UNDERSTANDING THE INFORMATION SEEKING OF PRE-KINDERGARTEN STUDENTS: AN
ETHNOGRAPHIC EXPLORATION OF THEIR SEEKING BEHAVIORS IN A PRESCHOOL SETTING

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Dissertation Prepared for the Degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

August 2016

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Stewart, Sarah N. *Understanding the Information Seeking of Pre-Kindergarten Students: An Ethnographic Exploration of their Seeking Behaviors in a Preschool Setting.* Doctor of Philosophy (Information Science), August 2016, 127 pp., 17 tables, 2 figures, references, 97 titles.

Although there has been research conducted in the area of information seeking behavior in children, the research focusing on young children, more specifically on pre-kindergarten students, is almost nonexistent. Children at this age are in the preoperational developmental stage. They tend to display curiosity about the world around them, and use other people as a means to gain the information they are seeking. Due to the insistence from President Obama to implement pre-kindergarten programs for all low and middle class children, the need to understand the cognitive, emotional, and physical needs of these children is becoming increasingly imperative. To researchers, the actions displayed by these young children on a daily basis remain vital in determining the methods by which they are categorized, studies, and even taught. This study employed Deci and Ryan's self-determination theory (SDT), Dervin's sense-making theory, Kuhlthau's information search process model (ISP), and Shenton and Dixon's microcosmic model of information seeking via people to lay the theoretical foundational framework. This ethnographic study aimed to fill the age gap found in information seeking literature. By observing young children in the school setting, I gained insight into how these children seek information. The resulting information collected via field observations and semi-structured interviews were coded based on Shenton and Dixon's model of information seeking via people. The findings, in Chapter 5, revealed emerging codes and trends in the information seeking behaviors of pre-kindergarten students.
ACKNOWLEDGEMENTS

I would like to begin by thanking the administration, faculty, staff, and students from the school where I conducted my research. I owe them so much gratitude for opening their doors last minute and allowing me to observe their students. The classroom teacher and teacher’s aide were extremely welcoming and the students were absolutely precious. I thoroughly enjoyed every observation session. I would also like to thank my dedicated committee members, Dr. Figa, Dr. Smith and Dr. Vires for offering sage advice during this entire process. Dr. Figa has been a consummate mentor from early on in my doctoral education. She has been instrumental in my success and cheered me on every step of the way. Dr. Carolyn Thomas and the Westward Expansion Grant through East Central University in Ada, Oklahoma largely made this journey possible. I will forever be grateful to East Central University for their support and the foundation they laid in my undergraduate and Masters degrees.

Personally, I would like to thank my family and friends for the endless support they have provided over the last several years. I would like to begin by thanking my amazing husband, Scott. Scott has been dedicated to encouraging me, listening, reading, and critiquing my work, helping with Emma, and pushing me to finish even when I thought I could not go on. To my precious Emma, your determination, strength, and sweet smile kept me grounded. You are my sunshine sweet girl and I hope I’ve made you proud. My mom and dad have always ensured that I have had every opportunity to pursue my educational goals. Thank you both for cheering me on and helping out when I needed you the most. Dad, this is the best I could do. I have been extremely blessed with the most caring, thoughtful, and encouraging family and friends. I cannot begin to truly express how much their support and love truly means.
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CHAPTER 1

INTRODUCTION

Background of Study

In today’s society, technology is readily available. One can solve a problem, locate an answer, or become an “expert” in a subject within a matter of moments with just a click of a button. Spending hours in a library combing through countless card catalogs and mountains of research books is becoming more of a rarity than a necessity. Information seeking is not only a part of adults’ everyday lives but also important to the ways children discover and process information. Children soak up every ounce of information they can process, and the youngest school-age children, pre-Kindergarten (pre-K) students, continuously develop and hone learning skills as part of producing success in their future education endeavors. Among the subsequent questions involved is how pre-K students seek information and whether or not the school systems properly prepare students to be active information seekers ready for what the 21st century holds.

Information seeking behaviors are integral in understanding the manners in which people discover information unconsciously or seek it out for a specific purpose. “Recent research and theory has shown both adults and children to be information seekers and active problem solvers addressing their evolving information needs” (Borgman, Hirsh, Walter, & Gallagher, 1995). Information seeking behavior in children is a growing area of interest in information science research (Chelton & Cool, 2004; Chelton & Cool, 2007).

The technological expansions of the 1980s and 1990s had major impacts on the need to study the methods by which youth seek information (Cool, 2004). Most of this research
involves systemic research with older children and teenagers. However, according to Shenton and Dixon (2003a), the “use of other people has often been found to be the most frequently employed and most successful method by which youngsters obtain information” (p. 219). Although information seeking behavior has been researched, the area of information seeking in early childhood education, and more specifically, among 4-year-olds, has not been thoroughly investigated. Therefore, this study sought to determine how 4-year-old children in the preoperational developmental stage seek information from teachers, administrators, school librarian, other school staff, and peers in the school setting. By focusing a study on this particular age group, information science researchers as well as professionals in the education field might become better equipped to aid young learners needing to gain proper information seeking skills.

I selected two sources of theory and three information seeking models to strengthen the foundation and applicability of the research. The theories chosen were Dervin’s sense-making theory and Deci and Ryan’s self-determination theory (SDT). The three models selected to guide the research were Kuhlthau’s (1991) information search process (ISP), Dervin’s (2003) sense-making, and Shenton and Dixon’s (2003) microcosmic model of information seeking via people. A review of these models and theories is further explored in Chapter 2, and their methodological applications are explicated in Chapter 3.

Purpose of the Study

The purpose of the study was to determine how 4-year-old children in the preoperational developmental stage seek information from teachers, administrators, school librarians, other school staff, and peers in the school setting. The study involved observing and
investigating the information seeking behaviors of pre-K students in the school setting and
determining if the current information seeking model by researchers Shenton and Dixon
(2003a) was appropriate for examining and categorizing the pre-K students’ information
seeking behaviors.

Observing pre-K students in the school setting provided evidence of their information
seeking behaviors. Information about the types of questions students asked, responses given,
validity questioned, the person being questioned, and type of answer given were recorded and
analyzed. I, as principal investigator, was an active participant observer in the classroom and
immersed in the culture, attitudes, behaviors, and daily routines in which the students
engaged. Using audio and video recordings and field notes to record information seeking
observations, I gained insight into the various methods and behaviors demonstrated by the pre-
K students and the responses given by the teacher and other school personnel.

Personal Reflections

As a former early childhood educator and school librarian, I have been an active
observer and participant in the information seeking of pre-K students. This age group is
particularly inquisitive as they learn about their world and the society in which they live. I
cannot begin to count how many times I would answer why questions asked by students in my
classroom or school library. The preschool students are learning how things work, how they are
supposed to act in a school setting, why certain rules exist, and how to find the answers to the
questions they are asking.

I consider preschool an integral time in the lives of these children. As they inquire about
issues in their lives, they are actively participating in information seeking. They probably cannot
define information seeking or even consciously know what they are doing, but they are learning how to ask questions, who to ask them to in order to receive a desired response, and how questions gain access to their world, which are all the basis of information seeking. Due to my experience as an early childhood educator and school librarian, I understand several aspects about information seeking skills in pre-K students that involve their inquisitiveness, love of learning, and desire to please their teachers.

Problem Statement

Whether information is sought from a dictionary, an Internet search engine, or a parent, information seeking is a part of daily life. Information seeking behavior has proven to be a topic of growing interest in the field of information science in relation to the behaviors seen in children and teens (Bilal, 2005; Bilal & Kirby, 2002; Chelton & Cool, 2004, 2007; Cooper, 2002; Hutchinson, Druin, & Bederson, 2007; Shenton & Dixon, 2003a). Previous researchers focused on older children’s and teens’ information seeking behaviors and the tools created and utilized to aid in the completion information seeking tasks (Bilal, 2005; Case, 2008; Chelton & Cool, 2004, 2007; Cooper, 2002; Godbold, 2006; Hutchinson et al., 2007; Shenton & Dixon, 2003a). Tools involving use of electronic encyclopedias, the Internet, digital dictionaries, and Online Public Access Catalogs support students in their information seeking quests. These tools are useful because they target students who are literate and capable of operating a computer.

Initial information seeking research in children was centered on information systems. “This narrow focus limited the ability to develop a more general understanding of the information-seeking behavior of youth, in and out of the school environment, with or without the use of electronic information retrieval systems” (Cool, 2004, p. 8). As time progressed,
more researchers began to delve into the how and why of youths’ information seeking. While strides have been made in moving from systems oriented to user oriented research, there are still areas of weakness in the body of knowledge that need study (Druin et al., 2003). One area that information science researchers are concentrating on is the emotional processes students experience while seeking information (Bilal, 2005, and Kuhlthau, Heinström, and Todd, 2008).

Because children have emotional skills and needs different from those of adults, Bilal (2005) pointed out children “need to possess not only adequate information-seeking skills but also intelligent affective strategies that will help them cope with its complexity” (p. 198). Kuhlthau, an information scientist, recognized the psychological stages and feelings students undergo during the information seeking process (Cool, 2004). According to Kuhlthau, Heinström, and Todd (2008), “while uncertainty is the most dominant feeling for students in a construction process, the feeling of frustration is related to the actual information search particularly when this becomes challenging” (p. 9).

Shenton and Dixon (2003a) conducted a study that looked into the information seeking behaviors of children 4 to 18 years of age via several different methods. These researchers asked children to recount a time when they needed help, needed to find something out, or wanted to learn something (Shenton & Dixon, 2003a). Based on the information gathered, the researchers developed multiple microcosmic models including one to represent information seeking via other people. Shenton and Dixon claimed to have included 4-year-olds; however, the evidence for the age group was lacking. Their information seeking study, being one of the only ones that claimed to include the 4-year-old age group, opened the door for further research into the area of pre-K information seeking behaviors.
The persistent questioning, which epitomizes interactions with young children, is a method they employ to explore the world and learn about how it works. A nationwide increase in pre-K education has fostered an opportunity to understand how pre-K students seek information and how best to cultivate these skills (Office of the Press Secretary, 2013). Although a number of studies have focused on information seeking behavior in children, unfortunately, very little attention has been given in literature to what information seeking behaviors are displayed by pre-K students and how to properly cultivate information seeking skills in these young children.

Research Questions

In order to examine the information seeking behaviors of pre-K students and determine the validity of Shenton and Dixon’s (2003a) model for this age group, five research questions were developed. The research questions are as follows:

1. Who do pre-K children seek information from in a school setting?
2. How do pre-K students seek information in a school setting?
3. What types of questions do pre-K children ask?
4. What techniques are utilized by school personnel to encourage information seeking strategies?
5. What aspects of Shenton and Dixon’s model for information seeking via people are applicable for pre-K age students?

Pre-Kindergarten Information Seeking Standards

Several states have implemented information seeking goals and objectives into their pre-K state standards. It is interesting to note that even though states have seen the
importance in adding these standards into their pre-K curriculum, there are only a few researchers who are actively studying the information seeking behaviors of pre-K students.

Table 1 dictates a few examples of how states are emphasizing the importance of information seeking in pre-K and how the states assess the desired skill. As seen in Table 1, the desired information seeking skills are mostly related to the child learning to ask questions to receive information; however, Texas connects technology to the standard.

Table 1

**Implementation of Information Seeking in Pre-Kindergarten Curriculum Standards**

<table>
<thead>
<tr>
<th>State</th>
<th>Information Seeking Skill and Desired Behavior Observed</th>
<th>Source</th>
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| Massachusetts    | Develop Information Seeking Strategies:  
  • Ask relevant questions  
  • Recognize when information is needed  
  • Describe specific kinds of information  
  • May be used to solve a problem | Massachusetts School Library Association, 2008, p. 5 |
| North Carolina   | Curiosity, Information-Seeking, and Eagerness  
  Goal APL-1: Children show curiosity and express interest in the world around them.  
  Goal APL-2: Children actively seek to understand the world around them. | North Carolina Foundations Task Force, 2013, p. 8 |
| Pennsylvania     | Ask questions for clarification and to seek meaningful information  
  • Questions are used to understand, such as, “How does that work?” | Pennsylvania Department of Education and Department of Public Welfare, 2009, p. 8 |
| Texas            | Child recognizes that information is accessible through the use of technology.  
  • The child learns new information through interaction with technology | The University of Texas System and Texas Education Agency, 2008, p. 115 |
| Wisconsin        | Asks many questions with “why” to obtain information.  
  • “Where’s my shoe?” to a teacher  
  • “Where do you live?” to a classmate  
  • “When will daddy come home?” to a parent  
  • “What’s inside?” of an object  
  • “Why” questions are asked about things in the environment, stories being read, actions of people or animals, etc. | Wisconsin Department of Public Instruction, 2011, p. 11 |
Definition of Terms

*Information and Information Seeking*

As with most other disciplines, scholars in the field of information science vary on their definition of the term *information seeking*.

A more general definition allows frameworks, theories, and results to be transferred across disciplinary boundaries, and provides for dialogue across these boundaries, while at the same time allowing individual disciplines to focus on the specific information phenomena of their discipline” (Losee, 1997, p. 254).

Before evaluating the plethora of opinions on the definitions of the term *information seeking*, an understanding of the term *information* must be ascertained. According to Case (2008), “information can be any difference you perceive, in your environment or within yourself. It is any aspect that you notice in the pattern of reality” (p. 5). Information can emerge from a variety of sources and in a multitude of forms. Wilson (1981) argued, however, “the problem seems to lie, not so much with the lack of a single definition as with a failure to use a definition appropriate to the level and purpose of the investigation” (p. 2). Wilson elaborated that “confusion” stems from the multitude of ways information is perceived and used in everyday language.

The definition of information seeking is an oft-debated subject among scholars in the field of information science. Case (2008) offered an in-depth view of information seeking and explored several different meanings presented in literature. Case (2008) noted “information seeking is a taken-for-granted concept, a catchall phrase that encompasses a variety of behaviors seemingly motivated by the recognition of “missing” information” (p. 81).

Variations have also been offered. According to Belkin, Marchetti, and Cool (1993), “information seeking behavior is characterized by movement from one strategy to another with
the course of a single search episode” (p. 325). In a different approach, Dervin (2003) defined information seeking “as a process of sense-making in which a person is forming a personal point of view” (p. 326). However, the definition operationalized in the current study to describe information seeking was “any action taken by an individual to address a perceived information need” (Shenton, 2007, p. 320). This definition was broad in scope and encompassed many forms of information seeking.

*Pre-Kindergarten*

Pre-K programs are a staple in today’s educational framework. Pre-K programs are a distinct group of programs designed for ensuring preschool children become ready for success in Kindergarten as well as succeeding academically by Grade 3 of elementary school (Colker, 2008). In 2011-2012, over 1.3 million students were enrolled in pre-K programs in 40 participating states (Barnett, Carolan, Fitzgerald, & Squires, 2012). President Obama issued a challenge in his State of the Union address in 2013 for pre-K programs to be available to all low and middle class families (Office of the Press Secretary, 2013). With this potential increase in numbers comes the need to determine how best to educate young minds. As a rule, stated-mandated pre-K programs engage certified, college-educated teachers (Gormley, Gayer, Phillips, & Dawson, 2005). According to Colker (2008), “All pre-K programs have three characteristics in common. They are (1) governed by high program standards, (2) serve 4-year-olds or sometimes both 3- and 4-year-olds, and (3) focus on school readiness” (p. 22).

*Preoperational Child*

Jean Piaget (1969), a foundational theorist in the field of education, defined and labeled the preoperational child. Characteristics of a preoperational child include the beginning of language, symbiotic function, thought, and representation (Piaget & Inhelder, 1969). According
to Piaget and Inhelder (1969) children at this stage begin “symbiotic play, which is an assimilation of reality to the self and its desires” (p. 129). They pointed out that at the preoperational level, social exchanges are somewhat egocentric and children tend to not provide information about the question used to seek information.

Significance of Research

The information seeking behaviors of pre-K students are important to study for a variety of reasons. With the proliferation of pre-K programs across the nation, understanding children’s cognitive and emotional needs became vital. With several states already implementing information seeking criteria into their pre-K curriculum standards, further investigation into pre-K children’s information seeking behaviors is needed since it has yet to be empirically examined by information science scholars. The importance of filling this gap was critical for developing relevant models for the unique user group of pre-K children. The results might be used to create teaching practices assist educators who develop curriculum for teaching appropriate information seeking skills to pre-K students.

Organization of Study

Chapter 1 detailed the introduction, problem statement, research questions, purpose of the study, significant definition, limitations of the study, and personal reflections. Chapter 2 discusses the review of literature related to the information seeking behaviors of children, the information seeking methods and tools utilized by children, pre-K theories and theorists, major information seeking models and theories, and Texas pre-K standards. Chapter 3 outlines the methodology and research techniques utilized to gather and analyze data in this study. Chapter
Chapter 4 contains the discussion of the analysis of the data and the results. Finally, Chapter 5 concludes the study with a summary, findings, and recommendations for further study.
CHAPTER 2

LITERATURE REVIEW

A review of literature uncovers the history of early childhood education, more specifically pre-Kindergarten (pre-K), and the theorists who assisted in the advancement of this field as well as the information seeking behavior trends, theories, and tools discovered and developed for children over the last several decades. With the increasing attention focused on the need for universal pre-K programs, the need to understand young children and their information seeking behaviors is increasing. This literature review includes an overview of pre-K education, the progression and validity of pre-K education, and the theorists who shaped the foundation of early childhood education.

Information seeking has been a topic of interest in the field of information science for decades. However, researchers and theorists in the fields of education, psychology, and child development have approached this issue using terminology involving questions, curiosity, and inquiry. Overviews of the research regarding the information seeking behavior of children, systems developed to facilitate information seeking, related questioning and inquiry research, and models and theoretical considerations pertinent to the study appear in this chapter.

