EXAMINING THE RED THREAD OF INFORMATION IN YOUNG CHILDREN’S INTERESTS: A CHILD-CENTERED APPROACH TO UNDERSTANDING INFORMATION PRACTICES

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A dissertation submitted to the

School of Graduate Studies

Rutgers, The State University of New Jersey

In partial fulfillment of the requirements

For the degree of

Doctor of Philosophy

Graduate Program in Communication, Information, and Library Studies

Written under the direction of

Ross J. Todd

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New Brunswick, New Jersey

May 2018
ABSTRACT OF THE DISSERTATION

Examining the Red Thread of Information in Young Children’s Interests:
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Children and adolescents engage with information in a variety of contexts for a variety of reasons, including their desire to know more about their own personal interests. However, young children have typically been excluded from research in this area. This dissertation research addresses this gap by investigating the ways in which 5- to 7-year-old children experience information within the context of their individual interests. Individual interests are “enduring preference[s] for certain topics, subject areas, or activities” (Schiefele, 1991, p. 302) that are commonly exhibited by children and adults alike.

Drawing conceptually and methodologically on the framework of information experience and the field of childhood studies, this dissertation research makes use of a book discussion, a poster activity, a mobile photography app called PixStori, and photo-elicitation conversations in constructing an understanding of the ways in which young children think and feel about their individual interests and related information wants and activities.
The findings of this dissertation research contribute to the existing body of literature regarding children’s information practices by providing insight into the ways in which young children think and feel about information. The children who participated in this study articulated information wants that included descriptions, procedures, and explanations related to their interests. The children described information activities that involved information seeking and information use. Information seeking involved activities related to things that can tell you stuff, people that can tell you stuff, and experiences that can tell you stuff. Using information involved activities in which children applied information to their activities, and activities in which they shared information with others. Challenges that the children faced in engaging in these information activities included those related to their own capabilities and skills, constraints of information sources, and parental restrictions. Enablers that helped the children engage in information activities included the child’s personality, affordances of technology, and parental support. And finally, the children reported primarily positive emotions when engaging with information related to their individual interests, as well as some mixed emotions.

This dissertation highlights the usefulness of incorporating research methods and theories developed in the field of childhood studies to research in library and information science in order to better understand the information practices of young children.
Acknowledgements

Thank you to the children who participated in this research. I learned so much from each one of you and hope that I have captured at least some of your vibrancy and enthusiasm for pursuing your own interests and passions. To their parents, thank you for letting me learn from you and your children.

Thank you to my advisor, Dr. Ross Todd, for being such a wonderful mentor, and to my committee members, Dr. Marie Radford, Dr. Vikki Katz, and Dr. Roger Hart, for your support and guidance throughout my time in the doctoral program.

Thank you to Dr. Kaitlin Costello and Dr. Kathryn Greene for your kind and encouraging words as I neared the end of this process.

Thank you to Dr. Pam McKenzie, Dr. Lynne McKechnie, Dr. Colleen Cool, and the participants in the doctoral forums at the CoLIS, ISIC, and CAIS conferences for providing feedback on this research at various stages.

Thank you to Joan Chabrak, Alli Machiaverna, Danielle Lopez, and Elizabeth Ciccone for your administrative help over the past five years.

Thank you to SC&I and the LIS department for funding this research.

Thank you to Lynnette Fucci at Monroe Township Public Library and Fran Lee at Highland Park Public Library for your help with recruitment.

Thank you to Darcey Searles for being such an invaluable friend and collaborator, Miraida Morales for our regular dissertation therapy sessions, and to my colleagues and friends who helped make this experience enjoyable, Jack Harris, Joy Cox, Xiaofeng Li, Cheryl Klimaszewski, and Vanessa Kitzie.

Thank you to Zahra, Alexa, and Beth for being such supportive roommates.
Thank you to my parents, Rod and Darlene, my Nan, my sister Rachel and brother-in-law Robert, my brother Todd, and my nephew and niece, Carter and Calista, for your unwavering support and belief that I could do this.

Portions of this dissertation were previously published in:

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Chapter 1: Introduction

Background

Researchers in library and information science (LIS) who are concerned with the intersection of people and information “are always looking for the red thread of information in the social texture of people’s lives” (Bates, 1999, p. 1048). The concept of the “red thread of information” refers to the ways in which information in its many forms can be a part of virtually any activity in which people take part, whether or not engagement with information is the primary focus. Rather, information is embedded within people’s activities and interactions, and it is the researcher’s task to bring to light the ways in which that information is integral to the overall composition of daily life.

The dissertation research described here follows the red thread of information in young children’s lives within the context of their individual interests. The potential for this red thread to be interwoven throughout a child’s everyday activities is apparent in the following description of a child’s individual interest:

A 4-year-old boy’s interest in dinosaurs began when he was 18 months of age. He constantly looked through books (fiction and nonfiction) about dinosaurs, identifying and comparing them. He peppered his parents with detailed questions about dinosaurs - how they lived, what they ate, how they hunted, and so on. He spent hours playing with hundreds of plastic dinosaur figurines, organizing them into elaborate scenes. He also drew countless pictures of the different types of dinosaurs. The boy’s mother was supportive of his interest and learned a lot about dinosaurs herself. Twice the whole family drove 120 miles to visit the Natural History Museum in Washington to see and learn more about dinosaurs. (DeLoache, Simcock, & Macari, 2007, p. 1582)

While the child’s engagement with information was not the authors’ focus, this description nonetheless includes several examples of such engagement, including information seeking via books, asking questions of others, and visiting a museum, as well as the incorporation of information in activities such as art and play. This description
illustrates the importance and interwoven nature of information in children’s pursuit of their individual interests.

It has been well-documented that once they have gained sufficient language abilities, children begin asking questions in order to find out more about topics that interest them (Isaacs, 1938; Mills, Legare, Bills, & Meijas, 2010; Piaget, 1926; Shenton & Dixon, 2003c). Children also make use of digital technology (Agarwal, 2014; Havigerová & Haviger, 2014; Rideout & Katz, 2016; Spink, Danby, Mallan, & Butler, 2010), print information sources (Havigerová & Haviger, 2014; Shenton, 2004b), and the physical environment (Crow, 2011; Havigerová & Haviger, 2014) in seeking answers to their questions. Although some research has been conducted in this area, there are many gaps in our knowledge regarding the ways in which children engage with information in everyday life contexts. Research regarding children’s engagement with information has typically focused on the ways in which children seek or search for information to solve problems or to make decisions in classroom or library environments. Few researchers have examined the ways in which children engage with information in other ways, such as using, sharing, and creating information, and for other, more positive everyday life purposes. Even fewer research studies have given consideration to the ways in which children experience information – that is, how they think and feel about information and how they perceive their own actions related to information phenomena (Bruce, Davis, Hughes, Partridge, & Stoodley, 2014c). As Woodfall and Zezulkova (2016) have noted, this lack of attention to the ways in which children experience their own engagement with information and media can be seen in the proliferation of research that focuses on children’s use of specific types of information and media platforms, such as internet
search engines or television shows, rather than research that takes a more holistic approach to understanding children’s experiences with information and media across platforms.

In the body of literature related to children and information, these gaps in our understanding of young children’s (the phrase used in this dissertation to refer to those 8 years of age and younger) engagement with information are especially prominent. Scholars have pointed to young children’s limited verbal language (McKechnie, 2000) and reading abilities (Cooper, 2002) as barriers to their inclusion in the research process. As Shenton (2010) notes, “conventional research methods” used in LIS are not adequate for use with young children (p. 61). While including young children in research can certainly be challenging, the field of childhood studies offers an approach to research with children that can help to overcome these difficulties. An integral part of this approach is the recognition of children as competent social actors who can participate in research if given the right tools.

Research Problem

Many children develop individual interests in particular topics or activities. This dissertation research seeks to understand the ways in which young children experience information in the pursuit of their individual interests.

Research questions. The overarching question of this dissertation research is: How do young children between 5 and 7 years of age experience information within the context of their individual interests? The following research questions are investigated:

RQ 1. What information wants, if any, do young children report in relation to their individual interests?
RQ 2. What information activities, if any, do young children describe engaging in related to their individual interests?

RQ 2a. What types of challenges, if any, do young children encounter when engaging in these information activities?

RQ 2b. What types of enablers, if any, do young children receive when engaging in these information activities?

RQ 3. What types of emotions, if any, do young children describe in relation to their engagement with information related to their individual interests?

Although information wants, activities, challenges, enablers, and emotions are presented above as discrete phenomena, it should be noted that this is for the purposes of articulating specific, separate research questions to be answered in the course of this dissertation research. Taken together, these phenomena interact to make up children’s information practices, and all must be taken into consideration in order to gain a holistic view of children’s information experience.

**Significance and Contribution**

This dissertation research intends to make contributions to both research and practice in LIS. As previously noted, very few researchers have included young children in their investigations of the ways in which children engage with information.

McKechnie (2005) has posited that by studying young children, researchers in LIS can gain an understanding of how information behaviors develop through childhood and into adulthood. She argues that an understanding of the development of these behaviors in childhood will contribute to our understanding of these behaviors in adults. However, the research described here not only sheds light on the behaviors young children engage in
related to information, but also on how they think and feel about information and their information actions, offering a more holistic approach to understanding information practices. Lone (2012) notes that “every stage of life involves its own way of seeing the world” (p. 4), and children’s unique perspectives of any phenomena that involves them in some way contribute to a fuller understanding of that phenomena (Dahl, 2014). Understanding their perspectives also gives researchers greater understanding of why children behave the way that they do (Greene & Hill, 2005). By eliciting young children’s perspectives of information and information activities, a more complete picture of these phenomena can be formed.

Not only does this dissertation research add to the collective knowledge base regarding young children and their information practices, it also demonstrates that young children can be directly included in research that seeks to investigate their lived experiences if and when the appropriate research approach is taken. As previously noted, researchers in LIS may be hesitant to engage in research with young children as the types of research methods typically used in this field may not be suited for use with this population. This dissertation research serves as an example of the value of incorporating research methods from childhood studies, a field that focuses on understanding children and their experiences, into LIS research in order to address the exclusion of young children in research in this field. This exclusion is not only a theoretical or scientific concern, but also a moral one (Greene & Hill, 2005). In contemporary Western society, children and youth lack control over many aspects of their day-to-day lives. Shenton (2010) questions the “morality of allowing one group within society to speak for another” (p. 60), and notes that adults or others who act as informants in children’s lives may bring
their own biases or “agendas” to the research process (p. 60). By focusing on young children’s own thoughts, feelings, and perceptions, this dissertation research works to address this moral concern.

Additionally, the findings of this research will contribute to the provision of children’s services by information professionals. Scholars in LIS have noted that adults don’t always have an accurate understanding of children’s information needs, which is problematic as adults often determine what information a child receives (Bates, 1996; Shenton, 2010). By gaining a better understanding of not only how children engage with information, but also how they think and feel about information, parents, librarians, teachers, and others who work with children will be better able to assist them in their pursuit of information, not only in relation to their own interests but also in more formal learning environments, such as the classroom.

**Terminology**

Within the body of literature relevant to this dissertation, there exists substantial diversity in the language used to describe and explain some of the key concepts related to both children and their engagement with information. In order to make this dissertation more coherent, the words/phrases used to describe these concepts are set out below. Note that these terms may not be consistent with those used by the cited authors throughout this dissertation.

**Childhood.** In contemporary Western society, childhood is the period of the life span that begins at birth and ends at the end of adolescence, typically at 18 years of age. While the rigid overreliance on understanding childhood as a series of developmental stages, such as that exhibited by researchers in psychology, has been critiqued by
childhood studies scholars (e.g. Hill, 2005; Hogan, 2005), it is still important to consider the ways in which a child’s age may influence his or her perspective and experiences (Hart, 1992). In this dissertation research, the period of early childhood is considered to be from birth to 8 years (United Nations Educational, Scientific and Cultural Organization, n.d.). Children within this age range are referred to as young children, while children between the ages of 9 and 12 years of age are referred to as older children. Children from 13 to 18 years of age are referred to as adolescents. The generic children is used to refer to all individuals from birth to 18 years unless otherwise specified.

**Engagement with information.** Because of the desire to distinguish between the research domains of information behavior, information practices, and information experience, engagement with information is used throughout this dissertation in order to refer to “the interactions between people, the various forms of data, information, knowledge, and wisdom that fall under the rubric of information, and the diverse contexts in which they interact” (Todd, 2003, p. 27).

**Individual interests.** Researchers have distinguished between two types of interests, personal or individual and situational (Durik & Harackiewicz, 2007; Hidi & Renninger, 2006). An individual interest is “an enduring preference for certain topics, subject areas, or activities” (Schiefele, 1991, p. 302), while a situational interest is temporary and triggered by external environmental factors (Hidi & Renninger, 2006). Individual interests are of specific importance for this dissertation, as they represent the context in which young children’s engagement with information is explored.

**Information activities.** Information activities refer to “the partly mental processes that manifest in the physical manipulation of information” (Hartel, 2006, para.
5). Information activities include such things as searching, browsing, monitoring, exchanging, (Hektor, 2001), reading, producing, and using (Hartel, 2006) information. Information activities are the “doings and sayings” related to information that are part of broader social practices (Cox, 2013a). In this dissertation, information activities are specific actions that have been taken that involve some type of engagement with information.

**Information behavior.** *Information behavior* is a research domain within the field of LIS that is concerned with “how people need, seek, manage, give, and use information in different contexts” (Fisher, Erdelez, & McKechnie, 2005, p. xix). Generally, information behavior research draws on a psychological approach to understanding human behavior, and is heavily influenced by cognitive and individualistic approaches to understanding this behavior. Information behavior is the predominant framework through which people’s engagement with information is understood in the North American context. In this dissertation, the phrase ‘information behavior’ is used only when referring to this specific approach and the findings of studies that have explicitly used this phrase to describe their work.

**Information experience.** *Information experience* is an emerging framework within LIS that represents an alternative approach to studying people’s engagement with information. This framework seeks to understand the ways in which people think, feel, and perceive their own actions in relation to information phenomena (Bruce et al., 2014c). Research examining information experience tends to be phenomenologically oriented, although this is not the only approach to working in this domain. Rather, any approach that places emphasis on people’s lived experiences may fall within the
information experience domain. The phrase “information experience” is used within this dissertation to refer to an individual’s own perceptions and descriptions of his or her engagement with information.

**Information practices.** *Information practices* refers to an approach to understanding people’s engagement with information that draws on practice theory, an alternative means of conceptualizing human behavior that focuses on collective human activity rather than individual internal mental activity (Nicolini, 2013). Research examining information practices is more sociological in orientation than research conducted using the information behavior approach. In this dissertation, information practices is used to reflect this understanding of engagement with information at a collective level.

**Information wants.** The concept of *information wants* has been developed in order to differentiate between situations in which an individual has an “information need,” for example in order to complete a school assignment (Beautyman & Shenton, 2009) or to solve a life problem (Kari & Hartel, 2007), and situations in which an individual desires information for a non-problematic purpose. Kari and Hartel (2007) argue that such a desire for information should not necessarily to be viewed negatively, as the term “need” tends to connote. The term “information wants” is used in this dissertation in order to reflect the emphasis on information that is desired for a child’s own purposes.
Chapter 2: Theoretical and Conceptual Frameworks

Introduction

This chapter outlines the key theoretical and conceptual frameworks that work together to shape the ways in which information phenomena and children are conceptualized in this dissertation. Specifically, a brief overview of the metatheoretical orientation of social constructivism is provided. Next, the theoretical and conceptual frameworks that guide the ways in which children and their learning and development are understood are described, as well as their relevance to the field of LIS. Approaches to the ways in which people’s engagement with information is understood are then explicated, specifically the frameworks of information experience, information in social practice, everyday life information seeking (ELIS), and information wants. The chapter concludes with an explanation of how these diverse theoretical and conceptual frameworks are used together to inform this dissertation research.

Social Constructivism

Metatheoretical orientations influence the ways in which people see the world. For researchers, this includes the ways in which they understand the people, relationships, and concepts under study (Bates, 2005; Hartel, 2012). This dissertation takes a social constructivist approach to understanding young children’s engagement with information. Social constructivism is a metatheoretical approach that posits that knowledge is not an objective and external entity that must be uncovered by asking the right questions, but rather is created by people themselves (Berger & Luckmann, 1966). This process of knowledge creation takes place mentally, although it is heavily influenced by social interactions and conventions (Berger & Luckmann, 1966). While an
objective reality is understood to exist, people’s understandings or experiences of this reality are subjective (Berger & Luckmann, 1966). Intersubjectivity refers to the shared meanings people hold about the world around them, and this shared meaning is necessary for the construction of our social reality (Berger & Luckmann, 1966). As our knowledge of the world around us is constructed through our interactions with others, it is possible for these shared meanings to change over time and place.

In this dissertation, the metatheoretical orientation of social constructivism has shaped the ways in which both the concepts of information and children are conceptualized, and the ways in which the research was carried out. These influences are described in the sections below.

**Conceptualizing Children**

Children have been the object of study in fields such as psychology and sociology for quite some time. Typical orientations to the contemporary study of children in these fields include developmental and socialization models (Corsaro, 2014; Freeman & Mathison, 2009). Developmental frameworks for studying children draw on the work of well-known theorists such as Piaget and Vygotsky (Corsaro, 2014) and focus on the ways “in which children progress through established cognitive and biological stages” (Freeman & Mathison, 2009, p. 4). Hogan (2005) contends that this framework positions children as “predictable” (p. 26), “unformed persons” (p. 27) who lack agency and are not able to reliably and effectively function as research participants. This view of children as “deficient” (Hill, 2005, p. 62) can lead to “a detached and impoverished understanding of children’s needs” (Hogan, 2005, p. 23). The focus in developmental frameworks is predominantly on the individual and his or her internal, cognitive development (Corsaro,
Socialization models focus on the ways in which children “adapt to and internalize society” (Corsaro, 2014, p. 7), and draw on the work of theorists such as Bourdieu and Parsons. These models are also outcome-focused, as attention is paid to the ways in which children become functioning members of society (Christensen & Prout, 2005; Corsaro, 2014). While socialization models consider the influence of the child’s external environment, the child is cast in a passive role (Corsaro, 2014; Freeman & Mathison, 2009). Corsaro (2014) has distinguished between traditional developmental and socialization models by describing the latter as focusing on the ways in which a society “appropriates” or takes over a child (p. 7), while the former considers ways in which a child actively “appropriates” society (p. 10). Together, these models of childhood have dominated the ways in which adults conceive of children in contemporary society (Prout & James, 1990).

**Childhood studies paradigm.** Criticisms of both developmental and socialization models of childhood have led to the development of a comparatively new paradigm that has been termed sociology of childhood or childhood studies (Corsaro, 2014; Prout & James, 1990; Thomas, 2014). Within this framework, childhood is positioned as being socially constructed, much like race and gender (Connolly, 2008), and as such is a variable of social analysis much like these constructs (Prout & James, 1990). Additionally, in this paradigm children are situated as active social actors in their own lives (Melton, Gross-Manos, Ben-Arieh, & Yazykova, 2014; Thomas, 2014) who are worthy of study in their own right, rather than solely as future adults (Prout & James, 1990). Scholars in this field have notably compared this approach to the study of children’s lives with the ways in which feminist scholars study the lives of women.
(Hendrick, 2008; James, Jenks, & Prout, 1998; Thomson, 2008), as children are considered to be a marginalized group in contemporary Western society (Corsaro, 2014; Thomson, 2008) whose voices have been traditionally excluded from research (James, 2007). Within this paradigm, attention is directed to understanding children’s perspectives through the research process and making these perspectives or voices known via the dissemination of research results that remain true to the children’s perspectives (James, 2004; Thomson, 2008). Importance is also placed on understanding the diversity of children’s experiences, rather than focusing solely on the commonalities (Christensen & James, 2008).

Importantly, Hogan (2005) asserts that the childhood studies approach to conceptualizing children need not be “mutually exclusive” with the traditional developmental and socialization models of childhood (p. 37). For example, it is important to keep in mind the ways in which children can vary developmentally, even when operating from the framework of childhood studies (Hill, 2005; Hogan, 2005). As Hart (1992) notes, while it would be “misguided” to rely completely on developmental models in considering children’s capabilities when involving them in research, researchers should be aware of significant developmental milestones and the ways in which these may vary between and within children (p. 31).

**Children’s learning and development.** Social constructivist approaches to understanding children’s learning and development view learning as a social process and have been heavily influenced by the work of Vygotsky. One of the most widely cited constructs in Vygotsky’s work is the zone of proximal development, a mechanism through which social interactions can contribute to the construction of knowledge.
According to Vygostky (1978), the zone of proximal development is “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86). The zone of proximal development is significant as children first practice new skills through social interaction with an adult or more capable peer before they are able to perform the skill independently (McKechnie, 2005). This position of learning as a social process continues to influence much research on children’s learning and development.

Rogoff (1990, 2003; Rogoff, Mistry, Göncü, & Mosier, 1993) has extended Vygotsky’s work in her conceptualization of development as guided participation. According to Rogoff (2003), learning and development are processes of “changing participation in the socio-cultural activities” of the communities to which children belong (p. 11). This participation is guided by important individuals present in children’s lives, such as parents, family members, teachers, and other members of these communities, and involves children and their companions working together to achieve shared understanding, and to structure participation in the activities of a child’s community (Rogoff, 1990). Children learn and develop through observation and direct participation in community activities, through their interactions with others, and by engaging in community narratives and routines (Rogoff, 2003). Guidance can be provided through “face-to-face and side-by-side interaction as well as more distal arrangements of people’s activities” (Rogoff, Baker-Sennett, Lacasa, & Goldsmith, 1995, p. 46). Rogoff (2003) notes that guided participation is in many ways similar to Lave and Wenger’s (1991)
concept of legitimate peripheral participation, the process through which individuals learn, gain experience, and become full participants in a community of practice.

While the guidance of more competent or experienced others is consistent with Vygotsky’s zone of proximal development, Rogoff (1990) argues that guided participation places more emphasis on children’s active role in the development process. Additionally, guided participation focuses less on “explicit and even didactic dialogue that has characterized Vygotskian theory as well as American views of socialization” (Rogoff, 1990, p. 16), as learning occurs not only as a result of the explicit instructional intentions of parents and other adults, but also in the routine, mundane activities of daily life, in “passing moments of shared activity” (Rogoff, 1990, p. 17). These routine activities may not even be acknowledged as instances of learning by the individuals engaged in these activities (Rogoff, 1990). This is consistent with work exploring young children’s learning in relation to technology, in which “parents did not routinely characterise their children’s activities as learning and had limited awareness of the ways in which families supported this learning” (Plowman, McPake, & Stephen, 2008, p. 316).

There are also many parallels between the work of Rogoff and Corsaro, some of which have been outlined by Corsaro himself (Corsaro, Molinari, & Rosier, 2002). Corsaro (2014) has presented his theory of interpretive reproduction as an alternative to traditional socialization theories. In interpretive reproduction, children are positioned as active contributors to cultural production, rather than passive receptors and reproducers of existing societal and cultural structures (Corsaro, 2014). Children are recognized as belonging to both peer and adult cultures, and engage in “creative appropriation of information from the adult world,” “production and participation in peer culture,” and
“contribution to reproduction and extension of adult culture” (Corsaro, 2014, p. 41). In both guided participation and interpretive reproduction, development is understood as a process of participation in cultural or community activities (Corsaro et al., 2002), and both Rogoff et al. (1995) and Corsaro (2014) argue that development should be understood at community, interpersonal, and personal planes of analysis. Both Rogoff and Corsaro focus on “children’s active and creative participation in society” (Corsaro et al., 2002, p. 326), and the ways in which children do not simply reproduce existing cultures but contribute to their changing natures. However, as Corsaro et al. (2002) note, there are also differences in these two theoretical concepts. For example, although Rogoff (1990) notes the importance of various types of children’s companions in her concept of guided participation, her work tends to focus on parents and other influential adults in children’s lives. This contrasts with the focus in Corsaro’s (2014) work on the importance of peer cultures. Additionally, Corsaro et al. (2002) argue that interpretive reproduction is unique in its emphasis on the influence of social policies and existing power relations on children’s development as part of the community plane of analysis.

Together, the concepts of guided participation and interpretive reproduction offer a means of understanding the processes through which children learn and develop that recognizes the impact of both adults and peers at community, interpersonal, and personal levels. This approach has been increasingly used in scholarship concerned with children and youth. Importantly, it allows researchers to move away from more traditional conceptualizations of child development, and for this dissertation specifically, allows for a more holistic view of children’s engagement with information to be understood, with attention paid to children’s agency.
Conceptualizing children in library and information science. Research in LIS has only begun to incorporate the childhood studies perspective into its investigations of children’s information seeking and use. Analyses of articles published in the Journal of the Association of Information Science and Technology (Rothbauer & Gooden, 2006), as well as recent edited monographs devoted to the information behavior of children and youth (Lundh, 2016), note that traditional developmental approaches to studying children’s information behavior that position children as deficient and in need of adult intervention have dominated the published literature in this field. However, “there is also emerging evidence of competing discourses that begin to disrupt these dominant representations of young people” (Rothbauer & Godden, 2006, p. 8). For example, in their discussion of the methodology used to investigate the information behaviors of 9- to 13-year-old children, Meyers, Fisher, and Marcoux (2009) explicitly position their incorporation of participatory techniques as a move away from “doing research on youth to doing research with youth” (p. 310, emphasis added). Agosto and Hughes-Hassell (2005) and Fisher, Bishop, Fawcett, and Magassa (2014) have also adopted participatory, child-centered techniques in their research with adolescents.

However, to date, the childhood studies paradigm has very rarely been utilized in studies of young children’s engagement with information (for exceptions, see Barriage (2016b), Enochsson (2005), and Spink et al. (2010)). Researchers in LIS have noted that the types of research methods commonly used in studies of information seeking are not appropriate for use with young children (Cooper, 2002; McKechnie, 2000), yet instead of utilizing research methods that would provide young children with the opportunity to fully participate in research studies, they have argued for the use of indirect methods of
studying young children’s experiences, such as recording children’s naturally occurring talk, naturalistic observation, and parental reports of children’s activities (Cooper, 2002; McKechnie, 2000). Shenton (2010) has acknowledged the value of involving children more directly in the research process, and yet continues to position data gained from adults such as parents as a means of “[verification]” or “validation” of the data gained from children (p. 65). These authors’ discussions regarding research with young children indicate that researchers within LIS remain heavily influenced by traditional conceptions and models of children and child development.

This dissertation extends the application of the childhood studies approach to research with young children within the context of LIS. Importantly, it also builds on research in the field that uses a social constructivist approach to understanding information phenomena.

