Exploring the Experiences of Upper Elementary School Children Who Are Intrinsically Motivated to Seek Information

Sherry R. Crow, Assistant Professor of School Library Science, University of Nebraska Kearney

This article describes research conducted to understand the experiences of children in order to inform school librarians' practice in fostering intrinsic motivation for information seeking. An inductive naturalistic approach was used to explore the following question: "What are the experiences in the lives of upper–elementary school children that foster an intrinsic motivation to seek information?" The conceptual framework was composed of Taxonomy of Tasks (Bilal 2002) and A Theoretical Model of Urban Teen Development (Agosto and Hughes-Hassell 2006a, 2006b). Self-Determination Theory (Deci and Ryan 1985) provided the theoretical framework. Participants were survey-selected fifth graders from three diverse schools. Data was collected through interviews and drawings. Students described various family situations and school experiences, and exhibited different communication styles. They exhibited affinity for play, tendency toward creativity, and the disposition of noncompetitiveness. Informants indicated a variety of information-seeking styles and interests, engaged in information seeking to facilitate maturation into adolescence, and recounted diverse information-seeking episodes. All experienced a "point of passion," and "anchor" relationships helped foster their intrinsic motivation for information seeking. Topic interest and relevance, group work, task choice, creating a final product, and fewer time constraints were all components of the students' intrinsically motivating information-seeking episodes. Recommendations for practitioners are included.

Introduction

An accepted goal of school librarians is to help students become lifelong learners (AASL 2009; AASL and AECT 1998). School librarians are commissioned to enable students to use skills and resources so that they may "share knowledge and participate ethically and productively as members of our democratic society" as well as "pursue personal and aesthetic growth" (AASL 2007, 3). AASL emphasizes that "students must gain not only the skills but also the disposition to use those skills" in order "to become independent learners" (2). Similarly, Dunlap and Grabinger (2003) describe the lifelong learner as having the "capacity for self-direction, meta-cognitive awareness, and disposition toward lifelong learning" (7). These descriptions of lifelong learning accentuate the importance of the learner's motivation. In fact, it is considered to be the key attribute because the other attributes are "insufficient if learners are not disposed to engage in lifelong learning" (Dunlap and Grabinger, 9).

Background

Most children experience a decline in academic intrinsic motivation over their years in school. However, research has shown that some children maintain their excitement and a disposition toward intrinsic motivation for learning throughout their elementary years (Lepper, Corpus, and Iyenger 2005). Within a school context, looking at the "starting block," the initial moment and place where students begin seeking information on a particular topic, the point at which they begin to manifest the desire to "know something more," does not tell the story of *why* some students have a disposition toward intrinsic motivation to seek information and others do not. These individual starting block experiences are virtually invisible, mostly based on what Taylor (1968) termed "a cognitive level of visceral need." What will lead to a discovery, then, of what is different about these children who maintain the disposition toward intrinsic motivation to seek information?

Purpose and Research Question

The research for this study sought to understand the experiences of children in order to inform school librarians' practice in fostering the development of intrinsic motivation for information seeking in young patrons. Research was conducted using an inductive naturalistic approach to address the following question: "What are the experiences in the lives of upper elementary school children that foster an intrinsic motivation to seek information?"

Literature Review

The research question encompasses the issues of youth information seeking in context as well as motivation and youth in library and information science (LIS) research.

Youth Information Seeking in Context

The recent trend in information seeking in youth has been about context. While it may seem that information-literacy instruction and system designs are based on "a generic user in a decontextualized context, those who work with young people know that such a creature simply does not exist" (Chelton and Thomas 1999, 8). Two areas to be reviewed in the study of context are task definition and everyday-life information seeking.

Several researchers have explored the importance of task definition to information-seeking behavior. Findings indicate that children are more successful at finding information for completing ill-defined, open-ended tasks than for well-defined, specific tasks (Schacter, Chung, and Dorr 1998) and that they enjoy and are more successful at the self-initiated task that holds personal interest (Branch 2003; Farmer 2007; Hirsh 1999; Shenton 2007). Bilal's Taxonomy of Tasks (2002) shows the variety and relationship of task type, task nature, and task administration. Her conclusions point to the fully self-generated task as the type with which children are most likely to experience success and found that this conclusion applied to more than one culture (Bilal and Bachir 2006).

In a study with a different perspective, Gross (1995), the originator of the Imposed-Query Model, found that children will voluntarily engage in and have a positive experience with an imposed query if they accept the question as their own and feel that their response to the research will be accepted. She concluded that the child's understanding of the context of the task, whether imposed or self-generated, "is fundamental to question development as well as to understanding, transferring, negotiating, and determining the relevance of answers," and that this understanding becomes more important as the question becomes more abstract and open-ended (Gross 1999, 518).

Researching the information-seeking behaviors of youth in the broader context of daily life has brought about the study of everyday-life information seeking (ELIS) in youth. Research in youth ELIS has resulted in varied and mixed conclusions. Oliver and Oliver (1997) found that when students participated in information-seeking tasks that were linked to purpose, context and practical need, they retained more. Shenton (2004) reported that magazine use by teens (especially boys) was overwhelmingly for information about hobbies and consumer interest, but that the Internet was their source of choice for these topics. Fisher et al. (2004) found that "tweens" (children aged nine to thirteen) thought information seeking was a healthy activity, but did not think that their personal and social information needs are easily met. Julien (1999) found that many teens looking for career information did not know where to look, felt overwhelmed by the choices, and did not know what questions to ask.

Several studies have examined the perceived effectiveness of the library by teens, and concluded that secondary-aged students do not believe that school and public libraries contain the information they need for everyday-life concerns, such as drug use, coming-out experiences, and sexual and reproductive health. In addition, the organization of libraries might not facilitate adolescents locating the information they need (Mehra and Braquet 2006; Poston-Anderson and Edwards 1993). Todd's findings were similar, though less bleak, indicating that when teens actually do participate in the information-seeking process on topics of concern to their everyday lives, they are active creators of meaning (Todd 1999a; Todd 1999b).

Based on their study of urban teen ELIS, Agosto and Hughes-Hassell (2006a, 2006b) developed a theoretical model illustrating the concept that teens seek information in everyday life to "facilitate the teen-to-adulthood maturation process" (1394).

A key assumption in the research to date of youth ELIS is that the school and public library can be powerful catalysts in the lives of youth, "providing both an environment and access to sources of information that can shape choices and decisions about life and lifestyle matters" (Todd 2003, 39). The studies indicate, however, that libraries have not always been effective in this role.

Motivation and Youth in LIS

While much of the research on information seeking and youth touches on issues of motivation (such as the importance of context and task definition to the information seeker), there is a body of LIS research that more directly addresses motivation and youth. This literature focuses on student motivation and frustration in using technology, the use of Accelerated Reader (AR) as a

motivational tool, the school librarian's use of motivational strategies, and the motivation of the student during the information-searching process.

Student Motivation and Frustration in Using Technology

Studies conducted to examine student motivation and frustration in using technology during the search process have yielded varied results. Findings have shown a high level of frustration during students' use of the Internet and the online public access catalog, particularly regarding sorting through the abundance of materials available (Borgman et al. 1995; Broch 2000; Solomon 1993). Silverstein (2005) conversely found that students using digital reference services to answer self-initiated questions were highly motivated to do so, especially in elementary and middle school. Bilal (2005) also found a high level of motivation of students to use the Internet. Her study indicates that children are motivated because of an increased level of self-confidence once they learn to use it, and because they enjoyed the challenge of searching and discovering new information. Convenience of use also was a factor.

The Use of Accelerated Reader as a Motivational Tool

Many studies have examined the motivational aspects of AR (e.g., Krashen 2003; McLoyd 1979; Robbins and Thompson 1991; Schmidt 2008), a computer-generated reading program that claims to help educators "build a lifelong love of reading and learning in every student" (Renaissance Learning 2008, page heading). Everhart (2005) found that "motivational style interacts with gender in relation to the competitive and social aspects of the AR program" (12), that the level of implementation in the schools did not correlate with the extent of student reading, and that the management aspects of the program were not being effectively utilized. Her recommendations are that school librarians in schools already implementing AR should take a leadership role, "particularly in the area of book selection, reading guidance and motivation, organization of materials, and teacher professional development" (12). For school librarians in non-AR schools, she recommends that they use her study to help "collaborate with teachers to set individual reading goals for students and develop a responsive collection" (13) without implementing the AR program. Instead of AR, Crow (2004, 2010) suggests using children's choice book award programs because of their intrinsically motivating aspects.

The School Librarian's Use of Motivational Strategies

Ruth V. Small explored how K–8 school librarians used motivational strategies in library skills instruction and the resulting effects on their students' on- and off-task behaviors. Small (1998) found that the school librarians used a significant number of motivational strategies during lessons (an average of 24 strategies per 30-minute lesson) and that middle school librarians used more motivational strategies than elementary school librarians. She also reported that of the motivational strategies used, only 2 percent stimulated intrinsic motivation (Small 1999). More recently, Small, Snyder, and Park (2009) found that elementary school librarians use "significantly more motivational strategies than either secondary or K–12 SLMSs" (8).

The Motivation of the Student during the Information-Searching Process

There have been a few studies on the motivation of the student during the information-seeking process. Kuhlthau (2004), in her research into the Information Search Process, acknowledges the effects of uncertainty on the intrinsic motivation of the seeker. She theorizes that, with the mediation of school librarians and teachers, students can overcome the natural anxiety caused by the searching process and develop a personal interest in the topic being explored.