Pre-K Education and Theorists

Pre-K programs have become essential to educational programs in public schools and necessities for enhancing children’s entering public schools as well as for better preparing children for future educational endeavors. “State pre-Kindergarten programs (also called state pre-K) provide state-funded, classroom-based educational services to young children, typically 4-year-old children, although some states enroll three-year-old children” (Isaacs, 2008, p. 4). In
2013, President Barack Obama addressed the need for a universal preschool, or pre-K, education system. Obama declared:

In states that make it a priority to educate our youngest children . . . studies show students grow up more likely to read and do math at grade level, graduate high school, hold a job, form more stable families of their own. We know this works. So let’s do what works and make sure none of our children start the race of life already behind. (Office of the Press Secretary, 2013, para. 1)

With some small exceptions, pre-K tends to be the earliest opportunity for children to become students in America’s educational system. Pre-K programs can vary in regulations, length, service type, teacher education, etc., but as a rule, state mandated pre-K programs have certified, college-educated teachers (Gormley et al., 2005). According to Pianta, Barnett, Burchinal, and Thornburg (2009), “the field has become one of the most vibrant areas of scientific activity in terms of the connections among scientific advances and theory, program design, policy, and classroom practices” (p. 51). The research activity in this area is uncovering the methods that work for the advancement of these children, and those that only hinder their development. The validity of pre-K programs, both state funded and private, are being examined in order to determine how to formulate curriculum and structure effective programs (Barnett et al., 2012; Barnett et al., 2015; Duncan, & Magnuson, 2013; Gormley et al., 2005).

Gormley et al. (2005) focused on pre-K programs in Tulsa, Oklahoma and showed that students do benefit from early intervention programs like pre-K. Gormley et al. concluded their “research supports the proposition that a universal pre-K program financed by state government and implemented by the public schools can improve prereading, prewriting, and prenumeration skills for a diverse cross-section of young children”( p. 882). Gormley et al. followed both male and female students from multiple ethnicities and socio economic backgrounds and included teacher educational background as a variable. Based on research
from past and current pre-K programs, the National Institute for Early Childhood Education Research (NIEER) developed a 10-point quality standard checklist for evaluating pre-K programs:

- Comprehensive early learning standards
- Lead teacher must have a BA degree
- Lead teacher must have a specialization in early childhood education
- Assistant teachers must have a CDA equivalent
- Teachers must complete at least 15 hours of in-service training each year
- Maximum class size of 20
- Staff-child ration of 1:10 or better
- Vision, hearing, and health screening and referral are required, along with at least one family support service
- At least one meal per day is offered
- Required site visits by state monitors (Barnett et al., 2012)

The Texas pre-K program began in 1985 for children of 4 years of age who were considered at risk (Texas Education Agency, 2008). The state of Texas builds their curriculum around theoretical foundations. The Texas Education Agency (TEA) (2008) stated:

The guidelines are based on current knowledge of theory and scientific research about how children develop and learn; they reflect the growing consensus among early childhood professional organizations that a greater emphasis be placed on young children’s conceptual learning, acquisition of basic skills, and participation in meaningful, relevant learning experiences. (p. 4)

The Texas educational system acknowledged that children need to be in a setting that encourages growth in an appropriate and significant manner. Table 2 illustrates Texas pre-K enrollment statistics from 2014 from The National Institute for Education Research (NIEER). NIEER also assigned the Texas pre-K program with a 2 out of 10 rating in their 2014 quality report. Implementing early learning standards and completing 15 hours of yearly teacher in-service are the only two benchmark criteria that were met by the Texas pre-K program in 2014 (Barnett et al., 2015). The Texas pre-K enrollment falls drastically below the benchmarks in pre-K education standards. According to Barnett et al. (2015), “many states need to raise their
quality standards for pre-K and implement policies to ensure continuous improvement.

Without sufficient quality, programs will not fulfill their promise with respect to children’s learning and development or long term economic returns” (p. 12).

Table 2

*Texas Pre-K Public School Population as Provided by Barnett, Carolan, Squires, Clarke Brown, and Horowitz (2015)*

<table>
<thead>
<tr>
<th>State Statistic</th>
<th>Value</th>
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<tr>
<td>Total state program N</td>
<td>226,226</td>
</tr>
<tr>
<td>Percent of school districts offering state program</td>
<td>85%</td>
</tr>
<tr>
<td>Percent needed to meet Federal poverty level income requirement</td>
<td>185%</td>
</tr>
<tr>
<td>Hours of operation</td>
<td>3 hours/day, 5 days/week</td>
</tr>
<tr>
<td>Operating schedule</td>
<td>Academic Year</td>
</tr>
<tr>
<td>Special education N for ages 3-4 years</td>
<td>23,114</td>
</tr>
<tr>
<td>Federally funded Head Start N, ages 3-4 years</td>
<td>65,211</td>
</tr>
<tr>
<td>State-funded Heat Start N, ages 3-4 years</td>
<td>0</td>
</tr>
</tbody>
</table>

**Early Childhood Theorists**

States, including Texas, turned to the foundational groundwork laid by theorists such as Jean Piaget, Maria Montessori, Friedrich Froebel, John Dewey, and Lev Vygotsky to develop state standards (Texas Education Agency, 2008). These theorists developed the methods and theories used in the expansion of early childhood programs worldwide. Most of these theories involve the childhood action of playing. According to Saracho and Spodek (1995), “classical theories set the stage for a better understanding of play now provided by modern theories, which have attempted to explain both the cognitive and affective functions” (p. 146). The aforementioned theorists are discussed in context to early childhood education, and if
appropriate, by their contributions to the information science, or specifically the information seeking field.

_Friedrich Froebel (1782-1852)_

Friedrich Froebel is an early 19th century German educator. According to Manning (2005), Froebel was driven by the question: "What is the purpose of education?" The answer seemed to derive from his architectural learnings. He saw man in a world filled with objects. Man must interact with these objects and they, in turn, must interact with man” (p. 372). He is undoubtedly known best as the “Father of Kindergarten.” According to Reifel (2011), “[Froebel] believed that children learn to solve problems and think about life, science, and art as they manipulate objects and observe the results of their actions” (p. 62). Froebel’s kindergarten methods consisted of incorporating terms such as _gifts, occupations, and mother’s plays and songs_. Froebel’s gifts consisted of toys such as wooden blocks and balls. Occupations were specific craft activities. Mother’s plays and songs were children’s songs and games that all had symbolic spiritual meaning (Saracho & Spodek, 1995).

_John Dewey (1859-1952)_

Similar to Froebel in the scope of his work, John Dewey was an American born educator who is identifiably one of the most recognized and influential people on America’s education system. Dewey (1989) saw the educational process as having two main aspects: psychological and sociological. Dewey wanted his program to differ from Froebel’s kindergarten, so he called his American version sub-primary (Saracho & Spodek, 1995). According to Mooney (2000), “Dewey believed that the path to quality education is to know the children well, to build their experiences on past learning, to be organized, and plan well” (p. 7). Dewey thought “the only
true education comes through the stimulation of the child’s powers by the demands of the social situations in which he finds himself” (Mooney, 2000, p. 3).

Children’s backgrounds include their home life, people they interact with on a daily basis, culture, and so on should be taken into consideration when designing a learning environment. Another important aspect of Dewey’s pedagogical stance was how he viewed the importance of home on a young child: “School life should grow gradually out of the home life; and it should take up and continue the activities with which the child is already familiar in the home” (pp. 7-8).

Maria Montessori (1870-1952)

Maria Montessori, was trained in science, so “she used observation to determine the needs of children . . . and determined that the problems existed not in the children, but in the adults, in their approaches and in the environments they provided” (Mooney, 2000, p. 22). Montessori “developed a method of early childhood education based on self-chosen activities in a carefully prepared environment that encourages orderly progress from simple to complex tasks” (Papalia, Olds, & Feldman, 2006, p. 8). Montessori believed that in order for children to learn, their surroundings, including the furniture, must be suited to them. “Montessori believed that children learn best by doing, and through repetition” (Mooney, 2000, p. 29).

Another important view of Montessori is the importance of observation. She firmly believed in watching the way children behave and learn, and adjusting the teaching methods and curriculum to what was observed (Mooney, 2000). This method employed by Montessori was utilized in this study of the pre-K students in hopes of learning their behaviors for future educational instruction approaches.
Jean Piaget (1896-1980)

Jean Piaget, a Swiss theoretician, is credited for “what we know about how children think” (Papalia et al., 2006, p. 33). Jean Piaget (1959), a staple in the education theoretical world, defined and labeled preoperational child. Characteristics of a preoperational child include: beginning of language, symbiotic function, thought, and representations (Piaget & Inhelder, 1969). According to Piaget and Inhelder (1969) children at this stage begin “symbiotic play, which is an assimilation of reality to the self and its desires” (p. 129). Piaget and Inhelder also pointed out that at the preoperational level, social exchanges are somewhat egocentric and the children tend to not provide information of asked questions.

“Piaget took an organismic perspective, viewing cognitive development as the product of children’s efforts to understand and act on their world” (Papalia et al., 2006, p. 33). While Piaget had these notions regarding this age group, Cooper (2002) argued “children must rely largely on visual and auditory information [and] they look around and ask questions” (p. 904). Children at this stage are not typically readers; therefore, the information seeking skills they use differ from children in the next developmental stage of concrete operational.

Lev Vygotsky (1896-1934)

Lev Vygotsky, a Russian theorist, saw an importance in the “interaction with teachers and peers in advancing children’s knowledge” (Mooney, 2000, p. 83). One of Vygotsky’s concepts that is still discussed in early childhood development today is the theory of Zone of Proximal Development. “This zone, according to Vygotsky, is where children learn, the area just beyond where they can function independently. Adults and peers interact with children in this zone, “scaffolding” their learning and helping them to reach a higher level of functioning” (Jacobs, 2001, p. 125). The manner in which adults interact with children and their
understanding of how children can be best directed is integral in children’s educational experiences. “Piaget view[ed] play as not simply a product of cognitive development, but as an activity that directly supports the development of children’s cognitive powers” (Saracho & Spodek, 1995, p. 143). Vygotsky believed the play in which children involve themselves to be a direct representation of real-life problems and worries. “Vygotsky described play as children’s make-believe events that are based on real-life events” (Saracho & Spodek, 1995, p. 143).

History of Information Seeking in Youth

Information seeking has been an oft-discussed topic in the information science realm. However, the primary mode was information systems, and adults were the main focus of research. In fact, the history of information seeking by children did not become prominent until the 1980s (Bernier, 2007). The technological explosion of the 1980s and 1990s had a major impact on the need to study the methods by which youth sought information, thereby finding ways to assist them in becoming more adept at utilizing the rapidly expanding numbers of information sources that were becoming accessible to them (Chelton & Cool, 2004).

The focus of the researchers tended to be technology driven and focused more on the performance in relation to the technologies and not the actual information needs of the children (Chelton & Cool, 2004). However, the next decade brought a shift in the way scholars began to research and view information seeking via children. “The research agenda shifted from examining what young people knew and learned to how they learned” (Bernier, 2007, p. xiii). The research tended to examine children or youth primarily in the role of a student and the seeking behaviors solely focusing in relation to schoolwork or library context (Bilal, 2005; Cooper, 2002; Shenton & Dixon, 2003a).
Information Systems Aiding Information Seeking

Information systems play an important role in both school and public libraries. Systems have been created to promote information literacy, information seeking, information dissemination, and so on. Children are not mini adults; they need to have specialized systems developed with their needs in mind. The problem sometimes lies in the lack of attention from system developers in seeking children’s opinions. “It is common for developers of new technologies to ask parents and teachers what they think their children or students may need, rather than ask children directly” (Druin, 2002, p. 1). If a conscience effort is made to focus specifically on what works best for children instead of what adults (e.g., researchers, teachers, and school librarians) think works best for information seeking, then information systems can be designed to support and encourage information retrieval and seeking in more effective ways.

The 20th and 21st centuries brought about a widespread technological explosion that has no doubt spurred the need for information systems development. “A prime use of the Internet within schools is to provide students with access to information on the Web as a resource to support class projects” (Large, Beheshti, & Rahman, 2002, p. 79). Using the Internet can be a useful tool for research related to both school and personal activities. However, the World Wide Web can be overwhelming with the massive amounts of information available at the push of a button. Information systems such as online publicly available access catalogs, electronic encyclopedias, Internet, and digital libraries assist students of most ages in gathering information for personal and academic use. While these systems are effective for assisting students in seeking information for various school projects and personal curiosities,
there is an apparent problem with relying solely on these systems. While all of these methods are useful in aiding the information seeking process, most rely on the ability to read and spell.

Children must have an understanding of the written word to independently use these systems. Pre-K students are, for the most part, nonreaders. Therefore, these technology-oriented systems are difficult for a pre-reading child to utilize effectively. As a result, people represent the most relevant system for pre-K students attempting to seek information.

Pre-K students, for the most part, are just beginning their alphabet recognition. Without the help of an adult or an older student, technology-based information systems are not user friendly to young children. The pre-K age group relies primarily on other people for their information seeking needs. In a way, other people are these children’s information systems. Without the ability to question their peers, educators, family, and other people, pre-K children may be unable to learn about how the world works.

Despite emerging research dealing with information seeking behavior, one area remains relatively unexplored. This unexplored area involves children’s information seeking behavior, and more specifically, why children choose people as their reference sources when seeking out information for their everyday needs. The two major studies found in research literature on this particular approach to information seeking behavior research focused on youth in general (Shenton & Dixon, 2003a, 2003b, 2003c), and in a more focused context, on tweens (Fisher, Marcoux, Meyers, & Landry, 2007). Shenton and Dixon (2003a) noted “practitioners have tended to regard the use of other people as an inferior information-seeking method” (p. 219). Perhaps this observation is one of the reasons research has lagged.

Alternatively, in polling students, Shenton and Dixon (2003a) and Fisher et al. (2007) showed children use peers, teachers, and parents most frequently to seek out information on
everyday problems and activities. Additionally, Shenton and Dixon conducted focus groups and interviews with 188 students aged 4 to 18 years from a rural school in England. They developed a typology of 13 information needs as follows: (a) advice, (b) affective support, (c) consumer information, (d) empathetic understanding, (e) interest-driven information, (f) personal information, (g) preparatory information, (h) reinterpretations and supplementations, (i) school-related information, (j) self-development information, (k) spontaneous life situation information, (l) support for skills development, and (m) verification information (Shenton & Dixon, 2003a). These typologies were discovered among multiple age groups in regards to information seeking via people, so whether or not all these typologies are in agreement with pre-K students’ information seeking needs is yet to be determined. All of the aforementioned systems are being utilized in today’s school libraries with children to promote information seeking.

The Use of Questions and Inquiry with Children

In information science, information seeking is the term commonly used by professionals in the field to discuss the process of looking to find out information about the world around them; however, in other fields such as education, psychology, and child development, the term question or questioning is used (Chouinard, 2007; Eltgeest, 1985; Martens, 1999; Test, Cunningham, & Lee, 2010). Test et al. (2010) discussed how “children’s questions stimulate each other’s curiosity and scientific thinking, while the rich vocabulary encourages language development” (p. 9). Test et al. regarded children’s ability to ask a question and engage in conversation as important to “spoken language, early literacy, cognitive development, social skills, and emotional maturity” (p. 3). A brief historical overview is discussed, along with
productive questions, inquiry, and curiosity and is related to the questioning techniques discussed in the education, child development, and psychology literature.

**History and Description of Questions**

As children encounter problems “with their current knowledge state (a gap in their knowledge, some ambiguity they do not know how to resolve, some inconsistency they have detected), asking a question allows them to get targeted information exactly when they need it” (Chouinard, Harris, & Maratsos, 2007, p. vii). Discussions surrounding the information seeking behaviors of pre-K children are relatively new in the information science field; however, other fields have been interested in the information seeking behaviors of young children for decades. More specifically researchers in the fields of psychology, education, and linguistics have investigated children’s information seeking behaviors (Callahan & Oaks, 1992; Chouinard et al., 2007; Eiser, 1976; Frazier, Gelman, & Wellman, 2009; Gonya, Ruggeri, & Lombrozo, 2007; Ruggeri & Lombrozo, 2014; Sully, 1895; Test et al., 2010).

Theorists have been exploring children’s questioning and conversation techniques for decades. For example, Piaget (1926) examined everything said by two 6-year-old boys during class time for 1 month in order to understand the language behavior of children. Piaget dedicated part of his book to the questioning behaviors of these two boys. Piaget said, “It is well known that the whys which appear somewhere about the age of 3 ... are extremely numerous between this age and that of 7, and characterize what has been called the second age of questions in the child” (p. 98). Piaget did not indulge the answers given to the inquiries these boys had. For Piaget, the children’s “questions and the answers they elicited were not of any actual use to the child; for his purposes, these questions only allowed him to see how the
child was thinking about phenomena in the world, and only that information was relevant” (Chouinard et al., 2007, p. 7).

However, Chouinard et al. (2007) critiqued the studies’ failure to “give information that allows any in-depth analysis of children’s questioning behavior” (p. 10). Researchers in these fields typically refer to their research with the term question-asking (Callahan & Oaks, 1992; Chouinard et al., 2007; Eiser, 1976; Sully, 1895). From the area of psychology, Chouinard et al. (2007) offered an in-depth analysis of preschoolers’ questions over a course of four studies. Chouinard et al.’s main goal was to determine if children’s questions impact their cognitive development by proving the following to be true:

1. Children must actually ask questions.
2. Children must receive informative answers.
3. There must be evidence that the child wants to receive the information they are requesting.
4. The questions children ask must be relevant to cognitive development.
5. We must see evidence that children’s questions help them in some way. (p. 12)

Therefore, questioning techniques such as productive questions, curiosity, and inquiry are detailed below in the role these techniques play in the literature related to questions.