**Conceptualizing the Red Thread of Information**

In distinguishing LIS from other related disciplines, Bates (1999) posits that LIS researchers “are always looking for the red thread of information in the social texture of people’s lives” (p. 1048). The “social question” of LIS, which is concerned with the ways in which people “relate to, seek, and use information” (Bates, 1999, p. 1048), is one of the major questions this field seeks to address. The concept of the “red thread of information” serves to illustrate that in answering this social question, research in this field focuses on the ways in which information and information activities are interwoven within people’s lives. Using the example of computer-supported co-operative work, Bates (1999) notes that while sociologists focus on the relationships and social hierarchy that are formed within this environment, researchers in LIS focus on the ways in which these
relationships facilitate or constrain the flow of information (p. 1048). Similarly, this dissertation is not concerned with investigating young children’s individual interests per se, but rather the ways in which information is interwoven into these individual interests.

Currently, human information behavior is the predominant lens through which researchers follow the red thread of information in seeking to address the social question of LIS. Two other approaches to the study of this social question are discussed here, that of information experience and information practices. Both of these approaches have recently been introduced to LIS as alternative lenses through which scholars can seek to understand the ways in which people engage with information. Proponents of these approaches contend that these terms should not be seen as “an exercise in ‘academic hairsplitting’” (Savolainen, 2007, p. 110), nor should they be subsumed under “the information behavior research umbrella” (Bruce & Partridge, 2011, para. 4). Rather, they should be understood as significantly different ways of understanding people’s engagement with information.

Table 1 illustrates some of the key differences in these three approaches to answering the social question of LIS. As there is variation in how each of these three approaches are applied by individual researchers, this table represents the general trends evident in each of these approaches. As Savolainen (2007) notes, works published utilizing the terminology of one approach may comfortably fit within the ‘umbrella’ of one of the other approaches. The information in Table 1 is a summary of the key features of information behavior, information experience, and information practices, drawing from the literature explicating these approaches (particularly Hepworth, Grunewald, and Walton (2014) and Savolainen (2007)).
Table 1. Key Features and Examples of Works of Information Behavior, Information Practices, and Information Experience Approaches

<table>
<thead>
<tr>
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<th>Information Behavior</th>
<th>Information Practices</th>
<th>Information Experience</th>
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<tbody>
<tr>
<td><strong>Predominant paradigm</strong></td>
<td>Analytical</td>
<td>Interpretivist</td>
<td>Holistic</td>
</tr>
<tr>
<td><strong>Predominant disciplinary influences</strong></td>
<td>Psychology</td>
<td>Sociology; Philosophy</td>
<td>Phenomenology</td>
</tr>
<tr>
<td><strong>Object of inquiry</strong></td>
<td>Human behavior</td>
<td>Social practices</td>
<td>Lived experience</td>
</tr>
<tr>
<td><strong>Individual vs collective</strong></td>
<td>Individual</td>
<td>Collective</td>
<td>Individual or collective</td>
</tr>
<tr>
<td><strong>Predominant research approach</strong></td>
<td>Etic</td>
<td>Etic and/or emic</td>
<td>Emic</td>
</tr>
<tr>
<td><strong>Predominant research methods</strong></td>
<td>Experiments; Surveys; Interviews; Usage statistics</td>
<td>Ethnography; Discourse analysis; Conversation analysis</td>
<td>Interviews; Observation; Participatory techniques</td>
</tr>
<tr>
<td><strong>Examples of empirical works studying children and adolescents</strong></td>
<td>Cooper (2002); Gross (2006); Lu (2010); Todd (1999)</td>
<td>Barriage (2016a); Barriage &amp; Searles (2015); Harlan, Bruce, &amp; Lupton (2014); Francke, Sundin, &amp; Limberg (2011)</td>
<td>Barriage (2016b); Harlan, Bruce, &amp; Lupton (2012); Smith &amp; Hepworth (2012)</td>
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In summary, as shown in Table 1, some general trends are evident in the body of literature within each of the three approaches of information behavior, information practices, and information experience. Information behavior offers an analytical approach to understanding people’s engagement with information, while the information practices approach is more interpretivist, and information experience more holistic, in nature. These differences likely stem from the different disciplines that have predominantly influenced these three approaches, specifically psychology, sociology and philosophy, and phenomenology respectively. These disciplinary influences also impact the object of inquiry of research using these approaches, the level at which people’s engagement with information is understood (individual and/or collective), the use of an etic and/or emic approach, and the research methods typically used to study people’s engagement with information. Theoretical frameworks have been developed within both information behavior and information practices approaches, such as Wilson’s (1999) model of information behavior and McKenzie’s (2003) model of information practices. However, such theoretical development has not yet taken place within the information experience approach. To date, all three approaches have been used in LIS research with children and youth. A more detailed discussion of both information experience and information practices follows.

**Information experience.** The information experience approach is a quite recent development in the field of LIS, and has primarily been utilized by scholars in Australia (Bruce & Partridge, 2011). Due to its recency, it remains in need of theoretical development (Bruce & Partridge, 2011), and there exists much variation in how it has been applied. There is no one definition or theory of information experience (Bruce et al.,
This claim can be highlighted by examining a recent publication edited by Bruce, Davis, Hughes, Partridge, and Stoodley (2014a), in which each contributed chapter begins with an explication of the individual authors’ conceptualizations of information experience. While the editors of this book indicate that phenomenology has influenced their own interpretation of information experience, they acknowledge that this may not be the case for all researchers using this approach (Bruce et al., 2014a). Information experience has been described as an approach that “integrates people’s thoughts, feelings, sense, and actions; as well as their social and cultural influences” (Bruce et al., 2014c, p. 316), “[gives] priority to and [focusses] on gathering people’s experiential accounts of ‘lived-through’ moments, rather than people’s cognitions or explanations” (Partridge & Yates, 2014, p. 30), and “incorporate[s] the wider context, or represent[s] the wider phenomenon within which people might have, for example, experiences of information, experiences of information literacy and experiences of information sharing or seeking” (Bruce, Davis, Hughes, Partridge, & Stoodley, 2014b, p. 10).

Although there is no single approach to studying information experience, there are some commonalities in the work that has been published thus far. Partridge and Yates (2014) posit that the “interpretive research paradigm” is central to the information experience approach (p. 29). Hepworth et al. (2014) note that within this approach, focus is on “people’s own, personal, interpretation of their individual information experience” (p. 1041). Information experience has been articulated as “complex, multidimensional, and grounded in real life” (Bruce et al., 2014c, p. 316, emphasis added). Bruce, Somerville, Stoodley, and Partridge (2014) note that researchers need to “challenge ourselves about how we avoid or limit the influence of existing or dominant
understandings of information and learning when researching under-represented communities and contexts” (p. 183). As Capurro and Hjørland (2003) note, “information is what is informative for a given person. What is informative depends on the interpretative needs and skills of the individual” (p. 350). In the information experience approach, focus is on emic perspectives of people’s understandings of and engagement with information, meaning the perspectives of the individuals under study are the focus, rather than the perspectives of others such as the researcher. This is particularly notable when investigating the information experiences of people who have not typically been included in LIS research, such as young children.

Scholars note that information experience represents a broader approach to studying people’s engagement with information than information behavior and information practice (Bunce, Partridge, & Davis, 2012; Tucker 2014). Information experience reflects a phenomenologically oriented approach to studying people’s engagement with information (Bruce et al., 2014a; Hepworth et al., 2014), in contrast with the psychological influence in information behavior (Case, 2012) and the sociological influence on information practices (Cox, 2013b). While studies of information behavior focus on individuals and studies of information practices focus on groups of people, information experience can be considered at both individual and collective levels (Maybee, 2014). Hepworth et al. contend that the information practice approach is more “interpretivist” than information behavior, and gives more consideration to the ways in which meaning is made and knowledge is constructed within the group under study, although still guided by “pre-defined frames of analysis” (2014, p. 1047). In their view, information experience is a more “holistic” approach in which the
participants, rather than the researcher, are positioned as “experts of their reality” (p. 1045).

In this dissertation, information experience provides the main framework through which young children and information are understood. This framework is understood to place emphasis on young children’s “thoughts, feelings, and actions” related to information (Hepworth et al., 2014, p. 1046) in order to gain an understanding of their lived information experience. The children are considered to be the experts of their own reality, with this reality being the object under investigation.

**Information in social practice.** Information in social practice provides a secondary framework through which young children’s engagement with information is understood. The information practices approach reflects a sociologically-oriented approach to the study of engagement with information (Cox, 2013b; “Behaviour/practice debate,” 2009) as compared to the psychological orientation that is often implicit, if not explicit, in much research on information behavior (Case, 2012). The information practice approach draws on practice theory, an alternative means of conceptualizing human behavior that focuses on collective human activity rather than individual internal mental activity (Nicolini, 2013). Practice theory includes a “broad church of thinkers” (Cox, 2013b, para. 1), including historically significant theorists such as Bourdieu, Giddens, Marx, Wittgenstein, Heidegger, and Garfinkel (Nicolini, 2013) and contemporary theorists such as Schatzki, Reckwitz, and Gherardi (Cox, 2013b). As practice theory has been influenced by such a broad range of theorists, “there is no unified practice approach” (Schatzki, 2001, p. 2). This may explain why it is so difficult to find a single, succinct definition of the concept of ‘practices’. A commonly cited
definition of contemporary practice theory can be found in the work of Schatzki (2001), who describes practices as “emobodied, materially mediated arrays of human activity centrally organized around shared practical understanding” (p. 2), while Reckwitz (2002) considers the concept of practice to refer to “a routinized way in which bodies are moved, objects are handled, subjects are treated, things are described and the world is understood” (p. 250). Rosenbaum (1993) defines social practices as “the concrete and situated activities of interacting people, reproduced in routine social contexts across time and space” (as cited in McKenzie, 2003, p. 24). Regardless of the specific definition used, the incorporation of practice theory into studies of people’s engagement with information reflects a recognition of human activity as embedded within social and cultural contexts.

Just as there is no one approach to practice theory generally (Schatzki, 2001; Nicolini, 2013), “the concept of information practice lacks a fixed meaning in the field of information studies” (Byström & Lloyd, 2012, “Introduction” para. 2). LIS scholars using practice theory have taken as their inspiration various practice theorists in outside fields such as sociology and philosophy, which has, in turn, resulted in differences in how the practice approach has been applied in LIS. For example, Savolainen’s (1995) earlier work on ELIS was rooted in Bourdieu’s notion of habitus, while his more recent work draws on the works of Schatzki and Schutz (Savolainen, 2008). Lloyd’s work on information literacy practices is also influenced by Schatzki (Lloyd, 2007; Lloyd, Bonner, & Dawson-Rose, 2014; Lloyd, Kennan, Thompson, & Qayyum, 2013), as is the work of Francke et al. (2011). Other practice theorists cited in LIS work include Gherardi (cited in Cavanagh, 2013) and Reckwitz (cited in Haider 2011, 2012). Few LIS scholars have

The concept of socialization is integral to practice theory; as Nicolini (2013) states, “becoming part of an existing practice… involves learning how to act, how to speak (and what to say), but also how to feel, what to expect, and what things mean” (p. 5). As Christensen and Prout (2005) note, traditional socialization approaches are limited in that they emphasize that children are valued for their future potential, rather than appreciating them in their current state. By incorporating Rogoff’s (1990, 2003) concept of guided participation as well as Corsaro’s (2014) interpretive reproduction into the framework of information in social practice, children are positioned not as simply learning to engage in the ways of doing and speaking of either their peer or adult cultures, but as actively learning from and contributing to the social practices of both cultures.

Cox (2012, 2013a, 2013b) has advocated for the use of the phrase “information in social practice” rather than “information practice,” as he believes this would more accurately reflect the ways in which information is incorporated into people’s lives. Using the examples of photography and rubber duck collecting, he posits that many practices involve information to some extent, but the information-based components of these practices are typically “not the main purpose; it is a means to an end” (Cox, 2012, p. 185). He goes on to say that while “those practices that are information centred may be particularly interesting to us as information scientists… information activities are woven through all social practices” (Cox, 2012, p. 185, emphasis added). An additional advantage of using this conceptualization of “information in social practice” is that what
can be considered ‘information’ is dependent on the particular social practice and its meanings (Cox, 2013b), allowing for a move away from typical conceptions of information that reflect the traditional text- and document-based concerns of LIS.

In this dissertation, children’s engagement with information is understood through the lens of information in social practice, meaning that their information activities are a part of the broader social practices in which they participate. Additionally, children are considered to be active participants in and contributors to the communities to which they belong.

**ELIS and information wants.** ELIS is concerned with information seeking for purposes other than work and school, although it has been acknowledged that these domains may intersect (Savolainen, 2010), as everyday life is not free from the influence of institutions such as these (McKenzie, 2016). Notable theoretical models of ELIS include Savolainen’s (1995) model, which is concerned with way of life and mastery of life, Fisher’s information grounds (2005), and McKenzie’s model of information seeking practices (2003). Although developments in the area of ELIS have broadened the focus of studies of information seeking, such research remains focused on problem-solving and decision-making. As Case (2012) notes, “information seeking is much more than solving problems, finding facts, or making decisions” (p. 377). Rather, people may engage in information seeking and other information activities for a variety of purposes, including “entertainment or distraction” (Case, 2012, p. 377). Kari and Hartel (2007) have advocated for the exploration of what they term “the higher things in life,” which are “positive human phenomena, experiences, or activities that transcend the daily grind with its rationality and necessities” (p. 1133). This dissertation research is situated within the
context of ELIS and aligns with this focus on the role of positive information phenomena, as it seeks to understand young children’s information experience related to the positive experience of individual interests.

Part of this shift in focus to positive information phenomena includes a change in terminology, specifically the use of the phrase *information wants* in place of *information needs* to describe what prompts information seeking. Kari and Hartel (2007) challenge the conceptualization of an information need as representing “a felt lack of knowledge” and instead argue that that information needs should be viewed “in a positive light, as a want to strengthen and develop one’s knowledge” (p. 1140, emphasis added). Chatman and Pendleton (1995) note that information needs are fulfilled in order to avoid problematic situations, while fulfilling information wants provides a “benefit” or “enhancement” to one’s life (p. 136). Gross (2006) notes that wants are not necessarily goal-oriented, while needs are. In their research with children, Beautyman and Shenton (2009) distinguish between information needs, which result from imposed queries in the school setting, and information wants, which result from a child’s own interest in a topic. In this dissertation, the phrase *information wants* is used to emphasize the focus on the positive approach to young children’s engagement with information related to their individual interests, in which information is not necessarily sought to solve a problem or to achieve a goal but rather for the child’s own purposes.

**Summary of information-related frameworks.** Information experience, information in social practice, and ELIS are lenses through which people’s engagement with information can be understood. Information in social practice emphasizes the information activities that people engage in as part of broader social practices, while
information experience brings attention to the ways in which people think and feel about these information activities and related information phenomena. ELIS focuses on engagement with information for purposes other than work or school, with the concept of positive information contributing to a focus on engagement with information in non-problematic contexts. Together, these frameworks inform the way in which engagement with information is understood in this dissertation.

**Combining These Frameworks**

This dissertation draws on the theoretical and conceptual frameworks outlined above (information experience, information in social practice, ELIS, and childhood studies) in examining young children’s thoughts, feelings, and actions related to information within the context of their individual interests (see Figure 1 for a conceptual diagram of the interrelation of these frameworks).
Figure 1. Conceptual diagram of theoretical and conceptual frameworks informing the dissertation. Items in red are directly related to information theory. Items within the bolded circle represent the major concepts informing the dissertation.

The relationships between these frameworks are understood as follows:

- **Information experience** provides the main framework for this work, as primary focus is on young children’s subjective interpretations of *their own lived experiences* of engagement with information, positioning them as “experts of their reality” (Hepworth et al., 2014, p. 1045). That is, young children’s understandings and perceptions of information, their information activities, and the role of information in their social practices will be given primacy.
This focus is in keeping with the mandate of childhood studies in privileging children’s own experiences and in recognizing children as accurate informants of these experiences. The use of a childhood studies approach also makes salient that there is not one universal “child’s information experience,” but that there is diversity in children’s experiences. Additionally, Rogoff’s (1990, 2003) concept of guided participation and Corsaro’s (2014) theory of interpretive reproduction inform the framework of information in social practice.

Information in social practice provides the framework through which young children’s information activities are understood to occur. Information activities are the “doings and sayings” related to information that are a part of broader social practices (Cox, 2013a).

This dissertation research is situated within the domain of everyday life, and its focus extends beyond information seeking to other information activities such as information use, sharing, and creation. Kari and Hartel’s (2007) concept of positive information phenomena also informs this dissertation research, with the recognition that children may engage with information for reasons that go beyond problem-solving or goal achievement, and are associated with positive experiences and activities.

These theoretical and conceptual frameworks directly inform the methodology of this dissertation research, as explicated more fully in Chapter 4. Briefly, the use of these frameworks necessitates data collection that is qualitative and participatory in nature and conducted with children directly, and analysis that foregrounds children’s voices and perspectives.
Chapter 3: Literature Review

Introduction

This chapter provides an overview of the LIS literature related to young children’s engagement with information, as well as relevant literature related to children’s media use and individual interests. First, key claims from the literature are presented, followed by a discussion of the gaps in this body of research. Next, patterns in the approach to research with children taken in this literature are explicated. The chapter concludes with a brief discussion of how this dissertation research addresses existing research gaps and challenges.

Key Claims from the Literature

Spink and Heinström (2011) posit that information behavior is evident in children by 4 years of age. However, as they note, very little research has been conducted in LIS with children this young. In this review of the literature, only eight studies of children’s engagement with information from the LIS literature focused exclusively on young children, including three studies conducted by this dissertation’s author. An additional four studies were reviewed from the child psychology literature that are directly concerned with young children’s information seeking. Fifteen additional studies from LIS included young children as well as older children and, in some cases, adolescents (it should be noted that several of these published articles regarding children’s information behavior draw on a single dissertation project conducted by Shenton (2002)).

As Todd (2003) notes, everyday life is the least studied area of research on children’s engagement with information, a pattern that is apparent in the research involving young children. As so little work has been conducted with young children in
LIS, literature that extends beyond the everyday life context is included in this review. Relevant literature on the everyday life information behaviors of older children and adolescents are briefly addressed where relevant, as well as research related to children’s use of media and technology.

Children’s interests have been an area of study in disciplines such as education (e.g., Renninger, 2000), psychology (e.g., McHale, Crouter, & Tucker, 2001), and recreation and leisure studies (e.g., Kleiber, 1999), as the development of such interests is considered to be a normal part of child development and to contribute to happiness (Chaplin, 2009) and adjustment (McHale et al., 2001). A common distinction in this area of study is that between individual and situational interests (Durik & Harackiewicz, 2007; Hidi & Renninger, 2006). An individual interest is “an enduring preference for certain topics, subject areas, or activities” (Schiefele, 1991, p. 302), while a situational interest is temporary and triggered by external environmental factors (Hidi & Renninger, 2006). Individual interests have been studied primarily for their impact on learning, with researchers exploring the ways in which individual interests influence factors such as attention (Hidi & Renninger, 2006) and motivation (Durik & Harackiewicz, 2007). Some researchers have focused on children who have developed a significant knowledge base or expertise about their interests. Early studies in this area include Chi and Koeske’s (1983) investigation of a child’s knowledge of dinosaurs and Chi’s (1978) examination of chess experts. Other examples of children’s expertise include work on ‘intense interests’ in young children, interests in which children are quite passionate about particular topics or categories of objects (DeLoache et al., 2007; Johnson, Alexander, Spencer, Leibham, & Neitzel, 2004), and Crowley and Jacob’s (2002) work on what they term ‘islands of
expertise’, topical areas of interest in which children become quite knowledgeable. Relevant findings from research on children’s individual interests are also included in this review.

The sections that follow detail relevant findings from the research literature described above related to young children’s conceptions of information, their information needs, use of media and technology as sources of information, use of other sources of information, and information use and sharing, followed by a brief description of models of children’s information seeking and use. Key claims in each section are presented in bold font.

**Young children’s conceptions of information.** Previous research has demonstrated that *children’s understanding of the concept of ‘information’ emerges and becomes more complex as they age*. The 3- to 5-year-old participants in Barriage (2016b) did not express an understanding of the word “information” when asked, while Shenton and Dixon (2003b) found that 4- and 5-year-old children were not able to verbally articulate an understanding of the word, but a few could create drawings that expressed their understanding. Around 6 years of age, children began to express their understandings of the word ‘information’, which was strongly associated with the concept of facts (Shenton & Dixon, 2003b). In a later study, Shenton, Nesset, and Hayter (2008) found that 8- to 10-year-old children provided definitions that reflected an understanding of information as consisting of facts, something that met a need or could be put to some use, as requiring action in order to be accessible, or something that is found in particular sources. While not concerned with defining the concept of information, Cooper (2004) studied the ways in which children categorize information.
She found that children's categorizations become more refined and more reflective of typical library categorization as they get older (Cooper, 2004). An example of this is seen in kindergarten children’s blending of fiction and non-fiction categories, which is replaced by fourth grade with typical distinctions between fiction and non-fiction (Cooper, 2004).

**Young children’s information needs.** Research has indicated that children seek information about a variety of topics. The parents of 4- to 8-year-old children surveyed in Barriage (2016a) indicated that their children seek information related to their hobbies and interests. Walter (1994) interviewed adults who interacted with children in a professional capacity, such as librarians, teachers, and social workers, and found that these adults perceived 10-year-old children’s information needs as reflecting Maslow’s hierarchy of needs, with children perceived to need information in the areas of self-actualization, esteem, love and belonging, safety, and physiology. In analyzing the questions children in kindergarten to grade 12 posed to a “just curious” or non-academic section of digital reference services, Silverstein (2005) found that the questions asked fell into one of six categories: questions about “my life,” “my stuff,” “other people,” “the world,” “the universe,” and “abstract thought” (p. 235). Silverstein (2005) noted that many of the questions young children posed were related to how the world works, while older children asked questions that were more abstract or conceptual in nature.

Other researchers have utilized more direct means of determining children’s information needs. For example, Shenton and Dixon (2003a) developed a typology of information needs based on their interviews with children between the ages of 4 and 18 years of age. The young children in their study described information needs that the
researchers categorized as interest-driven information, school-related subject information, reinterpretations and supplementations, personal information, affective support, response to problems, empathetic understanding, support for skill development, and advice on action to be taken. Older children and adolescents described additional information needs that the researchers categorized as consumer information, self-development information, preparatory information, and verificational information (Shenton & Dixon, 2003a).

Meyers et al. (2009) and Agosto and Hughes-Hassell (2005) have explored the information needs of older children and adolescents, respectively, and found that these groups expressed information needs consistent with those described by Shenton and Dixon (2003a). However, these authors note that children from urban areas expressed information needs that were different from those in suburban or rural areas (Agosto & Hughes-Hassell, 2005; Meyers et al., 2009).

**Children’s information seeking can be prompted by a variety of factors, both internal and external to the child.** Gross (2006) focuses on what she has termed “imposed queries,” instances in which children engage in information seeking in order to fulfill an information need posed by another person, typically a teacher or parent. She has found that as children get older, they ask more imposed and fewer self-generated queries within the school library setting. Beautyman and Shenton (2009) found that sometimes these imposed queries can initiate subsequent information seeking driven by self-generated interest in the topic. Information seeking in these instances could extend beyond the classroom setting into the home (Beautyman & Shenton, 2009). A similar phenomenon was noted by Silverstein (2005), with many of the questions children asked of the digital reference services seemingly influenced by topics covered in school. These
types of questions were much more commonly asked by younger children than older children (Silverstein, 2005). In interviews with 7-, 9-, and 11-year-old children, Foss et al. (2012) identified a number of what they term “triggers” for information seeking online, including school, personal interests, suggestions from friends, and playing games (p. 564). The 7-year-olds in this study were more commonly triggered to seek information by their personal interests, playing games, and suggestions from friends, and were less likely than the older children to be triggered by school assignments (Foss et al., 2012). Research outside of LIS has also noted that individual interests prompt self-generated information seeking, as children seek to address gaps in their knowledge about their interests independent of the instructions or expectations of others (Renninger, 2000). Research with older children has explored other motivations for information seeking, including coping with daily life problems (Lu, 2010) and intrinsic motivation (Crow, 2011).

Young children’s use of media as sources of information. There is a noted lack of discussion of young children’s use of electronic information sources in Shenton’s work (i.e. Shenton, 2004c, 2004d; Shenton & Dixon, 2002, 2004), which makes up a significant portion of the studies in this literature review. This is likely due to the fact that while his work has been published throughout the 2000s, data collection for his dissertation was carried out during the 1999/2000 school year. The information technology landscape has changed considerably in the nineteen years since then, with the increasing ubiquity of smartphones, tablets, and other technologies in the lives of young children. More recent research has demonstrated that children make use of a variety of
media and technology as sources of information in both everyday and school settings.

For example, according to a recent survey of parents by Common Sense Media (2017), 98% of children 8 years of age and younger have some type of mobile device in their homes. The survey reported that 53% of children between birth and 8 years of age watch television daily, 24% watch videos online daily, 28% use mobile devices daily, 11% use computers daily, and 6% play video games daily, with children between 5 and 8 years of age spending an average of two hours and fifty-six minutes using screen media daily (Common Sense Media, 2017). With the increasing number of children making use of digital technology in their daily lives, it is no surprise that young children’s use of these technologies as information sources has received attention in the literature. For example, in an earlier iteration of the Common Sense Media (2013) survey, it was reported that 61% of children watch educational TV shows, 38% of children use educational content on mobile devices, 34% of children use educational games or software on computers, and 19% of children visit educational or informational websites, all often or sometimes. In this survey, educational media were defined as media “that are designed to teach kids something” (Common Sense Media, 2013, p. 32).

Taking a slightly different approach, researchers in LIS have examined children’s use of technology in seeking information, conceptualized as a more active process than consuming educational media. For example, both parents (Barriage, 2016a) and children themselves (Havigerová & Haviger, 2014) have reported making use of technology such as computers, television, and movies to find information related to subjects of interest. Agarwal’s (2014) study demonstrates children as young as 3 and 4 years of age make use
of touch devices in engaging in information searching for their own purposes. Similarly, Given et al. (2016) observed children 3 to 5 years of age using a variety of information technologies for various information purposes, including tablets, e-books, smartphones, and laptop computers, both alone and in the company of family members. Silverstein (2005) recorded reference questions posed to digital reference services by children as young as kindergarten age. The young children in Foss et al.’s (2012) study discussed their use of search engines in seeking information for various purposes. These children articulated the selection criteria they used when searching for information via Google, including their reliance on the snippet, or description, of each result provided by Google as well as recognition or familiarity with the selected website (Foss et al., 2012).

Researchers have also explored young children’s web searching in classrooms and libraries, demonstrating children’s capabilities in using digital technology to find information in these settings. Spink et al. (2010) observed 5- and 6-year-old children conducting web searches related to a class project. The children searched for both textual and visual information, and also engaged in browsing, made relevance judgements when presented with the search results, and collaborated with each other on their search activities. Seven-year-old children have also been observed engaging in browsing strategies, and less often, in searching, when using electronic encyclopaedias (Cooper, 2002).