Building on Kuhlthau's Information Search Process, Burdick (1996) explored differences by gender in the information-seeking experiences of high school students. In her study, she developed an Information Search Styles Matrix based on the focus and involvement of the learner. She found that there were some gender differences, but that both genders were equally represented in the two most academically successful styles. Heinstrom's (2006) study also affirmed the motivational aspects of interest to students who used deep, as opposed to surface, information-seeking strategies.

In a study founded on human developmental theory, Fourie and Kruger (1995) used the works of Eriksen (1950), Havighurst (1972), Piaget (1981), Bruner (1973), and Kohlberg (1958) to indentify the psychosocial, cognitive, and affective needs fueling the information-seeking behavior of teens. They posited that fulfilling these needs motivated students' book and media choices.

Theoretical and Conceptual Frameworks

The theoretical framework for the study defined and conceptualized the social contexts that either foster or hinder the individual's intrinsic motivation to seek information. Deci and Ryan's (1985) Self-Determination Theory (SDT), rooted in theory and research concerning intrinsic motivation and children, provided the basis for the theoretical framework. SDT is an organismic motivational theory that stratefies three types of motivation: amotivation, extrinsic motivation, and intrinsic motivation. The factors that make SDT an appropriate theoretical framework for a study of experiences that foster intrinsic motivation are the epistemological, ontological, and axiological assumptions of the theory relative to the research question; its distinct treatment of the construct of intrinsic motivation; SDT's specific frameworks for examining social contexts that facilitate or undermine intrinsic motivation; and its compatibility with accepted principles and practices of human development and learning. Of particular importance to the current study is SDT's Cognitive Evaluation Theory, a subtheory that proposes that social conditions that produce a sense of *autonomy* and feelings of *competence* catalyze one's inherent tendency toward intrinsic motivation. Additionally, the subtheory posits that *relatedness* also has been found to be a significant factor (Ryan and Deci 2000).

The conceptual framework was composed of two information-seeking models: the Taxonomy of Tasks (Bilal 2002) and the Theoretical Model of Urban Teen Development (Agosto and Hughes-Hassell 2006a, 2006b). The Taxonomy of Tasks addresses the context (with reference to task definition) of the particular questions students ask. For the current research, it directed the collection and organization of questions being asked by the students under study. Its use helped in understanding the task definition of students' questions and the reasons behind their success or failure, as well as their preferences, in answering these questions. The current study also used the Theoretical Model of Urban Teen Development to classify and sort the topics of interest

generated by the intrinsically motivated students. The seven independent variables in the Agosto/Hughes-Hassell model—the emotional self, the reflective self, the physical self, the creative self, the cognitive self, the sexual self, and the social self—are based on personal and cultural situations and settings. Use of the model illuminated the sociocultural, as well as developmental, reasons behind the information-seeking behaviors of the student participants.

Methodology

Participants were selected from a pool of fifth graders from three diverse schools within a single community in Colorado Springs, Colorado. Initially, the children were chosen on the basis of results of a survey, the Information Seeking Self-Regulation Questionnaire (SRQ-IS), especially developed by the author with the aid of Dr. Ruth Small and the advice of Dr. Edward Deci and Dr. Richard Ryan for the study (Crow 2009). It was adapted from the Academic Self-Regulation Questionnaire (SRQ-A), a similar instrument used with children to identify motivational regulation in academics (Ryan and Connell 1989).

The questionnaire asks respondents why they exhibit a certain behavior (or category of behavior), then provides several answers that represent different styles of motivation or regulation. Students are asked to circle the words (ranging from "very true" to "not at all true") that best explain their responses to the answers. The questionnaire contains five questions with eight answers each. The questions are:

A. Why do I look for information for a project or assignment?
B. When I look for information about a new topic it is usually…
C. Why do I look for information in books?
D. Why do I look for information in magazines?
E. Why do I look for information on the Internet?

Examples of the answers are (explanations in the parenthesis were not included on the survey):

- Because I'll get in trouble if I don't (external regulation)
- Because I'll be ashamed of myself if it didn't get done (introjected regulation)
- Because it's important to me to [look for information in books] (identified regulation)
- Because it's fun (intrinsic regulation)

For all five questions, there are two answers representing each of the four regulatory styles—external, introjected, identified, and intrinsic—for a total of eight answers to each question (see Crow 2009, 109–12 for complete survey).

Interviews and a drawing activity were used with the nine informants to collect data that served as the basis for analysis.

Interviews

The interviews were semistructured and open-ended, beginning with broad questions (e.g., "What makes a good day for you?") and narrowing in on the experiences that illuminate the

phenomenon of interest—intrinsic motivation and information seeking (Creswell 1998, 121). The informant and researcher collaborated to construct meaning from the student's experiences. The information sought in these interviews was (a) the factors in the students' life experiences that have contributed to their dispositions toward seeking information generally, and (b) the factors surrounding their information-seeking experiences, especially the types of questions they ask. The protocol for the second line of questioning (information seeking experiences) was developed by Shenton and Dixon (2003) for a study of the information-seeking behavior and needs of young people, and was based on a similar study by Dervin et al. (1976).

The researcher assumed a role somewhere between a friend and a leader (Fine and Sandstrom 1988), and maintained flexibility on the basis of the informants' reactions and contributions. Since the informants were children, special consideration was given to the issues of ability (McDonald and Willett 1990; Waterman, Blades, and Spencer 2001), power (Hood, Kelley, and Mayall 1996; Punch 2002), and ethics (Greene and Hogan 2005). While most of the information was gathered primarily from the informants; some information also was gleaned through informal conversations with parents and teachers.

Drawing Activities

Using a procedure established by Amabile (1982b), students were given paper and a variety of drawing instruments and were asked to illustrate two topics. The two topics were "what makes a good day for me," and "a time when I sought information." The researcher's observations of the drawings were not based on specialized art skills, but on the perspective as a researcher of the students' lived experiences. In addition, the input and interpretations of certified elementary art teachers provided a means of analysis and a means to check reliability. Drawing exercises were conducted at the selected school sites.

Limitations

The methodological limitations to the current study include the use of a sample that is purposive (Miles and Huberman 1994) and not random, the gathering of informants from one geographical area, and the limitation of using the SRQ-IS with children who are able to understand and respond to the questionnaire. The informants were chosen (through results of the SRQ-IS) from three, preselected sites in an attempt to gather information about children from socioeconomic and culturally diverse backgrounds. All of the schools are in Colorado Springs, Colorado, because of access issues; that is, the author had better access to the schools because they are located in Colorado Springs, the author's home at the time of the study. One student, who was limited by his communication, social, and problem solving skills, was not able to participate in the questionnaire, though attempts were made to include him (such as using an instructional aide to help him take the questionnaire). Because of these limitations, the results of the study cannot be generalized to all students in all situations.

Findings

Findings were based on the data gleaned from the survey, interviews, and the drawing activity.

The Survey

One hundred surveys were completed by the fifth graders in eight classes from the three selected schools. The dominant motivational style for the pool of fifth graders was *identified* (36 percent), followed by *intrinsic* (21 percent), *introjected* (17 percent), and *extrinsic* (12 percent). Fourteen percent of the students had no dominant motivation style (see figure 1).

Twenty-one students (21 percent) were found to have a dominant intrinsic motivation style. These students were then sorted high to low by their composite subscale for intrinsic motivation. Because of the need to clarify and emphasize the salient aspect of the intrinsic motivation style, a differential of at least .3 points between the intrinsic motivation composite subscore and the next highest motivation style subscore for each student was used as a measure to determine informants. Of the 21 students with a dominant intrinsic motivational style, 9 were identified with scores that met this criterion. The results yielded a pool of 9 informants (9 percent).

Reliability of the SRQ-IS

A Cronbach's alpha, perhaps the most popular measure of internal consistency, was calculated to test the reliability of the survey response items that propose to capture the student's motivation style for information seeking along four dimensions: intrinsic, identified, introjected, and external. It is conventional to accept an alpha of 0.7 or greater as indicating a reliable set of responses (Hinton 2004, 302–3). All findings were above that standard, indicating that each group of survey responses for each of the motivation styles displayed an internal consistency across all subjects (see table 1).

The nine students identified as informants chose aliases: Alexandra, Bailey, Bob, Carl, Michael, Mickey, Melissa, Nicole, and Victoria. I referred to them by these aliases throughout the rest of the data-collection process and will use these same aliases when referring to individual students throughout this article.

The Interviews

Analysis of the data indicates that students came from various family situations and socioeconomic backgrounds, exhibited different communication styles, and described varied school experiences. They exhibited an affinity for *play*, a tendency toward *creativity*, and the disposition of *noncompetitiveness*. With regard to their information-seeking behavior, informants indicated a variety of information-seeking styles and interests, engaged in information seeking to facilitate maturation into their next developmental stage (adolescence), and recounted diverse and successful information-seeking episodes. A *point of passion* experience occurred in the lives of all of the informants (most at the age of four), and the presence of *anchor* relationships helped in fostering their intrinsic motivation for information seeking.

Home and Family Life

While several students came from typical small city homes, there was variation in the informants' homes and family situations (see table 2).

Students were asked to describe their homes. Most lived in single-family houses, but there were exceptions. Victoria lived in a two-bedroom apartment. Melissa was in foster care and indicated that her current home had two bedrooms, but preferred not to talk about it but instead to describe her father's home. Children described their relationships with their families mostly positively and described their family lives primarily in tranquil terms, but there were some major family problems discussed in the interviews. For example, Victoria described the difficult housing situation since "my mom got divorced by one of her husbands and he took most of our money and then he moved to Texas."