**Productive Questions**

Productive questioning is terminology used by several researchers in explaining how utilizing this type of questioning can lead to understanding by children (Dengler, 2009; Eltgeest, 1985; Martens, 1999). The term productive questions was defined by Eltgeest (1985):

A good question is the first step towards an answer, is a problem to which there is a solution. A good question is a stimulation question, which is an invitation to a closer look, a new experiment or a fresh exercise. The right question leads to where the
answer can be found in the real objects or events under study, where the solution lies hidden. The right question asks children to show rather than to say the answer: they can go and make sure for themselves. I would like to call such questions “productive” questions, because they stimulate productive activity. (p. 37)

Productive questions can, and according to some researchers, should be utilized and modeled by educators to demonstrate the efficacy of proper questioning techniques. While this current information seeking research project did not measure productive versus nonproductive questioning, understanding how teachers assist students in gathering information is integral in developing future models for this age group.

Martens (1999), as a science education professor, wrote on the importance of educators implementing productive questioning into their teaching styles and described six types of productive questioning. Figure 1 shows the six types of questions and examples of how each is used. While some of the productive questioning techniques may be too abstract for pre-K children, it is important to encourage even the youngest students to problem solve and use basic critical thinking skills.

“Productive questions enable teachers to create a bridge between activities and students” (Martens, 1999, p. 25). This bridge helps students better relate to instructional material as they gather information on the topics being discussed (Eltgeest, 1985; Martens, 1999). Eltgeest (1985) identified teachers’ questions as necessary for promoting “children’s activity and reasoning. Questions which do not do this (unproductive questions) are those which ask only about knowledge of words, often for repetition of words given earlier by the teacher or to be found in a book” (p. 45).
Figure 1. Examples of productive questions reproduced from Martens (1999) with permission.

Curiosity

Children are naturally curious as can be observed when spending a day with a 4-year-old to gain insight into his or her innate ability to question various details of everyday life, a fundamental part of every 4-year-old’s day. Early on, children shape their opinions, views, and understanding of the world around them by seeing answers to things that peek their curiosity. “Curiosity is a fundamental human trait. By valuing this natural impulse to learn, the inquiry process can give children the direct feedback and personal experiences they need to shape new and enduring views of the world” (Dyasi, 2000, p. 9). In order to transition curiosity and questioning into meaningful inquiry, teachers must model appropriate inquiry concepts (Conezio & French, 2002; Dyasi, 2000, & Gonya, 2007). Conezio and French (2002) reported:

Young children, like scientists, need to practice the process skills of predicting, observing, classifying, hypothesizing, experimenting, and communicating . . . in this way, children are encouraged to develop the attitude of a scientist---that is curiosity and the desire to challenge theories and share ideas. (p. 3)
Inquiry

Several articles have referenced the National Science Education Standards (1996) and their focus on the importance of student inquiry (Gonya, 2007; Martens, 1999). The National Science Education Standards included the importance of teaching inquiry through science as “students at all grade levels and in every domain of science should have the opportunity to use scientific inquiry and develop the ability to think and act in ways associated with inquiry, including asking questions” (p. 105). While the standards were developed for science education, the argument can be made that these guidelines are beneficial for other disciplines in school. Gonya (2007) argued the following:

Inquiry is a way of teaching that encourages children to learn by exploring ideas and asking questions. Inquiry is also a way of learning—a thinking and hands-on process that involves children in solving problems and discovering how things work. (p. 2)

Inquiry plays a role in information seeking with its link to questioning. Asking questions, or information seeking through inquiry, helps students build the skills necessary to succeed in future school endeavors (Conezio & French, 2002).

Information Seeking Models and Theoretical Considerations

Models and theories serve not only to help guide current research, but also to provide a road map of where to begin future research. While there are multiple information seeking models and theories regarding children’s information seeking behaviors, Dervin’s (1998, 1999), sense-making theory, Deci and Ryan’s self-determination theory (SDT) (1985), Kuhlthau’s (1991) information search process (ISP), and Shenton and Dixon’s (2003) microcosmic model for information seeking via people are particularly relevant to the current study.
Dervin’s Sense-Making

Dervin (1998, 1999), a researcher in the field of information science, developed the Sense-Making model. “In the sense-making characterization, a search for information starts with questions directed at making sense of the situation; communication is central to the process of bridging the gap to reach some kind of information or help desired” (Case, 2008, p. 85). Dervin (1999) offered a unique way of viewing knowledge and information because; she views these terms as verbs. “Information is conceived of as a verb, that is, looking at the ways in which people informationally design and shape their worlds, information may be referred to by expressions such as factizing, emoting, comparing, creating, socializing, and resisting” (Savolainen, 2006, p. 1118).

Dervin’s (1999) sense-making theory, which originally dates back to the 1980s, has been molded and investigated since its inception. Dervin originally intended to apply the theory to the fields of communication and library and information sciences. Dervin demonstrated how an individual creates a bridge to move across the gap to get to an outcome (Godbold, 2006). “The sense-making model centers on a relationship between situations or contexts in which people need to make sense of some problem, gaps in their understanding of how to solve problems” (Julien, 2004, p. 327). Dervin’s sense-making theory is illustrated in Figure 2.
Dervin’s (1998, 1999, 2003) unique approach to viewing knowledge and information as a verb has separated this research from other topics within the information sciences field.

Throughout the literature related to this subject, Dervin’s sense-making theory is often quoted in relation to explaining how students, or children, seek information (Julien, 2004; Meyers, Fisher, & Marcoux; 2007; Todd & Edwards, 2004). Todd and Edwards (2004) researched adolescents and used Dervin’s work to illustrate the constructive process of information seeking. Todd and Edwards’ perspectives were influenced by the “uses/helps, conceptualized in terms of how the individual is helped, facilitated, or sometimes impeded by the information” (p. 355). Todd and Edwards utilized Dervin’s unique method for classifying information and knowledge as verbs.
Meyers et al. (2007) examined the information behavior of tweens, or children aged 10 to 12, using Dervin’s methodology to guide the study and incorporated “Dervin’s sensemaking, micro-moment time line approach” when asking the tweens to recount everyday life information management (p. 312). Julien (2004) discussed several theoretical frameworks about information seeking, including Dervin’s sense-making theory. Julien featured Dervin’s sense-making theory in a study of the information seeking patterns of students in secondary schools who discussed future career possibilities. “Dervin’s sense-making theory provided conceptual categories with which to analyze the views of information seekers on their information seeking” (Julien, 2004, p. 322).

*Deci and Ryan’s Self-Determination Theory*

A theoretical foundation is critical in establishing the direction for any research. Deci and Ryan’s (1985) self-determination theory (SDT) supported the motivational aspects of the information seeking behaviors of children, more specifically, pre-K students. Deci and Ryan (2002) developed the self-determination theory (SDT) which “embraces both an organismic and a dialectical frame-work for the study of personality growth and development” (p. 8). As for the organismic frame-work, Deci and Ryan (2002) conceived individuals as intrinsically motivated active seekers in their environments. “When intrinsically motivated a person is moved to act for the fun or challenge entailed rather than because of external prods, pressures, or rewards” (Deci & Ryan, 2000, p. 56).

Young children are inherently inquisitive about the world around them. “As young children make choices, indicate preferences, problem solve, plan, and initiate, they are making sense of the world around them in a way that can ultimately produce feelings of competence, confidence, and empowerment” (Erwin & Brown, 2003, p. 78). Pre-K students, while having a
structured learning environment, spend sections of their day engaged in free play. “Intrinsically motivated activities are freely chosen by the participant, and choice implies self-determination” (Deci & Ryan, 1985, p. 317).

**Kuhlthau’s Information Search Process**

Kuhlthau (1991) developed a model called the information search process (ISP) after doing multiple studies involving the information seeking behaviors of students. Kuhlthau et al. (2008) developed the Information Search Process model in the 1980s and refined it during the 1990s “as a framework and diagnostic tool for understanding the information search experience in a variety of library and information settings” (p. 1). According to Case (2008), “Kuhlthau’s work was pioneering in several ways, particularly in its attention to the role of affect in information behavior” (p. 74). Kuhlthau (1991) thought it essential that the emotional aspects, or feeling, a searcher goes through, be examined and defined. While Kuhlthau’s research was based in a library setting, Bilal and Kirby (2002) noted “Kuhlthau’s findings suggest that user cognitive, physical, and affective states are a driving force in any information seeking process” (p. 653). Kuhlthau’s model, illustrated in Table 3, particularly influenced the research of information seeking by children (Bilal & Kirby, 2002, 2005; Branch, 2003; Cooper, 2002; Williamson, McGregor, Archibald, & Sullivan, 2009). Therefore the affective, or emotional, aspect of the ISP is integral to studying the information seeking behaviors of pre-K students.
Kuhlthau (1991) researched children’s information seeking behaviors and needs, which accounts for why Kuhlthau’s Information Search Process (ISP) model is often cited in literature related to the information seeking behavior of children. Bilal (2001) referenced Kuhlthau’s ISP when discussing children’s use of web search engines and the process in which children stop their search after their encounter with one page, whether the information is relevant or not. Bilal (2001) summarized Kuhlthau’s findings, noting “that stopping a search is an action that relates to the concept of enough” (p. 131).

According to Kuhlthau (1993), “enough relates to seeking meaning in a quantity of information by determining what one needs to know and by formulating a perspective on which to build” (p. 165). Cooper (2002) addressed Kuhlthau’s ISP in a study of 7-year-old children’s information seeking behaviors. Because Kuhlthau’s ISP is focused on the seeker’s
feelings during the information seeking process, Cooper (2002) suggested that the young children were obviously not as experienced at information seeking as older children or adults, so “one would think that feelings of uncertainty or insecurity during the information seeking process would be even more legion for the very young” (p. 906).

*Shenton and Dixon’s Grounded Model of Young People’s Information Seeking*

Shenton and Dixon’s (2003a) macrocosmic Grounded Model of Young People’s Information Seeking was developed after an investigation studying students in England. Shenton and Dixon evaluated previous literature pertaining to information seeking behaviors of children and discovered four basic model types: instructional, grounded, narrative, and synthesized (Shenton & Dixon, 2003a). Shenton and Dixon then observed students aged 4 to 18 years from rural schools in England. “A life-centered line of questioning was taken in all the dialogues . . . providing stories relating to the needs they had experiences, [then the] informants were asked to recall the action they had taken in response” (Shenton & Dixon, 2003a, p. 9).

Shenton and Dixon’s (2003a) macrocosmic model shows the flow of information seeking behaviors in relation to various forms of media and interactions that include books, CD-ROMs, Internet, and people. The Grounded Model of Young People’s Information Seeking model is illustrated in the Appendix E. This model was particularly fitting for early childhood children due to the fact that children of preschool, or pre-K, age are typically nonreaders, and their primary information source is others, such as teachers, parents, adults, and children. Shenton and Dixon (2003c) explained as follows:

The young child gains much knowledge from “hands on” experiences, such as practical activities, “exploration” with artefacts and the use of toys, games and other playthings. Nevertheless, more unaided methods of finding out are also prevalent. Observation is
particularly common and may be either direct or one step removed, via television. In the very early years at school, little information-seeking behaviour in the generally accepted sense is evident, as the child’s abilities to understand messages that are recorded as information in written form and to engage in detailed question and answer dialogues with others in order to elicit information provided orally are limited. (p. 32)

However, Shenton and Dixon (2003a) reported the “use of other people has often been found to be the most frequently employed and most successful method by which youngsters obtain information” (p. 219). Shenton and Dixon’s model is very detailed and allows for potential manipulation and adaptation within the pre-K classroom setting. Due to the comprehensive nature of Shenton and Dixon’s model, in relation to children, research into the area of information seeking behaviors of pre-K children was influenced by this model.

Summary of the Review of Literature

Pre-K education is a growing sector of the public and private school systems. President Obama’s preschool initiative facilitated the growth of early childhood education across the United States (Office of the Press Secretary, 2013). Although growth in early childhood education occurred, questions remained regarding the efficacy of early childhood education programs and how to apply best practices consistently across every state.

Information seeking in children has been an oft-studied topic in the information science field over the last two decades. The research into the information seeking behaviors of children has largely been focused on the tools utilized in aiding children’s information seeking. Scholars such as: Kuhlthau (1991) and Dervin (1998, 1999, 2003) developed and tested their models and theories reflecting information seeking behaviors.

The models and theories discussed in this chapter influenced the methodological development of the current study. Shenton and Dixon’s (2003a) model established the
framework for observable information seeking behaviors via people. The natural tendency of humans to be motivated by various intrinsic and extrinsic factors as discussed in the SDT was examined during the study’s observation sessions. While this study did not employ the same data gathering techniques as used by Shenton and Dixon, their detailed model provided useful terminology that was adapted in the coding process of the present study.
CHAPTER 3
DESIGN AND METHODOLOGY

Introduction

This ethnographic study was conducted to observe pre-Kindergarten (pre-K) students as they ask questions and engage in information seeking in their school environment. This study used an ethnographic, qualitative approach to observe the types of questions posed by the students, the responses given by their peers or teachers, and the methods by which they sought information in a school setting. Participants were observed as they interacted with their peers, teachers, and other school personnel in their physical school environment. Student information seeking behaviors were recorded using direct observation, field notes, and video recordings of interactions. The data collection method enabled analysis for discovery of patterns, themes, and commonalities amongst the types of questions asked and responses given. The observational data were paired with data obtained from semi-structured interviews conducted with the teacher and teacher’s aide to support the evidence of the students’ observed information seeking behaviors in the school environment. This study addressed the following five research questions:

1. Who do pre-K students seek information from in a school setting?
2. How do pre-K students seek information in a school setting?
3. What types of questions do pre-K students ask?
4. What techniques are utilized by school personnel to encourage information seeking strategies?
5. What aspects of Shenton and Dixon’s model for information seeking via people are applicable for pre-K age students?

Theoretical Foundation and Implementation

As detailed in Chapter 2, Deci and Ryan’s self-determination theory, Dervin’s sense-making theory, Kuhlthau’s information search process model, and Shenton and Dixon’s grounded model of information seeking via other people contributed to the theoretical foundation of this study and are described in the following paragraphs. Self-determination theory (SDT) revolves around the construct of motivation, especially intrinsic motivation. According to Ryan and Deci (2000), “the most basic distinction is between intrinsic motivation, which refers to doing something because it is inherently interesting or enjoyable, and extrinsic motivation, which refers to doing something because it leads to a separable outcome” (p. 55).

Crow (2011) conducted a study with upper elementary students to determine what nurtures intrinsic motivation that leads to information seeking. Crow (2011) employed SDT as a theoretical framework and inferred “that the play life of children is an important contributor to their intrinsic motivation for information seeking” (p. 26). SDT influenced the observations. Observing the children during play centers and watching their interactions without prompting from the adults allowed insight into their own desired information seeking. Discerning how these motivators affected pre-K students’ information seeking behaviors aided in understanding their behaviors and attitudes.

Dervin’s sense-making theory is often cited in the information seeking literature concerning children. Dervin (1998) claimed that “the bottom line of sense-making from its inception has been to find out what users—audiences, customers, patients, clients, patrons,
employees—‘really’ think, feel, want, dream” (p. 39). Dervin centered the theory on a gap in the process of information seeking as the location of the “action in sense-making . . . in communicating; and in the creating, seeking, using, and rejecting of information” (p. 39). Todd and Edwards (2004) discussed the use of Dervin’s sense-making theory in terms of how information is presented in the form of verbs, not nouns, because the user is aided or impeded by the information seeking process.

Kuhlthau’s (1991) information search process (ISP) was developed after multiple qualitative studies involving high school students and college students researching and writing a research paper. Upon analysis, Kuhlthau developed a model to describe the thoughts, actions, and feelings that students encounters during the information seeking process. Kuhlthau’s ISP occurs in six stages: initiation, selection, exploration, formulation, collection, and presentation. ISP has been repeatedly tested to determine its validity to other groups of information seekers. Kuhlthau’s ISP model has been primarily utilized in information seeking research regarding information systems with older children, teenagers, or adults (Bilal, 2005; Bilal & Kirby, 2002; Branch, 2003; Cooper, 2002; Williamson et al., 2009). However, this model has relevance for understanding the affective, or emotional, behaviors of pre-K students in information seeking endeavors.

Shenton and Dixon’s (2003a) grounded model for information seeking via other people laid a significant foundation for this research project. As discussed in Chapter 2, Shenton and Dixon developed their model after an extensive study conducted in a rural school in the United Kingdom. Students aged 4 to 18 years were each asked a question about information seeking. Based on their responses, a grounded macrocosmic model was formed and four microcosmic models were constructed based upon specific information seeking sources. Even though these
researchers claim to encompass all of these age groups and developmental stages, their research failed to differentiate between ages and developmental stages (Myers et al., 2009).

Shenton and Dixon’s (2003a) microcosmic model, the grounded model of information seeking via other people, encompasses many of the aspects of the information seeking behaviors expected to be observed in pre-K students. As seen in Appendix E, this model is very detailed with a variety of terms associated with the information seeking via other people. I was specifically interested in the type of information required, response of person approached, and future action. While some of the model’s categories were not relevant to the study, the model’s comprehensive stance on information seeking by using other people was unique and applicable to the current research.