Although young children are able to successfully obtain information from media and technology sources, they do experience challenges when using search tools such as Google. The young children in Enochsson’s (2005) study identified the ability to adequately read and write as well as possessing an understanding of the technology being
used, such as how to use a mouse, as fundamental skills needed in order to successfully use the internet for information seeking. The participants in Foss et al. (2012) voiced frustration related to problems with software and hardware, while spelling and typing were challenges reported by both Spink et al. (2010) and Foss et al. (2012) that impacted young children’s ability to successfully use Google. The 7-year-old participants in Foss et al.’s (2012) study had a much lower success rate in completing assigned search tasks than the 9- and 11-year-old participants, successfully finding the requested information in only 33% of searches, and younger children exhibited more uncertainty during the search process than did the older children. When asked why they usually abandon searches in their daily lives, these young children reported various reasons including finding wrong or unexpected information, becoming bored with the search activity, starting to engage in an offline activity, or in response to parental limits on their computer use (Foss et al., 2012). Strategies for overcoming some of the challenges that young children face in searching for information online include search engine features such as Google’s spelling suggestions (Spink et al., 2010), and help from others such as teachers (Spink et al., 2010) and siblings and parents (Foss et al., 2012). Such help could take different forms, including searching together, watching these more competent others conduct searches, and assistance in spelling keywords (Foss et al., 2012).

**Obstacles to using electronic sources to find information persist even when such sources are geared for children’s use.** Researchers who have designed interfaces specifically with children in mind consistently report that their youngest users experience more difficulty in successfully using these interfaces than the older children in their studies. This includes testing of public library catalogs (Creel, 2014), storybook search
interfaces (Chao & Lin, 2015), and digital libraries (Bilal & Bichar, 2007a, 2007b; Hutchinson, Druin, & Bederson, 2007; Wu, 2015) that were designed for and developed through testing with children.

Although research indicates that young children have increasing access to a plethora of information technologies in their homes and other settings, there are two important points to consider when conceptualizing young children’s use of these technologies. First, **increased access to technology does not necessarily translate into high use of said technology.** According to Plowman, McPake, and Stephen (2010), parents’ attitudes towards technology, family practices and values, and the children’s own interests were more important in determining children’s rates of technology use than the amount of technology present in the home. Foss et al. (2012) also identified a number of children in their study as being disinterested in computer use in general and online information searching specifically, even though they have access to this technology.

Second, as Rideout (2014) notes, while information about average use of media and technology among children can be helpful in understanding these phenomena, “averages mask big differences in how children use media. There are some 2-year-olds who don’t use any screen media at all, and some 8-year-olds who use four or five hours a day” (p. 11). **While media and technology are available to and used by an increasing number of young children, this engagement is not universal.**

It should also be noted that the American Academy of Pediatrics Council on Communications and Media (2016a) recommends that children between 2 and 5 years of age limit their digital media use to no more than one hour per day. For older children, parents are advised to develop family media plans that include limits on the amount and
types of digital media use (American Academy of Pediatrics Council on Communications and Media, 2016b). These recommendations have been developed in response to the growing body of evidence that, while digital media present many different opportunities and benefits in today’s society, there exist many risks to children’s physical and mental well-being if these media are used inappropriately.

**Young children’s use of other sources of information.** Research studies in LIS have also shown that young children make use of non-electronic sources in meeting their information needs. In her interviews with boys between the ages of 4 and 12 years, McKechnie (2006) found that both non-fiction and fiction books were important sources of information for these children, and that non-fiction material was identified by many of the boys as their favorite items in their personal book collections. When browsing books in a school library, 7-year-old children relied heavily on the visual images on the covers of books, and less often made use of features such as the table of contents or the index, in selecting books for a school project (Cooper, 2002). Parents have reported their children making use of material such as books and instruction manuals in seeking information related to their interests (Barriage, 2016a). Children under 8 years of age very rarely reported the use of serials such as comics, magazines, and newspapers in Shenton’s (2004d) study, and usage of these materials was low with older children and adolescents as well. The children in Havigerová and Haviger’s (2014) study reported using books and magazines in finding information about their interests, while the children in Barriage (2016b) described finding out information from classroom resources such as books, posters, and the classroom calendar.
In addition to text-based documents, research has demonstrated that children make use of other non-electronic sources of information. For example, children have described observing the environment as a way of seeking information (Crow, 2011; Havigerová & Haviger, 2014), while parents have reported their children finding out new information from visiting institutions such as libraries and art galleries, as well as their own imaginations and through trying new things (Barriage, 2016a).

Young children also rely heavily on other people as sources of information. The adult informants in Walter’s (1994) work mainly discussed parents, other adults, and peers when discussing the information sources children rely on, while the young children interviewed in Shenton and Dixon’s (2003c) work emphasized their reliance on their parents. While Shenton and Dixon (2003c) discuss other people as sources of information via face-to-face communication, the older children in Meyers et al. (2009) reported seeking information from other people through both face-to-face and mediated communication. The parents in Barriage (2016a) reported their children seek information by asking questions, talking with others, observing others, and engaging in activities with others. Barriage (2016b) reported children finding out new information from other children and the teachers in the daycare, both passively by observing other people’s activities and actively by asking questions. Barriage and Searles (2015) focused exclusively on the ways in which young children seek information from their family members by asking them questions during everyday interactions.

In their work on children’s interests, DeLoache et al. (2007) and Johnson et al. (2004) note that these interests are integrated within their family’s activities and interactions, and highlight the role of parents in working with their children to gain
knowledge about their interests. Crowley and Jacob (2002) also highlight the importance of “unremarkable moments” (p. 337) in which learning about interests occurs, as opposed to more formal or structured instructional interactions. These findings reflect the everyday nature of children’s interests and the importance of interpersonal interactions in engaging with information.

**Young children sometimes face difficulties in accessing non-electronic information sources.** The young children in Shenton’s (2004c) work indicated that they preferred to draw on fiction material for information seeking and required help from their parents in accessing non-fiction material. Inappropriate reading levels were cited as one of the barriers to using print information, as well as the need to consult multiple sources of information to address a single information need (Shenton & Dixon, 2004). Children between the ages of 7 and 11 years reported intellectual, physical, and administrative barriers in their use of public library materials, such as unfamiliarity with the controlled vocabulary used in libraries, restrictions on physical access to library materials, and the ways in which library materials are organized (Harris & McKenzie, 2004). Children of all ages indicated reliance on their parents to access the public library (Harris & McKenzie, 2004; Shenton & Dixon, 2002).

**Children also face challenges in seeking information from other people.** For example, the adults in Walter’s (1994) study considered peers to be an unreliable source of information for children, and also discussed the ways in which communication between adults and children can be problematic, resulting in unmet information needs. Researchers in psychology have been concerned with the ways in which young children make decisions about who to ask for information in experimental settings have
demonstrated that young children are not always able to identify the person best able to answer their questions or to ask enough relevant questions to satisfy their information needs. Fitneva and Dunfield (2010) found that 4-year-olds rely on trait-relevant labels (such as whether a person has been characterized as good or not good at giving answers) rather than whether the person has been characterized as being right or wrong when choosing a person to seek information from in laboratory situations, while 7-year-olds are able to choose the appropriate person after witnessing them give correct information on one previous occasion. In subsequent experimental situations, Fitneva, Lam, and Dunfield (2013) found that 4- and 5-year-old children could correctly identify looking at an object as a means of answering a question about its visible properties, but only 6-year-old children correctly identified asking an expert about the object’s invisible properties. Mills et al. (2010) found that children between the ages of 3 and 5 years were able to distinguish best between knowledgeable and non-knowledgeable informants, rather than knowledgeable and inaccurate informants. They also found that children did not always ask enough questions to solve a problem, although 5-year-olds asked more effective questions than the 3- and 4-year-olds (Mills et al., 2010).

**Young children’s information use and sharing.** Although only one study included in this literature review examined young children’s information use and sharing, its findings demonstrate that young children also engage in information use and sharing activities. The parents surveyed in Barriage (2016a) reported that their children use information by incorporating it into their free-time activities, to make purchases, to plan attendance at relevant events, and to inform their subsequent information seeking, among other activities. The parents also reported that their children share information
with others through talking, text messaging, and pretend play, and share sources of information such as books and pictures with other people, as well as their own information creations such as drawings, crafts, and stories.

**Models of children’s information seeking and use.** Shenton and his colleagues have developed a number of models of information seeking based on his dissertation work. These include a macrocosmic model of the information seeking process, beginning with an information need, as well as microcosmic models of the ways in which children use specific information sources (Shenton & Dixon, 2003c), as well as models of information seeking based on Sice’s systems model, which focuses on the iterative nature of information seeking, (Shenton & Hay-Gibson, 2011a) and Ochs & Capp’s model of narrative recursion (Shenton & Hay-Gibson, 2011b). It is not clear how these models differ from existing theories of information behavior. Based on her work with children from 6- to 17-years of age, Enochsson (2005) developed a model of the skills needed to successfully seek for information online, with the structure of the model borrowed from Corsaro’s (1997) model of interpretive reproduction. Additionally, Agosto and Hughes-Hassell (2006a, 2006b) have developed a model of the everyday life information needs of teenagers that directly relates to adolescents’ developmental needs, positioning ELIS as being motivated by the transition from teen to adulthood. To date, however, a more comprehensive model that encompasses children’s information practices beyond information needs and seeking has not been developed.

**Summary of key claims.** Children have a developing sense of the concept of information, and the concept does not appear to be well-understood by 4- and 5-year-old children. Children’s information seeking can be prompted by a variety of needs and
factors. Some of these factors are internal, such as their individual interests, while others are imposed on them externally. Young children make use of a number of different information sources in addressing their information needs, including technology such as the internet, television, and movies, and non-electronic sources of information such as books, magazines, and the natural environment. Other people are a particularly important source of information for young children through conversation and interaction. Young children face a number of barriers in accessing information from all of these sources, including those that are intellectual, physical, and social in nature. In addition to seeking information, young children also engage in information use and information sharing activities. Missing from the literature are comprehensive theoretical understandings of children’s information practices that go beyond understanding information seeking and searching.

**Gaps in the literature.** In his review of the research on children’s information seeking, Shenton (2004b) characterizes the existing literature as being both “peripheral to the information-seeking process” and “piecemeal coverage of the area as a whole” (p. 243). This peripheral and piecemeal coverage can clearly be seen in the research that has focused on young children specifically. As so few studies have been conducted with young children, it is not surprising that the gaps in our knowledge of their engagement with information are many.

Research with young children in LIS has been limited to traditional, psychological conceptions of both children and engagement with information. This research reflects a cognitive constructivist approach to understanding children’s engagement with information, with little mention of the social and cultural contexts in which such
engagement occurs. With few exceptions, children’s behaviors are described with little mention of the influence of other people in their lives, such as their teachers, parents, or siblings, except for instances in which these people impose questions on children or act as sources of information. However, as demonstrated by Given et al. (2016), Foss et al. (2012), and research from other fields, other people may support or otherwise interact with children during their engagement with information. For example, research regarding children’s media use has indicated that children often access technology collaboratively with their family members (Katz, 2014; Rideout & Katz, 2016). The ways in which other people influence and/or collaborate on young children’s engagement with information is not clear from the LIS literature.

The body of research conducted with young children in LIS is also missing a discussion of the ways in which factors such as socioeconomic status influences the ways in which children engage with information. Alper et al. (2016) note that research regarding children’s engagement with media and technology has tended to focus on families that are “middle-class and majority cultures” (p. 108), and an examination of the demographic information made available in the studies in this literature review indicate this claim holds true for research with young children in LIS. When information such as socioeconomic status or ethnicity is made available, the relationship between these factors and children’s engagement with information is not made explicit.

Additionally, the research that has been conducted with young children has been fairly limited in scope, with an almost exclusive focus on information seeking and searching. Other than the study by Barriage (2016a), missing from the LIS literature are explorations of the ways in which young children use, share, create, and experience
information. Examples of these types of activities can be seen in the findings of a survey of parents of children between 2 and 10 years of age, who reported their children engaging in “specific actions as a result of their exposure to educational media,” such as talking about the media content, subsequently engaging in related imaginary play, asking questions, asking to engage in related projects and activities, and teaching their parents about the content (Rideout, 2014, p. 23). These activities are relatively unexplored directions in the LIS literature on young children’s engagement with information. Some of the gaps in the research that has been conducted on young children’s information seeking are mirrored in the study of engagement with information with all populations. As Kari and Hartel note (2007), much of the research concerned with people’s engagement with information has positioned their conceptions of information seeking as solving problems or making decisions. They posit that this can be seen in the use of terminology such as information needs (Kari & Hartel, 2007). This tendency can be seen in research with young children as well – for example, Shenton (2002) asked the children in his dissertation to think of problematic situations in their discussions of information seeking. As Case (2012) notes, “information seeking is much more than solving problems, finding facts, or making decisions. Sometimes it is a quest for entertainment or distraction; sometimes it is an act of serendipity” (p. 377). Understanding information seeking in this way has only recently been utilized in LIS research with young children.

This dissertation research addresses some of these identified gaps in the existing literature related to young children’s engagement with information. Specifically, this research focuses on young children’s information wants, information activities beyond
information seeking, the challenges and enablers encountered in their information activities, and the emotions they feel when engaging with information. These phenomena are understood within the social and cultural contexts within which they occur, and are not viewed as actions taken solely in response to problematic or decision-making contexts.

**Patterns in Research Approaches**

As noted, only twenty-seven studies in the reviewed literature focused on young children’s engagement with information, and this research has been heavily influenced by traditional models of childhood. While this is certainly expected in the studies drawn from child psychology, it is also evident in the work from LIS. Some of the studies explicitly draw on the theories of Piaget and Vygotsky (e.g. Cooper, 2002, 2004; Enochsson, 2005; Harris & McKenzie, 2004), while others, including Foss et al. (2012) and the articles drawing from Shenton’s (2002) dissertation, make little mention of theory. The studies by Barriage (2016b), Enochsson (2005) and Spink et al. (2010) are notable in their inclusion of ideas drawing from the sociology of childhood. While McKechnie (2006) does not explicitly incorporate theory from the sociology of childhood in her work, she utilizes reader response theory, which positions the reader (in this case, boys) as the expert of their own reading experience. The influence of traditional models of childhood can be seen in the use of cognitive approaches to understanding children’s engagement with information (e.g., Agarwal, 2014; Cooper, 2002, 2004; Gross, 2006). Barriage (2016a), Barriage and Searles (2015), and Given et al. (2016) were unique in situating children’s engagement with information and information technologies as part of information practices. Only one study used the framework of information experience
(Barriage, 2016b), although Shenton and Dixon (2003b) note that their approach was phenomenological.

Fourteen of the twenty-seven studies made use of interviews and focus groups (Barriage, 2016b; Cooper, 2002; Foss et al., 2012; Gross, 2006; Harris & McKenzie, 2004; Havigerová & Haviger, 2014; McKechnie, 2006; Shenton, 2004c, 2004d; Shenton & Dixon, 2002, 2003a, 2003b, 2003c, 2004), and seven studies involved observation techniques (Barriage, 2016b; Barriage & Searles, 2015; Agarwal, 2014; Cooper, 2002; Foss et al., 2012; Given et al., 2016; Gross, 2006; Spink et al., 2010). These research methods were not mutually exclusive, as Barriage (2016b) and Gross (2006) used both observation and interviews, while Cooper (2002) used both observation and focus groups. Less common approaches included experiments or quasi-experiments (Fitneva & Dunfield, 2010; Fitneva et al., 2013; Mills et al., 2010), questionnaires (Shenton et al., 2008), parental reports (Barriage, 2016a), small group activities (Cooper, 2004), inventories of personal book collections (McKechnie, 2006), assigned search tasks (Foss et al., 2012), analysis of logged question data from a digital reference service (Silverstein, 2005), and child-led tours and photography (Barriage, 2016b). Two of the studies are drawn from larger ethnographic projects (Beautyman & Shenton, 2009; Enochsson, 2005). Additionally, Shenton and Dixon (2003b) mention making use of drawings in investigating children’s understanding of the phrase “information,” but only include a brief discussion of the results of this method.

Fourteen of the twenty-seven studies that included young children were conducted in school settings (Beautyman & Shenton, 2009; Cooper, 2002, 2004; Enochsson, 2005; Gross, 2006; Shenton, 2004c, 2004d; Shenton & Dixon, 2002, 2003a, 2003b, 2003c,
2004; Shenton et al., 2008; Spink et al., 2010). While this makes sense for studies such as Gross (2006) and Spink et al. (2010) that are concerned with information seeking and use within the context of the school library or classroom, this may be problematic for studies examining ELIS. Other research sites included public libraries (Harris & McKenzie, 2004), daycare centers (Barriage, 2016b; Havigerová & Haviger, 2014), psychology laboratories (Fitneva & Dunfield, 2010; Fitneva et al., 2013; Mills et al., 2010), and information collected online (Barriage, 2016a; Silverstein, 2005). Only five studies of ELIS took place in the home (Agarwal, 2014; Barriage & Searles, 2015; Foss et al. 2012; Given et al., 2016; McKechnie, 2006).

In nearly all of the studies, participants were selected based on their attendance at the schools or daycares in which the studies took place, while the studies that took place in laboratories recruited from nearby schools and daycares (Fitneva & Dunfield, 2010; Fitneva et al., 2013; Mills et al., 2010). The studies that took place outside of these settings made use of recruitment from local early childhood centers (Barriage, 2016a; Barriage & Searles, 2015; Given et al., 2016), personal networks (Barriage, 2016a; Barriage & Searles, 2015; Foss et al., 2012; McKechnie, 2006), and snowball sampling (Foss et al., 2012; Harris & McKenzie, 2004); although it is not made explicit, it is suspected that the single participant in Agarwal’s (2014) study is the author’s own child. Silverstein (2005) made use of a secondary data set.

It is important to note that, much like the majority of research conducted with young children in LIS, much of the research on children’s interests similarly has taken an etic approach to understanding these interests, relying on the perspectives of people other than the children themselves. Researchers have made use of parental reports (DeLoache
et al., 2007; Johnson et al., 2004), researcher observations of contrived situations (Crowley & Jacob, 2002), tests of knowledge and recall (Chi, 1978; Chi & Koeske, 1983), and standardized cognitive measurements (Johnson et al., 2004) to investigate children’s interests. Johnson et al. (2004) state that they chose not to ask the children in their study about their interests as the researchers did not believe the children were capable or likely to answer their questions.

**Summary of patterns in research approaches.** The vast majority of the research reviewed here related to young children and their engagement with information takes a traditional developmental approach to understanding this engagement. This approach is evident in the research methods of these studies, with the use of standard research methods such as interviews, focus groups, experiments, and observations dominating. These studies were predominantly conducted in school settings, with research participants selected based on their attendance at or near the institutions where the research was conducted. To date, few studies have taken an emic approach, one that centers the children’s own perspectives, in understanding young children’s engagement with information, or made use of research methods and settings that are better suited for eliciting young children’s thoughts and perspectives.

This dissertation research takes a different approach to studying young children and their engagement with information than those predominantly taken in the literature reviewed here. Specifically, children’s engagement with information is understood using frameworks from the field of childhood studies, rather than those from more traditional disciplines. Children’s perspectives on their engagement with information are solicited and privileged in this dissertation through research methods that facilitate children’s
direct participation in the research process. Additionally, recruitment and research interactions were not conducted in the school setting.
Chapter 4: Methods

Introduction

This chapter presents the methods used in this dissertation research. First, a brief overview of the research activities is provided. Next, the theoretical implications for methodology are outlined, followed by definitions of key terms. The pilot study for this dissertation is then briefly discussed. Information about the participants in the main research study is then provided, as well as details about the data collection and analysis process. The chapter concludes with a discussion of the limitations of this study and relevant ethical considerations.

The overarching question of this dissertation research is How do young children between 5 and 7 years of age experience information within the context of their individual interests? The following research questions were derived from the review of the existing literature and informed by the theoretical and conceptual frameworks discussed in Chapter 2:

RQ 1. What information wants, if any, do young children report in relation to their individual interests?

RQ 2. What information activities, if any, do young children describe engaging in related to their individual interests?

RQ 2a. What types of challenges, if any, do young children encounter when engaging in these information activities?

RQ 2b. What types of enablers, if any, do young children receive when engaging in these information activities?

RQ 3. What types of emotions, if any, do young children describe in relation to their engagement with information related to their individual interests?
In order to answer these questions, this dissertation research used multiple methods of data collection with both children and their parents over multiple stages in investigating the children’s information practices related to their individual interests. The various research activities that were conducted at each stage of the main research study are outlined in Table 2, and described in detail in the sections below.

Table 2. Research Activities by Participant and Stage of Research Study

<table>
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<tr>
<th>Research Stage</th>
<th>Research Activities with Child Participants</th>
<th>Research Activities with Parent Participants</th>
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<tr>
<td>Stage 1</td>
<td>• Assent</td>
<td>• Informed consent</td>
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<td>• Book discussion</td>
<td>• Parental consent</td>
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<td></td>
<td>• Poster activity</td>
<td>• Survey</td>
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<td></td>
<td>• Demonstration of PixStori app</td>
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<td>Stage 2</td>
<td>• Use of PixStori app</td>
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<td>Stage 3</td>
<td>• Joint conversation with parent regarding PixStori creation process</td>
<td>• Joint conversation with child regarding PixStori creation process</td>
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<td>• Photo-elicitation conversation</td>
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<td>• Photo categorization</td>
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<td>• Ideas for dissemination</td>
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Theoretical Implications for Methodology

The specific metatheoretical and theoretical orientations selected for this dissertation research work together to directly shape the way in which it has been conceptualized. These orientations impact the ways in which fundamental concepts are understood and data collection and analysis were conducted.
In line with social constructivism, the focus of this research approach is on “knowledge creation rather than knowledge extraction” (Clark & Moss, 2011, p. 4). The childhood studies approach also works to challenge dominant considerations of “whose knowledge counts” (Clark & Moss, 2011, p. 5), privileging children’s voices and perspectives regarding their own experiences. Co-constructing or creating knowledge with children and privileging their voices requires children’s direct and active participation in the research process.

As previously noted, the concept of the child is considered to be socially constructed within the context of this research. This is significant since, as Fargas-Malet, McSherry, Larkin, and Robinson (2010) argue, “the particular internal images of childhood that researchers hold will inform their choice of methods, ethical practice, analysis, and interpretation of data” when conducting research that involves children (p. 176). Understanding the concept of the child to be socially constructed involves a recognition that children need not be limited by dominant perceptions of them as not possessing the capabilities and competencies to be involved in research. This approach also requires the researcher to be aware of and work to address the power imbalance inherent in research with young children through the design of research.

The concept of information is also considered to be socially constructed and dependent on context and situation (Bruce, Somerville, et al., 2014; Capurro & Hjørland, 2003). The framework of information experience involves gaining an understanding of emic perspectives of people’s understandings of and engagement with information. As Budd (2005) notes, “phenomenology is not a method, but an attitude” (p. 56). A phenomenological attitude towards research involves a focus on participants’ subjective
experiences, with attention specifically paid to their points of view (Mertens, 2015; Schwandt, 2007). Therefore, any study of a particular group’s information experience should make use of research methods that elicit their perspectives, opinions, thoughts, and feelings.

Additionally, Greene and Hill (2005) argue that the use of the childhood studies paradigm requires researchers to make use of methods that “capture the nature of children’s lives as lived” (p. 3), rather than studying their actions in contrived situations. Qualitative approaches to research offer the preferred means through which children’s experiences can be understood (Hogan & Greene, 2005), as they are “more able to capture the full richness of experience” (Greene & Hill, 2005, p. 13) than quantitative methods. Similarly, Hepworth et al. (2014) posit that “participative approaches and techniques” that position participants as “experts of their reality” offer an appropriate way to study information experience (p. 1045).

Childhood studies researchers also often advocate for the use of multiple methods of data collection, in order to appeal to children’s diverse abilities and interests (Hill, 2006), to make room for choice (Darbyshire, MacDougall, & Schiller, 2005; Fargas-Malet et al., 2010), to allow for different communication styles (Clark, 2005), and to increase the likelihood of the researcher understanding the child’s meaning (Clark & Moss, 2011; Garbarino & Stott, 1992). Additionally, within the childhood studies paradigm children are viewed as the best sources of information about their own lives (Scott, 2008; Soffer & Ben-Arie, 2014). Some researchers within this paradigm recognize the role of information from parents on their children’s behavior, but argue that such methods should be used in conjunction with other methods (Bornstein, 2014), and
information gained from parents should be presented as complementary to information gained from children (Greene & Hill, 2005; Soffer & Ben-Arie, 2014).

As Woodhead and Faulkner (2008) note, “significant knowledge gains result when children’s active participation in the research process is deliberately solicited and when their perspectives, views and feelings are accepted as genuine, valid evidence” (p. 34). By utilizing a childhood studies approach, this dissertation research provides unique and needed insight into the ways in which young children experience information. Greene and Hill (2005) argue that “without some kind of access to the content of a person’s experience, we have a very incomplete account, from a scientific perspective, of what it is that causes any person, adult or child, to act as they do” (p. 2). Exploring young children’s information experience is a first step to gaining a richer understanding of their information practices.

In summary, the following principles guided the approach taken in designing the research procedures:

- Focus on children’s perspectives of their own experiences, with children’s voices privileged through all stages of the research process
- Use of multiple qualitative, participatory methods of collecting data with children directly
- Supplementary data collected from parents

**Defining and Identifying Key Concepts**

The concepts of information wants, information activities, challenges, and enablers are defined below, and the ways in which they were identified in the data are described.
**Information wants.** The term *information wants* is used in this dissertation research in order to reflect the emphasis on information that is sought in response to the child’s own motivations (that is, not information that is sought in order to address an imposed query). Information wants refer to anything a child desires or has desired to find out in relation to any aspect of his or her interest. Information wants were identified through children’s responses to questions about what they already know about their interests, and what they don’t currently know about their interests but would like to find out (see Appendix D). Specifically, things that the children stated that they know about their interests and things that they stated they would like to find out were considered to be information wants.

**Information activities.** *Information activities* are the “doings and sayings” related to information that are part of broader social practices (Cox, 2013a), and are “the partly mental processes that manifest in the physical manipulation of information” (Hartel, 2006, para. 5). Information activities include such things as searching, browsing, monitoring, exchanging, (Hektor, 2001), reading, producing, and using (Hartel, 2006) information. Information activities were identified in the children’s reports as specific actions that they have taken that involve some type of engagement with information.

**Challenges.** *Challenges* include any barrier or obstacle the children faced in engaging in any kind of information activity, including those that made children’s engagement in these activities difficult, or those that prevented their engagement with these activities altogether. Challenges were identified in both children’s and parents’ reports of instances in which children had difficulty or were unable to engage in desired information activities.
**Enablers.** The term *enablers* refers to anything that helped the children to engage in information activities in some way. Enablers were identified in both children’s and parents’ reports of instances in which children were able to engage in information activities due to some type of help or assistance.

