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Best Practices for Adoption of an Inquiry Learning Model in K-5 Education

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Abstract

This study describes best practices employed by successful teacher librarians in adopting and implementing an inquiry learning model within their schools and the obstacles overcome in doing so. It focuses on seven teacher librarians in the Grant Wood and Mississippi Bend Iowa Area Education Agencies who have completed their master's degrees or hold state licensure, and have at least one year of teaching experience. Participants took part in hour-long face-to-face, semi-structured interviews, and provided documentation of a lesson or a unit they have taught utilizing their school's inquiry learning model. After transcribing rich data from the interviews, the researcher coded it using the following themes derived from topics in the professional literature or emergent from the data: professional development, collaboration, practice, connection, schedule, support, flexibility, questions, relationships, communication, common language, curiosity, and Common Core. This range of themes illustrates the complexity involved in implementation of an inquiry model on a school or district-wide basis.

Teacher librarians at schools that gained the greatest benefits from implementing an inquiry learning model discussed the importance of support from their administration, flexibility in when they were willing to collaborate with teachers, using the model as a common language for research within their school, beginning inquiry research with higher order thinking questions, building positive relationships with classroom teachers and administrators, communicating to parents through websites and social media, and understanding the connection between the Common Core State Standards and inquiry based research. The majority of the teacher librarians interviewed found ways to work around barriers in order to successfully implement an inquiry learning model.

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CHAPTER 1

INTRODUCTION

The cure for boredom is curiosity. There is no cure for curiosity.

Dorothy Parker, (attributed)

The sentiment Parker expresses in the epigraph is very true for children and their natural curiosity about the environment that surrounds them. Curiosity has been defined in many ways, and Loewenstein's (1994) work, used more recently by Jirout and Klahr (2012), reviews a range of definitions of curiosity, including one that dates back to the time of Aristotle, "...curiosity was seen as an intrinsically motivated desire for information" (p. 76). Young children come to better understand the world through asking questions and exploring. What happens though to the ever-curious toddler who grows up to be the 5th grade student not engaged in learning? Engel (2013) points out that one reason curiosity may appear to lessen is that children have acquired more knowledge; however, she also cites adult influence as a significant factor in why some children lack curiosity. As teachers, if we are not encouraging and modeling questions, experimentation and curiosity, then our students will not come to fully recognize the significance of curiosity. According to Engel this is disturbing, "Because research shows unequivocally that when people are curious about something, they learn more, and better" (p. 37).

Kuhlthau (2010) states that inquiry happens when a student has a question or a problem that s/he chooses to investigate thoroughly. Donham (2014) agrees when she describes the link between curiosity and inquiry learning, "Curiosity is the catalyst that sparks the inquiry process" (p. 3). The inquiry literature offers several inquiry learning process models from which teachers and librarians may choose, as they determine one that best fits their instructional context. Most inquiry models contain a similar number of steps, and as pointed out by Stripling (2008),

recognize that inquiry, "...is cyclical in nature because the results of inquiry is [*sic*] not simple answers but deep understandings that often lead to new questions and further pursuits of knowledge" (p. 50). Pappas and Tepe's (1997) Pathways to Knowledge Model outlines six steps that transition students from appreciation to evaluation. Beginning with a sensory approach to the concept or problem, this model allows for students to connect to prior knowledge and take time to form questions prior to beginning their search for information. A second example, Stripling's Model of Inquiry (2010) is written with language that resonates with young students, including, "connect," "wonder," and "investigate." Eisenberg and Berkowitz's (1987) Big6™ Information Problem Solving Model was designed to be a model for students of any age, and begins by defining the task or problem to be researched. Kuhlthau's (1988) Information Search Process Model, a research-based model, highlights the affective domain of how a student may feel as s/he is progressing through seven steps of her inquiry process model, including anxiety and uncertainty to confidence and satisfaction. With multiple inquiry process models to choose from, some schools or school districts, like Iowa City Community School District's Library Program, choose to make adaptations and collaborate to create their own model. For example, Iowa City (2011) began with the Big6™ model and adapted it to include five steps:

1. Define the information need
2. Locate information
3. Process Information
4. Create and communicate
5. Assess products and process

Each of these models can serve to guide students as they follow their curiosity to new learning.