The students' styles of communication also varied. Alexandra, Nicole, Michael, and Victoria spoke with clarity and poise, and used adult vocabulary. Bailey and Carl were shy and hesitant about speaking, using mostly short answers. Bob, Mickey, and Melissa were exuberant and expressive.

The data gathered indicated varied experiences for the informants in school as well. Three students (Alexandra, Mickey, and Victoria) mentioned they were in the "Gifted and Talented" class. In contrast, Bailey's teacher informed me of the special services she needs for both speech and her low reading ability.

All the children commented on at least one area of their lives in which they felt competent, including nonacademic areas (e.g., drawing, music, soccer, camping, video gaming, imagination, talking, dancing, football). Perceived competence in school varied, with eight of nine informants (all but Melissa) discussing their own competence in at least one academic area (see figure 2).

Play

The informants recounted a variety of play experiences. They described them mostly in social terms, and many with a variety of age groups, family members, and some with pets. Students discussed engaging in a variety of outdoor activities. The children described biking, hiking, and camping. "Yeah, behind my house, there's all kinds of trails and stuff and me and my friends will go up and ride" (Michael). Sports were mentioned as play, primarily neighborhood football (interviews took place in the fall). Children described engaging in outdoor activities mostly in pairs and groups, and often with siblings and other relatives. A couple of students described pretend games and activities that use the imagination. Some students talked about playing on the computer. They described playing video and Internet games, both with friends and alone. "I like to play video games and hang out with my friends" (Bob).

Students discussed information-seeking activities they do for fun. "I kind of just like to go on the Internet and type in anything just randomly, like I can type in dinosaur or birds" (Victoria). "I like to observe—I like to catch bugs and observe them. … I do it in my spare time" (Carl). With regard to play, the comments of these children indicated that they viewed information seeking as fun and as a regular part of their leisure time.

An essential quality exhibited by informants during the interviews was that they viewed play time as important (as evidenced by how many times it was mentioned and the long and enthusiastic descriptions they gave), and that they do what they can to protect it. Related to the

informants' sense of play was their sense of humor. Students repeatedly gave "because they are funny" as a reason why they liked their friends and other people with whom they had relationships, as well as why they used Internet sites, read books, and watched movies.

Creativity

A characteristic that was portrayed prominently by the informants was creativity. All but one child (Bailey) described some creative experience during the conversations, and most mentioned several (see table 3).

Three children described books they are currently writing (Michael, Bob, and Nicole), and three drew pictures or diagrams to explain a point or just doodled during the interview process (Melissa, Alexandra, and Bob).

Some students mentioned their creative activities as something they engage in for the pleasure of doing them, but several mentioned the activities as a way to express their interests, or as an information-seeking behavior. For example, both Nicole and Victoria described the information-seeking experience of taking photographs of wildlife and nature in order to draw and study them.

Noncompetitiveness

Another characteristic exhibited by the student informants was a lack of competitiveness. This quality was revealed not so much by what the children said, but by what they did not say. Many of the students were involved in competitive activities such as sports, but rarely did they say anything about competition or winning. Even when pressed on the issue, students did not seem to have a consciousness of competition. For example, Bailey discussed her activities in cross-country running, and when asked she could explain that there was some kind of award given for placements. However, she was not sure what her placements had been. When I asked her why she participated, she said she liked running and it made her happy.

A poignant example of participating in competitive activities but not being "mindful" of competition was Michael's passion for football, specifically the Dallas Cowboys. Michael was his alias, and it was taken from his favorite player, Michael Irvin. He described a book he was writing about this player and mentioned specifically how impressed he was with Irwin's humble beginnings. Michael expressed both through his words and actions a strong affiliation with the sport and the Dallas team. However, in all of our conversations about football, the Dallas Cowboys, and Michael Irwin, Michael did not mention scoring, winning, or a score of a game. According to the descriptions Michael gave of his experiences with football, his interest was based on affiliation and identity, perceived competence, relationships, and the joy of playing, but not on winning and competition.

Another example of "what the students did not say" was a lack of comments about Accelerated Reader (AR), a computer-generated reading program that claims to help educators "build a lifelong love of reading and learning in every student" (Renaissance Learning 2008, page heading). AR has been in use in one of the survey-site schools for many years; however, only two students from that school made a comment about the program (though several students did

mention enjoyment of reading and other reading activities). Bailey discussed that to go to the school library "we wait until we finish a book and take an AR test and then we go turn them in." She was under the impression that she was not allowed to go to the library unless she had passed the AR test for the book she had checked out. Bailey indicated a passion for books, almost to the point of fearing a time when she could be without. She mentioned a few times in her interview about going to the public library and bookstores so she would not be without a book to read. After consulting with the school librarian, the author discovered that Bailey's impression of library AR policy was faulty information and that the students could visit the library for other reasons. Bailey did know that she had three points for AR, and was happy with that total. Apparently the AR program was not all that motivating to her, but it did not keep her from getting the books she craved, either. The other student who mentioned AR was Mickey, who commented that she had gotten the idea for questions that she used for a self-generated exploratory research project from taking AR quizzes.

Information-Seeking Behavior

The author gathered data about information-seeking behavior from the students in two ways: through the initial questions about the students' lives, and through a specific set of questions about their information-seeking experiences. As mentioned before, the children voluntarily included information seeking in their answers to the initial questions about their lives:

> Whenever I'm like wandering in my mind when I have to ask information about nature and stuff . . . like [what would] a regular spruce tree do in the summertime? Would it change colors? What kind of pine cones will it have? (Victoria)

> I like learning, but I mean it gets kind of boring sometimes, but researching stuff is like the best, doing projects. Holy cow, that's really fun. (Bob)

These types of answers indicated that information seeking is a part of these children's lives, a behavior they look forward to and, in Bob's case, do not even think of as learning. It is one of the things on their lists that they consider fun.

Along with general statements about information seeking, students also described specific information-seeking experiences that occurred in the courses of their lives. These experiences, along with the second line of questioning about information-seeking episodes, formed the data for this section of the research results. The results of the information-seeking behavior data collection fell into three categories: the children's information-seeking styles, their interests and passions, and their described information-seeking experiences.

Informants' Information-Seeking Styles

Students described engaging in a variety of information-seeking styles based on the type of media they used (see table 4). They used computers, books, and magazines, watched movies and television, and observed naturally occurring events. They also asked other people. The informants used media to find information and also as a means of entertainment, though it was often hard to differentiate between the two because they seek information for fun and enjoyment.

The book readers in the group (Alexandra, Bailey, Mickey, Nicole, and Victoria) brought up the terms *reading*, *reader*, *books*, and *read* often during their interviews, and indicated that they read books both for leisure and for information seeking. These children know what they are currently reading, what books they have read, and the personal reading styles and title selections of their family members. They liked both fiction (usually about their area of interest, such as dog stories) and nonfiction, and one indicated an affinity for the dictionary (Victoria). Two other students (Michael and Bob) described being book *users*, but there was no indication that they were avid readers, and their interview comments indicated other primary information-seeking styles. These students, along with the other five, indicated that they regularly used books to find information.

All nine informants described using technology for information seeking. They used the computer for entertainment, creating (drawing, writing, making a website, etc.), and used the online catalog to look up books. However, only one child (Bob) indicated that the Internet was his primary information source. Eight of the informants tended to begin with another source and then followed up with the Internet for additional information. An example of this is Melissa's episode with worms. She recounted that every time she goes to her grandma's house she looks under her bricks to see what she can find. One day she found worms, so she put the worms in a container along with the dirt they were in, and used the Internet to find what they needed to survive. "I was happy, cause then I [didn't] have to go buy anything from the store for them, it's right in there where they're living, cause they're living in their food." Computer users mentioned using Google, Ask.com, Yahoo!, and Wikipedia.

The watchers of television (Carl, Michael, and Mickey) and movies (Alexandra, Bob, Michael, Mickey, Nicole, and Victoria) watched mostly for entertainment, but they were also spurred on by their individual interests. Students tended to use television viewing as a way to "graze" on information, choosing to view shows that focused on their interests. None of the interviews indicated that television or movie watching was a primary information-seeking behavior for the students; however, it is interesting to note that two children could trace their points of passion (the informants' first remembered experience regarding an interest or fascination they have since pursued) to a particular movie they watched, and one student mentioned that a movie was the inspiration for a book she was writing.

Four children (Carl, Melissa, Nicole, and Victoria) were observers, falling into two types: opportunistic and intentional. Opportunistic observers looked at artifacts or objects when they presented themselves. They usually stumbled across objects, mostly crawling creatures such as insects, and took them inside to observe them. Carl and Melissa were opportunistic observers, typically observing and then checking other sources for more information on their observations. Nicole and Victoria were more intentional in their observing, such as planning excursions to take pictures of wildlife.

Three students mentioned asking people for information. Two—Bob and Victoria—described asking their parents information on a regular basis. Victoria knew what kinds of questions she should ask her mom and which to ask her dad. Bailey discussed asking the public librarian for help.

Two children (Michael and Nicole) discussed using magazines. They mentioned one episode each, both for assignments. Only one (Nicole) indicated success using magazines.

Informants indicated that they used libraries for information seeking and for finding books for leisure reading. Five (Alexandra, Bailey, Michael, Mickey, and Victoria) told of experiences regarding finding both fiction and nonfiction at either the school or public library, while Michael only described incidents of finding nonfiction for specific information requests at the public library (and did so on a regular basis). One student (Melissa) discussed wanting to volunteer in the school library, primarily for the purpose of building a continuing relationship with the library clerk.