Research Design

Both ethnographic and qualitative methods were used to research and observe pre-K students in a school setting to determine their information seeking behaviors. According to Reifel (2011), “for nearly two centuries, researchers used their observations and conversations with children to identify new aspects of how children behave in classroom activity, and perhaps more important, to provide new ways educators could reflect on or become conscious of what those activities mean for children’s education” (p. 63). In continuing with this idea, an ethnographic method of research was used in this study to observe the behaviors of children, specifically in the school setting. The research was concentrated on qualitative methods as well. In researching ethnographic and qualitative procedures, LeCompte’s (2000) approach to data collection and analysis closely aligned with this study’s methods.
LeCompte (2000) described the data analysis aspect of research as putting together a puzzle. This analogy was logical due to ethnographic and qualitative research data consisting of many pieces that required careful consideration and analysis for properly assembling them into a meaningful structure. According to LeCompte (2000), “if pieces of data are incomplete or biased, research results cannot provide a complete picture of a program or a good solution to problems” (p. 146). Ethnographic methods have been employed by researchers in the information science and education fields, and the efficacy of these methods for the present research project is presented.

*Ethnography*

During an ethnographic study, researchers typically conduct interviews and transcribe hours of recorded observations. Transcriptions form data and offer an insight into the lives of the culture being studied. According to Schensul, Schensul, and LeCompte (1999), “ethnography is a scientific approach to discovering and investigating social and cultural patterns and meaning in communities, institutions, and other social settings” (p. 31). The researcher’s eyes and ears are the tools of choice when conducting an ethnographic study (LeCompte & Schensul, 2010). These aspects of ethnography create an ideal research platform to use with young children. Research methods such as questionnaires and interviews were not appropriate for pre-K children due to their inability to read, so ethnographic methods involving observations opened the door to observing the behaviors of young children (McKechnie, 2000).

Ethnographic methodology is frequently employed with the research of children in the education and library sectors (Corsaro, 1996; Enochsson, 2005; Lundh & Limberg, 2008; McKechnie, 2000). According to Eisenhart (2001), “present understandings of how language use, peer group dynamics, a school social organization influence the meaning of school work
and affect school achievement have been immeasurably enhanced by the work of an ethnographer” (p. 19). Ethnographic research is also increasing among library and information specialists. Khoo, Rozaklis, and Hall (2012) identified 81 studies utilizing ethnographic methods for libraries or library users in 38 academic sources from 1965 to 2012. Khoo et al. noted an increase in the use of ethnography among library and information science studies over the past five years. Khoo et al. confirmed “a set of core methodological commitments and common research settings . . . suggesting that the studies reported form a coherent and emerging research genre that uses ethnographic methods to investigate libraries, their users, wider social contexts, and the relationships between these phenomena” (p. 86).

McKechnie (2000) offered an example of ethnographic methods in conjunction with library and information science research. McKechnie performed observations of preschool children in a public library setting and made audio recordings and informant diaries while gathering the data. McKechnie detailed the use of audio-recording, participant observation, and diary keeping to ensure the most reliable data collection occurred. While I could not replicate these exact steps due to the host school’s rules, I did perform the participant observer role and employed audio-recording of information exchanges to capture naturally occurring communications. McKechnie (2000) stated “the most important thing about [the] results is that arising from the naturally occurring talk and actions of the children, they reflect library use from the perspective of the children themselves” (p. 72). The results of this study represented the authentic information seeking exchanges preschool students participate in during the school day.
Qualitative Research

Ethnography in and of itself is not solely a qualitative research method; however, this form of exploration research does tend to lend itself more towards qualitative research. According to Bryman (2004), “qualitative research is a research strategy that usually emphasizes words rather than quantification in the collection and analysis of data” (p. 266). Qualitative research has not always been deemed legitimately sound by the academic community; however, in recent years, it has received more credibility and is gaining interest in library and information science research (Bilal & Kirby, 2002; Cooper, 2002; Gross, 2004; Hirsh, 2004; Shenton & Dixon, 2003a; Solomon, 1994). By using qualitative research methods to engage in extensive observation sessions of particular behaviors, questions, interactions, and problem solving strategies, I determined the information needs and behaviors of this group of young children.

Field Notes

“Qualitative observations are those in which the researcher takes field notes on the behavior and activities of individuals at the research site” (Creswell, 2009, p. 181). Field notes are used as a reliable qualitative data collection method. According to Creswell (2009), “in these field notes, the researcher records, in an unstructured or semistructured way (using some prior questions that the inquirer wants to know), activities at the research site” (p. 181). I used an unstructured recording technique for the daily observations of the students during their school day to ensure the collection as much relevant information seeking data as possible. During transcription, the field notes were sorted to narrow the data’s relevance to this particular research project.
Semi-structured Interviews

Semi-structured interviews were utilized to facilitate understanding how the teacher and teacher’s aide perceive pre-K students’ information seeking in the school setting. Semi-structured interviews “are generally organized around a set of predetermined open-ended questions, with other questions emerging from the dialogue between interviewer and interviewees” (DiCicco-Bloom & Crabtree, 2006, p. 215). Semi-structured interviews are one of the most utilized methods for obtaining information in a qualitative study and can either be conducted one-on-one or in a group setting (DiCicco-Bloom & Crabtree, 2006). Semi-structured interviews are readily employed by information seeking researchers to examine how people seek information (Gross, 2004; Julien, 2004; Nesset, 2005). The semi-structured interviews for this study occurred at the staff’s convenience after school. I interviewed the teacher and teacher’s aide individually in order to maintain an open and honest dialogue. Each interview was recorded to ensure that the entire interview would be available for coding and data analysis. Codes from these interviews were compared to codes developed from the observation session data and to the perceptions of the teacher and teacher’s aide. It was important to triangulate the results between the data collection methods because the adults interact with the students on a daily basis and the education professionals have taught this age group for years. The semi-structured interview used in this study is found in Appendix A.

Role of Observer

My roles were researcher and participant observer. “Participant observation is a data collection technique that requires the researcher to be present at, involved in, and recording the routine daily activities with people in the field setting” (Schensul et al., 1999, p. 91). Although I was not specifically employed by the school or hired to educate these children, my
daily presence in the classroom, coupled by the inherent nature of children, created an environment conducive of my role as not only a latent observer but also a participant in their education process. The cooperating teacher and teacher’s aide were made familiar with my background in early childhood education, so my competency and knowledge of the manner in which pre-K students learn and behave was evident.

According to DeWalt and DeWalt (2002), being a participant observer means a “tacit understanding that informs both the form of research, the specific techniques of data collection, the recording of information, and have subsequent interpretation of materials collected” (p. 264). As a participant observer, I tied shoes, helped with centers, engaged in pretend play, ate lunch, answered questions, laughed, and participated in general school activities. However, being a participant observer also opened the door for potential researcher bias, establishing the need to use triangulation techniques during data analysis.

Sample

The sampling frame included one pre-K4 class from a private Christian school in North Texas. This school was chosen in part, due to its geographical convenience as well as the class sizes. Each pre-K4 class comprised of 12 to 15 students versus the 20 to 25 students per class in the public school systems. Lastly, I had acquaintances who knew the administration at this school and could vouch for my professional and educational background. The participants for this study were comprised of boys and girls from one particular classroom. The study involved observing the pre-K students’ interactions and conversations with school personnel and other students as related to information seeking; therefore, the faculty and staff were involved in the observations.
After IRB approval, the lower school principal chose one of the three pre-K4 classes for the observation sessions. A letter of consent was sent home with the students. Due to the age of the children and their inability to read, the signed letter of consent from their parent or guardian was sufficient in obtaining permission. The goal was to have all of the students in the class return their consent forms with parental approval to participate; however, two of the students did not have parental permission to participate. Initially four of the students, who returned approval consent forms, were randomly selected to be observed for this study; however, after the preliminary observational session, I decided that due to two students not being allowed to participate, and the overall structure of the class, it would be more conducive to observe all the students who were allowed to participate. A letter of consent was also obtained from the teacher and teacher’s aide for their input via semi-structured interview and participation with the children. The consent form appears in Appendix B.

Demographics of Population

Participants were students and staff from a private Christian school in a suburban area of North Dallas. The lower school was comprised of Grades pre-K3 through 2. The school, which was associated with a religious group, educated students from 3 years of age through Grade 12. According to the National Center for Education Statistics (NCES, 2012), this school had 1,435 students enrolled in 2011-2012 for Grades Pre-K-12. According to NCES (2012), 84.8% of the student population was Caucasian, 4.9% was Hispanic, 4.5% was Asian, Black was 3.5% Hispanic, and American Indian/Alaskan Indian was 0.2%; additionally, students representing two or more ethnicities were 2.1%. The school was located in a suburban area approximately 20 miles north of Dallas. There were over 270,000 people in this growing city.
with a booming residential and commercial areas. This city was primarily comprised of a Caucasian population (66.9%) making an average annual salary of approximately $80,000 (United States Census Bureau, 2014).

One pre-K class was asked to participate in this study. The children were observed in all aspects of a school environment including the classroom, hallways, library and media center, and cafeteria. Some of the observations were videotaped and recorded for further examination and better accuracy in transcription for data analysis. Data analysis then took place looking for any particular repeated behaviors that the 4-year-olds exhibited when dealing with information seeking situations.

Since this research project centered on a classroom setting with many children who were students for the first time, I desired to begin the school year with the students. Preschool was the first experience most of these students had with any type of school, so the inquisitiveness and distraction of having an observer randomly attending class in the middle of the year with cameras, computers, and recorders was lessened. I along with my recording equipment were considered a part of the normal school surroundings and routines. Due to the observational methods desired for this study, I was a partial participant involved in the day-to-day activities with the students. Walford (2008) reinforced the importance of “building relationships with people, such that teachers and students learn to trust the researcher to the point where they are prepared to allow the ethnographer to observe them with few restrictions and be open about their perceptions and beliefs” (p. 16). Early involvement in the classroom allowed me to gain trust from not only the students but also their parents. I also gained a more intimate look into the lives and minds of the children and attained more accurate observations of the students’ normal daily behaviors.
Confidentiality

Confidentiality was of upmost importance in this research project due to the age of the children and the environment in which they were observed. After initial consent was received by the children’s parents and guardians, each child received an alias using an alphabetical prefix. In the field notes collected and recorded, the participants were recognized exclusively by their aliases. The original consent forms, other paperwork, and video and audio recordings were locked in a fireproof safe for protection of the data and participants involved.

Steps for Implementation

The following procedures were conducted in order to complete the study:

1. I received approval to conduct the research project from the Institutional Review Board (IRB) at the University of North Texas. This IRB application was submitted for a full board review due to the nature of the project and inclusion of minor children.

2. I met with the participating school’s lower elementary principal to deliver and discuss project information as follows:
   a. Semi-structured interview sheet (Appendix A)
   b. Parental consent form (Appendix B)
   c. Participant assent form (Appendix B)
   d. Observation Log (Appendix C)
   e. IRB Approval Letter (Appendix D)

3. I met with the collaborating teacher and consent and assent forms were distributed to the staff and students.
4. Consent and assent forms were gathered. At this time, four students, including two males and two females, were randomly selected from the returned consent forms. The first observation session occurred at the school.

5. The decision was made to observe all of the consented students due to the structure of the school day and restrictions of video and audio recordings by some parents. Observations continued within the school context including the daily classroom, gymnasium, playground, Spanish classroom, art classroom, library, auditorium, etc. Observations were video recorded and research field notes were written. The field notes were transcribed at the end of every observation day.

6. Semi-structured interviews were conducted at the end of the observational period with the cooperating classroom teacher and teacher’s aide. Interviews were audio recorded and transcribed.

7. Observation field notes, semi-structured interviews, and the audio and visual recordings were compiled and entered into NVIVO QSR10 for data analysis.

8. Project duration lasted approximately 3 years from 2013-2016.

Data Collection

Data collection “is an ongoing process involving continual reflection about the data, asking analytical questions, and writing memos throughout the study” (Creswell, 2009, p. 184). Phase 1 of data collection occurred over a period of 14 weeks with a pre-K4 class. Data were collected through the four methods of observation field notes, video recording, audio recording, and teacher semi-structured interviews. I visited the school weekly or biweekly according to the school’s schedule as well as my personal schedule. Observation sessions
began as the school day started at approximately 8:00 a.m. and ended around 2:30 p.m., the
time of day when the students were picked-up from school by their parents.

Initially, I planned to observe four students who had been randomly selected among the
parents or guardians who agreed for them to participate; however, during the initial days of
observation and familiarizing myself with the students, their routines, and waiting on all the
assent forms to be returned, I determined that this plan would not be the most effective data
collection strategy. Due to the small class size and the fact that two students opted out of
participating, I determined recording the questioning and information seeking behaviors of the
remaining 10 students would be more beneficial for ensuring adequate data collection.

Another challenge arose due to some parents being uncomfortable with any recording of their
children, so video recordings were utilized by me with as much careful consideration as possible
to ensure that the students whose parents had objections were not included on recordings.

This particular obstacle initially created a problem, but I adapted and was able to observe a
plethora of information seeking behaviors of pre-K students in a school setting.

The first and most utilized form of data collection was observation field notes. Every
time I performed a school observation, I carried a clipboard with the field note observation
form included in Appendix C as well as blank sheets of paper. These students maintained a
structured daily classroom routine, especially in the morning hours before nap. This structure
allowed me to observe the information seeking behaviors from a variety of students as well as
the teacher’s replies to their inquiries.

I protected the identity and confidentiality of each student by assigning alphanumeric
symbols to represent each particular student. I actively listened for the children’s use of the 5
Ws and 1 H of who, what, when, where, and why and how as well as for other forms of
questioning used to preface an information seeking interchange between a student and another person in the school environment. If appropriate, I added comments to the field note observation logs to add clarity to the notes and facilitate future coding endeavors. After each school observation day, I transcribed the observation notes with my comments to help ensure the authenticity of the information and the exact verbatim information seeking conversations that occurred that school day.

The final form of data collection used in this study was semi-structured interviews conducted with the teacher and the teacher’s aide. Once again, I had originally planned on interviewing the school librarian; however, during observations, I quickly learned that the library media time these students experienced was only for story time, so information seeking skills were not apparent or taught. I made the decision to focus solely on the classroom teacher and the teacher’s aide who were with the students more than any other school personnel.

I conducted the semi-structured interviews after school and at the end of the observation session experience. I sat down with each person individually and used the semi-structured interview guide found in Appendix A to guide the conversation. As mentioned previously, I used an audio recording device for the interviews to be sure the conversation had a more comfortable and natural flow. The audio recorder was allowed me to obtain a verbatim copy of the conversations during the transcription process. Each interview lasted between 30 minutes and 1 hour. The teacher and teacher’s aide did not converse about the interview between the interview sessions. I allowed for open thoughts and discussions. These interviews were transcribed using a service through NIVIVO to ensure greatest accuracy.
Data Analysis and Results

Ultimately, I explored whether or not Shenton and Dixon’s (2003a) grounded model is relevant when understanding the information seeking behaviors of pre-K students in a public school setting. Shenton and Dixon’s (2003) microcosmic model for information seeking via people was utilized as a starting point for discovering the trends and behaviors of the pre-K students. Using the above methods allowed for constant examination of the trends observed, and supports overall validity and reliability. I transcribed the taped and recorded observation sessions, then analyzed them, looking for particular repeated behaviors that did or did not correspond with the indicated model. The transcripts were prepared after each observation session to ensure the best accuracy. Triangulation, intercoder reliability, and coding cross-checks aided in maintaining reliability and validity in the data collection and analysis.

Observations of the pre-K class occurred on a weekly to bi-weekly basis over the course of several months to obtain the information seeking behaviors of the pre-K students. Video recordings as well as field notes from the observation sessions offered the ability to analyze with depth the inquiries of the students as well as the behaviors students exhibited during daily school activities. Creswell’s (2009) data analysis process was utilized to facilitate organization and consistency. According to Creswell (2009), “coding is the process of organizing the material into chunks or segments of text before bringing meaning to information” (p. 186). This process allowed for a thorough examination and coding of the collected data to find trends as they emerged.

In this study, the coded information came from data collected via observations, video recordings, and semi-structured interviews. Observation session data were recorded by video or by detailed field notes. LeCompte (2000) described the process of establishing codes within
the data as seeking frequency, omission, and declaration. Frequency refers to any trend noted often in the observation notes, recordings, and interviews. When a particular behavior is expected during a study, but never observed, LeCompte referred to this phenomenon as omission. Declaration is a process by which “items are sometimes identified as present or significant by study participants who tell the researcher they exist” (LeCompte, 2000, p. 148). Data collected through observations and interviews were transcribed, then coded using QSR NVIVO (version 10) qualitative analysis software. This software was utilized to explore trends, manage data, and create visual representations of the information seeking patterns demonstrated by the pre-K students observed in this study.

Reliability and Validity

Qualitative data rely heavily on the interpretation of the researcher unlike quantitative data that are usually measured by instruments using statistical measures. “Ethnographers have struggled for decades with positivistic criteria for reliability and validity, because the methods, field conditions, and objectives of ethnographic research do not lend themselves to the same kinds of detachment and control over practice that are possible in clinical studies, experimental and epidemiological research, and even standardized surveys and demographic research” (Schensul et al., 1999, p. 272). Due to the nature of this ethnographic/qualitative research, the researcher was the instrument, which could lead to issues in reliability and validity. Reliability in ethnographic/qualitative research refers to the ability of the research to be replicable in other situations (Creswell, 2009; Schensul et al., 1999). In order to create and maintain reliability in the study, I checked coding regularly to make sure I was preserving accuracy; used intercoder reliability, detailed study methods for future researchers; and carefully transcribed observation notes to avoid errors. Creswell (2009) defined “qualitative validity [as the] means
that the researcher checks for the accuracy of the findings by employing certain procedures” (p. 190). One way to help ensure validity is to utilize triangulation when analyzing data.