Justification

Justification for student understanding of an inquiry learning process model is evident across national and state standards. From as early as kindergarten, the Common Core State Standards call for students to begin to use research when reading and writing, in order to construct their own knowledge and be able to present to others what they have learned. The second grade "Research to build and present knowledge" writing strand of the Common Core State Standards (2010) states that students will, "participate in a shared research and writing project (e.g. read a number of books on a single topic to produce a report)" (p. 19). By fifth grade students will "conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic" (p. 21). Inquiry learning is also front and center as the first standard listed in American Association of School Librarians' (AASL, 2007) Standards for the 21st-Century Learner, "Inquire, think critically, and gain knowledge". AASL believes strongly that one skill needed in order to successfully achieve mastery of this standard is that students will need to "follow an inquiry-based process in seeking knowledge in curricular subjects and make the real world connection for using this process in own [*sic*] life" (para. 1.1.1). In 2013, a task force affiliated with the Iowa Department of Education also constructed a vision for the role of the 21st century teacher librarian. As part of this work, a vision for Iowa's school library programs was created, and it is communicated through specific roles of the teacher librarian. Relevant roles include, "1) teach students to think critically and independently to construct new understandings and insights from varied information sources, 2) collaborate with the school community to design and enact rigorous learning experiences and participate as positive digital citizen, and 3) nurture curiosity to develop in students a passion for learning for life" (Iowa Department of Education, 2013, para. 4).

In addition to national and state standards, Kuhlthau (2003) provides further justification for inquiry learning by stating, "Locating and interpreting information to construct a personal understanding is a basic literacy skill for the information age" (p. 3). She believes that the potential of the role of teacher librarians has not yet been fully realized in school reform. Based on Kuhlthau's research and the research of others she cites, such as Dewey, Vygotsky, Piaget, and Gardner, she writes:

> Students learn by constructing their own understandings of these experiences and by building on what they already know to form a personal perspective of the world. The process of construction is an active ongoing process of learning that continues throughout life (p. 4).

Kuhlthau suggests that if we collectively move beyond the approach of teaching students to look for right answers, and work toward an inquiry learning approach where students are building their own understanding and meaning with the support of a model, then we can prepare them to be lifelong learners and live and work successfully in the information age.

Donham (2001) documents multiple reasons for school-wide adoption of an inquiry learning process model. When a school chooses to adopt one inquiry model they are creating a common language for all the teachers and the teacher librarian to better design instruction. Donham states that, "Consistency in language of the classroom and language of the library enables children to internalize the model" (p. 22). Inquiry has a definitive set of steps through which the learner needs to progress, but it is not necessarily a linear process. Students often need to return to a stage during the process to clarify their thinking. When teachers and teacher librarians are using this common model they can scaffold instruction, even across multiple grade levels, continuously building on prior knowledge of the process and making improvements on research skills throughout the course of a student's years in a particular school. Finally, Donham also believes that an inquiry model can help teachers and teacher librarians discuss with students

their feelings in relationship to the inquiry and research process. One model in particular, Kuhlthau's model, includes an affective domain that can be incorporated into instruction. This allows students to understand that it is appropriate to feel anxious or uncertain in the beginning of their research and that they will continue to build confidence throughout the process.

Problem Statement

Notwithstanding justification in national and state standards, some teacher librarians still struggle to reach a collaborative adoption and implementation of an inquiry learning model within their schools. Kuhlthau (2010) finds that some teachers believe that after they have taught the skills required by testing, and if they have time left over, then they would work on inquiry projects. She believes that:

> This is a misunderstanding of 21st century education. Inquiry learning is more than an occasional, optional research project. Guided Inquiry is a way of learning that accomplishes the objectives of 21st century schools. It is the way to meet the many requirements of the curriculum through engaging, motivating and challenging learning. Teachers and librarians work together to guide students' thinking and learning through inquiry (p. 3).

Despite research-based evidence that supports school-wide adoption of an inquiry learning model, there are still barriers that prevent teacher librarians and classroom teachers from working collaboratively in order to complete this task.

Purpose Statement

The purpose of this study is to describe the best practices that elementary school teacher librarians employ in order to successfully adopt inquiry learning models within their schools.

Research Questions

1. What have successful teacher librarians done in order to adopt and implement an inquiry learning model in their schools?
2. What obstacles or barriers have successful teacher librarians overcome as they work through adoption and implementation of the inquiry learning model?

Limitations

This research study is limited to elementary teacher librarians in the eight Iowa school districts with the largest certified enrollment within the Grant Wood and Mississippi Bend AEA's. Within those schools, it is further limited to teacher librarians who have completed their master's degree program or hold a state Teacher Librarian endorsement, and have at least one year of experience as a teacher librarian.

CHAPTER 2

LITERATURE REVIEW

Introduction

The purpose of this study is to describe best practices that elementary school teacher librarians employ in order to successfully adopt inquiry learning models within their schools. The first subtheme of the relevant published literature relates the importance of developing mental models in the information search process. The second subtheme explores collaboration between teacher librarians and classroom teachers, especially as it relates to the information search process. The third subtheme describes dispositions teacher librarians need to possess in order to successfully establish an inquiry learning model within their schools.

Importance of Mental Models

Kuhlthau (1988) followed her doctoral dissertation with a longitudinal case study in which she continued to follow four of her original six subjects. In this study she described the research process of four students who were entering graduate school programs. She considered the questions, "1) do individuals have habitual approaches and attitudes toward searching which are consistent over time, 2) are there common experiences which are generic to the search process, and 3) does individual ownership in the process, problem, and product develop through time and experience" (pp. 257-258). These questions helped her to envision and later articulate the mental model students had of the inquiry process.