Informants' Interests and Passions

Students expressed a variety of interests and information-seeking behaviors related to those interests. The informants usually expressed interest in more than one topic and discussed self-initiated information-seeking experiences in academic, physical activity, reflective, fiction interest, and creative activity topics. Of the information-seeking interest topics, more children showed interest in academic topics than any other. Within academics, science was the predominant interest, and within science, animals was the favorite topic. Six of the nine informants indicated an interest in animals (Alexandra, Bailey, Bob, Mickey, Nicole, and Victoria), three in bugs and crawling things (Carl, Melissa, and Victoria), and three in astronomy/space (Bailey, Bob, and Victoria); see table 5.

Interest in creative activities proved to be a special case in relation to the other interest groupings. All but one of the students (Bailey) described personal creative experiences. However, the manner of the creative engagement fell into three categories: being creative for the enjoyment of the activity, seeking information about the creative activity, and using a creative activity as an expression of another interest (see table 5).

As previously discussed, the current study used the Theoretical Model of Urban Teen Development (Agosto and Hughes-Hassell 2006a, 2006b) to classify and sort the topics of interest generated by the intrinsically motivated students. The model was evaluated for age-approriateness by comparing Havighurst's (1972) Developmental Tasks of Middle Childhood with the independent variables from the Agosto Hughes-Hassell model (they had used the 11 Developmental Tasks of Adolescence). Five of the seven variables from the Agosto and Hughes-Hassell model could be supported by Havighurst's Developmental Tasks of Middle Childhood.

Of the two variables in the Agosto and Hughes-Hassell (2006a, 2006b) model not depicted by Havighurst's (1972) Developmental Tasks for Middle Childhood, the first is *the sexual self*, which in the original model is based on the developmental tasks for teens, "learning to manage his or her sexuality" and "learning to recognize and accept his or her sexuality" (Agosto and Hughes-Hassell 2006b, 1424). Certainly, beginning fifth grade students (interviews were conducted in September) are starting to be concerned with sexuality as a few may be entering puberty, but Havighurst views this concern more as a social entity rather than a focus on *the sexual self* that is defined in the tasks for teens as listed above. Feldman (1999) seems to concur with this change in focus from childhood to the teen years when he defined adolescence as the "bridge between the asexual child and the sexual adult" (as paraphrased in Santrock 2006, 369).

Additionally, students in the study did not mention topics on *the sexual self*. One of the reasons for this could be that they did not feel comfortable discussing such topics with an interviewer they had just met, but another reason could be that Havighurst is correct in thinking that developmental tasks concerning sexuality (outside of masculine and feminine social roles) are not a major concern for children until they reach approximately twelve years of age.

The second variable not addressed by Havighurst for this age group is the same one not addressed in the model for teens—*the creative self*. I found it was necessary to add this variable to cover all the information-seeking questions of the students in this study, as did Agosto and Hughes-Hassell (2006a, 2006b) in theirs.

Students' statements and pictures that depicted their interests were collected, categorized, and stratified into a typology (see table 5). Then those interests for which students indicated they had had self-initiated information seeking episodes were sorted into the variables in the adapted model. All of the self-initiated information-seeking interests could be classified into this model, and all of the variables from the adapted model contained at least one information-seeking interest (see figure 3).

Described Information-Seeking Experiences

In the second phase of the interviews, the specific question asked of informants about information-seeking episodes was the following:

> Think of a time recently when you wanted or needed to find out information or learn something either for school or for your own interest. It might have been at home, at school or anywhere else. Could you tell me about what you remember of that time? (adapted from Shenton and Dixon 2003)

The question given if students did not respond to the first question was "Do you go anywhere or do anything to look up information? Where and what about?" After these initial questions, students were asked if they could think of another time that was different from the first. In this way, an attempt was made to capture at least two information-seeking experiences from each informant. Eight of the nine informants' responses to the first information-seeking question was immediate, and sometimes students offered more than one experience without the follow-up questions. There was only one student (Melissa) who hesitated, and the author believes it was because she began discussing her family situation. Once the clarifying questions were asked, she was then able to focus quickly on other information-seeking experiences. Again, the immediate and clear responses to this line of questioning were an indication of a mindset of information seeking as well as an abundance of experiences from which to choose.

Student responses to the second line of questioning were classified according to the categories in Bilal's Taxonomy of Tasks (2002). Those categories are *task type* (open-ended versus closed), *task nature* (complex versus simple), and *task administration* (fully assigned, semi-assigned, or fully self-generated). In addition, the author added another dimension to the categorization: *task relationship*, or whether or not the episode was experienced with a group (more than one) or as an individual (see figure 4 for an example of the use of the adapted taxonomy). The students' determination of the success level of the experience also was recorded, as well as their

preference between the two experiences they had shared. Since this study focuses on intrinsic motivation, those experiences for which the students expressed a preference were analyzed. Though the pool of experiences was quite varied in structure and purpose, six of the nine students preferred school research assignments.

Students' preferences included both open and closed questions, both simple and complex experiences, and included both questions that were semi-assigned and some that were fully self-generated. *None of the preferred information-seeking experiences was fully assigned*. Five students preferred group experiences while four preferred individual.

The reasons students gave for preferring one experience over the other were relevance or interest in topic (5), working in a group (3), the experience of the information seeking itself (2), creating the final product (2), choice of aspect within topic (1), and no time limit (1). Some children gave more than one reason.

The author observed an experience in one of the early interviews that was to be common to all nine of the informants; in fact, after finding this experience to be true for three informants in succession the author went back to the other informants to inquire as to whether they also had experienced it. The experience, termed *point of passion*, is the informant's first remembered experience regarding an interest or fascination they have since pursued. Not only were all of the informants able to remember a single interest-igniting experience, but six of them described having this experience at the age of four or five. The other three informants had the experience between the ages of seven and nine (see table 6).

Most of the children's point of passion experiences occurred at home, but four students (Bob, Carl, Nicole, and Victoria) described incidents at school. One child (Bailey) described an experience at a bookstore. Six informants described involvement by a parent, parents, or a grandparent in the incident. One described involvement by a teacher, and two described involvement by friends. Six students discussed follow-up activities by the adults in their lives. They described experiences of support from parents, teachers, friends, and grandparents. Some of the support was elaborate, some just simple help in giving students what they needed to further their passions.

The Drawing Activity

Most of the data was collected from the interviews; however, the drawing activity also provided some valuable information. The activity consisted of giving the students two topics to draw: "what makes a good day for me," and "a time when I sought information." The art-evaluation process was adapted from a procedure established by Amabile (1982b) to evaluate creativity in authentic art. This procedure has been used in other studies concerned with children's art and creativity (Amabile 1979, 1982a; Amabile, DeJong, and Lepper 1976; Koestner et al. 1984). Following guidelines recommended by Amabile, the art tasks for the current study required students to draw and did not depend on specialized skills, were based on open-ended questions that allowed for flexible responses, and led to a product that could be evaluated. The judges were three art teachers from a neighboring school district. They were all experienced in teaching art to this age group as well as having received education themselves in the domain.

The evaluation forms prepared for the judges contained a scale for each of nine art dimensions. The scale range was very poor, poor, average, good, and very good. The dimensions were for creativity (novel idea, effort evident, detail, complexity, variation in shapes, and novel use of materials) and for technical goodness (organization, neatness, and expression of meaning). These dimensions were among those listed in the artistic clusters of creativity and technical goodness evaluated in other creativity-in-art studies (Amabile 1979, 1982a; Amabile, DeJong, and Lepper 1976; Koestner et al. 1984). They were chosen for this study based on their appropriateness for the age group and the particular art activity. Judges were given the particulars regarding the administration of the art activity both in writing and verbally, but they were not given specific information on the purpose of the activity nor of the study. On the forms and in the verbal instructions, the directions stated, "According to your professional judgment, please evaluate each student's work as it would compare with the average fifth grade student in the same situation." Judges were informed that the students would not see the evaluations. The results of the art activity are here presented in two categories: the author's observations of the drawings, and the art evaluations from the professional judges.

The Author's Observations

The author's observations of the drawings were not based on specialized art skills, but on the author's perspective as a researcher of the students' lived experiences. The drawings were examined to see if and how these experiences were depicted. The students' interests and information-seeking styles as indicated in their interviews were depicted in their drawings. The pictures tended to illustrate the students' primary information-seeking styles, though this was not always the case. In addition, the children's pictures depicted many play and leisure activity scenes, and none of the pictures illustrated competitive or winning/losing situations. While the pictures varied in style, the scenes were consistent with information retrieved from the interviews for each student.

Art Evaluations from the Professional Judges

The evaluation forms from the three art evaluators were collected and values assigned to the scale scores, using 1 for very poor to 5 for very good. The dimensions were grouped by creativity and technical goodness, and the mean scores calculated for each of the student's "best work." The "best work" was determined as the picture receiving the highest total score from all three judges for each student. Using the score of 3.00 as average, eight out of the nine informants scored above average in both creativity and technical goodness based on the composite mean scores for the students' "best work." The range for the eight students' above-average composite scores was 3.11–4.61 in creativity and 3.22–4.44 in technical goodness. Bob was the only student who scored below average on either of the composite mean scores for creativity and technical goodness, and he scored below average for both creativity (2.72) and technical goodness (2.33).

A Cronbach's alpha was calculated to test the reliability of the judges' scores for each of the artistic dimensions in the art evaluation. Internal consistency was measured for all three judges' evaluation scores for each of the two drawings produced by the students. The conventional score of alpha 0.7 or greater, indicating a reliable set of responses (Hinton 2004, 302–3), was found for

all but the “novel idea” dimension for picture A, and for all the dimensions for picture B. The findings indicate that for all but one set of evaluations on one dimension for picture A, the evaluation scores for the artistic dimensions displayed an internal consistency across all three judges (see table 7).