**Pilot Study**

A pilot study was conducted in order to test the design principles outlined above, and to determine the suitability of the chosen research methods for use with children in the target age range and for answering the stated research questions. The pilot study procedures are briefly described here; more detail about the specific methods of data collection and analysis are presented in the sections detailing these procedures in the main study where applicable.

**Participants.** Children between the ages of 4 to 6 years were recruited from the Monroe Township Public Library using a flyer posted on the library’s webpage and Facebook page and displayed in the children’s section of the library. Participants were required to register online through the library to participate. Recruitment and interviews were conducted from March – May 2017.

In total, four children and their parents participated in the pilot study, including four mothers and one father. Child participants included two 4-year-olds, one 5-year-old, and one 6-year-old. Three of the participants were male, and one was female. Two parents identified their child’s race/ethnicity as Asian/Pacific Islander, and two parents identified their children’s race/ethnicity as white/Caucasian. Three parents reported a family income of $150,000 or more, and one parent reported a family income of $50,000 - $69,999. All four parents had completed postsecondary education. Table 3 shows the
interests reported by the children and their parents, as well as the researcher-assigned pseudonyms, age, and gender of the children.

Table 3. Pilot Study Participant Information

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Age in Years</th>
<th>Gender</th>
<th>Interests Described in Book Discussion</th>
<th>Interests Described in Parent Survey</th>
<th>No. of PixStoris Created</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carson</td>
<td>5</td>
<td>M</td>
<td>Spider-Man</td>
<td>superheroes</td>
<td>9</td>
</tr>
<tr>
<td>Penelope</td>
<td>4</td>
<td>F</td>
<td>Paw Patrol</td>
<td>karate, softball, Paw Patrol, reading, painting, coloring, crafts</td>
<td>14</td>
</tr>
<tr>
<td>Sanjay</td>
<td>6</td>
<td>M</td>
<td>writing, tigers</td>
<td>tennis, reading, cars</td>
<td>14</td>
</tr>
<tr>
<td>Tariq</td>
<td>4</td>
<td>M</td>
<td>turtles, lizards</td>
<td>ninjas, karate</td>
<td>7</td>
</tr>
</tbody>
</table>

Data collection and analysis. Data were intended to be collected in four stages. First, completion of a parent survey, a group book discussion, and PixStori demonstration; second, the creation of PixStoris over a one-week period; third, individual photo-elicitation conversations; and fourth, a group photo-elicitation conversation. In the first group of interviews, Penelope and Carson participated, along with their mothers. The second group of interviews included Sanjay and his mother, and Tariq and his mother and father.

Procedures for the parent survey, book discussion, PixStori demonstration, and individual photo-elicitation conversations were the same as described for the main study; however for the first group of children, both Penelope and Carson were interviewed at the same time. In the group photo-elicitation conversation, the children were asked to compare and contrast each other’s images, in addition to their own. The same

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1 In the pilot study, pseudonyms were assigned by the researcher.
compensation was offered to participants in the pilot study as was offered participants in the main study.

All interviews were video- and audio-recorded. The recordings of the book discussions, photo-elicitation interviews, and interviews with the parents were transcribed verbatim by the researcher, as were the audio components of all submitted PixStoris. A child-driven content analysis of the visual component of the PixStoris was conducted (Rose, 2016). All transcripts were analyzed for common themes related to the research questions using open and axial coding (Charmaz, 2014).

**Summary of preliminary findings.** The children created a total of 44 PixStoris, with the focus of these images as determined by the child-driven content analysis including (in order of frequency) toys, furniture, books, animals, games, sports, digital media, musical instruments, food, artwork, trophies, writing instruments, the floor, and color.

The children in this pilot study discussed the types of information that they already knew about their interests, including conceptual and procedural information. Conceptual information refers to “knowing about” a topic or activity, while procedural information is related to “knowing how” to do something. For example, Sanjay shared conceptual information related to tigers as both predator and prey, noting that “hunters kill tigers for their fur to make new things like carpets and stuff” and “tigers go sneak up on their prey and drag them to the ground.” Penelope shared procedural information related to how to play the game Candyland, as well as how to break boards in karate class.
In discussing their interests, the children talked about a variety of different ways in which they engage with information related to these interests. The information activities described by the children in this pilot study including information seeking and information use. The children’s descriptions of their information activities highlighted the importance of other people such as peers, siblings, and teachers in finding out new information related to their interests, as well as structured learning opportunities. For example, Tariq stated that he knew about Ninja Turtles “cause when I was, when I was three, it’s my friend and he’s got a video. And he has a ninja show. And that’s when I was three. He showed me ninjas,” while Sanjay described attending many different lessons and programs, including a “community art class,” piano lessons, tennis lessons, and Eye Level, an after-school learning center as part of his information activities. Not all children articulated their engagement with information in this pilot study. For example, when Carson was asked how he knew so much about superheroes, he said “I just know.”

The children described positive emotions related to their engagement with information related to their interests. For example, when asked how the fictional character Al in the story Owl Boy (Schatell, 2015) would feel if he found out new information about tigers, one of Sanjay’s interests, Sanjay stated “he would feel happy… because he really expert at tigers.”

**Implications of pilot study.** The implications of the pilot study process and findings, in relation to the suitability of the selected data collection methods for use with the targeted age group as well as for the elicitation of sufficient data to address the research questions are discussed below.
Suitability of data collection methods for age group. The group interviews presented two challenges: first, the dynamics between the children in Group 1 were not conducive to a productive discussion, as the children did not know each other previously and, in Carson’s opinion, were much too different in age; and second, in Group 2, one child’s late arrival to the first scheduled interview and his no-show to the second scheduled group interview. Additionally, although the picture book discussion was a useful way to introduce the idea of children’s interests, more structure was needed in discussing children’s information wants and activities related to their own interests.

Both of the 4-year-old participants in this study, Penelope and Tariq, had a substantial amount of assistance from their mothers and, in Tariq’s case, his seven-year-old sister, in creating the PixStoris. This included help deciding what to photograph and what to say in the accompanying audio messages. Both Carson and Sanjay created PixStoris on their own. However, Carson’s PixStoris did not seem to be reflective of the research aims, as they were primarily of furniture in his home, indicating that he may have been unclear about and/or uninterested in the researcher’s request that he take pictures related to his own interests and information activities.

Suitability of data collection methods for answering research questions. The predefined research questions were not adequately addressed by the information solicited in the pilot study. Specifically, data regarding children’s information wants, particularly those items of information that the children did not yet know but wanted to find out, were not sufficiently elicited using the selected research methods, as well as discussions from the children related to the challenges and enablers associated with their engagement in information activities.
Based on survey responses, revisions were needed to improve the clarity of some questions. Additional questions were also added to reduce the number of questions asked during the parent interview, enabling this interview instead to focus on the process of creating PixStoris and enable participation by both children and their parents, and to reflect emerging areas of inquiry based on this pilot study and incorporation of additional theoretical frameworks.

**Contributions of pilot study to main study.** Based on the preliminary findings and procedural challenges encountered in this pilot study, the following changes were made to data collection procedures in the main study:

- Focus on children 5-7 years of age instead of 4-6 years of age
- Focus on children’s interests in general, rather than one specific interest
- Individual interviews instead of group interviews
- Addition of poster activity to first interview
- Modifications to parent survey questions
- Modification of interview with parent to joint interview with parent and child

**Participants**

Institutional review board approval was granted to conduct this research in the United States and Canada. Participants were recruited from New Jersey and Ontario by posting recruitment flyers (see Appendix A) at local daycares, libraries, businesses, the university campus, and on social media, and through word of mouth. Children were eligible to participate in the study if they were between 5 and 7 years of age at the time of
the first research interaction, and if their parents considered them to have an individual interest in some topic or activity and gave consent for them to participate.

Eighteen children and their parents participated in this study, including sixteen mothers and two fathers. All but one child-parent pair completed all components of the study. Child participants included six 5-year-olds, seven 6-year-olds, and five 7-year-olds. Eleven of the child participants were female, and seven were male. Twelve parents identified their child’s race/ethnicity as white/Caucasian, while three parents identified their children as Asian/Pacific Islander, one as Latino/Hispanic, one as mixed Caucasian/Asian, and one child for whom this information was not provided. Family income levels ranged from $50,000 - $69,999 to $150,000 or more, with ten parents reporting family income levels of $100,000 or more. Three parents chose not to provide income information. Fifteen parents had completed postsecondary education, one parent was a high school graduate, one parent had completed some high school education, and one parent chose not to provide this information. Interests reported by the children and their parents are shown in Table 4, along with child-chosen pseudonyms, age, and gender.

Data collection took place from August – December 2017. Interviews with eleven families were conducted in public library locations of their choosing, while three families chose to be interviewed on the university campus, three chose to be interviewed at churches the families attended, and one family chose to be interviewed in the home of a mutual acquaintance. Photography and audio recordings were undertaken by the children in locations of their choice, such as the home.
Table 4. Participant Information

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Age in Years</th>
<th>Gender</th>
<th>Recruitment Method</th>
<th>Interests Discussed in Poster Activity</th>
<th>Interests Described in Parent Survey</th>
<th>No. of PixStoris Created</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abby</td>
<td>6</td>
<td>Female</td>
<td>word of mouth</td>
<td><em>Moana</em>, technology</td>
<td>music, gymnastics, crafts, playing board games</td>
<td>7</td>
</tr>
<tr>
<td>Alex</td>
<td>7</td>
<td>Female</td>
<td>word of mouth</td>
<td>dance, songs, pools, Christmas</td>
<td>dance, American Girl dolls, TV musicals, YouTube kids</td>
<td>9</td>
</tr>
<tr>
<td>Chris</td>
<td>7</td>
<td>Male</td>
<td>word of mouth</td>
<td>Nerf guns, video games, Lego, devices</td>
<td>video games, soccer, basketball, ice skating, pretend play, Pokémon, chess, checkers, laser tag, trampoline park</td>
<td>4</td>
</tr>
<tr>
<td>Daisy Shopkin Girl</td>
<td>6</td>
<td>Female</td>
<td>word of mouth</td>
<td>pigs, lambs, Shopkins</td>
<td>Shopkins</td>
<td>16</td>
</tr>
<tr>
<td>Elsa</td>
<td>6</td>
<td>Female</td>
<td>social media</td>
<td>presents, <em>Super Monsters</em>, <em>Paw Patrol</em>, <em>Bubble Guppies</em>, <em>Sarah and Duck</em></td>
<td>Pokémon</td>
<td>36</td>
</tr>
<tr>
<td>Era</td>
<td>6</td>
<td>Female</td>
<td>library</td>
<td>ballet, <em>Sofia the First</em>, <em>Elena of Avalor</em></td>
<td>princesses, ballet/dancing, Disney characters, dressing up, Minecraft, drawing</td>
<td>13</td>
</tr>
<tr>
<td>Frankenstein</td>
<td>5</td>
<td>Male</td>
<td>social media</td>
<td>hockey</td>
<td>Lego, Imaginext, hockey, swimming</td>
<td>10</td>
</tr>
<tr>
<td>Futi Futi</td>
<td>5</td>
<td>Male</td>
<td>library</td>
<td>dancing, Spider-Man, race car shows</td>
<td>imaginative play, dancing, building sculptures</td>
<td>10</td>
</tr>
</tbody>
</table>

2 In the main study, all pseudonyms were chosen by the children themselves.
<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Age in Years</th>
<th>Gender</th>
<th>Recruitment Method</th>
<th>Interests Discussed in Poster Activity</th>
<th>Interests Described in Parent Survey</th>
<th>No. of PixStoris Created</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linwei</td>
<td>5</td>
<td>Female</td>
<td>library</td>
<td>dogs, cats, dolphins, owls, bunnies, Elsa</td>
<td>playing with friends, animal toys</td>
<td>5</td>
</tr>
<tr>
<td>Milla</td>
<td>7</td>
<td>Female</td>
<td>social media</td>
<td>foxes, soccer, ballet, gymnastics</td>
<td>playing with friends, playing with family dog, dolls, crafts, movies</td>
<td>20</td>
</tr>
<tr>
<td>Pocahontas</td>
<td>6</td>
<td>Female</td>
<td>university campus</td>
<td>moon, stars, butterflies, snails, Queen Elizabeth</td>
<td>princesses, gymnastics, rainbows, nature</td>
<td>22</td>
</tr>
<tr>
<td>Rarity</td>
<td>5</td>
<td>Female</td>
<td>word of mouth</td>
<td>butterflies, Santa</td>
<td>sparkly things, butterflies, unicorns, fairies, princesses, dressing up, singing, imaginative play</td>
<td>24</td>
</tr>
<tr>
<td>Robobuilder</td>
<td>6</td>
<td>Male</td>
<td>word of mouth</td>
<td>Roblox, Minecraft</td>
<td>building games, Minecraft, Roblox, soccer</td>
<td>4</td>
</tr>
<tr>
<td>Rosabella</td>
<td>6</td>
<td>Female</td>
<td>social media</td>
<td>BFFs, animals, playing on the playground, making videos, bugs</td>
<td>art, swimming, books, dolls, dance, bugs, animals, collecting things (shells, rocks, bugs), butterflies</td>
<td>21</td>
</tr>
<tr>
<td>Spider-Man</td>
<td>5</td>
<td>Male</td>
<td>social media</td>
<td>rock music, &quot;Bugs ‘n’ Slugs, Paw Patrol&quot;</td>
<td>space/stars/planets</td>
<td>19</td>
</tr>
<tr>
<td>Star</td>
<td>5</td>
<td>Female</td>
<td>social media</td>
<td>dogs</td>
<td>pets, dogs</td>
<td>5</td>
</tr>
<tr>
<td>Steve</td>
<td>7</td>
<td>Male</td>
<td>library</td>
<td>Minecraft, MarioKart</td>
<td>video games, Minecraft, MarioKart</td>
<td>17</td>
</tr>
<tr>
<td>The Rock</td>
<td>7</td>
<td>Male</td>
<td>social media</td>
<td>hockey, cats, hunting</td>
<td>hockey, bike riding, playing “farm”</td>
<td>18</td>
</tr>
</tbody>
</table>
Data Collection

Data were collected from both children and their parents over three stages, using multiple methods of qualitative data collection. In the first stage, the researcher and the child read a picture book together and created a poster about the child’s interests while the parent was asked to complete a survey. In the second stage, the child created PixStoris over a one-week period. In the third and final stage, the parent-child pair answered questions about the use of the PixStori app, followed by the researcher and the child discussing the PixStoris the child had created in the second stage of data collection. Each of the stages of data collection are described in detail in the sections that follow.

Stage 1: Parent survey, book discussion, poster activity, and PixStori demonstration. During this first stage, the research study was explained to the children and their parents. Parents were asked to sign parental consent forms giving their children permission to participate in the research study, and to indicate if they gave permission for the research interactions to be audio and/or video recorded and for research materials such as images to be shared (see Appendix B for informed consent forms and assent scripts). Parents were also asked to sign an informed consent form indicating their willingness to participate in the study themselves.

The children were asked if they gave assent to participate in the research study and, if their parents had consented, to the video-recording and/or audio-recording of this session. The children were also encouraged to think about what they might like their pseudonym to be. The children were then invited to help the researcher set up and test the recording equipment if consent and assent had been given for these recordings. The presence of the parent in the interview room for the remainder of this stage of the study
was decided by the child and parent together. Thirteen parents sat with their children throughout the book discussion and poster activity, while five parents left the immediate area but stayed nearby.

**Parent survey.** Parents were given a short survey to collect demographic information about their families as a whole and about the child who participated in the study. The survey included questions about the families’ socioeconomic status, racial and ethnic identity, their perceptions of their children’s individual interests and engagement with information, and their own attitudes and approaches to their children’s use of media and technology (see Appendix C for a full list of questions included in survey). Parents were given the choice to complete a pen-and-paper version of the survey or an online version. The majority of parents completed the paper version of the survey while the researcher and their child participated in the child-focused research activities during the first research interaction. The remaining parents completed the online version of the survey at a later time.

**Rationale.** The information gained from this survey was used to complement the information gained from the children. As Scott (2008) notes, “there is often a very large gulf between parental observations about their child and the child’s own perceptions” (p. 88). Not only do parental reports have the potential to be quite different from how a child would describe or explain his/her own experience, but they also may also be subject to both social desirability and parental bias in their observations of their children (Bornstein, 2014). Scholars in childhood studies that do choose to incorporate parental reports in their work note that such methods should be used in conjunction with other methods that focus on the children’s perspectives (Bornstein, 2014; Clark, 2005) and caution that
parental reports should be presented as “complementary” to these methods (Greene & Hill, 2005, p. 7) or as providing an additional “[way] of seeing” the child’s experience (Clark, 2005, p. 39). In this study, the parental survey was used to gain information that the children themselves may not have been able to provide, such as the family’s income level and parents’ attitudes toward media use, as well as information that was used with the information provided by the children in order to gain a more comprehensive understanding of the children’s experiences.

**Book discussion.** The concept of individual interests was introduced to the children through the use of a book discussion. The researcher and the children read the book *Owl Boy* by Brian Schatell (2015), which tells the story of a young boy whose obsession with owls permeates many aspects of his life. The children could choose to read this book aloud themselves, or have the researcher read it aloud. The researcher then asked the child to identify things that they are interested in, similar to the way Al, the character in the book, was interested in owls (see Appendix D for the activity prompts and conversation frameworks used throughout the data collection activities with the children).

**Rationale.** Green (2012) has suggested book discussions as one approach to overcoming the challenges of introducing concepts to children in a research study in a way that does not unduly influence or restrict their subsequent responses to questions related to these concepts. Story times are interactions that many children have had exposure to in a variety of settings, including in their homes, daycares, and schools. Using picture books, children are able to make connections to their own personal experiences (Mantei & Kervin, 2014; Torr, 2007), and are able to subsequently talk about
these connections (Evans, 2011). The book *Owl Boy* was chosen for use in this research study as it tells the story of a boy who has an individual interest in owls, and is recommended for children ages 4-8 years of age. This book was successfully used in the book discussion in the pilot study.

*Poster activity.* After the book discussion, each child was invited to create a poster about their interest(s). Specifically, once the children identified their own interest(s), they were invited to draw and/or write about that interest on a sheet of large poster paper. The children were asked what they know about their interest, and what they do not yet but would like to know. These information wants were written on Post-it notes and affixed to the poster paper. The children were also asked to discuss how they knew about their interests, and any ideas for how they could find out the answers to their identified information wants. Some children wrote on their posters themselves, while others dictated their responses to the researcher (see Figure 2 for an example of a poster created by a participant).

![Figure 2. Part of Frankenstein’s poster with Post-it notes detailing what he knows about hockey and how it makes him feel.](image)
Rationale. The poster activity was modeled after the K-W-L chart by Ogle (1986), a literacy activity in which students are asked to complete a worksheet detailing what they know and what they want to learn about a topic, and what they have learned after reading an expository text on that topic. This literacy activity was modified to focus only on what the children know and want to know about their interests, rather than an expository text. In addition to helping structure the conversation, this poster functioned as a reminder for the children of the aims of the PixStori task, as the children took this poster home with them at the end of this stage of the study.

PixStori demonstration. Finally, the researcher introduced the children to PixStori³, the app they were asked to use on an iPod loaned to them by the researcher to take pictures of things related to their individual interests and their information experiences. During this step, the children and the researcher discussed the concept of ‘borrowing’ to ensure the children understood that the iPod was not theirs to keep, and then created at least one PixStori together in order for the children to become familiar with the app. The children and their parents were also given an information sheet explaining the steps needed to create and upload a PixStori (see Appendix E).

The children were asked to use PixStori over a one-week period to take pictures related to their individual interests and their information activities. In addition to taking photographs, the children were asked to record an audio message explaining what was in

³PixStori is an app that was developed by researchers at the University of Buffalo that allows users to take a photograph and then record an audio message to accompany the photograph (Nealon, 2016; for more information, see http://www.pixstori.com/). After creating a PixStori, the image and accompanying audio can be shared with others via social media, email, or, in the case of research, can be sent to a designated web portal specific to the research study (see Appendix F for a depiction of the app and a web portal).
the picture, why they chose to photograph what was in the picture, how it relates to their interest, or anything else they felt they would like the researcher to know. The researcher and the children also discussed ideas about the types of things the children could photograph. Each child was given a participant number to enter when uploading their PixStoris in order to maintain confidentiality.

**Rationale.** Photography is a method of data collection that helps to bring children’s perspectives to the fore (Einarsdottir, 2005; Green, 2012) and positions children as experts in their own lives (Clark-Ibanez, 2008). Child photography has been successfully used in research studies of young children’s perceptions of their childcare settings (Clark & Moss, 2011; Einarsdottir, 2005), their experiences of the first year of formal schooling (Dockett & Perry, 2005), and their experiences of physical activity (Darbyshire et al., 2005). In other research studies, photography has been combined with other methods such as child-led tours (Barriague, 2016b; Einarsdottir, 2005), which have been characterized as a “mobile interview” (Johnson, Hart, Colwell, West, & Carvalho, 2014, p. 42), and involve children taking the researcher on an exploration of the physical spaces and places of importance to them. Using PixStori, the children can link audio-recordings to the photographs they have taken, offering an opportunity to add explanatory commentary to the photographs. In this way, the audio-recordings served as an asynchronous photographic tour of the children’s experiences.

**Compensation.** This first research interaction typically lasted about an hour. At the end of this research interaction, each child was offered a copy of *Owl Boy* to keep as compensation for participation in this stage of the research study. All children but one accepted the picture book.
**Stage 2: PixStori creations.** The children created PixStoris on their own time, at home and at other relevant locations they visited, such as swimming lessons, hockey games, and the playground. The PixStoris could be uploaded to the designated web portal as they were created, or they could be saved to the device and uploaded at a later date. In total, the children created 260 PixStoris. Some children uploaded all of their PixStoris to the web portal as they were created, while others uploaded some but not all of the PixStoris before meeting a second time with the researcher. Still others did not upload any of their PixStoris before meeting with the researcher. The reasons for this were not always clear. In one case, the mother chose not to connect the iPod to the internet as she did not want her daughter using the device for anything other than creating PixStoris. Other children expressed surprise that the researcher had not received all of the PixStoris they had created prior to meeting. Potential reasons for failure to upload PixStoris could include the device becoming disconnected from the internet, or children not completing all required steps for upload to the web portal. Once the iPods were returned to the researcher, all PixStoris were uploaded to the web portal.

When the iPods were returned to the researcher, any images or videos that the children took using the normal iPod function, rather than the PixStori app, were saved. Any search history on the iPod was also recorded. This was not a planned method of data collection; however it did afford the researcher the opportunity to observe some aspects of children’s information creation and information seeking activities.

**Stage 3: Photo-elicitation conversations.** For those participants who did upload PixStoris to the web portal prior to this meeting with the researcher, copies of the pictures were printed and the children could choose to discuss the physical copies and/or the
digital versions using the iPod. For those participants who did not upload PixStoris, the children and the researcher based the conversation on the digital versions. Again, the children and parents decided together if the parents remained in the room during the photo-elicitation conversation. Eleven parents stayed with their children throughout the photo-elicitation conversation, while six parents left the immediate area but stayed nearby (one parent-child pair did not complete this stage of the study).

This stage of the research project served as an opportunity for the children to discuss the photographs they had taken directly with the researcher, providing additional information to what was included in the audio component of the PixStoris. The children were asked to identify what each picture was of, and then asked relevant questions in order to clarify and/or follow-up on the information shared in each PixStori and its relevance to their interests and information activities (see Appendix D). The children were also asked to organize their PixStoris into categories that were similar in some way, and to explain the categories they constructed.

This stage of the research project also served as an opportunity for the children to share their ideas about how best to disseminate the research findings. The researcher had previously explained to the children during the assent process that she was talking to children about their interests in order to complete a project for school, and that she was going to write a report about what the children told her for her teachers to read. At the end of the photo-elicitation conversation, the researcher asked the children what other ways she could share what she had learned with other people who might be interested in learning more about children and their interests, and who might not want to read the report she would create for her teachers.
**Rationale.** Using children’s images as the basis for interviews gives children greater control of what is discussed (Fargas-Malet et al., 2010; Walker, Schratz, & Egg, 2008) and may help to reveal things that the researcher might have overlooked (Clark-Ibanez, 2008). The photographs also help to lend structure to the interview setting, as well as keeping children’s interest (Clark-Ibanez, 2008; Fargas-Malet et al., 2010). Additionally, discussion of the photographs allows children to guide the interpretation of these images (Rasmussen, 2014; Walker et al., 2008). This method also allows children to combine their verbal communication with visual representations of the ideas or objects under discussion (Rasmussen, 2014), which may be particularly useful for children who may not be comfortable with research methods that rely heavily on oral communication (Einarsdottir, 2005).

**Compensation.** The photo-elicitation conversations typically lasted about half an hour. The children who uploaded PixStoris to the web portal prior to the photo-elicitation conversations were given the physical copies of the pictures to keep. Children who did not upload their PixStoris to the web portal prior to the photo-elicitation conversations were given access to digital copies of their PixStoris when requested. Each child was given a $10 gift card to a bookstore as compensation for completion of this stage of the research study. All children accepted the gift card. Children and parents who completed all stages of the research study also had their name entered in a draw to win an iPod Touch.

**Note on terminology.** Researchers have argued that the term ‘information’ should not be used when researching children’s engagement with information, as the term may be unfamiliar or confusing to them, and have suggested alternative phrases such as
“facts and ideas,” “things you needed to know,” and “stuff” (Shenton, 2004a, p. 371).

The phrases suggested by Shenton (2004a) and other similar terms were used in all stages of the data collection process with the children. For example, the researcher asked the children to talk about what they already knew or wanted to know about their interests, as opposed to framing the questioning as identifying their information wants. Similarly, the researcher asked the children to describe what they do after they find out something new, rather than asking them to describe their information activities.

**Data Analysis**

All research interactions but one were audio- and video-recorded; in one case, the parent did not give permission for the initial research interaction to be recorded and the researcher instead took notes throughout the book discussion and poster activity. The researcher also photographed the posters that the children created in order to document these artifacts, as the children kept the originals. The audio-recordings of the research interactions were transcribed verbatim by a transcription service, with all transcriptions reviewed by the researcher using the video-recordings in order to verify accuracy and to incorporate relevant non-verbal communication, still images from the video-recordings, and photographs of the children’s posters. The audio component of all PixStoris were transcribed verbatim by the researcher. Parent survey responses, transcripts of research interactions, and both the visual and transcripts of the audio components of the PixStoris were imported into NVivo 11, a qualitative data analysis program.