“Triangulation involves confirming or cross-checking the accuracy of data obtained from one source with data collected from other, different sources” (LeCompte & Schensul, 2010, p. 180). This technique was used by comparing observed information seeking behaviors by the pre-K students to the data collected in the semi-structured interviews.
CHAPTER 4

FINDINGS

Chapter 4 presents the findings and results of this ethnographic study, including the 18 data observation sessions at the private school, video recordings, and interviews with the teacher and the teacher’s aide. This project involved observing the information seeking behaviors of pre-K students in a private school setting. These students were observed during their normal school day routines. The findings from the observation sessions, video recordings, and interviews are detailed in this chapter. This chapter includes a brief overview of the ethnographic project, demographic data, and explanation of the role of the researcher as a participant-observer. The observation sessions as well as information seeking examples from the students with interactions with other students, their teacher, me as the researcher, the teacher’s aide, and other school personnel are presented and discussed in relation to their relevance to the study. Furthermore, the results from the coded data and interview responses are presented with relevant tables and figures to demonstrate the trends in information seeking behaviors of pre-Kindergarten (pre-K) students.

Project Overview Demographic Data

A suburban private school was invited to participate in this ethnographic study. The school’s principal chose one pre-K class to conduct the study. Each child in the class was invited to participate in the study. All of the students returned their parental consent form; however, two of the 12 opted not to participate. Participant’s information seeking behaviors were recorded during 18 observational sessions during their day-to-day school activities and routines.
Initially, I was going to randomly select a few students, but after an initial observation session, the class was structured in such a manner that I determined the best course of action would be to observe the class as a whole. The class size was small and their school day was very structured. While impossible to catch every information seeking opportunity the students participated in at school, deciding to observe all of the consented students provided considerable data for analyzing the behaviors of the entire group of participating pre-K children.

Participant Observer

Using ethnographic research techniques for this study opened doors for me to take a participant-observer role during the observation sessions. These observation sessions took place over several months during all aspects of the pre-K students’ school day. Observations took place not only in the classroom, but in the gymnasium, auditorium, playground, accessory classrooms, and hallways. As a participant observer, I was privy to the emotions, actions, inquires, and interactions of the students throughout their day. The students adapted rather quickly to my presence in the classroom, and the staff made me feel very welcome. I was able to record not only the students’ information seeking queries, but also the responses from those who were asked, and when appropriate, the body language and/or outside responses. While this position allowed for an abundance of data collection, I had to remind myself not to become so caught up in the daily school routine that would in turn lead to neglect in recording important information seeking evidence. Also, due to some initial challenges in regards to some students who could not participate, I was limited to the video and audio that I could record at a time; therefore, potentially limiting the information seeking inquiries recorded by me, the participant-observer. Therefore, I decided at this point to observe the remaining 10
students to collect a variety of information seeking exchanges. I primarily utilized field notes to collect these information seeking exchanges.

Observations

Eighteen school observations were made and recorded via observation field notes, and recordings. Prior to this study, I did not know the school, staff, or students. The school that I initially contacted withdrew from participation a month before beginning my observation sessions, so I sought an alternate location that fit the proposed criteria. The cooperating school that I found was very accommodating to my research needs despite having zero previous professional experience with me as a teacher or researcher.

The first observation session occurred at the beginning of the school day on day near the end of October. This was an opportunity for me to get to know the environment of the school, the personalities of the students, and to become familiar with the staff. I was enthusiastically greeted by the teacher and invited to make myself comfortable. I found a chair in the back of the room and began to observe the students during the morning work routine. The teacher finished welcoming the students while the teacher’s aide emptied backpacks and gave students the instructions needed to complete their morning work. This was an opportunity for me to survey the classroom, begin to get acquainted with the personalities of the students and determine how best I would record information seeking behaviors and best observe the four particular that were randomly selected. In the meantime, I wrote down students’ questions or information seeking behaviors for all of the consented students. I observed many who, what, when, where, and how questions being asked by the students. They were curious about my presence in the classroom.
Student H (to me): What is your name?

Me: Mrs. Stewart.

In the discussion with the teacher at the end of the day, it was relayed that two students were not able to participate in the study and their parents did not want them to be videoed.

As I reflected on this day I wrote, “I find myself wanting to dive back into teacher mode. It makes my heart melt a little to receive those smiles and questions. I do have to restrain myself from interjecting and helping more than I ought.”

The second observation session was 2 days later and began a few hours after the school day had begun. I now had my official list of participants and what the school expected of my role as a researcher. After my initial visit, I decided that due to the structure of the school day and restraints on observation recording, I needed to observe all of the students for whom I had permission for participation. I maximized data collection by observing and recording the information seeking behaviors of all the participating students. An example of an information seeking exchange from the second observation session day follows:

Student G: Why did you have to go to the doctor?

Student A: You mean dentist?

Student G: Yeah why?

Student A: Because they had to look in my mouth.

Sixteen additional observation sessions were conducted over the course of 4 months. Table 4 illustrates the number of observation sessions and their corresponding dates. Long holiday breaks, such as Thanksgiving break in November and winter break in December, occurred during the school year. Those times account for lapses in time between observation sessions.
<table>
<thead>
<tr>
<th>Observation Session Number</th>
<th>Date</th>
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<tbody>
<tr>
<td>1</td>
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</tr>
<tr>
<td>2</td>
<td>10/24/2013</td>
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<tr>
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<tr>
<td>7</td>
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<td>8</td>
<td>11/19/2013</td>
</tr>
<tr>
<td>9</td>
<td>12/03/2013</td>
</tr>
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<td>10</td>
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<td>14</td>
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<tr>
<td>17</td>
<td>01/21/2014</td>
</tr>
<tr>
<td>18</td>
<td>01/23/2014</td>
</tr>
</tbody>
</table>
I observed information seeking behaviors in the classrooms, art class, Spanish class, music class, physical education, chapel, and other school day activities. Due to the number of observation sessions, little detail about each one can be depicted in this chapter. However, I describe several information seeking exchanges that occurred during observations. These observation sessions offered vivid detail about the variety of information seeking behaviors performed by the young children during school day activities.

During each observation session, I recorded information seeking exchanges between the students and other people. I made notes of particular emotions I observed the children conveying and thoughts that came to my mind during the day to day school activities. After each day’s observation, I transcribed the field notes and observations to ensure accuracy.

I conducted brief data coding following the observation sessions and made allowances for emerging themes differing from the original Shenton and Dixon model. Unfortunately, due to some technology errors, a large portion of my coding was erased; therefore, I had to begin that process anew several months after the first effort at observations. While this observation restart added an unwanted repeat of already completed work, my previously developed code list and transcribed field notes provided an excellent footprint to restart coding of the data.

Detailed in the tables are the codes I used on each section of information seeking exchanges based on Shenton and Dixon’s (2003) model. The code that emerged during analysis was imaginative with a frequency of 161. The origin of need code imaginative is included in the codes attributed to the results in this study. Each of the tables presenting the results represents a total number of 618 information seeking exchanges recorded over the 18 observation sessions and limited video recordings; however, 742 information seeking exchanges were used in the overall coding. Additionally, 20% of the existing code exchanges
were used to develop a Kappa’s coefficient. Therefore, the 742 exchanges, rather than percent of total coded exchanges, were more reflective of the overall data recorded and the figures displayed in the tables. It is important to note that the total codes for the data are different in each area of exploration. This difference is due to some items representing more than one code, some items not needing to be included among the codes for a particular category, and potential researcher bias or error.

I captured the naturally occurring information seeking language demonstrated by the pre-K students and the responses given by the individuals from whom information was sought. The evidence of the students seeking information from their fellow peers and their teacher was plentiful. Students were often seeking information related to spontaneous life situations and obtaining advice or verificational information. Most of the given responses were deemed adequate enough to close the specific search for data inclusion.

Table 5 provides evidence that the pre-K students primarily sought self-initiated information. For example, the following exchange was typical between the participating students:

Student A: My dad is very, very, very, old. Can you guess how old he is?

Student K: How old?

Student A: 37

Student K: Well, my dad is 50!
Table 5

*Code Frequencies for Origin of Need*

<table>
<thead>
<tr>
<th>Origin of Need</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-initiated</td>
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</tr>
<tr>
<td>Circumstantial</td>
<td>201</td>
</tr>
<tr>
<td>School-inspired</td>
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</tr>
<tr>
<td>School-required</td>
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<td><strong>Total</strong></td>
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</tr>
</tbody>
</table>

A term not used in the original Shenton and Dixon (2003) model was *imaginative*.

However, imaginative emerged in this study as an aspect of the origin of the need segment among the participating students. An example of the origin of need represented as imaginative occurred between students most frequently during center time as seen in the following exchange:

**Student G:** Do you want to go to the bear cage today?

**Student J:** No.

**Student G:** Come on kitty; there is just one bear.

Table 6 highlights the code frequencies for information required in the participating students’ information seeking endeavors. Spontaneous life situation information was seen most often with self-development information not being noted during these observation
sessions. Below is an example of spontaneous life situation information observed between two students during a lunch time information exchange:

Student F: What did I get? Ew, what is that purple stuff?

Student H: Yeah, Ew. What is that purple stuff?

Student F: Beans are supposed to be brown right?

Student H: Yeah.

Table 6

*Code Frequencies for Information Required*

<table>
<thead>
<tr>
<th>Information required</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous “life situation” information</td>
<td>265</td>
</tr>
<tr>
<td>Verificational information</td>
<td>192</td>
</tr>
<tr>
<td>Advice</td>
<td>131</td>
</tr>
<tr>
<td>Personal information</td>
<td>67</td>
</tr>
<tr>
<td>Subject knowledge</td>
<td>35</td>
</tr>
<tr>
<td>Empathetic understanding</td>
<td>26</td>
</tr>
<tr>
<td>Support for skill development</td>
<td>24</td>
</tr>
<tr>
<td>Reinterpretations and supplementations</td>
<td>23</td>
</tr>
<tr>
<td>Affective support</td>
<td>9</td>
</tr>
<tr>
<td>Self-development information</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>772</strong></td>
</tr>
</tbody>
</table>

Tables 7, 8, and 9 provide the frequencies of the mode of contact codes for the exchanges by pre-K students as well as for seeking information directly in person with another.
person and primarily with people they already knew. The participating students utilized their friends as most commonly for information seeking inquiries despite their peers’ likelihood for having a low level of knowledge of the subject (Shenton & Dixon, 2003a). Regarding exchanges I experienced as a participant observer and to overcome bias, I coded the researcher as a person new to the user for the first two observation sessions. For the third and all subsequent observations, I coded the researcher as a person already known to the students.

Table 7

*Code Frequencies for Mode of Contact*

<table>
<thead>
<tr>
<th>Mode of Contact</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct, face-to-face</td>
<td>712</td>
</tr>
<tr>
<td>Distanced</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>712</td>
</tr>
</tbody>
</table>

Table 8

*Code Frequencies for Familiarity of Person Approached*

<table>
<thead>
<tr>
<th>Familiarity of Person Approached</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person already known to user</td>
<td>690</td>
</tr>
<tr>
<td>Person new to user</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>727</td>
</tr>
</tbody>
</table>
Table 9

*Code Frequencies for Specific Individual*

<table>
<thead>
<tr>
<th>Specific Individual</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friend</td>
<td>273</td>
</tr>
<tr>
<td>Teacher</td>
<td>186</td>
</tr>
<tr>
<td>Researcher</td>
<td>150</td>
</tr>
<tr>
<td>Teacher’s Aide</td>
<td>93</td>
</tr>
<tr>
<td>Other School Personnel</td>
<td>28</td>
</tr>
<tr>
<td>Substitute Teacher</td>
<td>27</td>
</tr>
<tr>
<td>Parent</td>
<td>7</td>
</tr>
<tr>
<td>Self</td>
<td>4</td>
</tr>
<tr>
<td>Other Adult</td>
<td>3</td>
</tr>
<tr>
<td>Coach</td>
<td>2</td>
</tr>
<tr>
<td>Sibling</td>
<td>0</td>
</tr>
<tr>
<td>Member of distanced family</td>
<td>0</td>
</tr>
<tr>
<td>Member of the Public</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>773</td>
</tr>
</tbody>
</table>

Tables 10, 11, 12, 13, 14, 15, and 16 illustrate the code frequencies for the other categories within Shenton and Dixon’s (2003a) model. The participating students spent much of the school day together in a group setting. Numerous exchanges of students seeking information within the group occurred. The overwhelming majority of the information seeking exchanges were answered directly and unaided. Two emerging responses were noted as the
following: (a) no response, in which a question was asked, but no response was given, and (b) no verbal response when nonverbal response using body language occurred to answer the inquiry. As seen, very little information seeking exchanges were answered using resources as a guide. Most of the time, the inquiring student considered the answers received as valid, their need was met, and the search for information closed. Most of the children sought information from the same people in multiple information seeking exchanges, so their exchanges were more frequently repeating versus isolated in nature. Lastly, most of the content given by the person responding to information seeking inquiry was relevant to the question asked.

Table 10

*Code Frequencies of Individuality of Contact*

<table>
<thead>
<tr>
<th>Individuality of Contact</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within a group</td>
<td>491</td>
</tr>
<tr>
<td>One-to-one contact</td>
<td>252</td>
</tr>
<tr>
<td>Total</td>
<td>743</td>
</tr>
</tbody>
</table>
Table 11

*Code Frequencies for Response of Person Approached*

<table>
<thead>
<tr>
<th>Response of Person Approached</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct, unaided provision</td>
<td>546</td>
</tr>
<tr>
<td>Cognitive facilitation</td>
<td>73</td>
</tr>
<tr>
<td>No response</td>
<td>54</td>
</tr>
<tr>
<td>Direct, aided provision</td>
<td>21</td>
</tr>
<tr>
<td>No verbal response but nonverbal response</td>
<td>20</td>
</tr>
<tr>
<td>Referral</td>
<td>6</td>
</tr>
<tr>
<td>Provision of materials forming information</td>
<td>4</td>
</tr>
<tr>
<td>Direction of provided sources</td>
<td>3</td>
</tr>
<tr>
<td>Access provision</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>728</td>
</tr>
</tbody>
</table>

Table 12

*Code Frequencies for Youngster’s Involvement if Information is Provided Orally*

<table>
<thead>
<tr>
<th>Youngster’s Involvement if Information is Provided Orally</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Via question and answer dialogue</td>
<td>665</td>
</tr>
<tr>
<td>Passive reception</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>671</td>
</tr>
</tbody>
</table>
Table 13

*Code Frequencies for Outcome*

<table>
<thead>
<tr>
<th>Outcome</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need met</td>
<td>596</td>
</tr>
<tr>
<td>Need unmet</td>
<td>83</td>
</tr>
<tr>
<td>Need partially met</td>
<td>41</td>
</tr>
<tr>
<td>Total</td>
<td>720</td>
</tr>
</tbody>
</table>

Table 14

*Code Frequencies for Future Action Data*

<table>
<thead>
<tr>
<th>Future Action</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close search</td>
<td>659</td>
</tr>
<tr>
<td>Continue seeking via other people</td>
<td>33</td>
</tr>
<tr>
<td>Continue seeking with same person or source</td>
<td>17</td>
</tr>
<tr>
<td>Continue seeking with another form of source</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>712</td>
</tr>
</tbody>
</table>
Table 15

*Code Frequency of Regularity of Contact*

<table>
<thead>
<tr>
<th>Regularity of Contact</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeating</td>
<td>474</td>
</tr>
<tr>
<td>Isolated</td>
<td>44</td>
</tr>
<tr>
<td>Total</td>
<td>518</td>
</tr>
</tbody>
</table>

Table 16

*Code Frequencies for Appropriateness of Content*

<table>
<thead>
<tr>
<th>Appropriateness of Content</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevant</td>
<td>532</td>
</tr>
<tr>
<td>Irrelevant</td>
<td>85</td>
</tr>
<tr>
<td>Total</td>
<td>617</td>
</tr>
</tbody>
</table>

Student Interactions and Information Seeking Exchanges

*Student to Friend Information Exchanges*

The focus of this study was to examine, through qualitative analysis, the trends and behaviors of pre-K students in a school setting. One of the biggest areas of interactions occurred between the students themselves (student to friend). A friend in this study is a fellow classmate. Over the course of 18 observation sessions, I was able to observe and collect data on the various information exchanges. The small classroom of students provided an environment of lively discussion. Several of these students had been in a three-year-old program together the year before, so they were quite familiar and comfortable with each
other. They referred to each other for questions regarding school to spontaneous life situations. Below are a few examples of the information seeking exchanges observed between the students and their friends.

This first example of student to friend information seeking shows a student desiring information related to a school-required project. The question included one of the six buzz words how. The response given by Student K shows an example of provisions provided to meet the information need. The information given by the peer was deemed satisfactory and the search was closed, as follows:

Student J: How do scissors cut?
Student K: [Uses hand motions to show up and down, up and down]
Student J: [Watches and mimics instructions]

The second example of student to friend information seeking demonstrates the students interacting during center time. These students were at the letter writing center and discussing sending letters to Jesus. At first, the student from whom the information was sought needed clarification about what was being asked. The inquiring student was ultimately satisfied with a much exaggerated (if unrealistic) answer from the friend and the search was closed.

Student G: Are you making that for Jesus?
Student J: What, Student G?
Student G: You are supposed to because it’s his birthday.
Student J: How do we give it to him?
Student G: Hold it up, and he will take it out of your hand.
The third student to friend information seeking example involves a demonstration of a student asking a friend for advice and then proceeding to ignore the given advice and do something completely opposite to close their search. See example below:

Student C: Where do I put my nap mat?

Student F: Put it over here.