Kuhlthau noted two problems with the information search process. One problem was described as the user's lack of knowledge about the issue being investigated and the second was the user's lack of knowledge about the search process. Her research focused on the user because she reasoned, "The user's perspective on the problem, the system, and the process needs to be

studied rather than the perspective of the librarians and other intermediaries within the system because these perceptions direct the user's actions and effect [*sic*] their choices within a search" (p. 258).

In her initial research conducted in 1981, Kuhlthau followed six high school seniors in an Advanced Placement English course. In so doing, she developed an information search model comprised of six stages: task initiation, topic selection, prefocus exploration, focus formulation, information collection, and search closure (p. 262). Kuhlthau chose to continue this research with a longitudinal case study method because she believed in the potential for a case study to extend beyond a snapshot to reveal a holistic view of the cognitive processes at work. Her case study included two men and two women who were academically high-achieving. Each was asked to recall research experiences from their undergraduate work. Kuhlthau hypothesized that high-achieving students would utilize skills that would be useful to students who were generally not as successful. In other words, the research behaviors of these high-achieving students might provide a model for novice information seekers.

Kuhlthau conducted one-hour interviews of ten questions with each of the four students. The interviews were recorded and subsequently transcribed. Each of the four participants also completed a timeline of their research process, and that timeline was compared to a timeline that they had completed during the first phase of the study when they were in high school. Kuhlthau stated that, "The timelines provided a conceptual map of the subjects' perceptions of the search process based on their recall of and reflection on their search experience" (p. 271).

Kuhlthau analyzed data using five main categories, including: selection of topic; attitude toward research assignments; perceptions of searching; procedures for gathering and organizing

information; and role of mediators. The insights gained in this second phase of her research allowed Kuhlthau to polish her information search model (p. 272).

Kuhlthau reported a number of findings when she compared the four case studies. She found that the participants preferred to choose their own topics based on personal interest, as opposed to having a topic assigned to them by faculty, and all four built on previous research. She asserted, "Habitual approaches which remained consistent over time were evident in the subjects' explanations of how they selected topics" (p. 296). Kuhlthau recorded that overall the participants held positive attitudes about the research process. In examining their perceptions of searching, she found, "All four participants saw the search process as taking place over a period of time for which they had to plan in advance" (p. 297). This advanced planning varied with the subjects from days to weeks. Kuhlthau described the back and forth process of searching as "nonlinear" (p. 297). "While the process was perceived by the students as moving from general to specific, their descriptions of searching revealed more of a spiral of thoughts building through the information encountered rather than a neat step-by-step progression" (Kuhlthau, 1988, p. 297). In the category of procedures for gathering and organizing information, Kuhlthau found that the participants had developed individualized processes, including use of yellow notepads, outlining based on recall, and symbolically coding their notes. Finally, in the category of role of mediators, Kuhlthau detailed, "Instruction given by librarians was described as inadequate and not tailored toward the students' majors. Further discussion revealed dissatisfaction with the role librarians had played" (p. 298). Kuhlthau's longitudinal case study of these four participants' perceptions of the information search process helped her determine that there are defined stages with particular characteristics that could inform library education and user education (p. 301).

Similar to Kuhlthau, Pitts was also concerned with students' information seeking processes and mental models. After Pitts' death, McGregor and Stripling summarized her doctoral research for AASL in 1995. Pitts wanted to further understand the decision making process of students engaged in seeking information. "Specifically, the researcher wanted to know what prior learning students had about information seeking and use, and how they used that prior learning to help them with their task" (as cited in McGregor & Stripling, 1995, p. 177).

McGregor and Stripling (1995) wrote that several questions guided Pitts' research, "1) what prior learning did students have that influences the decisions they make while seeking and using information, 2) how is that prior knowledge learning the same or different from what they need to address their task, and 3) if differences exist between what they need to know and what they do know, how do they cope" (p. 178). Pitts used mental model theory to support her conclusions about the students' prior learning. She separated prior learning into two categories: novice and expert. A novice learner has "isolated ideas" whereas an expert learner has "connected ideas" otherwise known as "schema, or mental models" (as cited in McGregor & Stripling, p. 178).

For her study, Pitts spent approximately nine weeks with 26 eleventh and twelfth-grade biology students who had been tasked with creating a video documentary related to a marine biology topic. Both the students and the teacher of the biology course were considered relevant participants in the study. Pitts completed her research through the use of observations, interviews, student notes, outlines, teacher evaluations, and written prompts. Participants worked in groups to complete the research project and documentary, and as a result of this, Pitts was able to gather data as she listened to them. "Probing for individual perceptions was usually

not necessary, because those perceptions became obvious as the students talked with other members of the group" (as cited in McGregor & Stripling, p. 179).