**Analysis of textual data.** Parent survey responses and transcripts of the research interactions and PixStoris were analyzed using the methods of qualitative data analysis outlined by Miles, Huberman, and Saldaña (2014). In the first cycle of coding, structural
codes (Saldaña, 2016) that aligned with the research questions were applied to the data. In the second cycle of coding, the data were analyzed using a combination of in vivo, process, descriptive, and emotion codes (Saldaña, 2016) as relevant for each research question, using the constant comparative method (Charmaz, 2014), followed by axial coding. Memoing was conducted throughout. All coding and memoing were conducted by the researcher.

**Analysis of images.** As the photographs utilized in this proposed research study were used primarily as “elicitation device[s]” (Freeman & Mathison, 2009, p. 124) within the interview setting, analytic focus was given to the children’s descriptions and discussions of their individual interests and information experiences in the data analysis. The audio component of the PixStoris were analyzed as described above. The visual component of the PixStoris were analyzed using a child-driven content analysis based on the children’s descriptions of the images provided in the audio component of the corresponding PixStori and in responses to relevant questions during the photo-elicitation conversation (Rose, 2016). Specifically, the content of each image was coded based on the children’s descriptions of the images, rather than the researcher’s interpretation of those images. For example, in the PixStori for Figure 3, Spider-Man stated “this is my Lego,” and thus only the Lego was included in the content analysis, and not the other items in the image, such as the iPod box or the blankets. Additionally, the categories described by the children when examining their own photographs guided subsequent axial coding.
Limitations

The limitations of this dissertation research include those related to the participant sample, specific methods of data collection, and data analysis.

First, the participants in this study were predominantly white and from highly educated and high-income households. Because of this, the findings from this study may not be transferable to children from families with lower incomes and/or with less education, or to children from families that are not white (Alper et al., 2016).

Secondly, the interests of Al, the main character in *Owl Boy*, may have influenced the children’s responses to the researcher’s questions about their own interests. As Green (2012) has noted, when using book discussions, children may relate their own experiences to the examples given in the story in ways that mirror those examples quite closely. As evident in Table 4, eight children described interests in animals and insects, similar to Al’s interest in owls. Some of the children may have included animals as one
of their interests in response to the book’s focus on owls, while other children’s interest in animals appeared to be more authentic. For example, Milla stated that she likes foxes as part of the book discussion, but did not photograph or mention foxes in any of the subsequent research activities, while The Rock and Star talked extensively and created several PixStoris about cats and dogs, respectively.

Third, there are potential limitations related to parental influence on the creation of PixStoris. Some parents may have influenced what the children photographed and what they said in the audio component of the PixStoris. For example, in some of the children’s PixStoris, parents’ voices could be heard prompting their children’s responses. Since this activity was competed on the children’s own time without the presence of the researcher, the extent to which parents may have influenced this process is unknown.

Additionally, the presence of the parents in the interview room may have influenced children’s responses, a known limitation of this strategy. As Mayall (2008) notes, parents may interfere with the course of the conversation, as they may divert discussion of topics that they do not want addressed and their children may choose not to discuss certain topics in front of their parents.

And finally, due to limited resources, data analysis did not include a process of establishing intercoder agreement (Saldaña, 2016). Although trustworthiness of the data analysis was established by collecting data through multiple methods, engaging in an iterative process of coding and memoing over an extended period of time, attending to the children’s meanings, and participating in peer debriefing, a more formal process of intercoder agreement or a confirmability audit (Lincoln & Guba, 1985) may have strengthened the trustworthiness of the findings.
Ethical Considerations

Guillemin and Gillam (2004) distinguish between procedural ethics, the types of ethical issues that are considered and addressed when obtaining ethics approval from an institutional review board, and ethics-in-practice, the ethical issues that arise during the process of actually conducting research. In this dissertation research, procedural ethics were addressed through obtaining informed consent, parental consent, and child assent for participation in the study. The selection of the specific data collection methods outlined in this proposal have been selected with a consideration of ethics in mind – these methods have been chosen as they have the potential to help keep the research child-focused. There are also ethical questions surrounding the use of children’s photographs and artistic creations, including issues of ownership (Johnson et al., 2014; Rasmussen, 2014; Walker et al., 2008) and anonymity (Fargas-Malet et al., 2010; Rasmussen, 2014). The children were allowed to keep the original research artifacts they created, and permission was sought for using reproductions of these artifacts in publications or presentations. The identities of the children are kept confidential through the use of pseudonyms, and any photographs that might identify the child are only used with explicit permission.

Ethics-in-practice involves “ethically important moments,” “the difficult, often subtle, and usually unpredictable situations that arise in the practice of doing research” (Guillemin & Gillam, 2004, p. 262). Warin (2011) advocates for both ethical mindfulness and researcher reflexivity in attending to the ethical decisions that researchers must make on the spot in the course of conducting research. As ethics-in-practice by nature involves unexpected or unplanned ethical decision making, it is difficult to describe how such
situations will be handled. However, the researcher attempted to remain aware of the power imbalance between the children and the researcher throughout the research process and to be mindful of the ethical implications of the research interactions.

Dorner (2015) extends Guillemin and Gillam’s (2004) distinction to include ethics-post-practice, giving ethical consideration to data analysis and dissemination. In the proposed dissertation research, every attempt was made to follow Eide and Winger’s (2005) argument that researchers working in the childhood studies paradigm should be committed to interpreting the data in a way that remains true to the children’s perceptions and intentions. Member checking, also termed respondent validation (Flewitt, 2005), is one means of helping to ensure the researcher’s interpretation has not strayed from the children’s intentions (Greene & Hill, 2005). This not only allows the researcher the opportunity to verify his or her interpretations, it also gives the children an opportunity to further clarify statements they have made earlier in the research process (Thomas & O’Kane, 1998). The multiple methods of data collection used in this dissertation research allowed opportunities for the researcher to check the accuracy of her interpretation of the children’s messages. Dorner (2015) also argues that children’s words and the research artifacts they have created should be privileged in articles or reports of research conducted with children, and that the researcher should carefully consider the ways in which the data chosen reflect the data created in the process of conducting research. These guidelines regarding ethics-post-practice guided data analysis and will inform dissemination of the findings.

The attention paid to procedural ethics, ethics-in-practice, and ethics-post-practice enabled the researcher to conduct this dissertation research in a way that remained both
child-centered and participatory, in both the ways in which data were collected and analyzed, as described in this chapter, and in the ways in which the research findings are presented in the following chapter.
Chapter 5: Findings

Introduction

This chapter presents the findings of this dissertation research. First, a categorization of the children’s interests is presented, followed by the results of the content analysis of the visual component of the PixStoris. Next, the findings of each research question are discussed in turn. Finally, a set of key claims based on these findings is presented.

Throughout this chapter, focus is placed on the children’s statements related to the research questions under discussion, with reports from parents included only in those instances where very few or no children addressed the topic. Children’s PixStoris are presented as part of the evidence for the findings where applicable; as PixStoris are comprised of both an image and an audio message, the transcript of the full audio-recording of each PixStori is presented alongside the accompanying image.

Categorization of Children’s Interests

On average, the children described three of their interests in the poster activity, with the total number of interests described by each child ranging from one to six. In the survey, parents described their children having an average of four interests, with the total number of interests described by each parent ranging from one to ten. The interests described by each individual parent and child were displayed in Chapter 4 in Table 4. In Table 5, a categorization of these interests is provided. Children’s interests included those that were conceptual in nature, those that were play-based, those that were skill-based, and those that were creative in nature.
Table 5. Children’s Interests

<table>
<thead>
<tr>
<th>Interest Category</th>
<th>Examples</th>
<th>No. of Children</th>
<th>No. of Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conceptual interests</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animals and insects</td>
<td>butterflies, dogs, unicorns</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Media</td>
<td><em>Moana, Paw Patrol, Pokémon</em></td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>People</td>
<td>fairies, Queen Elizabeth, princesses, Santa</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Holidays</td>
<td>Christmas, presents</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Music</td>
<td>songs, rock music</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Technology</td>
<td>devices, technology</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Nature</td>
<td>moon, stars, rainbows</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Reading</td>
<td>books</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Play-based interests</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Games</td>
<td>Bugs ‘n’ Slugs, Minecraft, Roblox</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Toys</td>
<td>Imaginext, Nerf guns, Shopkins</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Outdoor play</td>
<td>playing on the playground, bike riding</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Imaginary play</td>
<td>dressing up, imaginative play</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Playing with others</td>
<td>playing with friends, playing with family dog</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Skill-based interests</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports/dance</td>
<td>ballet, hockey, gymnastics</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>hunting</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Creative interests</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building</td>
<td>Lego, building sculptures</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Digital content</td>
<td>making videos</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Arts and crafts</td>
<td>drawing, crafts, art</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

4 The coding scheme used in the analysis of the data collected in this dissertation is displayed in Tables 5 - 12. Definitions and examples of each code are included in the text.
As Table 5 shows, conceptual interests were the type of interest most often described by the children. Conceptual interests refer to those interests that are primarily focused on knowing about a particular topic or activity, such as butterflies or rainbows. Play-based interests are those interests in which play is the primary activity, in either structured activities like board games or unstructured activities like playing with the family dog, and represent the interest type most often described by parents. For children with skills-based interests, described by more than half of parents and a third of the children, learning how to complete an activity is the main focus. Examples of skills-based interests include learning how to do ballet or play hockey. And finally, creative interests involve those that focus on building or making something, such as making videos or drawing pictures. These interests were the least frequently described by both children and parents.

Parents listed more interests in the parent survey on average than their children discussed in the poster activity. Also, the interests described by the children and their parents did not always match. This may be due to the nature of the two different tasks the parents and children were asked to complete (survey vs. poster activity; other-report vs. self-report). Both those interests described by the children themselves as well as the interests described by their parents are presented here, as these were the basis for subsequent discussions with the children and survey answers from the parents.

**Content Analysis of PixStoris**

In total, the children created 260 PixStoris, not including those PixStoris that were made during the research interactions. The number of PixStoris each child made ranged from four to 36, with an average of 14.4 PixStoris created per child. The results of the
child-driven content analysis of the visual component of the PixStoris are shown in Table 6. As previously noted, the content analysis is based on the children’s descriptions of the content of their images. Examples of images for each of the categories in Table 6 are shown in Figure 4.

Table 6. Content Analysis of Visual Component of PixStoris

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of PixStoris</th>
<th>No. of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>My self</td>
<td>40</td>
<td>11</td>
</tr>
<tr>
<td>Documents</td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>Other people</td>
<td>28</td>
<td>10</td>
</tr>
<tr>
<td>Toys</td>
<td>25</td>
<td>8</td>
</tr>
<tr>
<td>Devices/technology</td>
<td>25</td>
<td>6</td>
</tr>
<tr>
<td>Holiday decorations</td>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td>Pets and animals</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>In and around my house</td>
<td>14</td>
<td>9</td>
</tr>
<tr>
<td>Drawings and crafts</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Locations</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Games</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Nature</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Jewelry and clothing</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>TV and movie characters</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Food</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>
Figure 4. Examples of the visual component of PixStoris by category.
Figure 4 (continued). Examples of the visual component of PixStoris by category.
As shown in Table 6, the most frequently photographed item was the children themselves, with eleven children taking selfies and pictures of themselves engaging in various activities. The second most frequently photographed item was documents such as books, photographed by twelve children, followed by pictures of other people such as family members, friends, and the researcher, photographed by ten children. Eight children took pictures of their toys, and six took pictures of technology or devices. Holiday decorations were photographed by eight children, with pets and animals photographed by nine children. Nine children photographed areas in and around their homes, and drawings and crafts were photographed by seven children. The least photographed items included specific locations, games, nature, jewelry and clothing, and food, each photographed by four children, and TV and movie characters, photographed by three children. The miscellaneous category includes pictures that did not fit within the categories constructed by either the children when examining their own photographs, or by the researcher when examining all of the children’s PixStoris together.

Young Children’s Information Wants

The children described their information wants related to their individual interests. These information wants included things that they already knew about their interests, and things that they did not already know that they wanted to find out. The specific information wants the children described are discussed below, followed by a brief discussion of the information wants the children demonstrated during the research process itself.

Articulated information wants. Every child shared at least one thing that they knew about their interests, with most children seeming eager to share many items of
information. For example, while creating the poster with Star, she said, “Write down everything that I say about dogs! ‘Cause I know so much!” Fifteen of the children also identified things that they didn’t know about their interests yet that they would like to find out. The children’s information wants included those related to descriptions, procedures, and explanations (see Table 7).

Table 7. Information Wants

<table>
<thead>
<tr>
<th>Category</th>
<th>What I Know</th>
<th>What I Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of info wants</td>
<td>No. of children</td>
</tr>
<tr>
<td>Descriptions</td>
<td>226</td>
<td>18</td>
</tr>
<tr>
<td>Procedures</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>Explanations</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>

As shown in Table 7, overall, the children articulated more things that they already know about their interests than things they want to know. The children most frequently discussed knowing or wanting to know descriptions about their individual interests, or information that was focused on the “aboutness” of a topic, and described descriptive information wants much more frequently when discussing what they knew about their interests than when discussing what they would like to know about their interests. Much less frequently, the children also discussed knowing procedures, or information about “how to” do something related to their interests. Fewer children described already knowing explanations about their interests, or information that relates to knowing “how” or “why.”
All eighteen children provided descriptions about their interests when asked what they know about their interests, with fourteen children also discussing not knowing but wanting to find out descriptive information. For example, while discussing foxes, Milla stated that she knew that “they’re orange,” “they have black nails,” and “they say ‘awoo!’,” and wondered “can they talk to other foxes?” Descriptive information that The Rock knew about hockey included “there’s a whole bunch of teams and they all play against each other” and “the teams are a whole bunch of different colors,” and descriptive information that he wanted to find out included “how many OHL and NHL teams there are.”

The children also described information wants about procedures related to their interests, which refer to those information wants that involve the children wanting to know how to do specific actions or activities, such as performing dance moves, executing sports maneuvers, and playing games. Nine children described already knowing procedures related to their interests, while five children described wanting to find out such information. For example, while discussing her interest in ballet during the poster activity, Era noted that she knows that in order to do ballet, you have to “keep your focus,” and that “I don’t know how to keep [balance]” (see Figure 5). As she was drawing, she said “that’s me, yeah, me,” referring to the drawing of the figure on the right, “and me falling. On ballet,” referring to the drawing of the figure on the left.
Explanations refer to information wants the children described that relate to understanding how or why things happen. Four children included explanations in their discussion of what they already know about their interests, and seven children described wanting to know explanatory information. For example, The Rock noted that on hockey jerseys, “the only numbers go up to 98 . . . because Gretzky was the last best player, and they just took out the number,” and stated that he wants to find out “why they’re starting to take out hockey fighting. And these fights used to be they never really got people out for. Now they’re out for a long time, like four days, uh games.” When discussing race cars, Futi Futi wondered “How do they go super fast? Because I don’t even know.”

Not all children identified existing information wants related to their individual interests. Three children stated that they already knew everything about their interest,
leaving no new information to be discovered. For example, when discussing possible items that Robobuilder could create PixStoris about, the researcher mentioned a book as one example of the types of things he could photograph that might help him find out new things about video games. Robobuilder responded with, “No, I don’t wanna spend my money on a book, on a Minecraft book ‘cause I already know everything about Minecraft. And everything about Roblox.” Other children recognized that there were things that they did not know about their interests that they might want to find out, but did not articulate what these information wants might be. This may reflect the difficulty of asking the children to speculate on the types of information they may want to find out in the future, as opposed to identifying a topic or question that they are currently curious about. As Rosabella noted, “I don’t know what I don’t know. So yeah, I don’t know.”

**Information wants within the research process.** In addition to discussing the types of things that they knew about their own interests, as well as the types of things that they wanted to find out, several of the children articulated information wants that arose in the process of the research itself, particularly in creating the poster about their interests. Ten of the children who chose to write on their posters themselves asked how to spell words that they wanted to include on the poster, and six children stated that they did not know how to draw some of the items they would like to include on their posters. For five children, discussing what they knew about their interests with the researcher revealed gaps in their knowledge that they asked their family members to help fill in order to continue the conversation. For example, Era told the researcher that the character Elena is the crown princess of Avalor; however, she did not know what the phrase “crown princess” meant and asked her mom to explain the term.
Young Children’s Information Activities

The children described a variety of information activities that they engage in related to their individual interests. These activities involve seeking and using information, and are described in the sections that follow.

**Information seeking activities.** Information seeking refers to any activities the children described as involving obtaining information related to their interests, either purposefully or incidentally. The children described three categories of ways in which they have found out new information about their interests in the past or could do so in the future, including *things that can tell you stuff*, *people that can tell you stuff*, and *experiences that can tell you stuff*. Table 8 lists the specific information seeking activities that were described by the children and their parents.

Table 8. Information Seeking Activities

<table>
<thead>
<tr>
<th>Information Seeking Activities</th>
<th>No. of Children</th>
<th>No. of Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Things that can tell you stuff</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watching movies, shows, and videos</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Reading books and other print material</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>Searching for information online</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Consulting instructions</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Playing video or online games</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Looking at pictures</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Listening to audio content</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>People that can tell you stuff</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Being told or taught</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Asking other people</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td><strong>Experiences that can tell you stuff</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiencing things first-hand</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Observing</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Information Seeking Activities</td>
<td>No. of Children</td>
<td>No. of Parents</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Taking classes or lessons</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Practicing</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Going to relevant places or events</td>
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<td>4</td>
</tr>
<tr>
<td>Trying</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Playing with toys and non-electronic games</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Owning items related to interest</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

As shown in Table 8, children described information seeking activities that involved things, people, or experiences that, as The Rock put it, “can tell you stuff.” As previously noted, “information” is not a concept that is well understood by young children, and while talking with the researcher, the children frequently used the word “stuff” to describe their engagement with information; thus, the phrase is used here. The category things that can tell you stuff refers to children’s interactions with print and digital objects or platforms that they described as informing. People that can tell you stuff includes ways of finding out information in which direct information exchange occurred between the children and other people, while the category experiences that can tell you stuff encompasses ways of finding out information that center on activities or events. The children described engaging in information seeking activities across all three categories; their parents, however, more frequently mentioned things that can tell you stuff than people or experiences that can tell you stuff. Each of these categories are described in more detail below.

**Things that can tell you stuff.** One of the ways in which children described finding out new information related to their interests involved things that can tell you stuff. The specific activities that the children and their parents described that involved
things that can tell you stuff included *watching movies, shows, or videos; reading books and other print material; searching for information online; consulting instructions; playing video or online games; looking at pictures; and listening to audio content*.

Thirteen children described finding out new things about their interests by watching movies, shows, or videos, particularly when their interests centered on these forms of media. For example, Abby stated that she knew a lot about the movie character Moana “‘cause I watch her a lot” (see Figure 6). The children discussed watching these types of media via platforms such as Disney Junior, Netflix, and YouTube, in addition to more traditional mediums like television and DVDs. For example, The Rock stated that he finds out information about hockey by watching hockey games on television or on his tablet (see Figure 7).

![Figure 6. PixStori by Abby](image)

“This is me, Moana, watching *Moana* on TV.”
Nine children described finding out new information by reading books related to their interests. For example, Alex explained that American Girl dolls come with books “about different stuff about” the dolls, including “what they like to do. Maybe what they like to wear. Where they go and where they go to sleep.” In addition to describing books as sources of information, two of the children noted that they read books with their fathers. For example, when discussing one of his PixStoris during the photo-elicitation conversation, Frankenstein stated “this one, me and my dad were reading a hockey book. That’s my daddy” (see Figure 8). Other print material mentioned by the children and their parents included an American Girl doll catalogue, Shopkins checklists, magazines, a map, and a program for a hockey tournament (see Figure 9).

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5 Shopkins are very small collectable toys that are based on food and other grocery store items. Shopkins are packaged for sale in “blind bags,” meaning the customer cannot see what specific Shopkin character is in the bag prior to purchase. Inside these blind bags are typically one Shopkin, a “shopping bag,” and a Shopkins shopping list or checklist of specific Shopkins available for purchase that includes information about the rarity and other features of the figurines.
“This is my book *Just One Goal*. I like it because I stared at it the whole time and it’s cool. *Just One Goal* is my specialist book of my life. I can do whatever I want, look at the pages at night, do everything that I like. Bye.”

**Figure 8.** PixStori by Frankenstein

“This is our program that has all the players’ names and all the teams.”

**Figure 9.** PixStori by The Rock

Searching for information online was an activity described by eight children, who noted using a variety of platforms including Google, YouTube, e-book apps, and voice-activated virtual assistants like Apple’s Siri and Amazon’s Alexa to find information.
Children described using search platforms in order to find specific answers to their information wants. For example, Abby suggested asking Siri where Moana “gets the pig and the chicken” that are her sidekicks in the movie, saying “you could ask Siri ‘cause I’ve done that once.” Children also described using search platforms in order to find more general information. For example, Chris described how to search for books using an app called Epic, stating “Epic is a bunch of books on your tablet or phone. There’s a bunch of books so you can tap one, and let’s say you typed ‘Hanukah’, then there would be a bunch of books about Hanukah.”

Five of the children made use of the iPod they had borrowed for the research project to search online, as evident by the device’s browser history (see Figure 10). Robobuilder also described searching in chat forums when playing the video games Minecraft and Roblox, saying “You go to chat and you search and you put the name and kill. . . It’s on the top on the tablet. You can go on the top and it’s there. On a computer and stuff, you have to hit the scroll button.” Robobuilder’s explanation here reflects his awareness of the differences in platforms when completing search tasks.
During the poster activity, Era stated that “it would be much easier” to draw a picture of Elena of Avalor “if I had an Elena picture.” When asked how she could find a picture of the character, she said “from your phone? And Google.” The researcher handed Era her phone and Era quickly searched online using Google, only needing help to locate the Safari app, finding a picture of the character that was appropriate for her current situation (see Figure 11). Both Robobuilder and Era demonstrated the ways in which they search for information online related to their interests.
Playing video or online games was described by six children as a way of finding out information. For example, Elsa took a picture of a reading game she plays on the computer (see Figure 12). She described the game to the researcher, stating “this is a monster that likes words. You have to feed them to the monster. You’re actually learning how to read at the same time as teaching your monster.” Here, Elsa described playing a game as a way of learning how to read, a skill that is not specific to her interests. However, other children did describe playing games as a means of finding out information specifically related to their interests. For example, Chris stated that he knows a lot about video games “really because I play it all the time . . . Every day I play video games.”
Six children described consulting instructions for information about their interests. For example, Chris stated that he finds out how to play video games by looking at the instructions, saying “most games have this book so you can slide it out, it tells you all the rules.” Rarity also described consulting instructions in order to find information about her interests, sharing a picture of a unicorn craft she made by “[matching] the square stickers with the numbers” on the unicorn, as shown “on this little card that had numbers and the colors were on top of it. That’s how I knew” how to complete the craft (see Figure 13).
“This is what I made from kids’ church. And it’s a unicorn, and you have to match the dots with, with- you have to match these squares with the numbers, and it has certain numbers. The flowers are supposed to be, the flowers are supposed to be, the flowers are supposed to be eleven, and the jewels, the circle purple jewels, are nine, are nine. And I really like how it is. It’s sparkly, and there’s lots of jewels. I like the- and the red flower, the red hearts at the top, ours had, and I like those too. But my favorite one are the flowers, then they’re the hearts, then they’re dots.”

Figure 13. PixStori by Rarity

Four of the children described finding out new information from looking at pictures. For example, Alex stated that she knows how to draw music notes because “the music teacher has pictures of all, how to show music notes, and I see a lot of them.” Pocahontas noted that she knows that Queen Elizabeth has gray hair because her mom “showed me the picture of Queen Elizabeth.”

One child described listening to audio content as a way of finding out new information. The Rock described finding out new things about hockey on “the radio ‘cause I always hear hockey stuff” when driving in “my mom’s car and my dad’s car.” Listening to audio content was also described by Rarity’s mom, who stated that her daughter finds out new information as they “listen to e-books, etc. while driving in the car.”
People that can tell you stuff. The children also described finding out new information from people that can tell you stuff. The specific activities the children described in this category included being told or taught the information by another person, or through asking other people.

Thirteen children described finding out new information about their interests by being told or taught the information by someone else. Steve explained the distinction between being told something and being taught while reading *Owl Boy* with the researcher. In the part of the book where Al, the main character, shares what he knows about owls with the class, Steve said “he’s just telling. He’s not teaching them. . .

Teaching will be if you’re telling like some, asking them a question and they would answer it, but he’s telling all the questions. That’s just telling people.” Alex also reflected on the process of being taught new information by others, describing the importance of feedback from her swimming teacher in learning new swimming moves. She said “you can learn by watching your teacher and then you can ask them to let you do it, the move, and they can tell you if you get it right or wrong.”

In some cases, the children described being told or taught information directly. For example, Frankenstein said that one of the ways that he knows so much about the hockey player Auston Matthews is because “my dad tells me about him,” while Pocahontas described knowing about rainbows “from pre-K . . . My teacher taught me that from rain they can turn to rainbows.” In other cases, the children described finding out the information in a more serendipititious fashion. For example, The Rock explained that he knew about Wayne Gretzky, a former hockey player, “‘cause I always hear about him and pretty much like four or five people in my class always talk about him.”
Another way in which the children described finding out new information about their interests was through asking other people. Six of the children explicitly described asking other people for information in the past or as a way they could find out information in the future. The children talked about asking teachers, parents, siblings, cousins, veterinarians, a store employee, and the fictional character Moana for information about their interests. Ten of the children used this strategy of finding out new things during the poster activity, asking their parents or the researcher how to spell words that they wanted to include on their poster or for clarification about details about their interests. Era also used her PixStoris as a means of asking for information, using the PixStori process as an opportunity to ask the researcher to “research” information about questions that arose for her while she had the iPod (see, for example, Figure 14).

“"I think this is a giant footprint, so I wanna know who made this, so I took a picture of it for you to research and tell me which animal made it."
While sometimes the person who a child asks for help may be due to convenience (for example, asking the researcher with whom they are currently talking how to spell a word), the children also discussed asking specific people for help based on their perceived expertise. For example, when discussing his information wants about cats, The Rock identified “vets” as a potential group to ask in order to find out the answers to his questions. Daisy also identified individuals with expertise that might be relevant for helping to answer her information want about pigs. When the researcher asked Daisy how she could find out if pigs can run during the poster activity, at first she said “Jenna [her sister] is a smart girl, and Robobuilder [her cousin] is a smart reader” and called them both over to help. Then, she changed her mind and said “actually, Robo, you can go back and play. Sorry. Maybe I’ll need you for reading. Jenna, I need you. . . Why - since you’re a smart girl. How do pigs run? Since you love pigs.” Here, Daisy attributed Jenna’s ability to answer her question to Jenna’s love for pigs, not just because she identified her sister as being “smart.” She also identified her cousin as a potential resource for a different type of information want, since he is a “smart reader.”