Student C: [Ignores Student F and puts his mat elsewhere]

The fifth student to friend example shows a student asking the friend a question and the friend not knowing the answer; therefore, the friend who was regarded as having information referred the inquiring friend to the teacher’s aide for further instruction. Interestingly, the student turns to me instead of going to the teacher’s aide before closing the search on this school-required information as follows:

Student A: How do I find Little Red Riding Hood?

Student G: I don’t know, ask Mrs. E?

Student A: [Turns to me, participant observer] I can’t find Little Red Riding Hood.

The sixth student to friend interaction was an example of the interesting discussions and thought processes had by the pre-K children in the classroom. The following represents one of the only examples of the student referring to informational material and not another person:

Student G: You know girls are smarter than boys?

Student C: No, they’re not.

Student G: Yes, they are, I read it in a book.

Student C: No.

Student G: Well have a baby then.
Student to Teacher Information Exchanges

While students were observed interacting with their fellow students most of the time, their classroom teacher was not surprisingly the second most person sought out to seek information from in the classroom setting. The following are a few examples of the student’s interactions with their classroom teacher and some corresponding analysis.

The first student to teacher example demonstrated a classic who, what, when, where, why, or how question. Student E asked the question to the teacher. Instead of giving a direct-unaided answer to this spontaneous life situation, the teacher directly suggested to the student to use observation to answer the question. As will be seen in other information seeking exchanges with the teacher, she tended to instruct the students to attempt to find the answers to their own inquiries before simply giving them the answer as seen in the following transcript of an exchange:

Student E to Teacher: Who brought lunch today?

Teacher: Look around and see.

The second student to teacher example is an illustration of an exchange between two students that ended in an unresolved manner. The two students continued seeking information with another person, in this case the teacher, to try to conclude their need for information. However, in the end, despite the teacher’s direct, unaided provision of information, the students still did not end the conversation with a definitive agreement as seen in the transcript below:

Student J: A million is the biggest number.

Student G: No, a thousand is bigger.

Student J: Nah-uh.
Student G: Yes, my mom said so yesterday.

Student J to Teacher: Is a million bigger than a thousand?

Teacher: Yes

Student J to Student G: See?

Student G whispers angrily: But my mom said a thousand yesterday, so see?

The third student to teacher example is a good illustration of the teacher trying to get the student to construct his or her answer. It would have been easy to simply give a direct answer. However, the teacher wanted the student to apprehend specifically the instructions previously provided to the children for this school-required project:

Student F: Where should I put the tail?

Teacher: You tell me where you think it should go?

Student F: [places tail on the horse]

Student F: Should I glue it now?

Teacher: Yes, please.

The fourth student to teacher example is an interchange between a student and the teacher during mat time as a group. The teacher was introducing the advent calendar to the students. The advent calendar was an unknown item to this child who asked questions in order to determine the relevancy of the item. While the teacher initially gave a direct answer to this spontaneous life situation question, the student kept seeking information. The teacher encouraged the child to use visual clues to try to assimilate the information desired.

Teacher: I have a package to open up.

Student C: What is it?

Teacher: It is called an advent calendar.
Student C: What’s an advent?

Teacher: Let’s look who is in this picture to find out.

The fifth student to teacher example was brought on by a bright student who was very active in asking questions and seeking information on topics that most of the other children had no interest in. For this question, the teacher gave a direct, unaided answer to the student’s subject knowledge question as seen below:

Announcer: On this day, the first abdomen surgery was performed without any anesthesia.

Student C: What do you mean by no anesthesia?

Teacher: Someone had surgery a long time ago without any medicine to help them.

The sixth student to teacher example occurred during a fire drill at school. These students sought some affective support and reinterpretations for knowledge previously relayed to the students. The students were concerned about their safety during a fire. The teacher used this opportunity to use prompting to get the students to work out the answer to their own question. The students were able to successfully fill the gap in their own information seeking problem and close the search as follows:

Student C: What happens if there was a fire and students A and H were in the bathroom?

Teacher: What do we always do before we leave this room?

Student A: You save us.

Teacher: Yes, but what else do I so?

Student A: Count

Teacher: Yes, so I always know where you are.
Student and Researcher Information Exchanges

As a participant/observer, I had the privilege of observing these students while having some interaction with them. To be fair, as a former early childhood educator, I knew it was going to be difficult to be inconspicuous in the classroom. Children at this age are inherently curious and have very little prejudice when it comes to interaction with adults. The following are a few of the information seeking exchanges between some of the students and I.

The first student to research information seeking exchange example demonstrates a new situation in a child’s life and how they sought information to fill the gaps (Dervin, 1998). This was an assembly honoring the military on Veteran’s Day. When we entered the auditorium, there were many men and women dressed in uniforms, which prompted a spontaneous life situation question in this circumstantial situation. I answered the question with in a direct, unaided manner. The need was met and the search was closed. The student asked me several other questions during the assembly.

Student C: Who are those people?
Me: Soldiers and Veterans.
Student C: Wow, look at all those soldiers

The second student to researcher information seeking example exemplifies the students including me in their imaginative playtime. As a researcher, these were some of my favorite moments to watch information seeking exchanges. These moments of imaginary play led to some interesting insights into minds of these children. In this instance, I was a customer at their diner. This is just a short segment of this center time exchange. They enjoyed asking me various questions about what I liked to eat and how the kitchen equipment worked.

Student G: Have you been waiting so long?
Me: Yes, I am so hungry.

Student A: Really?

Me: Yes

Student E: Here is a hamburger (hands me pretend hamburger)

The third student to researcher exchange shows an information seeking opportunity in which Student I asked me advice on a school-related project. I gave the student a direct, unaided answer; however, the student was not satisfied with my answer (their need was not met). The student then approached the teacher’s aide and asked her the same question. The teacher’s aide gave Student I the same direct, unaided answer that I gave, but the student’s need was met and they closed their search.

Student I: Where do I put this?

Me: I think on the drying rack.

Student I: [walks to Teacher’s Aide] Where do I put this?

Teacher’s Aide: On the drying rack.

The fourth student to researcher information seeking exchange shows a student wanting to determine where we were located in the “big church building.” I used a direct, unaided answering approach and Student E was satisfied with the answer and closed the search.

Student E: Are we in the roof?

Me: No, we are just on the second floor.
Student to Teacher’s Aide Information Exchanges

The teacher’s aide was a professional that had daily interactions with these children. The students sought information from this person frequently. Below are a few examples of the information seeking exchanges between the teacher’s aide and some of the students.

The first student to teacher’s aide information seeking event was a repeating question that was asked to the teacher’s aide on a daily basis. The teacher’s aide used this opportunity to use cognitive facilitation to encourage this student to dig into her memory to think about the previous times she asked this question. Student E and fellow classmates answered the question together. The need was met and the search was closed as seen below:

   Student E: Who brought the napkins?
   Teacher’s Aide: You ask me every day and what do I tell you?
   Student E and other students: PCA

The second student to teacher’s aide information seeking occurrence centers around a school required activity in which the student was seeking advice on how to do the assignment. The teacher’s aide gave a direct, unaided answer. The student really wanted to be able to use crayons and proceeded to leave a small area without paper and asked the teacher’s aide again. Once again, the teacher’s aide gave a direct, unaided answer and the search was closed. The following is the exchange:

   Student A: Can we just color it [referring to tree]?
   Teacher’s Aide: No, we are using green paper, see, you can overlap it so you can’t see any white.
   Student A: I still have white on the bottom. Can I color it?
   Teacher’s Aide: No, just paper this time
The third student to teacher’s aide information seeking experience demonstrates a time when Student H sought verificational information and the teacher’s aide used cognition facilitation to prompt the student’s ability to comprehend the answer. However, the teacher's aide did end up giving a direct, unaided answer to the question, the student’s need was met and the search was closed. The exchange follows:

Student H: Can I do play dough?

Teacher’s Aide: Did you finish your L paper?

Student H: Yes

Teacher’s Aide: Then, yes you can.

The fourth student to teacher’s aide example shows a moment when a student was curious about the whereabouts of their teacher. Their information seeking exchange led to an educational moment with the student about jury duty. The teacher’s aide gave a direct, unaided answer to this circumstantial, spontaneous life-situation question. This is a difficult concept for this age group to understand; however, the teacher’s aide simplified the information to make it understandable to Student G. The student’s need was met and search closed as seen in the following:

Student G: I wish Mrs. A was here.

Teacher’s Aide: Maybe I could send her a picture of you guys later today to make her smile.

Student G: Is she at a meeting?

Teacher’s Aide: No, sometimes people don’t make good choices. Sometimes they have to go before the judge and people who help make the decisions on who make good choices and bad choices. Those people are called the jury.
Student G: Maybe she will tell us how many people made good choices.

Student to Others Information Exchanges

In this final group of information seeking exchanges, I included examples of students seeking information from other school personnel, the physical education coach, a parent, and an instance where the student sought information from themselves. These individuals did not have as much interaction, during school hours, with the students as the other people discussed previously; however, it was important to note these exchanges and how the students interacted with others when seeking information they desired.

The first student to other person example demonstrates the information seeking exchange between a student and supplemental teacher, in this case the art teacher. The teacher overheard a conversation between two students discussing mixing colors. The student E suggested the wrong color combinations in their inquiry, so she prompted without giving a direct answer to see if the student could remember what color, when mixed with red makes purple. Interestingly, the original seeker did not answer the teacher, but Student J, who was also sitting at the table, answered the question. The art teacher verified the response and the search was closed.

Student E: Why don’t you make purple with red and orange?

Art Teacher: Oh, you’re close, red and what make purple?

Student J: red and blue

Art Teacher: You are right

The second student to other person example illustrates an empathetic question being asked by a student to the school counselor during a group discussion. The counselor was getting ready to discuss a topic with the students, when Student E noticed something different
about the counselor. The counselor gave a direct, unaided answer that satisfied the student and closed the search. This question occurred while the students were all together in a group, so no doubt this curiosity was noticed by more than one student.

Student E: What happened to you?

Counselor: I had to get my toe fixed so now I get to wear a special shoe.

The third student to other person example shows an information seeking exchange between Student J and an adult new to the students, a minister at the church that houses this school. Every year, these students get a tour of the big auditorium. This particular student was very curious about different aspects of the auditorium. The minister acknowledged the student, gave her a positive affirmation about her questions, and gave them a direct, unaided answer to this spontaneous life situation inquiry. The answer met the need for the student and the search was closed.

Student J: What are those hangy things right there? [pointing to microphone]

Minister: Good question, these are called microphones. They pick up the sound and put it all over the worship center.

The fourth student to other person example exhibits an information seeking exchange between student I and a substitute teacher. This substitute teacher was a familiar person to the students as she was their class substitute most of the time their teacher was absent. During this exchange, Student I was verifying if he finished his school-required, subject knowledge assignment. The substitute teacher used a direct, aided approach to lead the student to help himself find the answer.

Student I: Did I get them all? Did I get them all?

Sub Teacher: Let me see if you got them all. No, I see one more.
Student I: (Looks for the N): Did I get them all now?

Sub Teacher: Almost, look in this line.

Student I: Continues to search.

The fifth student to other person example was one of few exchanges between a student and their parent. While parents were in and out of the classroom for various events, there were few instances in which the students sought information from their parents in this school setting. In this instance, the mom came during a school birthday party time for another student. The birthday boy had brought Spiderman cupcakes for the other students. This prompted Student C to ask his mother a spontaneous life situation question. At first, the mom gives an unsatisfactory answer to Student C. Student C then comes up with an answer and his mom chimes in with another option. The search is closed without a definitive answer determined.

Student C: Why does Student C like Spiderman so much?

Mom (Student C): I don’t really know.

Student C: Maybe it’s because he watches the movies.

Mom (Student C): Or, maybe it’s because his big bother likes Spiderman.

The sixth student to other person example demonstrates an example of an emerging theme that I noticed as a researcher with this group of students. This information seeking exchange occurred between the student and themselves. I was observing a student playing by herself with a nativity scene. As the researcher, I deemed it appropriate to include this exchange because it shows how a student is learning, through self-talk, how to come to a conclusion on their own and end their search.

Student E: What is this thing?
Student E: It is baby Jesus.

Student E: Baby Jesus?

Student E: Yes, in my tummy.

The seventh student to other person example reveals an information seeking exchange between a student and their physical education coach. Physical education was a very structured and busy time and I observed very little information seeking exchanges; however, in this observation the student was seeking verificational information on how to do their drill. The coach gave a direct, unaided answer and met the need of the student and the search was closed.

Student F: When you dribble the ball, you don’t want to run into people right?

Coach: Right.

Cohen’s Kappa Coefficient

I utilized Cohen’s Kappa Coefficient as a manner to solidify the reliability of my collected data. I asked an acquaintance, who has a doctorate degree, to aid in being the secondary coder for this project. I had a secondary coder code 20% of the collected information seeking exchanges conducted by the pre-K students. According to Lombard, Snyder-Duch,, and Bracken (2004, 2010), “This sample must also be selected using a random or other justifiable procedure. The appropriate size of the sample depends on may factors but it should not be less than 50 units or 10% of the full sample, and it rarely will need to be greater than 300 units” (How should content analysis researchers properly assess and report intercoder reliability section, para. 6). With 20% of the original 618 information seeking exchanges, 124 of those were randomly selected (20% from each day plus with video excerpts) for the secondary coder to
code to check intercoder reliability. The secondary coder was given the detailed list of codes I used originally and had the ability and opportunity to ask me any questions about the code list during the process. After some trial and error, it was determined that this would work most efficiently if the randomly selected data was moved into NVIVO. This application ensured that all original data were saved and copied into the new database, which allowed for NVIVO to run a Kappa coefficient and a percentage of agreement once the secondary coder completed the coding process. According to NVIVO, the average Kappa was .912475, indicating a high agreement of intercoder reliability.

Teacher and Teacher’s Aide Interview

I sat down with the teacher and teacher’s aide at the conclusion of my observation sessions and interviewed them about various topics related to information seeking behaviors of pre-K students. I used the semi-structured interview template in Appendix A to guide my questions. I interviewed the teacher and teacher’s aide separately to ensure that their answers would not be influenced by the other person’s answers. I stressed that there were not any right or wrong answers, but that I wanted their honest opinions based on what they see in their day-to-day interactions with these students. I recorded the interview using an audio recorder for accuracy as well as taking abbreviated notes. Once recorded, I used transcription software connected with the NVIVO software to have both of the interviews transcribed for best precision.

Interview Question 1

I started by asking the teacher and teacher’s aide: What types of questions do you think this age student asks?
Teacher’s Aide: Well, how things work. Why things happen. Why? Two that come to mind: how things work, and why. But specifically like why are there clouds in the sky, but also specifically, why did I get in trouble? I mean, I think it varies too. They want explanations for everything.

Teacher: Let me see. They ask all kinds actually, they'll ask specific questions when it might be zeroed in on; like if I'm talking about a plant, they're fixated on the green leaf that it look like a heart. They could be like that, or they could jump totally off topic and make vague, as in sometimes like, "Where do I find it?" Or because they saw it at the ocean, "Is that at the ocean?" I feel like that it's a pretty broad range of questions. If I had to-- do you want me to zero in on one or the other?

Researcher: No. Both of those are good. At this age do you feel like they ask a lot of why questions, how questions, etc.?

Teacher: I do. I feel like that there are a lot of why or-- I feel like there's a lot of why actually.

It was interesting that both of the professionals mentioned why as an example of the types of questions these students tend to ask. The why questions were asked around 93 times; however, what questions were the most prevalent as they were used 320 times. The teacher’s aide about comment about these children wanting explanations for everything is a direct reflection of seeing such a large number of spontaneous life situation questions being asked. The students at this age tend to ask questions whenever their curiosity strikes. Table 17 depicts the frequency of these commonly used words when seeking information.
Table 17

_Code Frequencies of 5W and 1H Questions_

<table>
<thead>
<tr>
<th>Question Type</th>
<th>n</th>
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<tbody>
<tr>
<td>What</td>
<td>320</td>
</tr>
<tr>
<td>How</td>
<td>113</td>
</tr>
<tr>
<td>Where</td>
<td>98</td>
</tr>
<tr>
<td>Why</td>
<td>93</td>
</tr>
<tr>
<td>When</td>
<td>69</td>
</tr>
<tr>
<td>Who</td>
<td>54</td>
</tr>
</tbody>
</table>

_Interview Question 2_

Do students at this grade level question the validity of an answer given to their information seeking inquiry? As a participant observer, I noted very few instances in which the students did not take the answer given as truth or at least satisfactory. However, I wanted to hear the opinions of the teacher and teacher’s aide to get an idea of whether what I observed was the norm, or if their perspectives differed from my observation.

Researcher: That's great. That's exactly what I was looking for. Do you think that kids this age ever question the validity of an answer that they're given?

Teacher’s Aide: [chuckles] Yes.

Researcher: How so? Do you feel like more so from their peers, if a peer answers a question for them?

Teacher’s Aide: I think it's more so, it's not like there are clouds because the rain molecules. It's not that. I don't think they question that. I think it's more of the personal
things that they question. Because we're a Christian school-- I mean more of like why did Jesus die on the cross. It's more of why am I in trouble? It's things that are more concrete to them, but feelings to be more abstract so that's more of what they ask the why's about if that makes sense.

Researcher: That's great. Do you feel like your students - and you can think of this group specifically and groups you've had in the past - do they ever question the validity of an answer that's given?

Teacher: I think sometimes they'll repeat it to make sure that it-- I think that they question it as in the same question like, to make sure that's what you’re saying. But they don’t doubt what I’m saying. I don't feel like there's a lot of-- you know, one side, I think if the information is coming from me, they seem to accept it.