During Pitts' research, unexpected results caused her to expand the breadth of her inquiry. Students worked within four domains in this particular project: subject matter, information seeking and use, life skills (e.g. decision making and problem solving), and video production (p. 178). She found that these four domains or strands were interconnected, affected each other, and could not be considered separately.

With regard to approaching the research task, Pitts observed that participants selected topics that they perceived as easy because they expected information about them to be readily available. She also commented, similarly to Kuhlthau, that the students tended to select familiar topics or topics they felt were interesting. Pitts reported:

> The only tactic employed to identify a topic was brainstorming; students sat in their groups and suggested topics until one seemed to appeal to nearly everyone in the group. Almost instantly, that topic would be adopted. Thus, because students did not have mental models of any alternative topic-selection processes, they limited themselves to topics about which they already knew (p. 179).

As Pitt analyzed her data, patterns emerged about how the strands affected each other and, "Later in the unit, it became obvious that their limited prior learning on the information-seeking-and-use strand kept most of them from developing more complex, subject-related mental models" (as cited in McGregor & Stripling, 1995, p. 180). All strands of the project were interconnected. If students did not understand how to seek information, they did not build their subject-matter expertise, and in turn they used limited resources to make their video. Most projects were completed using resources that were borrowed from home or friends, and very few relevant library materials were evident in the final projects. The students simply did not possess the mental models to be able to locate suitable library resources (p. 180).

Pitts described two reasons that students were not successful in locating library resources, including "incomplete subject-matter mental models" and "limited mental models of information-seeking-and-use systems" (as cited in McGregor & Stripling, 1995, pp. 180-181). In regard to subject-matter, Pitts created three formulas to describe her findings:

> novice subject understanding + expert information skills = students who may use information skills to find information necessary to strengthen subject understanding
>
> expert subject understanding + novice information skills = students who may articulate information needs clearly to those who can help
>
> novice subject understanding + novice information skills = students who are not likely to make progress on either strand (as cited in McGregor & Stripling, p. 181).

Pitts also found that students did not understand the organizational system of the library, and that when they were unable to find information within the library that they thought was useful, they looked outside of the library. Students were also adversely affected by their teacher's limited understanding of information seeking skills. Pitts found, for example, if the teacher mentioned browsing journals at the university library, the students would do just that. They would go to the university library and search the table of contents or search journal volumes randomly (p. 181). At the end of the project Pitts noted that, "Most students did not show an inclination to use the project as a way to expand their subject-matter understandings" (as cited in McGregor & Stripling, 1995, p. 182). Student plagiarism was accepted in the projects, and the most time-consuming portion of the project was technical (e.g. video editing). Pitts had three significant findings in her research in relationship to inadequate prior learning, "They used learning from another domain; they tried to acquire or construct the necessary new learning; or they did an inadequate job" (p. 182). Pitts' findings inform the current study as they

corroborate the need for teaching beginning stages of an inquiry model. Students have to know how to search, but also need instruction on what resources to search.

Despite the acknowledged limitations of Pitts' study, including the fact that it was only a sample of one group of students, it is an important study for teacher librarians and classroom teachers. She argued that multidisciplinary units of study were complex to build and that they should be constructed collaboratively with the teacher librarian as an important member of the team. Pitts' envisioned the teacher librarian's role as helping maintain the connection between the subject-matter and the process of information seeking.

With the importance of research-based practice for information literacy instruction in the foreground, Harada and Yoshina (1997) completed a case study at Mililani Mauka Elementary School in Hawaii. In her work as the teacher librarian at Mililani Mauka, Yoshina had already established an information search process model that was adopted from elements of Kuhlthau's, Stripling's and Pitts' models. Despite having a model in place, Yoshina felt her students continually relied on similar resources to complete research. After she administered an assessment of information search process skills, she found that her fourth and sixth grade students were not able to identify all of the steps of the model.

Yoshina and researcher, Harada, worked together with the fourth and sixth grade teachers and completed action research to improve instruction of the information search model, as well as self-assessment strategies. Two research questions were important, "1) what contributes to effective intervention work with students, and 2) how can students assess their own progress as they work through the information search process and prepare their presentations" (Harada & Yoshina, 1997, p. 44). Yoshina met collaboratively for six hours with the teachers and

established concept-based units for both the fourth and sixth grade students with a final product of Web pages that would be linked on the school's website.

Both qualitative and quantitative data were collected as part of Harada and Yoshina's (1997) case study. Data sources included: student research journals detailing progress and feelings about their work; teacher and librarian logs about student performance; field notes completed by Harada; rubrics; process-folios; and pre-and posttests on the information search process (p. 45). During the ten weeks of the project, students completed almost 43 hours of work, of which 18 hours were spent in the library. In the first six weeks, Yoshina engaged the students in direct instruction on information search process model steps during twice-weekly, 45-minute sessions in the library. Less frequent sessions in the library were held during the remainder of the project. It is important to note that, "Teachers assisted during her instruction and conducted all necessary follow-up tasks in the classroom" (p. 45).