Experiences that can tell you stuff. Finally, children described finding out new information about their interests through experiences that can tell you stuff. Specific activities the children described in this category included experiencing things first-hand; observing; taking classes or lessons; practicing; going to relevant places or events; trying; playing with toys and non-electronic games; and owning items related to their interests.

Thirteen of the children described finding out information about their interests by experiencing things first-hand. In these cases, the children stated that they knew specific
items of information related to their interests because of activities or experiences they
themselves had previously participated in. For example, Rosabella explained that she
knows that bunnies eat carrots “because one time there was a bunny hanging out. We
threwed it out carrots, me and my dad. When he ated it, that’s how I know” (see Figure
15). Similarly, Star noted that she knows that “puppies and doggies, they lick people
sometimes. . . ‘cause my dog licks me almost every morning.”

"There was my bunny in my backyard. It was so cool. And I love pets and animals. But I’m gonna
catch it. I love animals."

Figure 15. PixStori by Rosabella

In addition to describing knowledge they have gained by experiencing things first
hand, eight children described finding out new information through observing. Observing
is distinct from experiencing things first hand, as experiencing things first hand involves
some type of participation in an activity, while observing simply involves witnessing a
phenomenon or event. For example, in discussing the character Al from Owl Boy,
Frankenstein said Al might know so much about owls “because he probably studies them.
. He probably looks out his window at night and sees owls eat the mice and sees them come out at night with their eyes open.” Children also described observing as a means of satisfying their current information wants. For example, Rarity wanted to know if Santa Claus is real, and she suggested that in order to find out, she could “stay up on Christmas night” in order to see him. Alex, who participates in several different dance classes, described observing the activities of other children in her class as a means of finding out new information. She said that she learns how to do the different dance moves by watching her teacher, but also “sometimes I watch my friends go across the mat to do it so I can learn it” (see Figure 16).

“I sent you this video because it was at my dance studio and it was with my dance friend.”

**Figure 16.** PixStori by Alex

Six children identified finding out new information through attending classes or lessons. Here, children simply mentioned taking lessons as a means of finding out new information; instances in which children described specific ways of learning such as
observation or being taught are discussed in those relevant sections. For example, Spider-Man said that he learned how to play the piano “‘cause I’ve been taking piano lessons,” without elaborating on the methods through which he learned how to do so, while Milla noted that she attended a gymnastics camp where she “learned how to do different kinds of jumping” (see Figure 17).

“This is a picture of me before gymnastics camp.”

![Image](image1.jpg)

**Figure 17.** PixStori by Milla

Practicing was a means of finding out new information that was described by five children. For example, when making his poster, Futi Futi noted that he is able to draw race cars “‘cause it’s easy. Because I know. I practice.” Milla also noted that she found out how to play soccer “by practicing before we play against people.”

Four children described finding out new information by going to relevant places or events. For example, both Frankenstein and The Rock described learning about hockey by attending hockey games (see Figure 18). When creating his poster about Lego, Chris stated that “I know how to spell it ‘cause we went to Legoland.” Some of the parents also
described taking their children to events in support of their interests, such as the zoo, farm shows, and museums.

Figure 18. PixStori by The Rock

Two children described finding out new things by trying. Frankenstein stated that he learns about hockey by “trying my hardest,” while Chris noted that when his sister questioned his ability to hook up the family’s TV, he responded to her with “at least I’m trying.” Here, the children described attempting to complete a task, even when not sure of their ability to successfully do so, as a means of finding out information related to that task.

Two children described learning new things through playing with toys or non-electronic games. In explaining the game Bugs ‘n’ Slugs, Spider-Man said, “it’s a fun game to play to learn about the creeps and crawlies.” Frankenstein said that he wanted to
take a picture of his toy wrestlers “because it teaches me how they wrestle,” but wasn’t able to since it was time to return the iPod to the researcher.

Two of the children talked about knowing a lot about their interests as a result of owning items related to that interest. For example, Chris said he knows a lot about Nerf guns “‘cause I have so many Nerf guns at home. You wouldn’t believe. I have a Star Wars Nerf gun. I got four Nerf guns.” Relatedly, two parents discussed their children finding out new things about their interests by going shopping for interest-related items.

**Information use activities.** Using information refers to any activities the children described that involved incorporating information into their mental and physical activities. The children described two categories of information use activities related to their interests, including *applying information to their own activities* and *sharing information with others*. Table 9 lists the specific information use activities that were described by the children and their parents.

<table>
<thead>
<tr>
<th>Information Use Activities</th>
<th>No. of Children</th>
<th>No. of Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Then we do ‘em”: Applying information to their activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creating things</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Engaging in play and physical activities</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Making decisions</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Informing subsequent information seeking</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Demonstrating expertise</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Trying new things</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>“I tell more people”: Sharing information with others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharing resources</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Restricting other’s access to resources</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Talking with others</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>
As shown in Table 9, the children described two categories of information use activities, applying information to their own activities and sharing information with others. Applying information to their activities involved putting the information to use for some purpose, while sharing information with others involved activities related to the dissemination of information to other people. Both children and parents described each of these types of information use activities, however children discussed more varied types of sharing information with other people than did their parents, while parents described some types of applying information that their children did not. Each of these categories of information use activities are described in more detail below.

“Then we do ‘em”: Applying information to their activities. One of the ways in which the children described using information was by applying it to their activities. The ways in which children and their parents reported applying information to their activities included creating things; engaging in play and physical activities; making decisions; informing subsequent information seeking; demonstrating expertise; and trying new things.

Ten children described creating things using information about their interests, including drawing, making crafts, building Lego, and making videos. For example, Era drew a picture of Elena of Avalor on her poster after looking up the picture of the character on the researcher’s phone (see Figure 19). Rosabella talked about her interest in making unboxing videos⁶, an activity she had recently engaged in quite a bit as her birthday had just passed and she had received as gifts toys that she featured in her videos.

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⁶ ‘Unboxing videos’ are videos that feature products such as toys being unpackaged and assembled on camera. This is an increasingly popular type of media consumed by young children; according to the most recent Common Sense Media (2017) survey, 34% of children eight years of age and younger often or sometimes watch this type of video online.
She created several PixStoris related to this activity (see, for example, Figure 20), and also recorded two unboxing videos on the iPod she borrowed for the research study.

“Elena is a crown princess who helps her village called Av-.”

Figure 19. PixStori by Era

“I’m about to open up this from, this um, bracelet from my birthday party. It’s really fun. These guys are gonna watch me while I do it. Okay, bye, it’s bye Rosabella.”

Figure 20. PixStori by Rosabella
Engaging in play and physical activities was an information use activity described by nine children. This type of information use activity included structured activities that involve rules or a prescribed way of completing the activity, such as gymnastics or organized sports, and unstructured activities such as imaginary play. For example, Alex described using information when doing the different types of moves in tumble class, saying, “my teacher, she shows us step by step and then we do ‘em.” Elsa used information in her play activities, stating that she, her brother, and her friends “pretend to be” the characters from the show *Super Monsters* and “try to dress up as them” (see also Figure 21). Other children described using information to play more structured games, such as the board game *Bugs ‘n’ Slugs* described by Spider-Man, and video games like *Minecraft* as described by Steve.

One child described using information in order to make decisions. Daisy describing using her phone to watch videos about “blind bags, chocolate eggs, LOL surprise balls. That’s what I want for my birthday. It’s $16.” Alex’s mom noted that her
daughter also uses information to make decisions about purchases, as well as decisions about “if she wants to enroll in new classes” and “if she wants to watch shows we recommend.” Here, information the children obtained related to their interests helped them in making decisions about their own activities.

One child also described using information in order to engage in subsequent information seeking. Abby suggested that in order to find out the fictional character Moana’s real name, she could “search that up on YouTube . . . cause you can find her phone number. Then you can call her and tell her, ask her her real name.” In this discussion of how to find out information about her interest, Abby described a two-step process, in which the results of the first information seeking activity, searching for Moana’s phone number on YouTube, could be put to use in completing the second step, calling Moana and directly asking her to disclose her real name.

Although no children explicitly discussed this, three parents described ways that their children use information in demonstrating their expertise. This included activities in which the children could show the extent of their knowledge about their interests. For example, Frankenstein’s mom stated that her son “has learnt players [sic] names from hockey teams and can identify them when watching the game.” Daisy’s mom noted that Daisy will “try to learn all their names and have me ‘quiz’ her.” In these cases, the children applied the information they had previously obtained in showcasing their knowledge about their interests.

Two parents also noted that their children use information in trying new things. For example, Chris’s mom stated that her son uses information by “trying new thing that
he has saw [sic] or read about.” Neither of the parents specified what these “new things” might be.

“I tell more people”: Sharing information with others. Sharing information with others is the other category of activities that children described related to using information. These activities included sharing resources with other people; restricting other’s access to resources; and talking with others.

Five children described sharing resources related to their interests with other people. For example, Rosabella said that “If I have a good video, I leave it there and wait for somebody to see it.” The research study itself presented an opportunity for the children to engage in information sharing activities, with many children viewing the PixStoris as an opportunity to share information about their interests with the researcher (as was intended). The audio component of some of the PixStoris reflected this (see, for example, Figure 22).

“This is a - this is Sofia the First, and I’m taking a picture of her so you can see what she’s like.”

Figure 22. PixStori by Era
While Era wanted to share her PixStoris with the researcher, Rosabella wanted her PixStoris to be seen by a larger audience. When the researcher explained that all of the PixStoris were deleted from the iPod before the iPod was sent home with another child, she said it would “be better if the person could get more and the other person’s is still there. So I’m like, make more and the other person could still have some.” To clarify, the researcher asked her if she wanted other people to see her PixStoris and she said “Yes. They are so popular. I want them to be popular and other people see them.” Here, Rosabella demonstrated her desire to share her own information creations with other people.

Four children also described restricting others’ access to resources, which involved actively not sharing information with others. For example, Steve explained:

> I got a password to play Minecraft, so no one can get it on. Dad and Mom know, but Futi Futi does not. I don’t want to tell him. . . Because he will make it wrong because he doesn’t know all of it.

While Steve wanted to make sure his brother, Futi Futi, did not have the information needed to access his Minecraft account and possibly interfere with his progress in the game, Rosabella described restricting others’ access to resources based on her own evaluation of its quality. She noted that she does not share all of the unboxing videos that she makes with other people, saying that once she records a video:

> I watch them to see how good they are. If I don’t, if it’s not good, I will delete it and then do another video and put it [the toy] back in, and act like it wasn’t even opened, so then you don’t know.

And finally, one child and eight parents described sharing information by talking with others. For example, The Rock noted that once he learns new things about hockey, “I tell more people that like hockey, and then we can both talk about hockey.” Parents
noted that their children talk about their interests with family members, teachers, and their peers.

**Challenges to Young Children’s Engagement in Information Activities**

The children and their parents described specific challenges that the children face while engaging with information related to their individual interests. Challenges included any barrier or obstacle the children faced in engaging in any kind of information activity, including those that made children’s engagement in these activities difficult, or those that prevented their engagement with these activities altogether. These challenges included those that are related to the children’s own capabilities and skills, those that are related to constraints of the information sources with which the children engage, and those that are related to restrictions on children’s activities imposed by their parents.

Table 10. Challenges to Engagement in Information Activities

<table>
<thead>
<tr>
<th>Challenges</th>
<th>No. of Children</th>
<th>No. of Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I’m too little”: Children’s capabilities and skills</td>
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</tr>
<tr>
<td>Emerging literacy skills</td>
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<td>10</td>
</tr>
<tr>
<td>Not knowing where to find information</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Emerging technology skills</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Difficulty using information</td>
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<td>1</td>
</tr>
<tr>
<td>Interest level</td>
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<td>3</td>
</tr>
<tr>
<td>Personality</td>
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<td>2</td>
</tr>
<tr>
<td>“Maybe she will say ‘I don’t know that’”: Constraints of technology and information sources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failed searches</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Access to information and technology</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Characteristics of structured learning opportunities</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Limited availability of resources</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>“She never lets me”: Parental restrictions</td>
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</tbody>
</table>
As shown in Table 10, the children’s discussions of the challenges they face when engaging with information spanned three categories. The children and their parents discussed ways in which the children’s own capabilities and skills sometimes hindered their engagement with information. Constraints posed by information sources, or the ways in which specific aspects of information sources pose barriers to children’s engagement with those sources, were also articulated by both children and parents, as well as parental restrictions on their children’s activities. Parents more frequently described challenges that their children face than did the children themselves, and described a greater variety of specific types of challenges their children face, with the exception of challenges related to the constraints posed by information sources. Each of the specific types of challenges described by the children and their parents are described in more detail below.

“I’m too little”: Children’s capabilities and skills. Children and their parents described challenges that the children face in engaging with information that relate to the
children’s own capabilities and skills. These challenges included children’s *emerging literacy skills; children not knowing how to go about finding information; children’s emerging technology skills; difficulties in using information; children’s interest levels;* and aspects of their *personalities.*

Two children and ten parents stated that the children’s emerging literacy skills posed a challenge to their engagement with information, including their emerging abilities to read, write, and comprehend information. Parents noted that their children’s emerging literacy skills prevented them from searching for information online or accessing information in textual forms. For example, Daisy’s mom noted that Daisy “doesn’t know how to read well yet,” which made it difficult for her to independently read the information contained in the Shopkins checklists. Spider-Man stated that he likes to read and knows how to read “hard books;” however, his mom noted that “occasionally, the texts are at too high a reading level” for him to understand.

Two children and two parents stated that the children simply did not know how to go about finding information. Alex’s mom said that Alex’s “lack of awareness or knowledge about how to find info [*sic*]” was a barrier to her information seeking, while Star’s mom noted that “she doesn’t always know what to ask.” The Rock described an example of a time when he did not know where to go at first to find information about the newest NHL team; he said “I never knew really there’s a new team. I never knew what to do. Then the one day, three days after, I’m like ‘Oh, Google’.”

Related to their emerging literacy skills are the children’s emerging technology skills, a challenge described by two children and one parent. Alex’s mom noted “she is just learning to use a computer and her spelling is not great so she doesn’t google [*sic*].”
Chris described an example of a time when he tried to hook up his family’s television but was unsuccessful, relaying the outcome of his attempts with “the answer was no, I’m too little.”

One child and one parent also discussed experiencing difficulties in using information related to their interests. Alex stated “in dance, some new moves I can’t do, and I try to figure them out.” Her mom similarly noted, “sometimes she takes longer to learn a new skill than her peers.” Here, Alex and her mom both describe Alex’s challenges in using the information she has learned in her dance classes by applying it to her own physical activities.

Three parents stated that their children’s interest levels in activities related to their interests also had the potential to negatively impact their information activities. For example, Star’s mom noted that she sometimes faces challenges in finding out new information about her interest as she “loses interest in non-fiction books.” While for Star a lack of interest posed a challenge to her engagement with information, for Spider-Man his high level of interest had the potential to negatively impact his engagement with information. His mom noted that “other kids/adults aren’t as familiar/knowledgeable” with his interest in space, which sometimes posed a challenge for Spider-Man when incorporating new found information into his activities with others.

Two parents also noted aspects of their child’s personality that hindered their information activities. For example, Alex’s mom noted that her daughter is “introverted so she doesn’t always actively ask for info from those around her.” Chris’s mom noted that “he doesn’t have the patience if it takes too long to find the info.” Here, specific characteristics of the children posed challenges to their information activities.
“Maybe she will say ‘I don’t know that’”: Constraints of technology and information sources. Children and their parents also described challenges they faced when engaging with information that were due to the constraints of the information sources with which they were attempting to interact. These challenges included experiencing failed searches; characteristics of the structured learning opportunities that they participated in; problems physically accessing information and technology; and the limited availability of resources.

Four children described instances in which they experienced failed searches when using information search technology. For example, The Rock suggested Google as a way of satisfying one of his information wants related to hockey, noting that Google usually has the answers, but “not all the time.” Pocahontas stated that if she asked Amazon’s Alexa the answer to one of her information wants about the moon, “Maybe she will say ‘I don’t know that’.” Both The Rock and Pocahontas described experiencing the limitations of current search technology in finding the answers to their information wants.

Three children described barriers they faced in physically accessing the information and technology they wanted in order to engage in information activities related to their interests. For example, Chris described an instance in which he had a hard time building his Lego since “some of the instructions, Mom didn’t read anything, [she] just threw it in the garbage.” Abby noted that she is not always able to use her iPad when she wants to as “my brother always wants the iPad a lot” and they only have one that they have to share. In these cases, the children’s engagement with information was impeded by their inability to access the needed information sources.
Three children who participated in structured learning activities described ways in which characteristics of these activities posed barriers to their engagement with information. For example, Era quit her ballet lessons “because the instructor was too strict” and they didn’t actually do real ballet in the class, “we only did exercise.” Frankenstein stated that although his coach usually “teaches me how to do new stuff,” recently the coach was “away for a little bit,” which impacted his ability to learn more about hockey.

One child and two parents described how the limited availability of resources related to their interests made engaging in information activities difficult. For example, Abby noted that “I don’t have that much Moana stuff at home,” which limits her engagement with this interest. The Rock’s mom noted that that winter makes engagement with his interests in hockey and farming difficult since “ice hockey only happens part of the year” and “playing outside in his field, digging is hard when snow is on the ground.”

“She never lets me”: Parental restrictions. Finally, the children and their parents reported challenges the children face when engaging with information related to their interests that were due to restrictions their parents placed on their activities. These restrictions included limited access to financial resources; restricted access to organized learning opportunities; parental monitoring or restriction of types of content children accessed; restriction of media content sharing; limiting the amount of time children can spend on activities related to their interests; parents’ lack of expertise or interest; encouraging children to engage in other activities; and parents’ desire to avoid mess.

Two children described challenges to their engagement in information activities that were related to their limited access to the financial resources needed to engage in
some of these activities. Robobuilder noted that when he was first learning how to play Roblox:

I told my dad about it because, you know, I don’t have a credit card and I really wanted to get Robux⁷, so I asked him if he could buy Robux for me so I could get a whole bunch of stuff in the games and go to catalog and buy stuff for my person, like clothes and stuff.

Although parents often provide financial support for their children’s interests, their resources are not unlimited. For example, Frankenstein’s mom stated that “we pulled him from swim lessons because hockey is costly and Frankenstein chose hockey over swimming.”

This is related to the children’s restricted access to organized learning opportunities that they may want to take part in, also described by two children. For example, Milla noted gymnastics as one of her interests during the poster activity, however she was not enrolled in gymnastics classes. She said she was not able to take gymnastics classes because “soon I’m gonna have to do skating and right now I’m doing swimming. My brother is doing basketball and my sister is in ballet. So my mom doesn’t want me in that much things.” Era also described restrictions on her engagement in desired activities, noting that after watching the show Sofia the First, “now I want to ride horse, but she never lets me,” gesturing to her mother.

One child and ten parents described ways in which parents monitor or impose restrictions on the types of content that their children can access. When their children are allowed to use screen-based media, parents described viewing videos and other media content prior to or with their children, enabling passwords and parental controls on devices and apps, and just generally “monitoring” their children’s media use. Rosabella’s

⁷ Robux is the virtual currency used in Roblox.
mom stated that she purposefully did not connect the iPod Rosabella had borrowed for the research study to the internet, so that Rosabella would not use the device for anything other than research purposes.

Even though many of the children and their parents discussed how the children make use of apps and other media that are geared for a young audience, there still exists the potential for the children to see content that the parents would prefer they did not.

Daisy’s mom noted:

> with the increase in Google advertisements and other forms of advertisements, even for a “kid” video there may be a movie trailer ad for a rated R movie that will come on when your kids clicks to watch the video. It's not expected and comes out of nowhere, so even if I'm right in the room, it's too late - they've already watched some horror scene that might give them a nightmare later and stick in their mind. I hate it, I really do.

Rosabella related a similar experience, noting that sometimes her mom doesn’t let her watch YouTube “because there’s a ad and it was scary. It was a ad of a like killer movie.” She noted that she told her mom about the ad, saying “I’m the one who told her about it. Nobody else really saw it, only me,” but added “I didn’t know she was gonna get me never see YouTube ever.” She then said, “I like CookieSwirlC. I wish there was no such thing as ads so I could still watch it.”

One parent and one child discussed ways in which parents restrict the types of media content shared by their children. Daisy and Rosabella’s moms supported their daughters in creating their own digital content; for Daisy, videos featuring her Shopkins toys and for Rosabella, videos in which she “unboxes” or opens new toys. However, the videos that these girls created were only shared with family members and were not disseminated to a wider audience. Rosabella said “I asked my mom a hundred times to put it on YouTube,” but her mom said the videos are “just for family.” Rosabella said:
I wish it could be on YouTube [because] I like YouTube, and everybody can see it. . . Everybody and even persons I don’t know. And then I’ll get subscribers. And I’d get some more toys because like in CookieSwirlC, like the audience, they give you mail and toys.

Although Rosabella would like to share her videos with other people via YouTube, her mom has placed restrictions on this information sharing activity.

Sixteen parents stated that they limit the amount of time their children spend accessing screen-based media. Some parents stated that they only let their children use screen-based media for specific amounts of time each day. For example, Daisy’s mom noted, “I don't like my children being on tablets too long. I think the screen time needs to be limited for children (adults, too), so when it comes to her watching Shopkin videos, I keep it to a limit.” Others only allowed their children to engage with these media after they have completed homework, chores and other activities. For example, Era’s mom stated “she has to earn media time on most days by tidying up and doing math worksheets. Rarely do I give her a free pass for technology.”

Four parents noted that they also limit the amount of time their children spend on activities related to their interests. For Steve and Chris, who discussed their interest in video games, this is related to the restrictions their parents place on overall screen time. However, parents of children whose interests are not screen-based also discussed imposing restrictions on the amount of time their children can spend on related activities. For example, Alex’s mom noted that she may discourage her daughter’s interests “if we think she is spending too much time on it, we try to limit - keep her balanced.”

For four parents, an additional challenge for their children’s engagement in information activities related to their interests included parents’ lack of expertise or interest in the topic. For example, Steve’s mom noted that “video games are not really
‘my thing’ and Steve has largely figured this out on his own.” In this example, Steve’s mom’s lack of interest is an enduring trait. With other parents, their lack of interest is more temporary in nature. For example, Pocahontas’s mom said that she might discourage Pocahontas’s interests if she was “not on [sic] the mood” to engage with her daughter’s interests, “but normally, I would try to answer her or entertain as much as I can.”

Three parents also described encouraging their children to engage in interests other than those with which their children were primarily focused. For example, Abby’s mom noted that “some interests are not age appropriate and we encourage her to find other interests.” In addition to concerns about the appropriateness of children’s interests, parents also encouraged their children to increase the breadth of their interests. For example, Rarity’s mom said “we also encourage her to do things that she may not like as much, to keep her well-rounded while also providing opportunities to find added interests.”

For two children who are interested in artistic activities, their parents desire to avoid the resulting mess was another barrier to engaging in activities related to their interests. For example, Rarity’s mom noted that she does not discourage Rarity’s interests “except for making sure she does her crafts in an area that will not damage furniture, or make an extensive mess to clean up.”

**Enablers of Young Children’s Information Activities**

The children and their parents described ways in which the children’s engagement with information related to their interests was enabled. These enablers include those that are related to the children’s capabilities and skills, those that are related to affordances of
the technology with which they engage, and those that are related to support from their parents.

Table 11. Enablers of Engagement in Information Activities

<table>
<thead>
<tr>
<th>Enablers</th>
<th>No. of Children</th>
<th>No. of Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“Because I’m smart”: Children’s capabilities and skills</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personality</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>“It’s kind of more easier”: Affordances of technology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voice-activated virtual assistants</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Size of technology</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Availability of resources</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>“My mom got them for me”: Parental support</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing help with reading and understanding information</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Providing financial support</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Accessing expertise of others</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Taking children to places and events of interest</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Providing help using technology</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Providing access to technology</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Providing access to other information sources</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Sharing relevant information</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Engaging in play</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Providing encouragement and emotional support</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Providing access to organized learning opportunities</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Talking about interests</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Exploring</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Engaging in caring activities</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

As shown in Table 11, both children and their parents described enablers of children’s engagement with information across three categories. Children’s own capabilities and skills were discussed by one parent and one child. Affordances of
technology, or aspects of technology that make children’s engagement with information easier, was described by four children but only one parent. Parental support includes ways in which parents help to make their children’s engagement with information possible or easier, and was the predominant type of enabler discussed by both children and their parents.

Many of the enablers discussed by the children and their parents are related to the challenges discussed earlier in this chapter. For example, limited access to financial resources was described as a challenge to children’s information activities, where here financial support was described as an enabler. As with the discussion of the challenges children face, more parents described enablers of their children’s information activities than did the children themselves. Parents also described more types of enablers than their children did. Each of the specific types of enablers described by children and their parents are described in more detail below.

“Because I’m smart”: Children’s capabilities and skills. One parent and one child noted that they perceive aspects of the child’s personality as contributing to their successful engagement with information related to their interests. Futi Futi’s mom said that his “natural curiosity works well for his learning,” and that “I really just allow Futi Futi to be himself and be curious. I give him the tools to make things and stay out of his way.” Futi Futi himself noted that he knows a lot about his interests “because I’m weird. . . actually, because I’m smart.” Both Futi Fuit and his mom described his personality as enabling his engagement with information related to his interests.

“It’s kind of more easier”: Affordances of technology. Children and their parents reported that children’s engagement with information was enabled via
affordances of technology. Specifically, the children and their parents described the use of *voice-activated virtual assistants*, the small *size of technology*, and *availability of resources* as ways in which children’s engagement with information was enabled.

Two of the children who made use of voice-activated search platforms talked about the ease these technologies provide for searching. Pocahontas’s mom said that Pocahontas frequently makes use of the family’s Alexa device, and also likes to use Siri. Pocahontas tried to use Siri on the iPod that she borrowed for the research study; however Siri was not set up on the device. Her mom said that if Siri had been set up, “she would try to find a lot of things because it’s just by talking, you know? It’s a lot easier.” When discussing Siri and Spotify, Abby also mentioned the ease these technologies provide, saying “so whenever you need something, you don’t even have to spell it in. You just have to think it in your brain and it will search up on it.” In both of these cases, the ability to search verbally, rather than relying on accurate spelling, enable the children in searching for information using these platforms.

One child also noted that the size of some technology makes it easier to use. In discussing the different types of technology that he uses to take pictures, Chris stated that phones are “kind of more easier because it’s littler” than tablets, and therefore easier for him to hold.

One child described the availability of resources as an enabler of her engagement with information. Specifically, Elsa described being able to learn more about *Super Monsters*, a TV show she discussed in the poster activity, “because *Super Monsters* is still on Netflix,” unlike *Bubble Guppies*, a show she started to watch but “it went off Netflix.”
“My mom got them for me”: Parental support. Children and their parents also reported that children’s engagement with information was enabled by support from their parents. Specific ways in which parental support enabled children’s engagement with information included by helping them read and understand information; providing financial support; connecting them with the expertise of others; taking their children to locations and events relevant to their interests; helping their children to use the technology; providing access to technology; providing access to other information sources; sharing relevant information with their children; engaging in play with their children; providing encouragement and emotional support; providing access to organized learning activities; talking about their children’s interests; exploring; and engaging in care activities.