Conclusions and Discussion

While it is important to keep in mind that the observations drawn from this exercise are applicable only to the study’s pool of informants, the following conclusions may shed light on issues surrounding the general topic of intrinsic motivation within the framework of information seeking.

Diversity

Students in the study who were identified as intrinsically motivated to seek information came from many family situations and backgrounds.

Not Necessarily “Advantaged”

The typical assumption is that these children fit an “advantaged” profile—white, rich, high achievers with doting parents who provide them with every asset needed for success. However, the fact is that while some of the children in the study tended toward the “advantaged” profile, most did not.

Informants’ family configurations and situations varied (though most were living with both their mother and father), but all described *anchor* relationships, people who supported their interests and information-seeking behavior. The importance of anchor relationships in the informants’ information seeking supports the research that relatedness plays an important role in intrinsic motivation; in fact, it is one of the three major psychological needs posited in Self-Determination Theory (SDT), in the subtheory Cognitive Evaluation Theory, as the basis for intrinsic motivation (Ryan and Deci 2000). While autonomy and competence are considered essential,

> a secure relational base appears to provide a needed backdrop—a distal support—for intrinsic motivation, a sense of security that makes the expression of this innate growth tendency more likely and more robust (Deci and Ryan 2000, 235).

The conclusion is that anchor relationships foster intrinsic motivation for information seeking, and though these relationships are usually adult relatives, they need not be. Others can and have stepped into the anchor relationship role.

Success in School

Informants perceived themselves as competent in a wide variety of nonacademic and academic areas, including describing success and competence in information seeking itself. Students were not all competent in reading, as one might expect of those students who are intrinsically motivated information seekers. Such a link has been suggested between *perceived* reading

competence and information skills (Arnone, Reynolds, and Marshall 2008). SDT research also shows that it is *perceived competence* (Vallerand and Reid 1984) that fosters intrinsic motivation, and this study suggests that perhaps it is this *sense* of competence, rather than the *area* of competence, that has influenced the informants' intrinsic motivation for information seeking.

Although all of the children perceived themselves as competent in at least one area, these were not necessarily competencies that would help them succeed in school. Couple this with the varying communication styles of the students, and it leads to the conclusion that educators may not easily recognize children who are intrinsically motivated for information seeking in their classrooms and libraries. While it is common in some schools to reduce, limit, or eliminate information-seeking experiences such as research projects and even library sessions in order to provide time for students to receive special services (e.g., remedial reading, help for learning disabilities, and gifted instruction), as well as to neglect those who do not seem competent or do not communicate their information needs well, these "special" students can and do benefit from school-related information-seeking experiences, as do students who fit the "normal" profile. The indication is that research and library-related experiences contribute to intrinsic motivation for information seeking for many types of students, both within and outside of what might be considered the norm.

Similarity: Commonalities of Student Experiences

Students in the study who were identified as intrinsically motivated for information seeking exhibited an affinity for play, a tendency toward creativity, and the disposition of noncompetitiveness.

Affinity for Play

Research indicates that play is an important component in the development of healthy individuals. It

> increases affiliation with peers, releases tension, advances cognitive development, increases exploration, and provides a safe haven in which to engage in potentially dangerous behavior. (Santrock 2006, 281)

Interestingly, aspects of play can also be associated with intrinsic motivation. For example, Berlyne (1960) described play as a way to satisfy curiosity and the need to explore, considering both to be at the root of intrinsic motivation.

The play experiences the informants described were indicated to contribute to the fulfillment of students' needs for competence, autonomy, and relatedness, all principles espoused by SDT (Deci and Ryan 1985) to foster intrinsic motivation. While it may or may not be true that most students—intrinsically motivated for information seeking or not—enjoy and thrive on play, based on the author's experiences working with children, the students in the study seemed to have a particular affinity for it. In fact, not only did they discuss play often and enthusiastically, students also connected play with information seeking. Informants described incidents of play

that involved information seeking, and information seeking was indicated as play for many of the students.

These findings suggest that the play life of children is an important contributor to their intrinsic motivation for information seeking. However, further study is required to determine if the affinity for play is more poignant for students who are intrinsically motivated for information seeking than it is for other children.

Creativity

Students in the study exhibited a tendency toward creativity, which was indicated by statements in their interviews as well as by the evaluations of the art teachers. They described creativity as an outlet in itself, a way to express interest, and as an object for information seeking. The data suggest that creativity both contributed to and manifested itself in intrinsic motivation for information seeking in the lives of the informants. The assumption is that students who engage in information-seeking experiences that include the use of creativity are more likely to be intrinsically motivated for both the information seeking and the creative aspects of the activity, and that the inclusion of each enhances the intrinsically motivating aspects of the other.

According to the National Association for Gifted Children (2008), creativity is "the process of developing new, uncommon, or unique ideas" (para. 15). Csikszentmihalyi (1997) posited that creative people experience a state of "flow," which he believed can be achieved by anyone under the right conditions. Creativity is by definition intrinsic, or emanating from the self. Research has shown that people who are intrinsically motivated for an artistic task exhibit higher levels of creativity than those who are not (Amabile 1979) and that external conditions such as evaluations, competition, and behavior limits reduce intrinsic motivation for the artistic task (Amabile 1979, 1982a, 1982b; Koestner et al. 1984).

Sheldon (1995) took this concept a step further when he posited that not only is intrinsic motivation associated with creativity on the task level, it also is connected on the trait level. He proposed that the measures of self-determination, as defined in SDT (Deci and Ryan 2985), and creativity be linked. The significant psychological aspect is autonomy. "A long tradition of empirical research has established that personal autonomy is a core characteristic of the creative personality" (Sheldon 1995, 25). The assumption is that creative, self-determined people are better able to "resist the controlling situational and intrapersonal forces that can undermine creativity and are also better able to establish and maintain contact with intrinsic interests" (25). Csikszentmihalyi (1997) echoed this sentiment when he suggested that the first step in maintaining creativity is to cultivate one's curiosity and interests.

Noncompetitiveness

Informants in the current study exhibited a disposition of noncompetitiveness. They rarely mentioned winning, losing, or competition in any domain. The reasons they gave for engaging in competitive activities was for the joy of participation and because they were competent or were striving for competence—both intrinsic reasons. The data suggest that the effect of the extrinsic motivator—competition—to diminish intrinsic motivation is decreased through a focus on the

intrinsic reasons for participation in an activity as well as on the functional feedback of personal performance. Since research indicates that extrinsic motivators have a tendency to decrease intrinsic motivation (Deci et al. 1981), it would be logical to conclude that students who focus on participating in competitive activities for intrinsic reasons are less likely to be affected negatively with regard to intrinsic motivation, particularly in the domain of information seeking, as is the case in the current study.

Information-Seeking Behavior

The informants indicated having a variety of information-seeking styles and interests, and recounted diverse and successful information-seeking episodes.

Information-Seeking Styles

All of the students recounted experiences using computer technology for information seeking. However, only one student gravitated to computer technology as the primary information seeking medium, compared with four who did so for books. This finding might be considered surprising in this age of increasingly abundant technology. Notwithstanding, studies have shown that children are not as successful nor as motivated by computer use as the conventional wisdom would suggest when one considers the popularity of computer games in contemporary society and assumptions drawn about youth and technology (Bilal 1999; Bilal 2000; Bilal and Kirby 2002; Spavold 1990). At the same time, one must remember that this group of children was identified as intrinsically motivated for information seeking and as such may not represent patterns from the general population. The data did not indicate that they were unsuccessful nor that they disliked using the computer; it simply indicated that they had chosen other media as their primary information seeking sources, media for which they had more access, or presumably with which they felt more comfortable.

The styles they did choose more often—using books and observing—could indicate inclination toward their own particular learning styles (Gardner 1999). It also is important to consider that two students could not be pinned down to specific information-seeking styles because they tended to focus on their interests and sought information regarding those interests using any medium they could find. In fact, all of the students indicated using at least two media types for information seeking, and eight of the students indicated using at least three.

The students use of their primary information-seeking sources, and their versatility in using secondary sources suggests that students who are intrinsically motivated to seek information (1) begin with the media for which they have more access, for which they are best suited, and/or with which they are most comfortable; (2) then they develop more questions from that experience; and then (3) expand the focus to other sources as the need or desire for more information arises. It would be logical to conclude that students who are exposed to various media types and who are allowed/encouraged to use them at will would be more intrinsically motivated to seek information, and possibly more successful as well.

The Point of Passion Experience

All of the students in the study described a *point of passion* experience, a particular event they remember that ignited an interest they have since pursued. Most of the students (6 of 9) described having this experience at the age of four or five. In the same vein, a majority of the students also indicated support from others, generally an adult relative, for pursing the interest. While the research on the long-lasting effects of interests cultivated in childhood is inconclusive (Hidi and McLaren 1990), anecdotal evidence points to the possibility that point of passion experiences fostered by others may last until adulthood and, in fact, may affect a child's decisions for life (B. Birney, personal communication, Oct. 26, 2008; Fulton 1993). Combine this with the universal presence of the anchor relationship (who may or may not have been the person who supported them after the point of passion experience) in the lives of the informants, and the data point to the importance of an influential person(s) who fosters intrinsic motivation for information seeking in the life of each child.