Harada and Yoshina (1997) wrote about multiple intervention strategies that were utilized while teaching the information search process to the students, including: group brainstorming for alternative problem solving; modeling of the thinking and writing processes; student completion of graphic organizers that were part of the documentation in their process-folios; peer collaboration; guided practice and feedback; and information counseling which included 15 to 45-minute sessions between teachers and students about problems they were experiencing with the information search process (p. 46-47). Three self-assessment strategies were also important in their case study, including: student journals where reflection on the process was documented; process-folios, a note book where student-created documents related to the process were kept to look back on; and rubrics that were collaboratively created by the students and the instructional team (p. 48).

Findings related to both intervention and self-assessment strategies were documented by Harada and Yoshina (1997). "First, both adults and students most frequently mentioned a combination of practice, feedback, and conferencing as being 'highly effective.' Conferencing, in particular, was repeatedly signaled out as critical" (p. 48). Students reflected in their journals that think-alouds and modeling of the information search process were crucial to further understanding. Student contribution to the creation of the rubrics also allowed for further engagement in the project and deeper understanding. Students demonstrated significant gains from pre-to posttest on the information search process model, "...the most impressive gains were in their abilities to articulate the importance of choosing a topic (step 1) and in assessing both product and process (step 7) where percentage increases from pretest scores ranged between 95% and 100%" (p. 51). Even though this study was limited to the action research of one librarian and her work with two specific grade level projects, Harada and Yoshina were able to document an increase in student learning that was made through scaffolded instruction of an information search process model.

Collaboration

Montiel-Overall (2010) thoroughly reviewed research in the field and explored teacher librarian roles in working collaboratively with classroom teachers to create and implement curriculum. "For teacher and librarian collaboration to be successful, a clear understanding by classroom teachers/educators about how and why teachers and librarians should collaborate is critical" (Montiel-Overall, 2010, p. 32). Utilizing her own 2005 work on a teacher librarian collaboration model with distinct levels of collaboration, Montiel-Overall followed up by completing a three-year grounded theory qualitative case study about classroom teacher and teacher librarian collaboration. This case study was completed after the first year of work, during

which teachers and librarians were planning in preparation for information literacy instruction with a science focus for Latino students.

Working with participants that consisted of three elementary teachers, three teacher librarians, and four university faculty where the majority had at least 15 years' experience, and three identified as Latino, Montiel-Overall's case study strived to answer the following questions,

> 1) how teachers/educators perceive teacher and librarian collaboration, 2) how they collaborate with librarians on a joint project, 3) whether cultural differences between disciplines represented by teachers/educators and librarians affect collaboration, and 4) the extent to which levels of collaboration described in a proposed teacher and librarian collaboration model (TLC Model) are reached by participants (2010, p. 34).

Teacher librarians, called Peer Mentors in this study, were compensated for their time and also had specialized background knowledge, including science and math; Spanish language and culture; librarianship; and information literacy. The case study involved pre- and post-interviews with the Peer Mentors. Other means of data collection included observation notes, artifacts from meetings, meeting notes, interviews and informal conversations. Data were coded to arrive at patterns after the research was conducted, and "...the initial categories included (a) expertise, (b) respect, (c) trust, (d) patience, (e) openness, (f) social environment, (g) common goal, (h) time, (i) sharing knowledge, and (j) integration of ideas" (Montiel-Overall, 2010, p. 36). Also, data were coded to match specific tasks with levels of collaboration from Montiel-Overall's teacher and librarian collaboration model (TLC Model). For example, scheduling tasks were coded to be at the "coordination" level (p. 36).

Montiel-Overall (2010) reported important findings in response to her research questions. She discovered misconceptions about the nature of collaboration and in particular teacher and librarian collaboration. She also noted whether administrators built in time in educators'

schedules for collaboration. Classroom teachers were generally not aware that collaboration was considered a key element in the role of teacher librarians. Three subcategories developed in regard to how teachers collaborate, including understanding of a common goal, relationship building, and understanding cultural perceptions. Interestingly, Montiel-Overall (2010) found that in general the classroom teachers were not used to planning this type of task (creation of intervention workshops), and were more accustomed to working with a "designated leader" on "prescribed tasks" (p. 40). One noteworthy comment recorded from a teacher who withdrew from the study, in expressing her concern with the TLC Model suggested, "...that elementary teachers were expected to follow a scope and sequence and that guided inquiry generated by teacher librarian collaboration would be difficult" (p. 40). The difficulty, she explained, would be that it would consume too much of her time.