Four children and eight parents described helping their children to access information contained in print and digital sources by helping them read and understand information. Steve explained that he learned how to play both Minecraft and MarioKart “because my dad taught me so I could know how to play it” by reading “the instructions, like what it said for the video games.” Spider-Man noted that he learned how to read when he was three years old, and that his “Mom taught me lots of books, and hard books, too.” Linwei’s dad noted “I’ll help her understand the new information.”

Parents also provided financial support in order to provide their children with access to the physical resources needed in order for their children to participate in activities related to their interests, an enabler described by three children and eight parents. For example, parents and children reported that parents purchased items for their
children related to their interests (see Figure 23). Rarity’s mom noted that her daughter “has an endless supply of craft items” that enable her to engage in artistic activities.

“I like these ‘cause I have so many, and these are beautiful. And my mom got them for me, she’s so sweet. And she also got me like bobble heads. And these are the Shopkins that you – that you – I was talking about. Thank you.”

**Figure 23.** PixStori by Daisy Shopkin Girl

Two children and five parents described ways in which the expertise of others enabled children’s engagement with information related to their interests. For example, Frankenstein and his dad both share a love of hockey, which helps to support Frankenstein’s engagement in information activities about the sport (see Figure 24). When parents’ expertise was not aligned with their children’s interests, they described reaching out to others to help their children engage in their activities. For example, Elsa’s dad noted that when she requires help in finding out new things about Pokémon, “we ask her uncle, he knows everything about Pokémon.”
“This is a book I learn about my favorite hockey teams, the Maple Leafs, and all different teams and I learn their names and stuff. My dad usually looks through it and tells me all their names, because Dad knows all the hockey players because he loves them. Bye.”

Figure 24. PixStori by Frankenstein

Parents also supported their children by taking them to locations and events relevant to their interests, described by two children and four parents. For example, both Frankenstein and The Rock discussed their parents taking them to hockey games (see Figure 25). Other parents described taking their children to museums, the zoo, farm shows, and other “places that relate to [their] interest.”

Figure 25. PixStori by Frankenstein

“That’s the ticket booth. That’s where we buy tickets to go watch the game as a family. And that’s where I’m going, to watch a game, the Maple Leafs, on as a family. Just me and my mommy and daddy, watching the Toronto game. Bye.”
Relatedly, parents also helped their children to use the technology that they have access to, as described by one child and thirteen parents. Parents provided help with their children’s searching activities, primarily in response to their children’s emerging literacy skills. For example, The Rock said that he often searches for things on his own using Google, and that his parents help “just to spell.” However, he did also describe an instance in which he and his dad searched together to find out the height of a hockey player they watched play in a hockey tournament (see Figure 26). Rosabella’s mom also noted that they “look up information together” about Rosabella’s interests.

“This is the Level 1 prospect for the OHL draft, Quinton Byfield.”

Figure 26. PixStori by The Rock

Parents also helped their children develop the knowledge and skills needed to understand and make use of technology. For example, Daisy’s mom noted that “I show her how to click on smartphone and use the remote for TV/kids Youtube because as with other things, I want her to be confident in her ability to do things independently.” Similarly, Chris’s mom noted “I provide and help as much as I can with technology because it's a big part of our world and the way we live.”
One of the main ways in which parents enabled their children to engage with information related to their interests was through access to technology. Every parent who completed the survey indicated that they have internet access in their homes, and that their children have access to at least two different types of media and technology at home and at least one type of media and technology elsewhere. Types of media and technology that children have access to include desktops/laptop computers, tablets, smart phones, and video game consoles. One child and eleven parents elaborated on this aspect of enabling children’s access to technology. Some parents reported that their children have their own devices, while others reported that their children share devices with their family members. According to Rarity’s mom:

We have provided access to media, and are in full support of its limited use. We feel that it has huge benefit for children, and is definitely the way that things are going in the future, so we want our children to be well versed in the use of these types of technology.

One child and five parents also described parents as providing access to other information sources, such as books and the radio. The Rock stated that he finds out new things about hockey by listening to “the radio ‘cause I always hear hockey stuff” while in his parents’ vehicles. Era’s mom said “I usually browse and choose books on my own and surprise her with them at home.” Other parents also described taking their children to the library to find books about their interests.

One child and three parents also reported sharing relevant information with their children related to their interests. For example, Pocahontas and her mom described a time when her mom showed her a picture of Queen Elizabeth on her phone using Google, while Alex’s mom describing telling her daughter “about new dance classes” and “show[ing] her relevant sites on the computer (e.g. American Girl).”
One child and two parents also mentioned that parents engage in play with their children related to their interests. For example, The Rock mentioned several times that he and his mom play hockey together in their basement (see Figure 27 and 28).

“This is me and my mom getting ready to play hockey.”

**Figure 27.** PixStori by The Rock

“This is my mom getting ready to play hockey with me.”

**Figure 28.** PixStori by The Rock
Eight parents also reported providing encouragement and emotional support to their children in relation to their interests. For example, Alex’s mom stated that she provides Alex with “emotional support for the times she is frustrated” when engaging with information related to her interests. Other parents discussed encouraging their children to engage in activities related to their interests. For example, Daisy’s mom suggested that they make “our own homemade ‘Shopkin videos’ (not to post on YouTube, but just for us)” in order for her interest to be “active” instead of “passive.” As one parent noted:

We encourage Rarity in the ways previously mentioned; by providing the tools she needs, the answers she seeks, and the opportunity to learn. We do this because we feel that she will learn and develop much better if she is doing something she enjoys. We also love to see her happy and enjoying what she is doing.

For those children whose interests are supported by organized learning activities, parents also help them to engage in their interests by providing access to such activities, an enabler described by five parents. For example, Era’s mom stated “I do always look for activities or classes for her. I’m not very hands-on with arts and crafts so I try to find passionate people who love to teach.”

Parents also engaged in everyday activities with their children related to their interests, including talking about their children’s interests with them, as described by four parents. For example, Rarity’s mom stated “we love to ask her questions about her day, about what she has learned, all to help reinforce the learning.” Similarly, Rosabella’s mom noted that they “talk about interest together and information that she has learned” and “ask her questions” to help generate “deeper thinking” about her interests.

Two parents described their support for their children’s interests as exploring. For example, Milla’s mom stated that “I explore new opportunities with her,” and that she
“allow[s] her to explore” when using new information related to her interests. Spider-Man’s mom also mentioned that she and her son “explore together” when using new information related to his interests.

One parent described allowing her daughter to engage in caring activities. Star’s mom described allowing her daughter to help with “care for our dog. Especially feeding them and helping with bath time or treats.”

**Young Children’s Emotions Related to Their Engagement with Information**

The children described how engaging with information related to their individual interests makes them feel. The children described experiencing *positive* and *mixed emotions* related to their engagement with information, while their parents noted that they perceive their children as sometimes experiencing *negative emotions* (see Table 12).

Table 12. Emotions Related to Engagement with Information

<table>
<thead>
<tr>
<th>Emotions</th>
<th>No. of Children</th>
<th>No. of Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“I get really happy”: Positive emotions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Happy</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Good</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Excited</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Nice</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Brave</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>“Sort of great, sort of bad”: Mixed emotions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surprised</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Nervous</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Sort of great, sort of bad</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>“She was so frustrated”: Negative emotions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frustrated</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Confused</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Discouraged</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
As shown in Table 12, the children predominantly described experiencing positive emotions related to their engagement with information, as well as some mixed emotions. Parents, on the other hand, almost exclusively described negative emotions.

When asked about how they feel when they find out new things about their interests, twelve of the children responded that this made them feel “good,” “happy,” or “excited.” In some cases, the children explained that they felt positive emotions after finding out something new about their interest because it enabled them to participate in subsequent related activities. For example, Steve stated that when his dad helped him read the instructions for Minecraft, it made him feel happy “because I learned how to play a fun video game.” For other children, simply knowing more about a topic of interest spurred positive emotions. For example, The Rock noted that finding out new things about hockey makes him happy “‘cause then I know more about it.” Daisy noted that it makes her feel “nice” to know everything about Shopkins, while Era stated that watching *Sofia the First* makes her feel “brave . . . because she does stuff that I don’t even know how to do.”

Other emotions described by the children in relation to finding out something new included being nervous or surprised. When describing how she feels when there is something she doesn’t know about *Elena of Avalor*, Era stated “when something like I don't know and I want to know it, it gets me nervous to know what happens.” Similarly, Elsa noted that she feels “surprised” when she finds out something new while watching *Super Monsters*, “because it’s a new thing and I didn’t know that was going to happen.” Abby described having mixed emotions when finding out new things about *Moana*, stating that she feels “sort of great, sort of bad” when she finds out new things “because
sometimes I cry in the movie when she falls into the water.” Here, Abby’s negative emotions are related to the characteristics of her information source – sometimes sad things happen in the movie that make her feel “bad,” rather than the information itself making her feel bad.

The positive emotions that the children reported experiencing when engaging with information about their interests likely relates to the positive emotions they feel about the interests themselves. When asked how they thought that Al, the character in *Owl Boy*, knew so much about owls, many of the children responded with “because he likes owls.” This relationship between liking and finding out new things can be seen in the responses of the children about their own interests. For example, Star noted that after she finds out something new about her interest, “I get really happy. ‘Cause I love doggies and puppies. They’re my favorite animals.” This relationship also extends into other information activities, such as information use. Elsa stated that she knew how to draw one of the characters from *Super Monsters* “because I love her, that’s how I know.” She later went on to say that loving a character makes it easier to remember things about them because “you can focus on remembering what she looks like for a long time.” Rosabella similarly described feeling “happy, excited, and like people are going to like it” when making her unboxing videos, both because “I’m opening a new toy” and because “people want to see it and want to come to my house and play with it and me.” Here, her emotions are related to both her experience making the videos as well as the anticipated response of her imagined audience.

While the children primarily discussed positive emotions related to their information activities, three parents described other, more negative emotions that they
perceived their children experiencing. Sometimes, these negative emotions were described within the context of their children trying to incorporate new information into their activities. For example, Frankenstein’s mom stated that her son “used to get discouraged seeing other kids skate faster than him or get more goals than him.” Similarly, Alex’s mom noted that her daughter experiences “frustration at times if it doesn't go easily. A great example is learning new dance moves. Sometimes she takes longer to learn a new skill than her peers.” In both of these cases, the parents described their children experiencing negative emotions in response to difficulties using information, particularly in comparison to their peers. In addition to experiencing negative emotions in response to difficulties using information, Frankenstein’s mom also described her son experiencing negative emotions related to the barriers he faced in understanding new information. She noted that Frankenstein was “confused when his favourite hockey player got traded to his least favourite team. Doesn't understand the trade still.”

Although parents identified some instances in which their children experienced negative emotions resulting from the challenges related to using new information in some way, the children themselves primarily reported positive emotions. This could be due to the fact that few children talked about any emotions in relation to information activities beyond finding out something new. Finding out new information may be a relatively easier or more enjoyable activity than applying that information. As Rosabella stated, “nothing is bad about learning something new. Only on tests when they’re really hard.”
Key Claims

In synthesizing the detailed findings presented throughout this chapter, a set of key claims are listed below. In summary, this dissertation found that:

- Young children already know and want to know more information about their interests, including descriptive, procedural, and explanatory information.
- Young children engage in a variety of information activities related to information seeking and use. Young children seek information via things that can tell you stuff, people that can tell you stuff, and experiences that can tell you stuff, and use information by applying it to their activities and sharing information with others.
- Young children face challenges when engaging with information, including those related to their own capabilities and skills, constraints of the information sources with which they engage, and parental restrictions on their activities.
- Young children are enabled in their engagement with information by their own capabilities and skills, affordances of the technology with which they engage, and parental support for their activities.
- Young children experience primarily positive emotions when engaging with information related to their individual interests, as well as some negative and mixed emotions.
Chapter 6: Discussion and Conclusion

Introduction

This discussion chapter first draws connections between key findings of this dissertation research and the existing literature related to children’s engagement with information. Next, theoretical implications of the findings are explored, followed by implications for LIS educators and professionals. A brief reflection on the research methodology is also presented, including recommendations for researchers. Finally, future publications and research directions are explicated.

Connections with Existing Literature

The findings of this dissertation research add to the body of literature concerned with young children’s engagement with information, in some areas confirming findings of previous work and in others extending our understanding of young children’s information practices. Each of the key claims derived from the findings of this dissertation are discussed within the context of the existing literature below.

Young children’s information wants. This dissertation found that young children know and want to know more information about their interests, and that the types of information wants they have include descriptions, procedures, and explanations. This dissertation confirms previous work that has demonstrated that young children seek information in relation to their own interests, engaging in self-generated information seeking rather than information seeking that is imposed on them by others such as parents and teachers (e.g., Barriage, 2016a; Foss et al., 2012; Renninger, 2000; Shenton & Dixon, 2003a). These findings add to the body of literature advocating for the conceptualization of an individual’s desire to know more about a given topic or activity as a want rather
than a need (e.g., Beautyman & Shenton, 2009; Chatman & Pendleton, 1995; Kari & Hartel, 2007). This distinction is not trivial, particularly when children are the subject of inquiry; conceptualizing children’s desire to know as a want rather than a need emphasizes children’s agency in their quest to find out more information about topics of interest to them, positioning them as active and self-motivated investigators, rather than reluctant and uninterested learners simply following the instructions of adults. Such an understanding of young children is pivotal to continuing to build a rich understanding of their engagement with information.

While previous work has examined young children’s information needs by topical area (e.g., Shenton & Dixon, 2003a; Silverstein, 2005), this dissertation has instead looked at the types of information that young children want to know. This adds an additional dimension to our understanding of young children’s information wants by not only identifying the subjects that generate information wants, but also identifying the types of questions they have and the answers they seek. This more in-depth means of understanding young children’s information wants allows for a better understanding of the sophisticated nature of young children’s existing knowledge and unanswered questions related to their interests.

**Young children’s information activities.** In addition to examining the types of information young children want to know, this dissertation research shows that young children engage in a variety of information activities, including information seeking and use. Their self-described information seeking activities include engaging with things, people, and experiences that provide them with information related to their interests. These findings are consistent with prior research that has found that young children
engage with various forms of media and technology (e.g., Agarwal, 2014; Barriage, 2016a; Common Sense Media, 2017; Given et al., 2016; Foss et al., 2012; Spink et al., 2012), as well as other sources such as books (e.g., Barriage, 2016b; McKechnie, 2006), and other people, including family members and peers (e.g., Barriage, 2016a, 2016b; Barriage & Searles, 2015, Shenton & Dixon, 2003c), in their pursuit of information. Importantly, in addition to the types of information sources frequently included in LIS research related to young children’s engagement with information, the children in this dissertation research also talked about experiences as ways of finding out new information. This type of information seeking is rarely examined in LIS research (see Barriage (2016a, 2016b) and Havigerová and Haviger (2014) for exceptions) and represents an emerging area of inquiry in this field. These findings highlight the importance of looking beyond the types of sources typically emphasized in LIS research in order to gain a fuller understanding of young children’s information practices. It is notable that both Barriage (2016a) and Havigerová and Haviger (2014) focus on children’s engagement with information related to their own interests, as opposed to other work that has focused on children’s information seeking in response to imposed queries. Additionally, both Barriage (2016b) and Havigerová and Haviger (2014) also included children as direct participants in their investigation of young children’s engagement with information. This indicates that considering information seeking within the context of everyday life, and incorporating children’s own experiences of their engagement with information, allows for a more holistic and in-depth examination of information seeking as it is experienced by children themselves, as opposed to prescribed, pre-determined frames of analysis.
Additionally, the findings from this dissertation research show that young children engage in information use activities that include applying information to their own activities and sharing information with others. Young children’s information use and sharing are an area of inquiry that is not studied widely in LIS (for an exception, see Barriage, 2016a). As the findings of this dissertation demonstrate, children as young as 5 years of age are not simply uncritical consumers of information, but also engage in evaluation, appropriation, and creation of information in various forms, taking the information that they have found about their interests and incorporating that information into their own activities, creating new artifacts and experiences that build on the information available to them. These findings highlight the active agency of these young children when engaging with information, an area that is not widely recognized in the discourse surrounding young children.

Additionally, it is important to note that media and technology were just one component of children’s information seeking and use activities. The children in this dissertation research described many other ways of engaging with information that did not involve media and technology. In a time when journalists and scholars are increasingly defining children by their access to and use of technology, using labels such as “digital natives” (Prensky, 2001), “born digital” (Palfrey, 2010), “iGen” (Twenge, 2017) or the “digital generation” (Jukes, McCain, & Crockett, 2010) to describe children born into a society in which technology is seemingly ubiquitous, the children themselves have shown that technology is not the central means through which they engage with information. The prominence of physical documents, interactions with other people, everyday life experiences, and even play in children’s descriptions of their engagement
with information demonstrate that children’s lives are not being taken over by technology, as contemporary media panic may lead us to believe. Rather, technology is simply one of many tools children use in learning about and participating in the communities to which they belong.

Challenges to and enablers of young children’s information activities. This dissertation found that young children encounter both challenges to and enablers of their engagement with information. Challenges the children faced included those related to their own capabilities and skills, constraints of the information sources with which they engage, and parental restrictions on their activities. Some of these challenges are consistent with those described by other researchers. These include problems using technology and searching for information online (e.g., Enochsson, 2005; Foss et al., 2012; Spink et al., 2010) and intellectual barriers in accessing print information (e.g., Harris & McKenzie, 2004; Shenton & Dixon, 2004). However, the challenges described by the children and parents in this dissertation are more extensive than those described in previous research, perhaps due in part to the more inclusive definition of information used in this dissertation, in addition to the fact that children’s perspectives were directly solicited. Additionally, this dissertation research found that enablers of children’s information activities include children’s capabilities and skills, technological affordances, and parental support for their activities. These findings add substantially to the body of literature related to young children’s engagement with information. Previous LIS research focused on young children’s engagement with information does not explicitly discuss what is it about particular information sources or activities that enable children to
engage with information, as such research tends to work from a deficit-based approach and focuses primarily on technology.

Importantly, the findings of this dissertation research highlight the importance of the family unit in both challenging and enabling young children’s engagement with information. Underlying many of the accounts of both children and their parents was the influence of parents’ beliefs about child development, and the best ways to ensure their children are successful participants in their communities, on the ways in which they reported supporting or restricting their children’s activities. Research in other fields has focused on the ways in which family structure, including but not limited to financial and emotional support, and parents’ beliefs about child development impact children’s daily activities and development (e.g., Lareau, 2003; Pugh, 2009). However, such conversations are only beginning to take place within LIS literature focused on children’s engagement with information. For example, Yip, Gonzalez, and Katz (2018) have examined the ways in which older children and adolescents act as online information brokers for their parents who are immigrants and have limited English language skills. Situating young children’s information practices within the context of their families and broader communities is an area yet unexplored. This dissertation research represents the starting point of taking such an approach to understanding young children’s information practices.

**Young children’s emotions related to their engagement with information.**

This dissertation found that young children experience primarily positive emotions when engaging with information related to their individual interests, as well as some negative and mixed emotions. Prior research that has examined emotions related to engagement
with information, such as Kuhlthau’s (1999) Information Search Process (ISP) model, has focused on older children’s and adolescents’ emotions while completing a school assignment. According to the ISP model, information seekers experience a variety of emotions when searching for information, including uncertainty, optimism, confusion, frustration, and doubt. In this dissertation, the children discussed their emotions related to self-generated information seeking. While the emotions they described were primarily positive, some children did express mixed emotions associated with information seeking, and their parents identified negative emotions such as frustration and confusion when their children engaged in information use. The limited descriptions of emotions that young children experience when engaging with information related to their interests, particularly when moving beyond information seeking to information use, make it difficult to draw firm conclusions about the differences between emotions experienced during an imposed query and those experienced during instances of self-generated information activities; however, the predominance of positive emotions in young children’s descriptions indicate that the emotions experienced during self-generated information activities may be more positive than those experienced during imposed information activities, though not without the possibility for negative emotions such as frustration or confusion.

**Theoretical Implications**

The findings of this dissertation research highlight the utility of the theoretical frameworks chosen in understanding young children’s engagement with information, not only in the context of their individual interests but in any area of their lives. These
include those theories related to information specifically, as well as theories related to children’s learning and development.

By using the framework of information experience, young children’s own perspectives of what is informing and how that information is incorporated into their activities has broadened conceptualizations about these activities beyond those areas that have been studied by LIS researchers to date. The childhood studies approach similarly allowed for new ways of understanding children’s engagement with information to come through, by positioning children as experts of their own reality and not relying simply on reports from their parents, teachers, or other adults.

The children’s descriptions of their engagement with information related to their individual interests highlight the ways in which the red thread of information is truly interwoven into their everyday lives. That is, information is a part of many of the activities in which they participate on a daily basis, from time spent watching Netflix to making unboxing videos to caring for the family dog. Situating young children’s engagement with information within the lens of ‘information in social practice’ allows this red thread to be seen clearly.

Additionally, the theories of guided participation and interpretive reproduction offer a more holistic approach to understanding young children’s engagement with information than those theories that have been used in prior research. Situating young children’s information practices as part of their “changing participation in the socio-cultural activities” of their communities (Rogoff, 2003, p. 110) allows for many of children’s activities to be seen as part of their information practices. The children in this dissertation research described engaging in observation and direct participation,
interactions with others, and engaging in community narratives and routines as part of their information practices, all activities described by Rogoff (2003) as ways in which children learn to become part of their communities. The people children described as contributing to their engagement with information include teachers and parents, but also siblings, cousins, friends, and peers. Children also described “face-to-face and side-by-side interaction as well as more distal arrangements of people’s activities” (Rogoff et al., 1995, p. 46), emphasizing that children’s engagement with information does not happen in didactic settings alone. The findings of this dissertation research also highlight the importance of the routine, mundane activities in daily life, as well as what Rogoff (1990) terms “passing moments of shared activity” (p. 17).

Together, these theoretical frameworks enable young children’s engagement with information to be understood in a way that does not focus on their shortcomings due to their developing competencies and abilities, but rather highlights the many ways in which they are already engaging with information in varied and sophisticated ways. By allowing the children to articulate the ways in which the red thread of information is interwoven into the activities they engage in related to their interests, this dissertation research broadens our understanding of young children’s engagement with information substantially.

This dissertation makes important theoretical contributions to LIS, including:

- Broadening conceptions of information and information activities.
- Examining young children’s engagement with information from an asset-based, rather than deficit-based, approach.
• Demonstrating the utility of socio-cultural theories of child development to understanding children’s engagement with information, including considerations of the multiple communities to which children belong and the ways in which these communities may impact children’s engagement with information.

**Practical Implications**

The findings of this dissertation research have important implications for those working with children in information institutions, including public and school libraries and museums, as well as those who participate in teaching and training of future information professionals.

Firstly, and most importantly, this dissertation research demonstrates that using a child-centered approach to understanding young children’s engagement with information is possible. Such child-centered research is one of the three elements that Agosto (2013) identifies as essential to providing youth-centered library services, an approach to librarianship that takes “the behaviors, thoughts, and preferences” of youth into account (p. 48). Incorporating the results of research that directly involves children as research participants is the second element of youth-centered librarianship, and the direct participation of youth in designing library services is the third (Agosto, 2013). Although Agosto (2013) writes about youth-centered librarianship, her ideas can be extended to services for children in early and middle childhood as well. As shown by this dissertation and other previous studies (e.g., Barriage 2016b), research that directly solicits the thoughts and perspectives of young children related to their engagement with information can be conducted, and is not the exclusive territory of fields such as childhood studies. If
such research can be and is conducted by researchers in LIS, the findings of such research can then be incorporated into the education and professional practice of librarians and other information professionals who work with children.

The fact that such research can be conducted by researchers shows that a similar approach can be taken by practitioners in incorporating children’s thoughts and perspectives into the design of library services for young children, not just older children and adolescents. Examples of providing child-centered library services include facilitating children’s direct participation in collection development (Plemmons, 2017) and planning and implementing events and programming (Wilson, 2018). One means through which this can be accomplished is through children’s advisory boards (e.g., Gregory, 2015; Moore, 2012). Although teen advisory boards are widespread in libraries across North America, children’s advisory boards are much less common, particularly those that include involvement from young children. Activities such as those used in child-centered research can be used in seeking young children’s ideas on improvements to library programs and services, using either a children’s advisory board approach or a less structured means of obtaining feedback from young children who frequent public and school libraries. For example, apps such as PixStori could be used in obtaining feedback from children of a range of ages about their thoughts on library spaces, collections, and services. Such an approach can also be incorporated into LIS education by incorporating the guiding principles and examples of child-centered library services into courses that focus on children’s services and materials.

Secondly, this dissertation demonstrates that young children enjoy engaging with different types of information about a variety of topics using diverse information sources.
Libraries should continue to provide access to materials about a wide range of topics in diverse formats. These materials should include media and technology sources in addition to, not in place of, more traditional materials such as books. Although several libraries have been proud to announce their move away from physical to exclusively digital collections (e.g., Chappell, 2013; Shammas, 2016; Strauss, 2012), the young children in this dissertation research articulated their engagement with print materials in addition to the media and technology they used in their everyday lives. Notably, e-books were not a prominent source of information described by the children or their parents. Additionally, this dissertation lends support for the incorporation of experiential learning opportunities in libraries, museums and other information institutions (e.g., Caputo & Estrovitz, 2017; Ecker & Mostow, 2015; Marsh et al., 2017; Piscetelli & Penfold, 2015), in addition to the types of programming and services already on offer. Again, these ideas can be incorporated into both LIS education and professional practice.

And finally, the theoretical frameworks used in this dissertation lend support to the power afforded by understanding young children’s engagement with information as part of information in social practice, and understanding children’s actions as embedded within family, peer, and other community cultures. For example, this means moving away from an understanding of information literacy as a set of skills to be learned, and instead understanding information literacy as part of sociocultural practices (Lloyd, 2007, 2012). Such an approach would enable those working with children to view children’s engagement with information from an asset-based, rather than deficit-based, perspective, underscoring the ways in which children are already involved in the critical selection, evaluation, and use of information sources in their everyday lives that align with the
practices of the peer and adult communities to which they belong. Instead of working towards making children conform to prescribed standards of engaging with information, professionals could instead seek to understand and better support children’s already existing information practices. Such a shift in understanding information literacy would be greatly supported by a corresponding shift in the ways in which information literacy is taught in LIS education and subsequently put into practice by LIS professionals.