Based on their responses, it appears that the teacher and teacher’s aide differ slightly in their views on this matter. The teacher’s aide suggested that when the students seek information on affect or feelings, they tend to seek the validity of answer. However, the teacher relayed that the students might ask the teacher to repeat what she said, but did not question the validity of the answers given.

Interview Question 3

This interview question was used to understand the teacher aide’s and teacher’s perceptions of students asking where they would find an answer to their desired information need.

Researcher: Do the kids this age, do they ever ask where to find an answer to something? So, I guess an example would be, would they say, "Hey, I'm wanting to know
about how clouds are formed." Or, "I'm wanting to know about this certain person in
the Bible. Where would I find that at?" Do they ever ask you that?

Teacher’s Aide: I have not seen that. I have not, which is, I mean, I've never thought
about that but they don't ask where the answer is, they just want to verbally hear it
[chuckles].

[silence]

Researcher: Do you feel like your students ever ask you where to find an answer to
something?

Teacher: I don't think so. Let me see. Like where to find? They do ask how sometimes,
mostly. I guess they have asked how, but not where to find an answer?

Researcher: Like, "Mrs. A, I want to know about dogs. Where do I find out about dogs?"

Teacher: I don't think I've heard that. . . . I don't know, that's hard.

These education professionals did not recall their students ever asking to see where the
answer comes from or where to find an answer to their desired inquiry. The educators’ overall
perception involved these students simply wanting verbal answers. The students did not
appear to need any explanation regarding source monitoring to fulfill their information need.

Interview Question 4

This question addressed the topic of how resources are used in this particular classroom
to aide in information seeking.

Researcher: Do you ever, if they ask you a question, do you ever use other resources to
aid them in answering their question? So do you say, "Let me go look that up or show
you."
Teacher’s Aide: I have, well, for instance, rarely. I should probably do it more now that I think that I don’t ever do that. Like, we have a Bible story; there are some names, Zechariah, and I want to make sure I’m spelling correctly, so I’ll say, "Hold on, let me make sure I’m spelling correctly," and I’ll get on—well, I just have my phone here—but I’ll Google it, how to find the correct answer.

Researcher: Do you ever use resources to aid in answering students’ questions?
Teacher: Mm-hmm.

Researcher: What types of resources?
Teacher: Visuals. We’ll use visuals, as in an item. A material, physical item. Like, I’m going to show something. I can show someone watering. I’m showing a watering can. There are visuals like that. There’s iPad visual and now we’re doing Apple TV and books, hands on. It’s huge, I think visuals are huge, in this learning—for this learning style—at this age too.

The teacher’s aide mentioned using Google when she needed to verify something, but not teaching the students how to use this information seeking tool. She once again stated that these information seeking strategies needed to be utilized more by her in daily instruction. The teacher really stressed the importance of using visuals at this age to support the information needs of these students. This supports the fact that these children cannot read, so utilizing visual resources is a way to support information needs without the children needing to be literate.

*Interview Question 5*

In a piggyback off the previous question, I asked about the use of the Internet and books in the students’ information seeking behaviors.
Researcher: Do the students ever ask to look up something they’re interested about on the Internet?

Teacher’s Aide: They have never asked me to look something up forever. Besides, we look at the reindeer, but it's not really like they’re asking me to know.

Researcher: To look it up?

Teacher’s Aide: No.

Researcher: What about in a book?

Teacher’s Aide: I feel bad [chuckles].

Researcher: No, this is what I want.

Teacher’s Aide: The only thing like, was [student] H, but it wasn't a book, H was like, "I've heard of a $2 bill. Have you ever seen a $2 bill?" And I was like, "I have." I said, "Would you like me to bring one to show you?" But it's not looking something up. And he was like, "Yeah, I want to see what one looks like."

Researcher: That’s a good example though.

Teacher’s Aide: I brought one from home, and I got a $2 bill, and I showed him what one looked like, but it wasn't like a resource.

Researcher: But it is a resource. It's just not in Internet or book form. That's good.

Researcher: Do your students ever ask to look at an answer to something that they want to know about on the Internet?

Teacher: I don't ever hear someone asking to look up something. They love watching it. They'll always ask, "Can we watch it?" And, they're fascinated, but then I don't have the question of where you find it.

Researcher: How about in a book?
Teacher: I don't have them asking me to find it in a book either. They'll just ask questions. For what it's worth, if I teach a lesson with a book, they'll have four people later come in and say, "Can I look at that book that you read. Can I see that book?" And if it is about its garden or whatever, can I see that? Like where you go and get a book and sit in the tape line, well can I have that book that you had this morning? Can I have that book that you read?

The responses of the teacher’s aide and teacher indicated that these particular students have not moved past using other people for information seeking needs. These students may ask people in their lives to look up needed information on the Internet or in books; however, based on the observations and the interview responses of these educational professionals, it can be inferred that asking people to look up material is not a normal information seeking behavior for this age group. It is encouraging to see these children have such a fascination with books and technology, and perhaps with some modeling and prompting, they could learn how to utilize these reference tools to meet their information seeking needs. It is interesting to note that although I asked about resources in the question before this one, the teacher’s aide thought of the resource example that she had used with a student during our discussion about the Internet and books.

Interview Question 6

In order to learn more about how the library media center plays a role in the lives of these pre-K students, I asked a general question about how many times they visit the library. This question, along with some follow-up questions created some interesting dialogue. In full disclosure, I knew that the students only went to the library a few times solely for story time,
but my hope was that this leading question would spark more conversation related to the lack of a library program geared toward these pre-K students.

Researcher: And your class, they visit the library how many times?

Teacher’s Aide: Once-- oh, twice a month.

Researcher: Twice a month?

Teacher’s Aide: Yeah, two or three times.

Researcher: Is it solely for story time?

Teacher’s Aide: They are read to, yes.

Researcher: What age here do they start getting to check out books? Do you know?

Teacher’s Aide: I’m not sure. I know in first grade they get their level. I’m trying to think in kindergarten ... I think in kindergarten they get one book, and then in first grade they start-- they can have-- wait, I need to ask. I can’t even remember with my own kids. In first grade is where they’re assigned their level, and so they get a book by their reading level because they take a test, so they get an appropriate book. In Kindergarten, yes, they can check out a book. My son started taking AR tests, so yes, they can check out books in kindergarten. But only, I think, just one.

Researcher: How often do your students visit the library?

Teacher: Once every 2 weeks.

Researcher: And then, when they go to the library, what are they allowed to do in the library?

Teacher: I think they’re just told a story. They’re not actually taking books off the shelf. They’re just listening to a librarian.
Researcher: And so my last question is, if you could change anything about the kids’ library time that they have right now, what would you do?

Teacher: Truly--

Researcher: Or what would you like to see that they get to do.

Teacher: I don't think I would have thought about it had I not talked to you earlier, but it's crossed my mind several times that they're not too young to be able to have hands-on in the book, to find out about the card catalog or locating it, and mostly checking them out. They're a year younger than kindergarten and that's something that they would-- I think they would like that. They love books, and they love learning how to take care of them. We talked about the jackets and the sleeves in here and how to treat a book, and I think they would love it. I think they would take ownership with it. But, I wish that was something that could be implemented and maybe it can. Maybe, it can. Yeah. Maybe, with the resources and if I present it, then we'll see.

When I initially formulated the interview questions, I was under the impression that these students had library time, were allowed to peruse the library, check out books, and have some instruction about libraries. However, I found out that this activity was not part of the school day routine. I still wanted the perspectives of the education professionals.

Interview Question 7

This question involved asking: When you answer a question, do you give a direct answer or do you ever give students suggestions on how to find the answer to the question?

Teacher’s Aide: I think both, because I don't typically, even if I've give them the answer I don't give them the answer, I ask them what they think. So like today we made a little green house, and they said, "Well, what else does it need?" And I said, "Well, what do
you think it needs?" And then we would talk about, “Well, it has to have water and it
has to have--" so I try not to ever tell them the answer. I want them to try to come up
with it on their own or problem solve to come up with it on their own. If I do, I mean
rarely do I point them to [it]. I feel so bad, I can't believe I don't do this, I'm going to
start doing this now. But we do Bible story, I mean the only thing we have in here is the
Bible and the books we have and [the school] has them but I don't know if we
necessarily always have them out for them to use as a source. And we have the iPads,
but the iPads are-- when we do them with me, it's mostly they're doing stories or letter
tracers so it's not a source that they're using. This is a great paper. I'm going to start
doing things differently.

Teacher: Usually. I will say, I go both methods of, “What do you think?” Or sometimes
I’ll say, “How do you think it is? But then I’ll mostly give a direct answer. I’ll listen to
their suggestions but then I will give the answer. They like trying to answer their own
questions. They like that. They like that challenge and many times they really do know.

Yes, and what do you think, and then have them try to problem solve that out, and then
if they can’t, then the direct answer was given.

Their answers to this particular question were intriguing, because this was an area I
witnessed over the 18 observation sessions. While the teacher and teacher’s aide did give a lot
of direct, unaided answers, I did observe several information seeking exchanges in which the
teacher and teacher’s aide asked a student to think on his or her own or ask a friend. I did
appreciate the moment the teacher’s aide realized that they could use this tactic easily to
implement more into their dialogs with the students.
Interview Question 8

I asked the teacher and teacher’s aide if information seeking curriculum is something that they actively taught.

Researcher: Have you actively implemented any sort of information seeking curriculum? By that question I mean, have you done anything to teach your students how to find out the information they want to know?

Teacher’s Aide: Do I? After listening to this, I don't do enough. I ask them the why’s and I try to have them think of it themselves, but I don't ask the questions or I don't have them go to seek the answer in a resource that’s a book or a computer. I do not do that.

Teacher: I don’t think so. I really don’t think as far as to find out the information. It seems like everything . . . we have a lot of . . . we have some smaller hands-on centers where they are independently . . . but as far as just seeking out what you think, I don’t think so. Really there’s a lot of exploration . . . I’d like to know more about that to be able to challenge that.

As seen in their interview responses below, this is an area that neither had really contemplated. As a former early childhood educator, I understand their point of view. Educators might not take into account the importance of teaching effective information seeking behaviors at an early age. It is easy to give a direct answer and move on when inundated with question after question from a group of children. However, modeling those behaviors at this age could be a simple step toward creating more opportunities for inquiry and productive questions.
Summary

Observation sessions, video recordings, and teacher and teacher’s aide interviews provided data to understand the information seeking behaviors of pre-K students in a school setting. Based on the findings, these students mainly sought information from their peers and teacher while interested primarily on information related to spontaneous life situations and verificational information. The students tended to direct their information seeking inquiries to people whom they already knew in a direct, face-to-face manner. The interviews provided unique insight into the perceptions of the teacher and teacher’s aide in relation to the information seeking behaviors of their students. These educators relayed that they rarely observed students questioning the validity of answers given. The interview created dialog that revealed the desire of the teacher and teacher’s aide to implement information seeking skills into their curriculum as well as being more intentional on utilizing and modeling other information seeking resources such as the Internet, books, and other age appropriate materials. This interview also confirmed what was seen during the observation sessions about the information seeking behaviors of pre-K students.
CHAPTER 5

DISCUSSION AND CONCLUSION

With more implementations of pre-Kindergarten (pre-K) classrooms across the nation (Barnett et al., 2015), it is more apparent that understanding the way these children think, process information, and learn is important in cultivating their education experience. Information seeking has been an area of interest in the information science field for decades; however, the interest in information seeking in children did not occur until the 1980s and 1990s (Chelton & Cool, 2004, 2007; Cooper, 2002). The interest of pre-K students in information seeking behaviors is a somewhat uncharted area of research.

This ethnographic study was designed to observe the information seeking behaviors of pre-K students in a school setting. This chapter addresses the project’s findings in relation to the study’s five research questions. The theoretical foundations and model examples described earlier in Chapter 2 aided in the project’s design and are discussed in relation to the research questions. The study’s limitations, a discussion of the findings, and future research potential are detailed in this chapter.

Research Question 1

The first research question asked: Who do pre-K students seek information from in a school setting? Based on the data collected from the school observation sessions demonstrated previously in Figure 1, pre-K students seek information mostly from their friends. According to Shenton and Dixon (2003), “a diversity of people consulted but overall . . . people who were asked for information merely because they were available at the time of need, people whose circumstances were similar to those of youngsters and who were thus known to
be experiencing comparable needs, and experts in the matter in question (p. 231). I was slightly surprised by this finding, because I entered the study with the assumption that the students sought information from their teacher and teacher’s aide more than they did from their peers. Perhaps, the students found it more convenient to ask a friend. For instance, the teacher and teacher’s aide could really only address one question at a time whereas the student could ask a friend without having to wait.

The teacher was next in the frequency of information seeking inquiries. Some of the referenced people on Shenton and Dixon’s (2003a) model did not have a role at all in these students’ information seeking. For instance, I did not note any interactions between siblings, or members of the general public. It is likely children of this age seek information from these people; however, I did not see any exposure to people in these categories during the classroom observations. Due to limited observation exposure, the ‘parent and other adults’ category displayed a very small number of information seeking exchanges. While parents were observed during class parties and school day drop-offs and pick-ups, I witnessed very few information seeking exchanges. This lack of evidence might simply be an anomaly related to this specific environment or a norm that might apply to other school settings.

**Research Question 2**

The second research question asked: How do pre-K students seek information in a school setting? The study confirmed previous work conducted in this area—young children, more specifically; pre-K students seek information from other people (Shenton & Dixon, 2003a). As a researcher who was previously an early childhood educator, I expected to observe
students primarily seeking information from other people. Nonetheless, I was surprised that children did not use other forms of information seeking during my observations at the school.

Research Question 3

The third research question asked: What types of questions do pre-K students ask? The findings from the observation sessions and video observations indicated students ask questions related mostly to spontaneous life situation events. Table 6 showed the number of each type of question the participating pre-K children asked during the observation sessions of the school day activities. As research in the fields of education and psychology show, this finding relates to Dervin’s sense-making model in which children seek information when they come to a gap in their knowledge so they can bridge to their outcomes (Godbold, 2006; Julien, 2004). Gonya (2007) stated “the best answers come when curious children find the answers themselves through inquiry” (p. 2). According to the findings of this study, pre-K students use “spontaneous life situations” to perform most of their information seeking inquiries. For example, according to Dengler (2009), “children are working to discover answers to questions that they come up with, not questions that are found in a pre-made curriculum or book” (p. 12). These frequent life-situation questions introduced by Shenton and Dixon (2003) and frequently utilized by the participating pre-K students over the course of the observation sessions demonstrated their innate curiosity for information related to the spontaneous events occurring in daily life. The students frequently employed who, what, when, where, why, and how questions to seek the information they desired.
Research Question 4

The fourth research question asked: What techniques are utilized by school personnel to encourage information seeking strategies? Based on the information seeking observations and interview responses, this area was not recognized by the educational professionals. The teacher and teacher’s aide were sincere in their interview responses that verified what I perceived during the classroom observations. While the teacher and teacher’s aide did ask students to try to seek out the answer to a question on their own, the majority of the time, a direct, unaided answer was given to satisfy the student’s information seeking need.

The education professionals did use visuals to aid in the explanation of the information being presented. The teacher and teacher’s aide were open to hearing my suggestions, post study, to include additional simple, yet effective information seeking strategies and opportunities into their classroom. Relevant and helpful literature detail inquiry and questioning strategies available for increasing pre-K students’ ability to seek meaningful information and ask productive questions (Chouinard et al., 2007; Gonya, 2007; Test et al., 2010). “Children’s active exploration of the world (either external or internal exploration) can combine with the rich sources of assistance that surround them, allowing them to elicit information that guides the direction of their conceptual development” (Chouinard et al., 2007, p. 3).

Research Question 5

The fifth research question asked: What aspects of Shenton and Dixon’s model for information seeking via people are applicable for pre-K age students? In the final research question, I examined the aspects of Shenton and Dixon’s (2003a) model of information seeking
via other people to determine if the model created based on research with children ages 4 to 18 years was relevant with pre-K students specifically. The segments of information seeking were coded according to the terminology Shenton and Dixon used in their model. However, newly emerging codes were added during data analysis due to their relevance in the present study.

As evidenced by the data seen in Chapter 4, several aspects of Shenton and Dixon’s (2003a) model are very relevant to this age group. However, some modifications to the model might be useful. Modifications might offer a more encompassing view of how the preschool group seeks information in the school environment.

Deci and Ryan’s (2000) self-determination theory (SDT) employs motivation as a driving force for information seeking in children. Chouinard (2007) suggested that questions serve as a driving force in cognitive development that motivates young children to ask questions. Children do not simply use questions to gain attention from adults or peers. They use questions to learn how to categorize information and how to process available information. Understanding the motivations and thoughts of children during playtime offers the opportunity to gain insight into the minds of children while not being influenced to manipulate or process school-required information under the direction of teachers. More specifically, intrinsic motivation is important in relation to the play of children (Crow, 2011). Some new aspects of this information seeking data relate to students’ imaginative play.

Two emerging codes observed in the pre-K children involved how the person approached for information responded to the student. For example, I noticed that times when the child received response or when the approached person did not verbally respond but did offer a nonverbal answer using body language. These are two situations that were not
elements of Shenton and Dixon’s (2003a) model; however, these two situations may be vital for understanding the reinforcement processes involved in the information seeking behaviors of preschool students. Teachers need to consider how their students might respond when a question is not answered at all or whether pre-K students have enough understanding of body language and nonverbal communication to determine if as nonverbal answer is helpful enough to close the exchange. These emerging codes relate to Kuhlthau’s (1991) Information Search Process Model. Kuhlthau discussed how the feelings created during the exploration phase impact the search. The outcome from when a student asks a question but does not receive feedback could lead to frustration or even doubt in the person from whom the information is seeking. In some observations of exchanges during which the pre-K child received no response, I noticed the student completely stopped information seeking even though the problem had not been resolved.