Three themes of collaboration were reaffirmed by Montiel-Overall (2010), shared knowledge, relationship building, and deep thinking and they were described as "interrelated components of multidisciplinary collaboration" (p. 41). Importantly, shared knowledge was explained as the groups of professionals needing to understand more about each other's capabilities, "Teachers' lack of prior knowledge about what teacher and librarian collaboration (TLC) involved was evident in the questions raised at the meetings" (Montiel-Overall, 2010, p. 44). Three phases of collaboration were also illustrated: the beginning phase where common interest and goals are established; the relationship phase where participants get to know and become comfortable with one another; and the productive phases during which participants are collaborating at an increased level and moving the issues forward. Montiel-Overall concluded that her study indicated that the work of collaboration with teacher librarians was still misunderstood. She argued that,

> The relationship phase of collaboration identified in this study and in previous studies is within the realm of possibility for every school librarian truly committed to becoming an instructional partner with teachers and should be initiated regardless of scheduling issues, previous teacher and librarian collaborative efforts, or principal support (p. 49).

Researchers Chu, Chow, Tse and Kuhlthau (2008) wanted to study the implementation of inquiry based learning (IBL) in primary schools in Hong Kong. Even though best-practice research existed that encouraged instruction in inquiry based learning, the researchers stated that rote learning was the preferred method for instruction in Hong Kong primary schools. "In attempting to change this situation, the Education Bureau (2002) of the Hong Kong Special Administrative Region introduced IBL into the general studies curriculum as a way to help students develop basic inquiry, investigative, and problem-solving skills" (Chu et al., p. 10).

Chu, Chow, Tse, and Kuhlthau (2008) completed a research study that involved two separate, two- to three-month phases with 141 fourth grade students. Their purpose was to focus on how "subject teachers" and teacher librarians could collaborate to teach primary students inquiry learning skills (p. 13). Two of their research questions included, "1) what are the roles of the general studies teacher in an IBL project, and 2) how does the support from teaching staff and parents influence students' development of research skills through IBL projects" (p. 13).

In this study, students were in four sections with 30-40 nine year olds in each class. The students, considered to have average academic ability, were all from the same primary school, worked in groups of six to complete their projects for which they were given choice to choose their project topics within certain themes. Chu and Chow worked with the teachers and the teacher librarian on collaborative methods based on principles from Harada and Yoshina's and Kuhlthau's work for one year prior to the transition (pp. 13-14).

Instruction and guidance in inquiry based learning was very specific during the study. General studies teachers spent 80 minutes per week working with students on the subject-matter, process, questions and resources. The school librarian provided a variety of resources, including books loaned from another institution. "In both phases, a few library sessions (in collaboration with the general studies teachers) were offered to students to enhance their information literacy skills" (Chu et al., 2008, p. 14). The Chinese language teachers worked for 350 minutes per week on reading comprehension and writing with the students. Finally the IT teacher conducted several 30-minutes sessions with the students in Microsoft *PowerPoint*, *Excel* and use of a Chinese handwriting device. Other expected coursework was reduced during the study in order to accommodate the inquiry based learning methods, and homework was assigned to students as well. Both students and parents received information about inquiry based learning, and parents were asked to not give as much help to their children as they might have otherwise.

Data sources included: lesson plans; homework; in-class assignments; students final projects; student self-evaluations; student peer evaluations; student surveys; parent telephone interviews; teacher interviews; and a principal interview. Perceptions of effectiveness of the inquiry based learning projects were calculated based on similar survey questions given to the teacher, students and parents. Overall students gave "enjoyment of doing the project" a 3.8 on a 5 point scale with 5 as very enjoyable, and teachers rated the same question as 3.9 (Chu et al., 2008, p. 16). Perceived "level of difficulty of the project" was rated by students as a 3.3 on a 5 point scale with 5 as easy, and teachers rated this same item as 3.0 (p. 16). Lastly students rated "knowledge of the research topic" as 3.9 on a 5 point scale with 5 as the highest; teachers rated this item as 4.2 (p. 16). In regard to improving their research skills, 91% of the teachers rated the students as a 3.0 or better on a 5 point scale with 5 as the highest mark (p. 17). Collaboration

amongst the subject teachers and the teacher librarian, evaluated on a 5 point scale, "...was perceived as high by students, parents, and teaching staff with scores of 3.7, 3.7, and 3.9 respectively" (p. 18).

In summarizing their findings, Chu et al. (2008) agreed, "This study showed that a collaborative approach involving three kinds of teachers and the school librarian in equipping students with the knowledge and skills they needed to conduct IBL projects works effectively" (p. 26). Overall the researchers were most impressed with the results that the students had achieved higher marks for quality from their general studies teachers than the previous year, as well as the fact that students had given their peers more points than in the previous year.