Developmental Basis for Information Seeking

Students in the study shared their many different interests during the interviews and depicted them in their drawings. During the analysis of the data, these interests were sorted into a typology, then classified into an adapted model based on the Theoretical Model of Urban Teen Development (Agosto and Hughes-Hassell 2006a, 2006b). It is important to note that a difference between the Agosto and Hughes-Hassell's research and the current study is the type of information gathered from the informants. Agosto and Hughes-Hassell examined the information-seeking *needs* and behavior of teens, and the current study investigated the information-seeking *interests* and behaviors of upper elementary students. Even so, the interests of the younger students, though not asking specific questions about their everyday living needs (such as the teens' questions regarding how to make reservations at Red Lobster, and what to wear on prom night), may reflect a primal survival instinct (or need) to explore and conquer their surroundings (Ryan, Kuhl, and Deci 1997).

Agosto and Hughes-Hassell (2006a, 2006b) explain that everyday-life information seeking is "self-exploration and world exploration that helps teens understand themselves and the social and physical worlds in which they live" (1394). They conclude that the teens in their study are facilitating "the teen-to adulthood maturation process" through their everyday life information seeking. The classification of the current informants' self-initiated information-seeking interests into variables based on Havighurst's Developmental Tasks of Middle Childhood (1972) would also suggest that the fifth grade students in the current study are enacting maturational processes as they advance into their next developmental stage, adolescence, through their information-seeking behavior. More study is required to confirm if upper-elementary students outside of the profile of the informants in the study also seek information for the same developmental reasons.

The Task Definition of Favorite Information-Seeking Episodes

Students were asked about their favorite information-seeking episodes. These were recorded and stratified into an adapted Taxonomy of Tasks (Bilal 2002). While the three task patterns representing students' favorite information-seeking episodes included both open and closed task types, simple and complex task natures, semi-assigned and fully self-generated task administration, and both group and individual task relationships, the salient feature of the

episodes was that none of them included tasks that were *fully assigned*. Since the favorites were the most intrinsically motivating episodes of students identified as intrinsically motivated for information seeking, the assumption is that fully assigned tasks are least likely to be intrinsically motivating to students. Similarly, when students were asked why they chose their favorite episodes, one of their responses was *choice of aspect* in information seeking. This element in the information-seeking episodes aligns with the SDT (Deci and Ryan 1985) principle that autonomy is an essential component for intrinsic motivation.

Other reasons students gave for choosing their favorite information-seeking episodes also coincide with SDT principles. They are (given in order of frequency) relevance of/interest in topic (interest as the basis of intrinsic motivation, e.g., Csikszentmihalyi 1975), working in a group (relatedness, e.g., Deci and Ryan 1985), the experience of information seeking itself (indication of intrinsic motivation for information seeking), creating the final product (creativity, e.g., Amabile 1982b), and no time limit (extrinsic motivators decrease intrinsic motivation, e.g., Deci et al. 1981). The data suggest that students who participate in information seeking tasks that incorporate principles of intrinsic motivation (e.g., as outlined by SDT) in their design, are more likely to be intrinsically motivated by those experiences, and will hopefully be more likely to engage in information seeking on their own.

Implications and Recommendations

Constructivism is the belief that "phenomena in the world can be fruitfully understood many different ways and the knowledge is what the person has made of the world" (Littlejohn 2002, 27). The characteristics of constructivist learning environments are (1) "they are student-centered and instructor-facilitated," and (2) "they provide meaningful, authentic learning tasks" (Small 2005, 23). Within constructivist learning environments, authentic learning tasks require use of higher-order thinking skills, provide for collaboration, and "foster responsibility for learning" (23). The constructivist approach not only fosters intrinsic motivation for information seeking, it also works well with information-literacy skills instruction by promoting individual, lifelong learning strategies (Robins 2005).

Types of teaching methodologies that promote constructivist and SDT principles of intrinsic motivation are *problem-based learning* (Barrows and Tamblyn 1980), *intentional learning environments* (Resnick 1989), and *cognitive apprenticeships* (Collins, Brown, and Newman 1989). All of these instructional methods incorporate authentic learning tasks, lending relevance to the learning situation. They also include elements of collaboration, which serves to meet the need of relatedness for students. Another approach to learning that fosters intrinsic motivation is *inquiry*, a method that has been widely accepted in the school library field (e.g., Kuhlthau 2001; Kuhlthau, Maniotes, and Caspari 2007; Robins 2005). Inquiry-based learning "takes advantage of information-rich environments by promoting a student's natural inquisitiveness" (Robins 2005, 9). The inquiry approach encourages students to ask questions, investigate, explore, search, quest, and study. It can be used as a strategy for individuals, or it can be implemented as a collaborative strategy (Kuhlthau, Maniotes, and Caspari 2007). The option of implementing inquiry strategies in individual or group settings enables accommodation of the individual needs of autonomy or relatedness, which are influenced by an individual's culture (e.g., Chirkov and

Ryanan 2001). Giving students choice in this matter helps to differentiate according to their individual needs.

A caveat to this discussion of instructional design is the important consideration of the use of extrinsic motivators. Seeking information on topics of interest is usually a natural, pleasant experience for children (Ryan, Kuhl, and Deci 1997), a phenomenon this study supports. However, research shows that placing extrinsic motivators on intrinsically motivating experiences reduces intrinsic motivation for those activities (Amabile, DeJong, and Lepper 1976; Deci and Cascio 1972; Lepper and Greene 1975; Deci and Ryan 1985). Many of the activities

> we ask children to attempt in school may be of some initial intrinsic interest to at least some of the children, [however,] the effect of presenting these activities in the context of a system of extrinsic incentives and adult surveillance may [serve] to undermine that intrinsic interest in those activities (Lepper and Greene 1975, 484).

The bottom line is to give students choice and as much control as is feasible and age-appropriate in their information-seeking projects, then keep feedback on the functional rather than on the controlling level. This means emphasizing better ways to accomplish learning goals rather than emphasizing grades, competition, and rewards.

Particular strategic recommendations for practitioners based on the data gleaned from this study include use of playful and creative teaching strategies, providing a broad variety of material formats (especially realia and primary sources) for children, conducting fun and stimulating research activities with young children, arranging for adult mentors for children based on common interests, and educating parents in the role of fostering their children's natural interests.

By using strategies and techniques that stimulate and build on the innate interests of students, school librarians can move beyond teaching static skills and rote processes. Instead they become educators who take an active role in fostering in their young patrons a disposition for learning that may last a lifetime.

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Exploring the Experiences of Upper Elementary School Children Who Are Intrinsically Motivated to Seek Information by Sherry R. Crow (tables and figures)

http://www.ala.org/ala/mgrps/divs/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume14/crow_tbles_figs.cfm
Exploring the Experiences of Upper Elementary School Children Who Are Intrinsically Motivated to Seek Information by Sherry R. Crow (tables and figures)

Table 1. The Cronbach's Alpha Score for Each of the SRQ-IS Response Items for Motivation Styles

Motivation Style	Alpha Score
External	.89
Introjected	.77
Identified	.80
Intrinsic	.87

Table 2. Data Based on Informants' Descriptions of Home and Family Life

Student	Home/ Bedrooms	No. of T.V.s	No. of Com-puters	Parents at Home	Siblings	Special Relation-ships with Family
Alexandra	Single Fam./5	2	3	Mom and Dad	Youngest sibling at home	
Bailey	Single Fam./3	3	0	Mom and Dad	Oldest sibling at home	Close to Mom
Bob	Single Fam./3	3	2	Mom and Dad	Only child living at	Close to both Mom & Dad

					home	
Carl	Single Fam./4	5	2	Mom and Dad	Youngest sibling at home	
Melissa	Single Fam. Foster /2	Not described	Not described	Neither	Oldest sibling at home	Close to Grandma Not allowed to see Mom Dad is active in life
Michael	Single Fam./4	5	1	Mom and Dad	Oldest sibling at home	
Mickey	Single Fam./3	2	1	Mom and Dad	Only child	
Nicole	Single Fam./3	4	2	Mom and Dad	Oldest sibling at home	Close to Grandma
Victoria	Apt./2	1	1	Mom	Youngest sibling at home	Good relationship with Dad, though not at home

Table 3. Types of Creative Activities Engaged in by Informants

Student	Drawing	Writing	Music	Building	Dancing	Photography	Technology Creations	Imaginative Play
Alexandra	X		X	X				
Bailey								
Bob	X	X						X
Carl			X				X	
Melissa					X			X
Michael		X				X	X	
Mickey	X		X					X
Nicole	X	X				X		
Victoria	X	X				X	X	

Table 4. Information-Seeking Styles by Media Types as Described by Informants

Student	Readers and Book Users	Computer Users	TV and Movie Watchers	Observers	People Askers	Magazine Users
Alexandra	X*	X	X			
Bailey	X*	X			X	
Bob	X	X*	X		X	
Carl		X	X	X*		
Melissa		X		X*		
Michael	X	X	X			X
Mickey	X*	X	X			
Nicole	X*	X	X	X		X
Victoria	X	X	X	X	X	

*indicates primary information seeking style

Table 5. Typology of Interests as Described by Informants

1. Academics

    1.1. Science*

        1.1.1. Animals*
        1.1.2. Bugs and other crawling things*
        1.1.3. Nature other than animals/bugs*
        1.1.4. Astronomy and space*
        1.1.5. Dinosaurs*
        1.1.6. Human body*
        1.1.7. Plants*

    1.2. Social studies

        1.2.1. History*
        1.2.2. Geography*

    1.3. Math

2. Physical activities

    2.1. Sports

        2.1.1. Soccer
        2.1.2. Football*
        2.1.3. Swimming
        2.1.5. Hockey*
        2.1.6. Cross-country running

    2.2. Other physical activities

        2.2.1. Jumping rope
        2.2.2. Trampoline jumping
        2.2.3. Bike riding
        2.2.4. Cheerleading
        2.2.5. Tumbling
        2.2.6. Skating
        2.2.7. Camping
        2.2.8. Hiking**

3. Reflective topics

    3.1. Careers

- 3.1.1 Teacher*
- 3.1.2. Veterinarian*
- 3.1.3. Naturalist*
- 3.1.4. Animal trainer*
- 3.1.5. Career in the NFL*

- 3.2. Family history and culture*

4. Fiction interests

- 4.1. Humor*
- 4.2. Social life*
- 4.3. Animal fiction*
- 4.4. Historical fiction*
- 4.5. Fantasy*
- 4.6. Mystery*
- 4.7. Adventure*

5. Video and Internet gaming*

6. Creative activities

- 6.1. Imaginative play**
- 6.2. Building*
- 6.3. Dancing
- 6.4. Drawing* **
- 6.5. Technology creation
- 6.5.1. Website* **
- 6.5.2. Stencil drawing* **
- 6.6. Music*
- 6.7. Photography**
- 6.8. Writing

    - 6.8.1. Fiction**
    - 6.8.2. Nonfiction**
    - 6.8.3. Poetry* **

*Indicates interest includes information-seeking and grazing experiences (or an expressed desire or need for information seeking).