I also noted an emerging code regarding the area of future action by the seeker during an information seeking exchange. I observed several instances in which the information seeking child continued to seek information from the same person. At times the student’s questions related to the same topic initially addressed, but at other times, the student’s conversation took a completely different course. Chouinard (2007) responded to this phenomenon by reporting “children might ask questions in isolation, accumulating one piece of information at a time, building only cumulatively over time, or they might ask multiple questions in a single exchange that build on each other (or both)” (p. 21).

Other emerging codes to add to the original model involved the specific individual the information seeking child approached. While these interactions might not be integral to the overall efficacy of the model, the people approached by the students during the observations
might only be specific to this study and might not transfer into another study. The most fascinating emerging code about who children approached for information involved, in a few instances, a student actually seeking information from himself or herself. This phenomenon was not observed very many times but offers opportunities for further exploration and understanding of children’s methods for information seeking. In sum, Shenton and Dixon’s (2003a) model was thoroughly developed for the majority of information seeking behaviors observed in this age group at this particular school setting. However, the above emerging codes might add to the overall effectiveness of this model for this specific age and developmental level of information seekers and suggest a need for further study.

Study Limitations

Limitations are an inevitable aspect of research projects, especially qualitative research. Due to the nature of my role as a participant observer, I interacted as an active participant in the classroom. This role might have led to potential observer bias due to having personal contact with the students and information exchanges in which teacher-like authoritative interactions might have occurred.

This small private school pre-K classroom provided an ideal environment to conduct this research in a timely manner. However, due to the size of the sample, the generalizability of the findings to other pre-K environments is limited. This study did provide a vast amount of information seeking exchanges from pre-K students, because I observed all of the consented students to obtain a more overarching view of this age group. It is inevitable that I missed some information seeking exchanges while observing others, especially during center time when students disperse throughout the classroom. Also, while my role as a participant
observer gave me an upfront view of the information seeking behaviors of these students, this role might also have injected researcher bias because as an adult and former early childhood education teacher. I found engaging with the students from a teacher role point of view when surrounded by pre-K students ensued naturally. I constantly self-monitored to recognize the importance and inevitability of interactions with the students and to ensure the primary goal of observing and collecting data about information seeking exchanges and the environment in which they occurred.

Discussion

This study involved observing a group of pre-K students in their natural school environment to determine the information seeking behaviors they employ during the school day. I observe mainly information seeking behaviors from students seeking out the teacher as the main source of information. However, while the students did utilize their teacher frequently, they sought information more from their peers, who were their friends or classmates.

Profoundly evident during the investigation of the information seeking behaviors of the pre-K students involved observing the lack of purposeful instruction in successful information seeking behavior and strategies between the students and the adults. To be fair, I do not believe this is a direct reflection of negligence on the part of the teacher and teacher’s aide; however, I do think the missed opportunity involved this aspect of instruction as not consciously considered to be instruction by the teacher or the teacher’s aide. They may have considered their information exchanges as ancillary to their purpose for the specific time of day, which might have been a naturally occurring thought process among the adults.
Gonya (2007) noted the following:

Because children often look to adults for answers and solutions, it is difficult for some children to have the independence and confidence in themselves to find answers. Teachers can help these children by asking probing questions . . . instead of supplying all the answers for children’s questions and solving all their problems. (p. 3)

Therefore, early childhood education teachers may need specific training for recognizing information seeking exchanges as instruction with pre-K students. Injecting instruction about information seeking skills as well as library science skills into everyday pre-K instruction might increase the likelihood of indirect learning opportunities for children and impact the outcomes of similar ethnographic studies. As Gonya elaborated it is important to “start children on a journey from curiosity to inquiry by fueling their curiosity—by asking purposeful questions, supplying hands-on tools for exploration and discovery. . . and then stepping aside a bit so inquiry can freely develop” (p. 6). These young children use their preschool information exchanges to develop the foundation of their educational habits. Capitalizing on this phenomenon to enable children hone these skills early would be wise at a systemic level. In order to enable this evolution to the pedagogy of early childhood education, educators must be aware of this need and supported to utilize the exchanges with information seeking children as instruction.

The study’s findings suggest that pre-K students do frequently employ questions, inquiry, and information seeking exchanges to fill a void in their knowledge or to fulfill innate curiosity. Students used convenience to any answer in the majority of their information seeking endeavors. They rarely questioned validity of an answer and tended to accept the information they received as adequate. They also closed their searches for information without truly understanding the legitimacy of the information they obtained.
However, these children obviously had specific purposes for each question they asked and genuinely sought answers for information queries that affected their lives. Chouinard et al. (2007) echoed this sentiment about children’s question asking by concluding “the purpose of question asking is a genuine attempt to gather information; children want to know the answers to the questions they ask” (p. 101). Ultimately, the questions asked among information scientists, educators, child behavior specialists, and others concerning the information seeking behaviors, such as the use of questions, should lead to productive strategies educators can properly prepare in advance to encourage these students’ curiosity about the world around them and to enable pre-K children to develop basic information seeking skills for enhancing in their educational experiences in the future.

Future Research

Based on the findings of this study, several potential research opportunities emerge. First, the sample for this study came from a private preschool. While this single school’s use narrowed the scope and lay a good foundation for observing pre-K students’ information seeking, the students represented affluent backgrounds. In Texas, public pre-K education is free only to children in low socioeconomic status or with special education needs. Students in the classroom I observed paid tuition to attend school. Therefore, a replication study of students in a public school pre-K classroom is necessary to determine if the same information seeking behaviors are used as those used by the affluent private preschool children. An ethnographic study conducted in a public school could provide some interesting insight into the information seeking culture of children from a different socioeconomic class who might
experience higher numbers of students in the same classroom, less supplemental classes and activities, and differences in technology access and use.

Second, future researchers might engage the school librarian as a participant for study. Initially, including the school librarian was part of the research plan, but the school did not allow the pre-K students to check out books from the library and the only interactions they had with the library’s personnel happened during story time. Studying an interactive program initiated by a school librarian could provide important data about the purposeful instruction of information seeking behaviors with pre-K students. Additionally, the nature of collaborations between a school librarian and classroom teachers might offer data about purposeful instruction of information seeking techniques that help preschool children form and strengthen the information skills they are developing earlier in school.

Finally, the area of productive questions in the pre-K classroom needs further inquiry. The modeling of productive questions by educators bears study to demonstrate the efficacy of proper questioning techniques with children’s information seeking behaviors. This particular information seeking research project did not measure productive versus nonproductive questioning; therefore, understanding how teachers can aid students in gathering information is integral in developing future models for this age group (Dengler, 2009; Eltgeest, 1985; Martens, 1999). The relationship between productive questions and the information science field on pre-K children’s information seeking behaviors has great potential as a research agenda.
APPENDIX A

SEMI-STRUCTURED INTERVIEW
Semi-Structured Teacher/Teacher’s Aide Interview Scripts

Thank you so much for sitting down with me to discuss the information seeking skills of your students. I will be asking a few questions regarding the information seeking habits of your students in the classroom/library media center environment. Please feel free to ask for clarification or add additional information that you feel would be beneficial for this research project.

1. What types of questions do your students ask? (Research Question [RQ] 2, 3, 5)
2. Do your students ever question the validity of an answer? (RQ 2, 5)
3. Do students ever ask where to find an answer to an inquiry? (RQ 2, 5)
4. What types of resources are used to aid in answering the student’s questions? (RQ 4, 5)
5. Do the students ever ask to look up a question on the Internet? How about in a book? (RQ 2, 4, 5)
6. How often do your students visit the library? (RQ 4)
7. When you answer a question, do you give a direct answer or do you ever give students suggestions on how to find the answer to the question? (RQ 4, 5)
8. Have you actively implemented any information seeking curriculum? (RQ 4)
APPENDIX B

ASSENT AND CONSENT FORMS
Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

**Title of Study:** Understanding the Information Seeking Skills of Pre-Kindergarten Students: An Ethnographic Exploration of Their Seeking Behaviors in a School Setting

**Investigator:** Sarah Stewart  
University of North Texas (UNT) Department of Library and Information Science (College of Information). **Supervising Investigator:** Dr. Elizabeth Figa

**Purpose of the Study:** I am interested in how students in the pre-operation stage seek information in the school setting. Information seeking behavior has proven to be a topic of growing interest in the field of information science in relation to the behaviors seen in children and teens. An increase in pre-Kindergarten (pre-K) education has created a lack of understanding in how pre-K students seek information and how best to cultivate these skills. Although a number of studies have focused on information seeking behavior in children; however, very little attention has been given in literature to exactly what information seeking behaviors are displayed by pre-K students and how to properly cultivate information seeking skills in these young children. The steps of my study are listed below. I expect to begin when the Fall 2013 semester begins and observe 2 days a week for 3 months. I am particularly interested in the student’s behavior during library time.

**Study Procedures:** You will be asked to participate in a semi-structured interview (which is attached). The interview will occur in your classroom/library after school and will last approximately an hour. Questions will be asked to try to determine your perspective on how children seek information. You will also be recorded via audio and video as you interact with the students in the classroom, library, and other school grounds.

**Foreseeable Risks:** The researcher does not foresee any potential risks involved with this study. Participation is voluntary. You may stop participating at any time during the study and may decline to answer any questions.

**Benefits to the Subjects or Others:** This study is not expected to have any direct benefit to you; however, it is our hope that this study will give insight into the information seeking behaviors of 4-year-old children which will aid in the future development of curriculum and classroom environment to foster these skills in children.

**Compensation for Participants:** None

**Procedures for Maintaining Confidentiality of Research Records:** All reasonable efforts will be made to maintain confidentiality. All records pertaining to your involvement in this study are kept confidential. Consent forms will be kept separately from any other study data in order to help protect the identity of the students and other participants. Words or actions displayed by you may be recorded in the dissertation; however, identifying information about you will be
removed and a pseudonym will be used instead. The confidentiality of your individual information will be maintained in any publications or presentations regarding this study.

**Questions about the Study:** If you have any questions about the study, you may contact Sarah Stewart at (214) -2111 or s.stewart1114@yahoo.com, or Dr. Elizabeth Figa at (940) 565-2187 or elizabeth.figa@unt.edu

**Review for the Protection of Participants:** This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

**Research Participants’ Rights:**

Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- Sarah Stewart has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.

- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.

- You understand why the study is being conducted and how it will be performed.

- You understand your rights as a research participant and you voluntarily consent to participate in this study.

- You have been told you will receive a copy of this form.

___________________________  Printed
Name of Participant

___________________________  ___________
Signature of Participant                                      Date

**For the Student Investigator:**

I certify that I have reviewed the contents of this form with the subject signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

___________________________  _________
Signature of Student Investigator    Date
Before agreeing to your child’s participation in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

**Title of Study:** Understanding the Information Seeking Skills of Pre-Kindergarten Students: An Ethnographic Exploration of Their Seeking Behaviors in a School Setting

**Investigator:** Sarah Stewart University of North Texas (UNT) Department of Library and Information Science (College of Information). **Supervising Investigator:** Dr. Elizabeth Figa

**Purpose of the Study:** You are being asked to allow your child to participate in a research study which involves the observation of pre-Kindergarten students to determine their information seeking skills. Information seeking skills are basically any action a person takes in order to find out an answer. Due to the increase in pre-Kindergarten programs, more research is being conducted to further understand the behaviors and cognitive (mental) processes of these children. Pre-Kindergarten children tend to be extremely inquisitive, therefore, opening doors to the ways in which they seek information, who they seek information from, and what types of information they are seeking.

**Study Procedures:** In order to research the information seeking skills of your children I will be spending a significant amount of time observing the students in their classroom environment as well as their interactions during time in the library. I will be using audio and video to record the children’s conversations and interactions during school time activities. I will begin observations in Fall 2013 and spend approximately 2 days a week for 3 hours each day or until I feel certain I have enough data. I will also be interviewing your child’s teacher and library media specialist in order to get a better idea of the information seeking behaviors of this age group.

Once the consent forms are received, I will use a random stratified sampling (basically meaning splitting the forms into two groups: boys and girls) and randomly selecting three boys and three girls to participate in this research project. I will also choose two alternates from each group in case an original project participant needs to remove himself or herself from the study. If your child’s name is randomly selected, you will be informed via letter.

**Foreseeable Risks:** No foreseeable risks are seen at this time.

**Benefits to the Subjects or Others:** This study is not expected to have any direct benefit to your child; however, it is our hope that this study will give insight into the information seeking behaviors of 4-year-old children which will aid in the future development of curriculum and classroom environment to foster these skills in children.

**Compensation for Participants:** Your children will not receive any compensation for their participation in this research project.

**Procedures for Maintaining Confidentiality of Research Records:** All reasonable efforts will be made to maintain confidentiality. All records pertaining to the child's involvement in this study
are kept confidential. Consent forms will be kept separately from any other study data in order to help protect the identity of the student. All files will be kept in a fire safe/locked cabinet in Dr. Figa’s office at the University of North Texas. Words or actions displayed by the child may be recorded in the dissertation; however, identifying information about the child will be removed and a pseudonym will be used instead. The confidentiality of your child’s individual information will be maintained in any publications or presentations regarding this study.

Questions about the Study: If you have any questions about the study, you may contact Sarah Stewart at (580) 235-2111 or s.stewart1114@yahoo.com, or Dr. Elizabeth Figa at (940) 565-2187 or elizabeth.figa@unt.edu

Review for the Protection of Participants: This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

Research Participants’ Rights: Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- Sarah Stewart has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that you do not have to allow your child to take part in this study, and your refusal to allow your child to participate or your decision to withdraw him/her from the study will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your child’s participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as the parent/guardian of a research participant and you voluntarily consent to your child’s participation in this study.
- You have been told you will receive a copy of this form.

________________________
Printed Name of Parent or Guardian

________________________
Signature of Parent or Guardian

________________________
Printed Name of Child

For the Student Investigator: I certify that I have reviewed the contents of this form with the parent or guardian signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the parent or guardian understood the explanation.

________________________                     __________
Signature of Student Investigator      Date
Observation Log

Date: ___________________________________

Location: ______________________________

Type of Information Seeking:

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Attitude of Student:

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Attitude of Person Question:

______________________________________________________________________________
______________________________________________________________________________
Information Requested:

Advice
Spontaneous Life Intuition
Personal Information
Affective Support
Empathetic Understanding
Support for Skill Development
Subject Knowledge
Self-Development Information
Reinterpretation and supplementation
Verification Information

Response of Person Approached:

Direct, unaided
Direct aided
Provision of Materials Provided
Referral
Direction to Provided Service

Need Met:

Need Met
Partially Met
Not Met
APPENDIX D

IRB APPROVAL LETTER
Office of the Vice President of Research and Economic Development
Office of Research Services

September 19, 2013

Supervising Investigator: Dr. Elizabeth Figa
Student Investigator: Sarah Stewart
Department of Library and Information Sciences
University of North Texas

Re: Human Subjects Application No. 13409

Dear Dr. Figa:

As permitted by federal law and regulations governing the use of human subjects in research projects (45 CFR 46), the UNT Institutional Review Board has reviewed your proposed project titled "Understanding the Information Seeking Skills of Pre-Kindergarten Students: An Ethnographic Exploration of their Seeking Behaviors in a School Setting." The risks inherent in this research are minimal, and the potential benefits to the subject outweigh those risks. The submitted protocol is hereby approved for the use of human subjects in this study. Federal Policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only, September 19, 2013 to September 18, 2014.

Enclosed is the consent document with stamped IRB approval. Please copy and use this form only for your study subjects.

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. The IRB must also review this project prior to any modifications. If continuing review is not granted before September 18, 2014, IRB approval of this research expires on that date.

Please contact Shelia Bourns, Research Compliance Analyst at extension 3940 if you wish to make changes or need additional information.

Sincerely,

[Signature]
Patricia L. Kaminski, Ph.D.
Associate Professor
Department of Psychology
Chair, Institutional Review Board

PK/sb
APPENDIX E

INFORMATION SEEKING MODEL
<table>
<thead>
<tr>
<th>Origin of need</th>
<th>School-required</th>
<th>Otherwise imposed</th>
<th>School-inspired</th>
<th>Self-initiated</th>
<th>Circumstantial</th>
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</thead>
<tbody>
<tr>
<td>Information required</td>
<td>Advice</td>
<td>Spontaneous life situation information</td>
<td>Personal support</td>
<td>Affective understanding</td>
<td>Support for skill development</td>
</tr>
<tr>
<td>Mode of contact</td>
<td>Direct, face-to-face</td>
<td>Person already known to user</td>
<td>Person new to user</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Familiarity of person approached</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific individual</td>
<td>Parent at home</td>
<td>Sibling at home</td>
<td>Member of 'distanced family'</td>
<td>Friend</td>
<td>Teacher</td>
</tr>
<tr>
<td>Individuality of contact</td>
<td>Within a group</td>
<td>One-to-one contact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regularity of contact</td>
<td>Repeating</td>
<td>Isolated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response of person approached</td>
<td>Direct, unaided provision</td>
<td>Direct, aided provision</td>
<td>Provision of materials forming information</td>
<td>Direction to provided sources</td>
<td>Cognitive facilitation</td>
</tr>
<tr>
<td>Youngster's involvement if information is provided orally</td>
<td>Passive reception</td>
<td>Via question and answer dialogue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriateness of content</td>
<td>Relevant</td>
<td>Irrelevant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Need met</td>
<td>Need partially met</td>
<td>Need unmet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future action</td>
<td>Continue seeking via other people</td>
<td>Continue seeking with another form of source</td>
<td>Close search</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
REFERENCES