Herring and Bush (2011) completed a study comparable to Chu et al.'s (2008) work in Hong Kong. Working with a group of six teachers (in various grade levels), the teacher librarian, and two principals at an all-female primary school in Sydney, Australia, Herring and Bush researched issues of utilizing an inquiry learning model, specifically with regard to student transfer of knowledge and the culture of transfer within the school. The particular model of information literacy that was employed in this study was the New South Wales (NSW) Department of Education and Training information literacy model, which comprised the stages: defining, locating, selecting, organizing, presenting, and assessing (p. 124). Research questions in Herring and Bush's study included, "1) how did teachers define information literacy and transfer, 2) what was the teachers' experience of using the NSW information literacy skills model with their students, 3) what evidence did teachers find of the transfer of information literacy skills amongst their students, 4) what factors may be identified that contribute to establishing a school wide culture of transfer of information literacy skills across time and

subjects, and 5) what impact might the school executive have on establishing a culture of transfer of information literacy skills" (p. 123-124).

In the same manner as Pitts' study, Herring and Bush (2011) employed grounded theory methodology. Their particular study did not result in new theory, rather a series of conclusions. Unlike Chu et al.'s (2008) research, Herring and Bush only chose to use a select number of teachers, the teacher librarian and the principals in the study. Worth noting, none of the teachers in their study had more than six years of experience.

Data for their study were collected in the form of teacher diaries. Teachers recorded perceptions of student comprehension of the different stages of the NSW model of information literacy (Herring & Bush, 2011, p. 125). In the third term of the study, teachers completed comment sheets, and were interviewed by the researchers. During the course of the research, administration was in the process of transitioning, so both principals were interviewed during the final phase.

Across grade levels teachers reflected that they had to use a significant amount of scaffolding with students, particularly with the stages of selecting and organizing information (p. 126). It was reported that students with poor comprehension abilities struggled the most with the quantity of internet resources. Participation in the research study also allowed the teachers to clarify their own misunderstandings of information literacy. Herring and Bush (2011) acknowledged, "The teachers were also in agreement that having a common terminology for information literacy skills was important for students across the school" (p. 127). Overall the teachers did not feel it was difficult to incorporate the NSW model of information literacy into their curriculum, and they did feel that instructional support was necessary for students to transfer their skills. Herring and Bush commented that by the third term, "Some of the teachers

still viewed information literacy mainly as a process rather than a way of thinking, but other teachers focused on the NSW model and critical thinking by students" (p. 128).

As a result of both the teacher and principal interviews, Herring and Bush (2011) found that the participants believed that a "culture of transfer" of information technology skills was desirable; however, they did not believe that it existed at that point and the principals asserted that it would take leadership and collaboration between the administration, teacher librarian, and the teaching staff (p. 129).

Herring and Bush (2011) offered multiple conclusions from their research including the importance of training for teachers; the need for administrative support; collaboration between the teachers, teacher librarian and the principal; use of posters in classrooms to aid student recollection of stages of the information literacy model; a consistent approach throughout the school for information literacy instruction; and embedding information literacy skills into the curriculum (p. 130).

Dispositions of a Teacher Librarian

The ability to establish an inquiry learning model and work collaboratively with other instructional staff within the school would require leadership dispositions on the part of the teacher librarian. Bush and Jones (2010) sought to pinpoint a list of professional dispositions of teacher librarians. Their interest in professional dispositions of teacher librarians was related to AASL's release of the *Standard's for the 21st-Century Learner*. "There was an implied imperative that practicing educators were to provide the requisite modeling of student-learning dispositions, which is borne out in the teacher education professional literature" (Bush & Jones, 2010, p. 12). Working together they completed a study of respected professionals within the field. Initially 63 participants, including academic scholars in the field of librarianship,

association leaders and editorial board members from school library journals were sent the invitation to participate, and 33 agreed to participate in the first round of the study.

Bush and Jones (2010) used the Delphi method to ask the expert participants a question which they responded to by email. Data collected were analyzed, compiled and sent back out to the participants a second and third time. As expected in a Delphi study, fewer panelists participated in the following two rounds with 21 participants in the third and final round.

The initial round of questioning required each participant to name five dispositions of a teacher librarian and support the answers with no more than 100 words. Participants were given approximately one month to reply with no reminders. Bush and Jones (2010) emphasized that, "This request was described as forecasting a vision rather than reporting on the panelist' perception of the current reality within the practice of school librarianship" (p. 8). After the first round a list of eleven dispositions varying from teaching with an 85% consensus rate to reading with 15% was compiled (Table 1, pp. 8-9). Bush and Jones summarized a list of dispositions that the experts envisioned a teacher librarian should possess ordered from the most responses to the least:

Teaching
Collaborating
Leading
Lifelong Learning
Creative Thinking
Empathy
Critical Thinking
Professional
Ethical
Advocacy
Reading (Table 1, pp. 8-9).

In the second round of reflection, Bush and Jones (2010) grouped the dispositions into three sets. During this round, experts were asked to provide thoughts about the dispositions.

The third and final round was completed approximately one month later and at that time participants had to rank the dispositions in order of importance. The final outcome of the research was a list of dispositions ranked in the following order:

Critical thinking
Creative thinking
Teaching
Leading
Collaborating
Lifelong Learning
Reading
Professional
Ethical
Empathy
Advocacy (Bush & Jones, 2010, Table 3, p. 11).