Reflection on Methodology

The limitations of the research methods used in this dissertation research were addressed in Chapter 4. Briefly, these included the homogeneity of the participants in terms of race/ethnicity, income, and education levels; the potential influence of the topic of the picture book used in the book discussion on the children’s reports of their own interests; possible parental involvement in the creation of the children’s PixStoris; possible influence of parents’ presence during the researcher’s conversations with the children; and the lack of resources available to establish intercoder agreement. Although there were limitations of the methods chosen for use in this dissertation research, as the depth of the findings of this study demonstrate, there were also many strengths, including those identified in Chapter 4 in the rationale for selecting the specific data collection methods. Several of these strengths warrant further discussion within the context of this study.

One of the greatest strengths of this dissertation research was the use of multiple methods of data collection. In addition to combining both parents’ and children’s perspectives in constructing an understanding of young children’s information practices, the multiple methods of collecting data directly with children enhanced their participation
in the research process. Children who were uncomfortable or not interested in one method of data collection were more engaged in the other methods used. For example, Rarity talked very little during the book discussion and poster activity and, during the photo-elicitation conversation, asked “how much more minutes” she had to keep talking with the researcher. However, she made more PixStoris than nearly all of the other participants, and the audio components of her PixStoris were much longer and more detailed than those created by the other children. Star, on the other hand, was extremely enthusiastic during the book discussion and poster activity, but only created five PixStoris and seemed very uninterested in subsequently discussing them with the researcher. By using multiple methods of data collection, the children’s participation in the research process was not significantly hindered if the children were not engaged in any given method.

Additionally, meeting with the researcher on multiple occasions allowed those children who were particularly shy or nervous time to get used to interacting with the researcher and sharing their thoughts about their interests and information activities. For example, Elsa was extremely nervous when first meeting with the researcher and at the beginning did not want to complete the poster activity. However, she made the most PixStoris out of all of the children, and was much more comfortable talking with the researcher during their second meeting. Several of the other children also appeared more at ease with the researcher during the photo-elicitation conversation, as compared to the initial conversation with the book discussion and poster activity. By allowing the children opportunities to interact with the researcher over time, their participation was enhanced.
The poster activity and the PixStori app also proved to be successful methods of data collection on their own, in addition to the strengths they provided when used together. The poster activity provided substantial structure to the initial conversation between the researcher and the children, facilitating quite lengthy conversations about the children’s information wants and information activities as compared to the initial conversations with the children in the pilot study. The poster, which the children took home after completing the activity with the researcher, also appeared to function well as a reminder for the children of the PixStori task. The children’s PixStoris were much more closely related to the conversations the children had with the researcher than was the case in the pilot study before this activity was introduced. Additionally, the PixStori app enabled the children to have more control and ownership over the research process, helping to solidify their role as experts on their own reality.

This dissertation research makes important methodological contributions to the field of LIS, by demonstrating:

- That young children can be direct participants in research concerning their own experiences.
- The usefulness of task-centered activities in LIS research with children (Barriage, 2018).
- The utility of book discussions, the poster activity, and the PixStori app, data collection methods not previously used in LIS research; these methods have demonstrated utility in investigating the ways in which individuals experience their own engagement with information, and have the potential to be used with participants of all ages, with the appropriate modifications.
**Recommendations for researchers.** The following are a list of recommendations for researchers interested in working with young children, based on the researcher’s experiences in completing this dissertation research. These recommendations primarily focus on establishing trust and comfort with the child participants throughout the research process, which in turn allows for the elicitation of rich descriptions of children’s experiences:

- Pilot specific methods of data collection in order to determine suitability for the chosen age group and specific research questions under investigation.

- Involve children from the very beginning of the parental consent process, explaining the study and expectations of their participation jointly to both children and their parents.

- Invite children to assist in setting up and turning off any video- or audio-recording equipment (Carey, McKechnie, & McKenzie, 2001).

- Incorporate an “ice-breaker” activity in the beginning of the research interaction (some type of low-stakes interaction between the child and the researcher that gives the child time to become more comfortable interacting with the researcher).

- Treat children’s responses with seriousness and respect; this is crucial at all times, including in any interactions that involve both the children and their parent(s).

- Respect children’s decisions to not participate in any given aspect of the research study.

- Encourage parents to document their perceptions of any research activities that occur without the researcher present; for example, keeping a record of how often
children mention the assigned research task, how often they engage in that task, and how much and in what ways parents or siblings contribute to the task.

- Avoid group interviews with young children who do not already know each other and/or are of different ages.

**Dissemination of Research Findings**

Part of children’s ownership over the research process can be seen in the children’s ideas for disseminating the research findings. Seven children suggested that the researcher share the PixStoris they created by showing the PixStoris to other people, either by playing them on the iPod or showing them physical copies of the images. Era suggested showing other people the recording of her photo-elicitation conversation, and then held up each of her pictures one by one in front of the video camera, stating clearly what was in each picture (see Figure 29).

![Figure 29. Era showing one of her PixStoris to the video camera](image)

In addition to sharing their PixStoris, some of the children also discussed sharing information about their interests with other people. For example, Alex stated, “you could tell them that these are the things that I like and show them the pictures that are the same
in a way. You can tell them about the picture so they know what I like.” Steve suggested that the researcher could share what she has learned about the children and their interests by “[telling] them all the things I told you . . . The same way I told you,” by sitting with someone and talking with them.

These ideas will be taken into account in disseminating the findings of this dissertation research in multiple venues and formats. Possibilities for future publications and presentations include: an exhibit of the visual components of the children’s PixStoris with accompanying transcripts of the audio components at a conference or other venue; a conference presentation featuring both the visual and audio components of the children’s PixStoris, allowing the children’s voices to literally be heard; and a journal article that focuses in-depth on one or two children, highlighting the ways in which the data collected from all stages of the research process come together to build a holistic understanding of their information practices.

**Future Research Directions**

This dissertation research sets the foundation for future work concerned with children’s everyday life information practices. Specific methodological considerations and areas of inquiry to be addressed in future research are briefly outlined below.

First, future research concerned with exploring children’s everyday life information practices should make an intentional effort to recruit a diverse sample. The findings of this dissertation research reflect the experiences of children from predominantly white, high-income, and highly educated families. The ways in which the experiences of children from different socio-economic and racial/ethnic groups may be different from the experiences of the children in this dissertation research is unknown.
However, previous research has indicated that children’s access to and use of media and technology may vary according to these demographics (e.g., Common Sense Media, 2017). Additionally, research with teen and adult populations of different racial/ethnic groups, education levels, and socio-economic groups has found differences in their information practices (e.g., Buchanan & Tuckerman, 2016; Chatman, 1996; Robinson, 2014; Savolainen, 2008). The findings of these two areas of research indicate that the information practices of children from diverse groups may similarly show variation due to demographic differences.

Additionally, the inclusion of older children and adolescents as co-researchers in studying young children’s everyday life information practices will be incorporated into future research. Older children and adolescents can contribute to formulating specific research questions, designing and implementing data collection methods, analyzing and interpreting data, and disseminating research findings, and may be better positioned to develop an appropriate research approach and establish rapport with younger children than an adult researcher (Alderson, 2001, 2008; Dahl, 2014). Including youth as co-researchers also has the advantage of contributing to their confidence and skills while learning more about the experiences of younger children (Alderson, 2001, 2008).

In addition to these methodological aspects, future research will explore three specific areas of inquiry: perceived public and school library support for children’s information activities, children’s use of voice-activated virtual assistants in the context of reference services, and young children’s digital content creation practices. First, the ways in which characteristics such as gender, socio-economic status, race/ethnicity, and geographic region impact the ways in which young children engage with information and
technology in their everyday lives will be explored, including the ways in which children from these diverse groups perceive public and school libraries as places of support for their information activities. Second, the ways in which children make use of voice-activated virtual assistants for reference queries will be examined, and the ways in which this might be incorporated into library reference services will be considered. Previous research focused on other modes of virtual reference has demonstrated that the convenience (Connaway, Dickey, & Radford, 2011) and lack of intimidation (Connaway & Radford, 2010) that these services provide are important to adolescent and adult users of these services; the characteristics of voice-activated virtual assistants that may make their use in children’s reference services in a library context valuable have yet to be explored. And third, young children’s digital content creation practices will be investigated, specifically in relation to the creation of YouTube-inspired videos such as those described by Rosabella and Daisy’s mom. Both Rosabella and Daisy engaged in digital content creation activities but did not share the products of these activities with people outside of their families, opening up compelling questions regarding their information use and sharing practices. While previous research in LIS has examined older children and teen’s digital content creation practices (e.g., Harlan et al., 2012, 2014; Koh, 2013), this phenomenon has yet to be studied in early childhood.

And finally, future research should continue to explore the applicability of the theories of guided participation and interpretive reproduction to the study of children’s information practices. As outlined in the previous section, these frameworks enable children’s engagement with information to be understood in a way that focuses on their competencies and agency, rather than taking a deficit-based approach as is evident in
much of the literature related to children’s information practices and information literacy. Future research exploring the ways in which children’s engagement with information can be examined through the community, interpersonal, and personal planes of analysis would be particularly fruitful, including an examination of the influence of relevant social policies on young children’s engagement with information.

**Conclusion**

Few researchers in LIS have focused on the ways in which young children engage with information in their everyday lives. This dissertation research contributes to the field of LIS by making major theoretical and methodological contributions, with implications for researchers, practitioners, and educators. The findings of this research have added depth and breadth to our understanding of young children’s information wants and information activities, the specific challenges and enablers that impact their engagement in information activities, and the emotions they experience when engaging with information, as articulated by the children themselves. In addition to contributing to the literature on children’s engagement with information, the findings of this study demonstrate the usefulness of incorporating child-centered research methods in studies of young children’s experiences, as shown by the rich data collected that brings children’s voices to the fore in discussing their information practices. As Lundh (2016) notes, the childhood studies approach to research with children has the potential to “allow information science to create more nuanced and less static descriptions of and knowledge about children and the conditions within which they perform their information activities” (Discussion and conclusion, para. 4). By taking such a child-centered approach, this
dissertation gives new insight into the ways in which the red thread of information is interwoven throughout children’s day-to-day activities.
Appendix A: Recruitment Flyer

Volunteers Needed
For Research Study on Young Children’s Interests

Who can participate?
Kids 5-7 years old who have an individual interest & their parents
An individual interest is a long-lasting preference for a specific topic or activity

What will we be asked to do?
Kids who participate in the study will be asked to:
• Read a book & answer some questions about their interests
• Borrow an iPod & use the PixStori™ app to take pictures & record messages about things related to their interests
• Talk about these pictures with the researcher

Parents who participate in the study will be asked to:
• Fill out a short survey about their kid’s interests
• Answer questions in an interview about their kid’s participation in the research study

What will we receive in return for participating?
Kids who participate in all parts of this research project will have their name entered in a draw to win a NEW iPod Touch

To sign up for the study or for more information, contact Sarah Barriaghe at sarah.barriaghe@rutgers.edu

This flyer was approved by the Rutgers University Institutional Review Board for the protection of Human Subjects on 8/2/17, approval expires on 10/2/17.
Appendix B: Consent Forms and Assent Scripts

Informed Consent Form

You are invited to participate in a research study that is being conducted by Sarah Barriage, a doctoral candidate in the Library & Information Science Department at Rutgers University. The purpose of this research is to learn about the ways in which children between 5 and 7 years of age think about and engage with information related to their individual interests. Part of this study also includes learning about the perceptions that parents/caregivers have about their children’s behaviors related to their individual interests.

Study Procedures

The study procedures include completing a questionnaire in which you will be asked questions about your child’s behavior and about some characteristics of your family at the beginning of the research study, and participating in an interview at the end of the research study in which you will be asked questions about you and your child’s involvement in the research study. Approximately 20 to 30 parents/caregivers will participate in the study, and each individual's participation will last approximately 45 minutes (about 30 minutes to complete the questionnaire and 15 minutes for the interview).

Confidentiality

This research is confidential. Confidential means that the research records will include some information about you and this information will be stored in such a manner that some linkage between your identity and the response in the research exists. Some of the information collected about you includes information related to your family and your child who is also participating in this study. Please note that we will keep this information confidential by limiting individual's access to the research data and keeping it in a secure location.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept for at least (3) three years.

Risks and Benefits

There are no foreseeable risks to participation in this study. There is no direct benefit to you; however, your participation will help in assisting the researchers understand how young children find, use, and share information about their interests. If you are interested in receiving the published results of our study you may contact one of the researchers listed below.
**Voluntary Participation**

Participation in this study is voluntary. This means that you may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

**Contact Information**

If you have any questions about the study or study procedures, you may contact myself at sarah.barriage@rutgers.edu or you can contact my advisor, Dr. Ross Todd, at rtodd@rutgers.edu, 4 Huntington Street, New Brunswick, NJ 08901, 848-932-7602.

If you have any questions about your rights as a research subject, you may contact the IRB Administrator at Rutgers University at:

Rutgers University, the State University of New Jersey  
Institutional Review Board for the Protection of Human Subjects  
Office of Research and Sponsored Programs  
Liberty Plaza / Suite 3200  
335 George Street, 3rd Floor  
New Brunswick, NJ 08901  
Tel: (732) 235-2866  
Email: humansubjects@orsp.rutgers.edu

You will be given a copy of this consent form for your records.

________________________________________________________________________

Sign below if you agree to participate in this research study:

**Subject Name (Print) ______________________________**

**Subject Signature ______________________________ Date _________**

**Investigator Signature ______________________________ Date _________**

This informed consent form was approved by the Rutgers University Institutional Review Board for the protection of Human Subjects on October 11, 2017; approval of this form expires on October 10, 2018.
Parental Informed Consent Form

Your child is invited to participate in a research study that is being conducted by Sarah Barriage, a doctoral candidate in the Library & Information Science Department at Rutgers University.

Purpose of the Research Study

The purpose of this research is to learn about the ways in which children between 5 and 7 years of age think about and engage with information related to their individual interests. An individual interest is a lasting preference for certain topics or activities. Many children have individual interests that they engage with on a regular basis. Some examples of the types of things children have an interest in include specific activities like sports or games, topics like bugs or dinosaurs, or media like Pokémon or My Little Pony. These are just some examples of the many things that children might have an interest in.

Research Study Procedures

Your child will be asked to participate in a number of activities as part of this research study.

The activities that your child will be asked to participate in include:

- **Book discussion:** The researcher will read a book aloud to your child, and will then ask your child some questions related to the book and his or her own life experiences. This part of the research study should take about thirty (30) minutes.
- **Demonstration of PixStori app:** The researcher will show your child how to use PixStori, an app that allows you to take a picture and then record an audio-message to accompany that picture. This part of the research study should take about ten (10) minutes.
- **Creation of PixStoris:** The researcher will lend your child an iPod Touch. Your child will be asked to take pictures of things related to his or her individual interest, and to record an accompanying audio-message explaining what they have taken a photo of and why. These PixStoris will be uploaded to a web portal. This part of the research study will take place on your and your child’s own time over a one-week period.
- **Conversation about PixStoris:** After you and your child have uploaded his or her PixStoris to the web portal and have returned the iPod Touch to the researcher, the researcher will ask your child some questions about the PixStoris he or she has created. This part of the research study should take about thirty (30) minutes.

The book discussion and the conversation about PixStoris will be audio and/or video recorded.

Twenty to thirty children will be asked to participate in this research study.
Potential Discomfort or Risk

Your child may feel mildly nervous or self-conscious during this study. Your child will not have to answer any question he or she does not want to. She or he can withdraw from the study at any time.

Potential Benefit

Your child’s participation has the potential to benefit the Social Sciences if the project leads to the presentation or publication of research findings. However, your child may receive no other direct benefit from taking part in this study.

Confidentiality

Any information obtained in connection with this study that can be identified with your child will remain confidential and will be disclosed only with your permission or as required by law. In some situations, it may be necessary for the investigator/researchers to break confidentiality. If your child threatens to harm him or herself or another person or report any incidents of child or elder abuse (or if it is strongly suspected), then the investigator is required to notify the appropriate authorities.

The interviews will be videotaped and/or audiotaped. Please note that we will keep this information confidential by limiting individuals’ access to the research data and keeping it in a secure location. Videos and transcripts will be maintained on a password-protected computer and will not contain your child’s personal information. Data will be accessible only to research project staff for research and educational purposes. When results of the research are published or discussed at conferences, no information will be included that would reveal your child’s identity. No identifying information, such as your child’s name, home address, or phone number will be given to anyone.

Voluntary Participation

Participation in this study is voluntary. Your child may choose not to participate, and he or she may withdraw at any time during the study procedures without any penalty.

Contact Information

If you have any questions about the study or study procedures, you may contact myself at sarah.barriage@rutgers.edu or you can contact my advisor, Dr. Ross Todd, at rtodd@rutgers.edu, 4 Huntington Street, New Brunswick, NJ 08901, 848-932-7602. If you have any questions about your rights as a research subject, you may contact the IRB Administrator at Rutgers University at:

Rutgers University, the State University of New Jersey
Institutional Review Board for the Protection of Human Subjects
Office of Research and Sponsored Programs
You will be given a copy of this consent form for your records.

Name of child: __________________________ Age of child: __________

Name of parent: __________________________________________________________________________

Please check either ‘yes’ or ‘no’ for each of the following statements:

I agree to allow my child to participate in this research study:

☐ Yes ☐ No

I agree to allow my child to be audio- and/or video-recorded as part of this study:

☐ Yes ☐ No

I agree to allow the audio- and/or video-recordings of my child to be used in sharing the research findings with others, with identifying information such as my child’s name removed (this could include, for example, conference presentations, publications, or the researcher’s website):

☐ Yes (audio and video) ☐ Yes (audio only) ☐ No

I agree to allow photographs of my child to be used in sharing the research findings with others (this could include, for example, conference presentations, publications, or the researcher’s website):

☐ Yes ☐ Yes (only if my child’s face is blurred out) ☐ No

I agree to allow photographs that my child takes to be used in sharing the research findings with others (this could include, for example, conference presentations, publications, or the researcher’s website):

☐ Yes ☐ Yes (only if identifying features are removed) ☐ No

Parent Signature ___________________________ Date _______________

Investigator Signature ___________________________ Date _______________

This informed consent form was approved by the Rutgers University Institutional Review Board for the protection of Human Subjects on October 11, 2017; approval of this form expires on October 10, 2018.
Book Discussion and Poster Activity

My name is Sarah and I’m a student at Rutgers University. I’m working on a project and would like your help in finding out about the types of things that kids like and how they find out new things about the things they like. Today I have a book to read with you and then I’d like to ask you some questions about the book and about your own interests. And then we can make a poster together about your interests. If you don’t want to answer any of the questions that’s okay – you can say no to any question you don’t want to answer.

Would you like to help me with my project and read a book with me and answer some questions? Is it ok if I use my video camera to record us talking?

Individual Photo-Elicitation Interview

You borrowed one of my iPods and made some PixStoris about your interest at home and maybe other places too. You shared some of your PixStoris with me and I have them here with me today. I’d like to look at them with you and ask you some questions about them. If you don’t want to answer any of the questions that’s okay – you can say no to any question you don’t want to answer.

Would you like to look at your PixStoris with me and talk about them? Is it ok if I use my video camera to record us talking?

Is it okay if I share your PixStoris with other people?
Appendix C: Parent Survey

In this research study, we are interested in learning more about your child and his or her individual interests. An individual interest is a sustained preference for certain topics or activities.

Many children have individual interests that they engage with on a regular basis. Some examples of the types of things children have an interest in include specific activities like sports or games, topics like bugs or dinosaurs, or media like Pokémon or My Little Pony. These are just some examples of the many things that children might have an interest in.

Please answer the following questions about your child and his or her individual interest.

1. Please describe your child’s individual interest.

2. What type of activities does your child engage in related to his or her interest?

3. How does your child find out new information about his or her interest?

4. What problems or challenges, if any, does your child encounter in finding new information about his or her interest?

5. In what ways, if any, do you support or assist your child in finding new information about his or her interest?

6. How does your child incorporate this new information into his or her activities?

7. What problems or challenges, if any, does your child encounter in incorporating new information into his or her activities?

8. In what ways, if any, do you support or assist your child in incorporating new information about his or her interest into his or her activities?

9. In what ways, if any, do you encourage your child’s interest? Why?
10. In what ways, if any, do you discourage your child’s interest? Why?

11. What else would you like to share about your child’s interest?

12. Do you have internet access in your home?
   a. Yes
   b. No

13. What types of media and/or technology does your child have access to at home?
   a) Television
   b) Desktop/laptop computer
   c) Smartphone (e.g., iPhone, Samsung Galaxy, Android)
   d) Tablet (e.g., iPad, Microsoft Surface)
   e) Tablet for kids (e.g., LeapPad, Fisher Price)
   f) Video game consoles (e.g., Play Station, Wii, Nintendo DS)
   g) Other (please specify)

14. What types of media and/or technology does your child have access to elsewhere?
   a) Television
   b) Desktop/laptop computer
   c) Smartphone (e.g., iPhone, Samsung Galaxy, Android)
   d) Tablet (e.g., iPad, Microsoft Surface)
   e) Tablet for kids (e.g., LeapPad, Fisher Price)
   f) Video game consoles (e.g., Play Station, Wii, Nintendo DS)
   g) Other (please specify)

   Please specify in what location(s) you child has access to this media and/or technology:

15. In what ways, if any, do you support or assist your child in using media and/or technology? Why?

16. In what ways, if any, do you monitor and/or limit your child’s access to media and technology? Why?
17. How old is your child?
   a. 5 years
   b. 6 years
   c. 7 years
   d. Prefer not to answer

18. What is your child’s gender?
   a. Male
   b. Female
   c. Prefer not to answer

19. What is your child’s race/ethnicity?
   a. White/Caucasian
   b. Asian/Pacific Islander
   c. Latino/Hispanic
   d. African American
   e. Other (please specify) ________________________________
   f. Prefer not to answer

20. What is your race/ethnicity?
   a. White/Caucasian
   b. Asian/Pacific Islander
   c. Latino/Hispanic
   d. African American
   e. Other (please specify) ________________________________
   f. Prefer not to answer

21. What is your relationship to the child?
   a. Mother
   b. Father
   c. Step-mother
   d. Step-father
   e. Grandmother
   f. Grandfather
   g. Aunt
   h. Uncle
   i. Foster parent
   j. Other (please specify) ________________________________

22. How many children live in your home?
23. What is the main language spoken every day in your home?
   a. English
   b. Spanish
   c. Other (please specify) ________________________________________

24. What is the total income for your household?
   a. Under $20,000
   b. $20,000 - $29,999
   c. $30,000 - $39,999
   d. $40,000 - $49,999
   e. $50,000 - $69,999
   f. $70,000 - $99,999
   g. $100,000 - $149,999
   h. $150,000 or more
   i. Prefer not to answer

25. What is the highest level of education that you have completed?
   a. Eighth grade or less
   b. Some high school
   c. High school graduate
   d. Associate’s degree/technical school
   e. Some college
   f. College graduate
   g. Some graduate study
   h. Graduate degree
   i. Prefer not to answer

26. What is your current work status?
   a. Employed full-time (40+ hours/week)
   b. Employed part-time (less than 40 hours/week)
   c. Self-employed
   d. Unemployed
   e. Retired
   f. Student
   g. Disabled
   h. Stay-at-home parent
   i. Other (please specify) ________________________________________
   j. Prefer not to answer
27. What is your partner’s current work status?
   a. Employed full-time (40+ hours/week)
   b. Employed part-time (less than 40 hours/week)
   c. Self-employed
   d. Unemployed
   e. Retired
   f. Student
   g. Disabled
   h. Stay-at-home parent
   i. Other (please specify) ________________________________________
   j. Prefer not to answer
   k. Not applicable
Appendix D: Activity Prompts and Conversation Frameworks

Outlined below are the activity prompts and conversation frameworks used in the research interactions with the children. The questions were used as a guide, with follow-up questions asked as relevant.

Book Discussion and Poster Activity Prompts

- How do you think Al knew so much about owls?
- Al was really interested in owls for a long time. Is there anything that you’ve been interested in for a long time?
  - What do you know about this interest?
  - What would you like to know about this interest that you don’t already know?
    - What helps you to find out new things about your interest?
    - What stops you from finding out new things about your interest?
    - How does it make you feel when you find out new things about your interests?
  - What kinds of things can you do once you know more about your interest?
    - What helps you to do these activities once you find out something new?
    - What stops you from doing these activities once you find out something new?
    - How do you feel when you do these activities?
PixStori Prompt

Today I am going to lend you an iPod to take home with you to take pictures about your interest. I would like you to take some pictures of how you find out new things about your interest and what you do once you find out something new. What are some ideas of things you could take pictures of [examples could include books, artwork, toys, other people]? What are some ideas of different places where you could take pictures? Remember to ask permission before taking pictures of other people.

After you take a picture, you can record a message to send to me with the picture. You can tell me what is in your picture, why you took the picture, or anything else you want to tell me about what’s in your picture.

Individual Photo-Elicitation Interviews

- Let’s look at the PixStoris that you sent me this week. Do you want to tell me about your PixStoris or do you want to listen to them?
- What is this a picture of?
- What did you want to take a picture of, but you couldn’t?
- What are some things that are the same about these pictures?
- What are some things that are different about these pictures?
- What are some ideas for how we could share these pictures with other people?
How to Make a PixStori

**Step 1:** Open PixStori app.

**Step 2:** Take a new picture OR choose an existing picture.

**Step 3:** Select “use photo”.

**Step 4:** Select the microphone icon to begin recording a message. When finished, select the pause button.

**Step 5:** Save the PixStori by selecting either of the icons highlighted below.
How to Share a PixStori with the Researcher

**Step 1:** Select the “share” icon.

**Step 2:** Select the “Kids Interests” icon.

**Step 3:** Enter your assigned participant number into the email field. Then select “Post”.

**Participan Number _____**

Note to Parents:

Your child has been loaned an iPod Touch for one week in order to create PixStoris to share with the researcher.

Your child has been asked to take pictures related to:
- their interest
- how they find out new things about this interest
- what they do once they find out something new

In the audio recording, your child can describe what is in the picture and why they have chosen to share this picture with the researcher.

In order to share a PixStori with the researcher, the iPod must be connected to Wi-Fi. If you do not have a wireless internet connection at home, you can connect to the internet at the library or other locations that offer free wireless internet.

Please feel free to contact the researcher at any time if you have any questions or problems with the iPod or the PixStori app (email Sarah at sarah.barriage@rutgers.edu or call/text 732-407-3307).

*Please return the iPod to the researcher no later than Monday, May 15th.

Thank you for your participation in this research study!
Appendix F: Screenshot Representations of PixStori App & Web Portal

Screenshot of PixStori App on iPod Touch

Screenshot of Web Portal of PixStoris Uploaded from App
References


Foss, E., Druin, A., Brewer, R., Lo, P., Sanchez, L., & Golub, E. (2012). Children's search roles at home: Implications for designers, researchers, educators, and