** Indicates use as an expression of another interest.

Table 6. Point of Passion Experiences as Described by Informants

Student	Point of Passion	Age	Others' Involvement	Others' Follow up
Alexandra	Got a dog as a personal pet.	7 years old	No discussion	No discussion
Bailey	Noticed book about Saturn at the bookstore.	9 years old	Accompanied by mother.	Mother purchased this book and encouraged purchase of another.
Bob	Teacher showed movie about the ice age and the people from the time.	9 years old	Teacher led discussions/lessons about the unit.	Parents took him to New Mexico and Washington DC. Allowed purchase of memorabilia. Discussed family history.
Carl	Caught bugs (Box Elder) at recess in preschool.	4 years old	Was with friends.	No discussion
Melissa1	Began playing teacher with brother as student.	5 years old	Parents and grandma told her she was good at it.	Grandma provided an office for Melissa.
Melissa2	Noticed lots of ladybugs in yard. caught many and put in container	5 years old	Parents also observed ladybugs and expressed excitement.	Parents and grandma allowed more creature hunts.
Michael	Watched movie of Cowboys 1995 Superbowl	4 years old	Dad suggested he watch it.	Dad also involved in interest. Grandpa took Michael to

	year.			library for research.
Mickey	Got a goldfish and a dog. Dog was injured. Watched E-Vet Interns	5 years old	No discussion.	No discussion.
Nicole	Grew up with pets. Learned about careers in preschool and decided to be a vet.	4 years old	Mother told stories of past pets.	Involvement with mom's friends' pets. Training friend's dog.
Victoria	Played "dinosaur" in kindergarten. Watched movie on television about dinosaurs.	5 years old	Friends involved in kindergarten play. Dad purchased DVD of same movie.	Dad purchased more movies, games, books. Sister read dinosaur books to her. Mom enrolled her in naturalist classes. Dad took her on a "Dinosaur Road Trip."

Table 7. The Cronbach's Alpha Score for the Judges' Evaluations of the Artistic Dimensions for Pictures A and B

Artistic Dimension	Alpha Score for Picture A*	Alpha Score for Picture B**
	Creativity Cluster	
Novel idea	.47	.90
Effort evident	.79	.90
Detail	.85	.90
Complexity	.84	.83
Variation of Shapes	.78	.90
Novel use of materials	.79	.96
	Technical Cluster	
Organization	.77	.89
Neatness	.92	.82
Expression of Meaning	.74	.89

*Picture A topic was "what makes a good day for me"

**Picture B topic was "a time when I sought information"

Figure 1. Dominant Motivation Styles

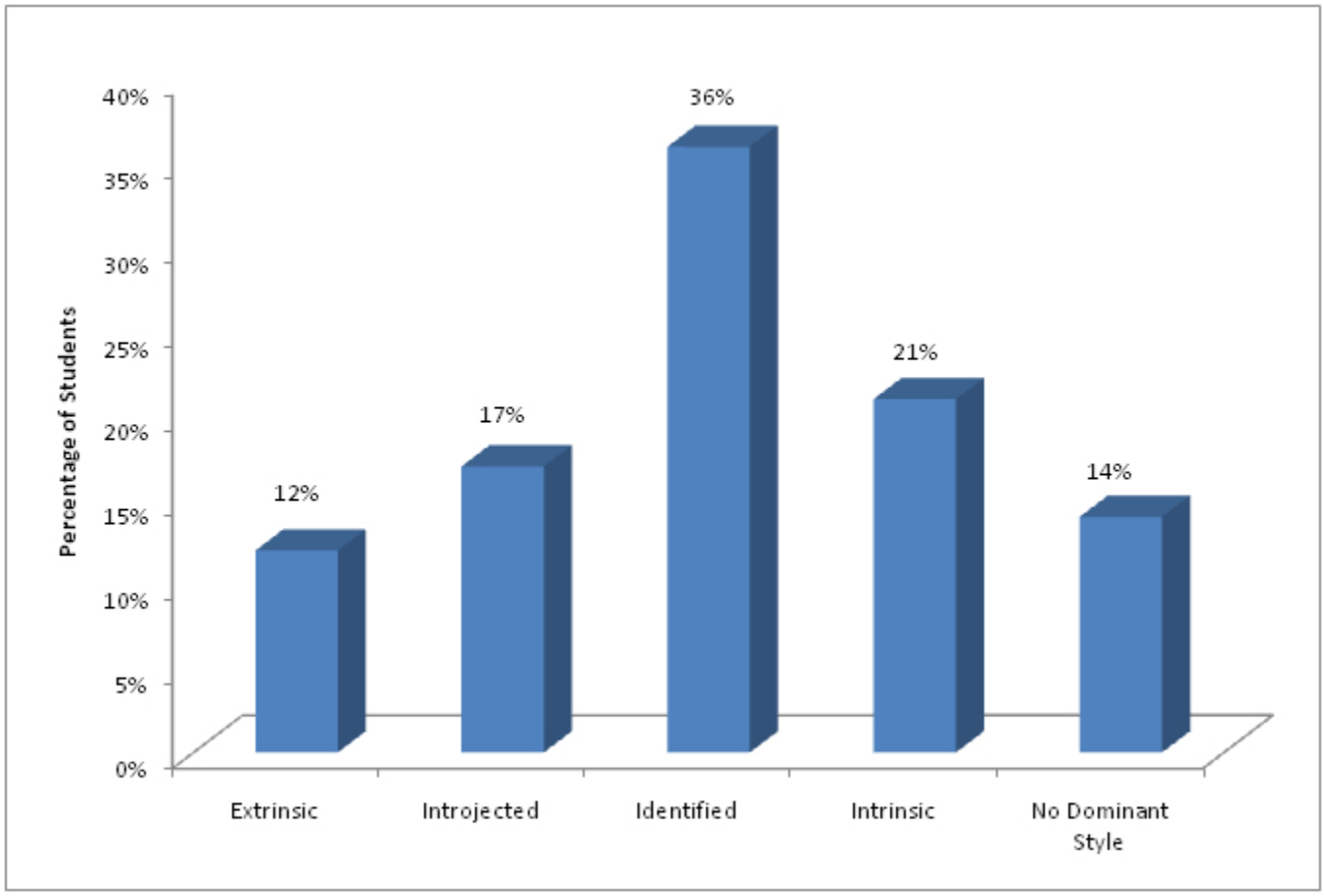
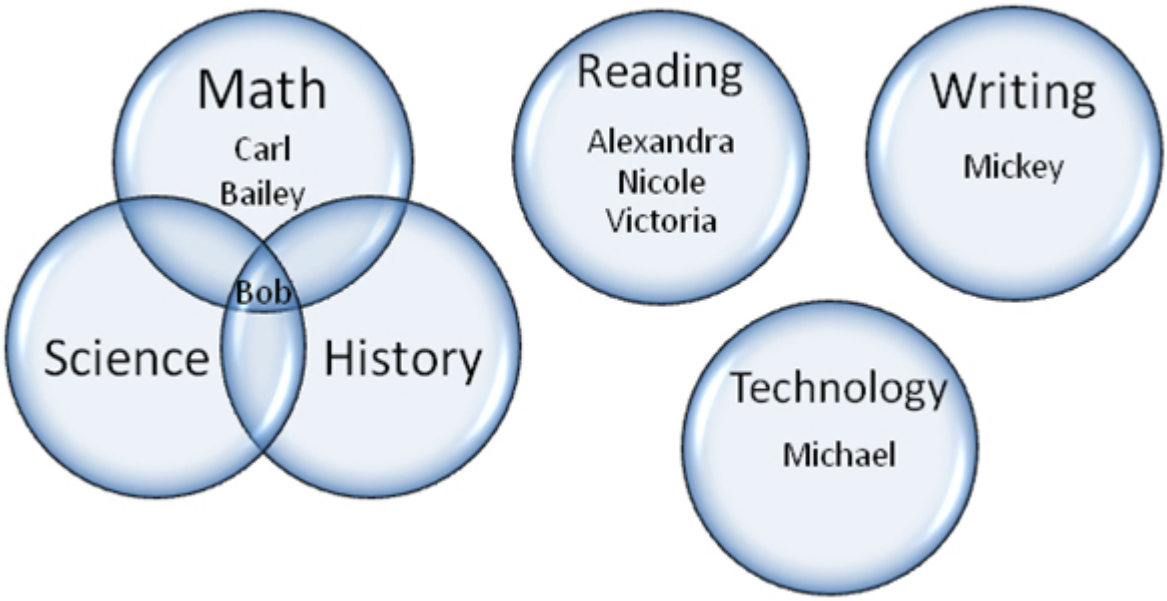
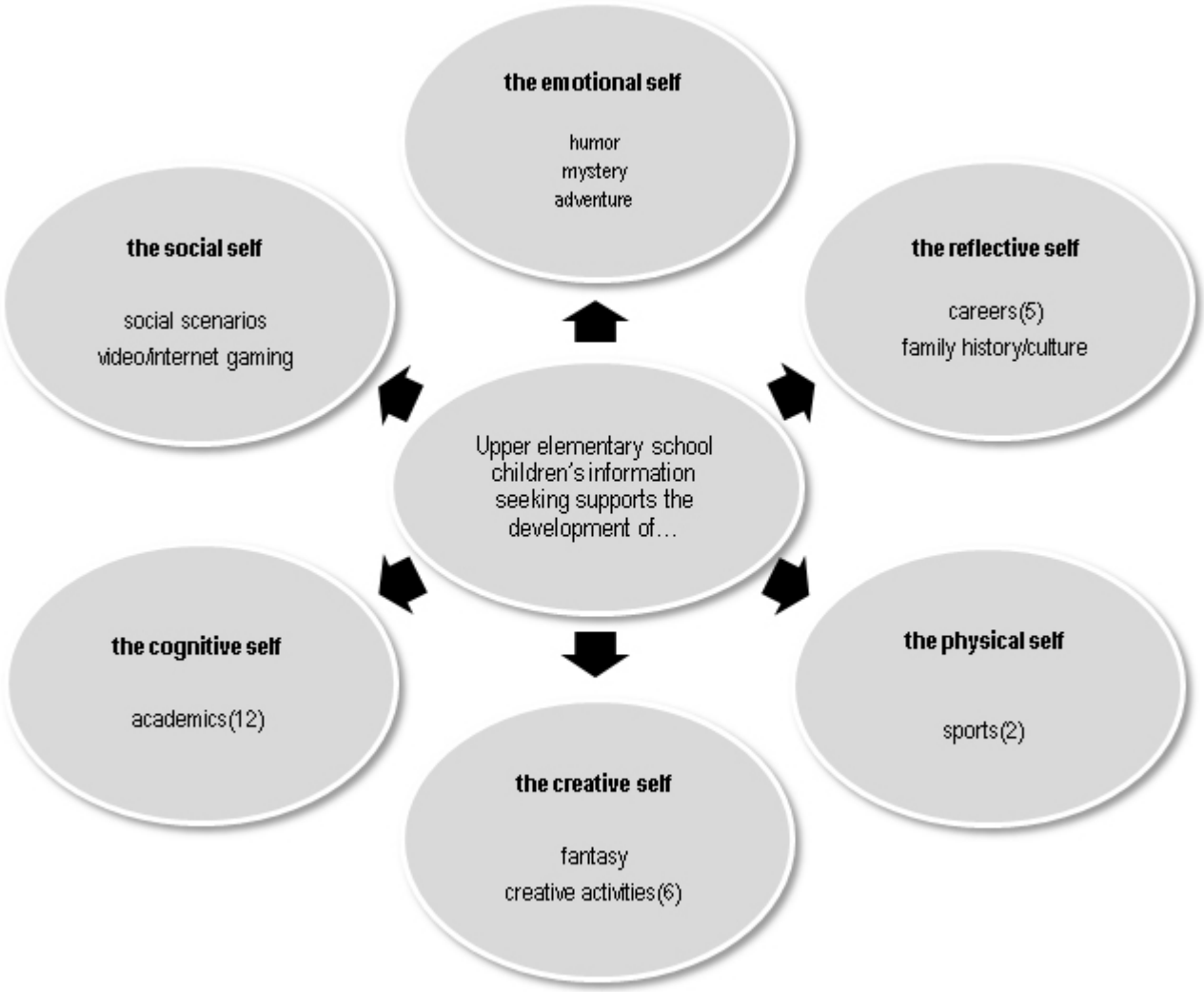


Figure 2. Informants' Perceived Competence in School Areas



Eight informants (all but Melissa) discussed their own competence in at least one academic area.

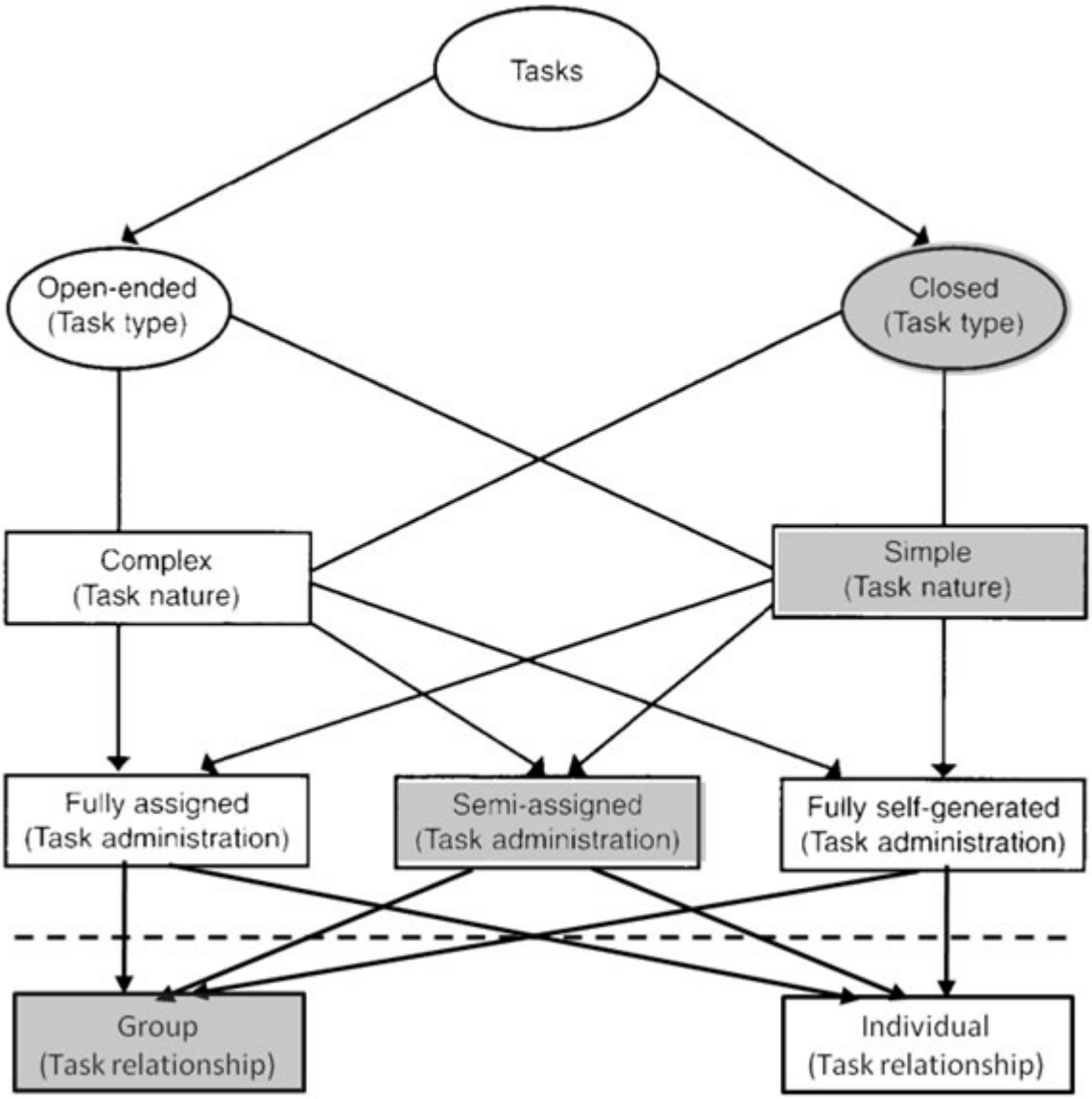
Figure 3. Adaptation of A Theoretical Model of Urban Teen Development



Adaptation of A Theoretical Model of Urban Teen Development* used in exploring the information seeking interests of upper elementary school children who are intrinsically motivated to seek information. All of the self-initiated information seeking interests as discussed by the students were classified into this model, and all of the variables from the model contain at least one information seeking interest (if more than one the number is indicated in parenthesis).

* Agosto, D. E., and S. Hughes-Hassell, "Toward a Model of the Everyday Life Information Needs of Urban Teenagers, Part 1: Theoretical Model," *Journal of the American Society for Information Science & Technology* 57, no. 10 (2006): 1394–403; Agosto and Hughes-Hassell, "Toward a Model of the Everyday Life Information Needs of Urban Teenagers, Part 2: Theoretical Model," *Journal of the American Society for Information Science & Technology* 57, no. 11 (2006): 1418–26.

Figure 4. Pattern #1 Representing Preferred Assignment #1, Colorado Cities, and Preferred Assignment #2, Colorado Regions, as Classified into the Adapted Taxonomy of Tasks*



* Bilal, D., "Children's Use of the Yahooligans! Web Search Engine III. Cognitive and Physical Behaviors on Fully Self-Generated Search Tasks," *Journal of the American Society for Information Science & Technology* 53, no. 13 (2002): 1170–83.