Bush and Jones (2010) acknowledged three findings from their research on dispositions, including one relevant to teaching and inquiry: "Results indicate a vision for professional dispositions of school librarians recognized predominantly for their quality teaching but from a distinctly school library perspective" (p. 12). Within this finding, Bush and Jones noted that participants commented on three categories, including holistic, transformative, and inquiry (p. 12). They noted that teacher librarians were in a "...unique position as an instructional partner..." to have a longitudinal effect on student learning and school curriculum, varying from several years to up to thirteen years from teacher librarians who were the sole practitioners in kindergarten through twelfth grade buildings (p. 12). They also found that participants felt that an inquiry stance was a disposition that was dispersed throughout many of the other dispositions in the final list.

Bush and Jones pointed out several limitations in their Delphi study including the difficulty in defining dispositions, the fact that the method itself generated opinion-based

findings, and the tendency for participation in their study to be limited and even decrease over time due to the fact that the panelists in their study were people with many commitments.

Similar to Bush and Jones, Shannon (2009) sought to study the criteria and expected competencies that principals were using when they hired teacher librarians, as well as administrator satisfaction with their current teacher librarian. Shannon recognized principal support as having impact on the success of the teacher librarian's work, and so she employed a survey research method to gain additional insight on principal viewpoints. Shannon worked specifically with South Carolina K-12 public schools, and several questions guided her study, including: "1) what criteria do principals use when hiring a school librarian, 2) when seeking a librarian, what competencies do principals consider most important, and 3) how satisfied are principals with the work of their current librarian" (p. 3).

Data were collected from an online survey that was sent to the participants by email. Of the 785 principals who received her email, 189 responded to her answering open- and closed-ended questions. First, principals were asked to list three criteria that guided their choice in hiring a teacher librarian. Shannon (2009) wrote that concepts were divided into three categories, "1) interpersonal and affective factors, 2) knowledge and skills, and 3) pre-employment qualifiers" (p. 5). Relevant responses included teamwork and collaboration, as well an emphasis on communication skills.

When principals answered Shannon's (2009) question on important competencies, several data points emerged that are relevant to the current study, including: "Collaborates with teachers to provide students with instruction in strategies such as finding, judging, and using information in support of active, authentic learning" (Table 2, p. 7). Collaboration had the highest mean rating, 2.97 on a scale where 3.0 was equal to very important. Collaboration in

order to integrate information literacy into school-wide curriculum had a mean of 2.95, and collaborative planning for curriculum development with a goal of improving student success had a mean of 2.79 (Table 2, p. 8). To the question on satisfaction with their current librarian's work, and in particular with teaching information literacy and research skills, principals answered with a mean of 3.17 on a scale where 3.0 was equal to good, and 4.0 was excellent (Table 4, p. 12).

Shannon (2009) commented that remarks about collaboration were noted 19 times; however:

> Only a few specifically used the term 'information literacy.' More frequently, respondents called for more activity in the area of 'research'…'teaching research skills to provide ELA [English Language Arts] teachers with foundation to conduct research projects with students,' and 'how to research with texts and the Internet' (p. 13).

Shannon suggested that because most principals did not use the term "information literacy" in their response to the open-ended questions, "School librarians might consider being more deliberate about defining information literacy and describing its relationship to the school's curriculum and the role it plays for lifelong learning" (p. 16). She also pointed out that knowledge of how to create a successful library program would not be enough on its own, and her study found that interpersonal and communication skills would be important for ensuring program delivery as well.

Summary

Research by Kuhlthau, Pitts, and others suggest that students need a mental model to follow in order to understand and be able to use an information search process model to carry out research and develop lifelong inquiry learning skills. Studies reviewed here show that collaboration between the teacher librarian and classroom teachers, with support from the

administration, is necessary in order to adopt an inquiry model to facilitate inquiry learning. Research on best practices for adopting inquiry learning models at the elementary level is limited. This study will describe best practices as related to adopting an inquiry learning model at the elementary level.

CHAPTER 3

METHODOLOGY

Today's students are challenged to conduct research differently then in generations past. Due to the large volume of information available across multiple media platforms, they have to learn how to navigate this excess of information in order to gain new insights and construct their own meaning. Research clearly documents the need for teacher librarians and classroom teachers to collaboratively provide instruction on information search process models; however, research in this area regarding best practices is limited. The purpose of this study is to describe best practices as related to adopting an inquiry learning model at the elementary level.

Research Design

In order to define who is involved in successfully adopting an inquiry learning model within elementary schools in eastern Iowa and exactly how they carry out this task, a qualitative phenomenological or descriptive study was employed. Wildemuth (2009) states, "...descriptive studies are conducted for the purpose of understanding a phenomenon or setting that is complicated – it is too complex to take in with just a superficial observation of it" (p. 27). This study focused on understanding what specifically happens in schools that are utilizing an inquiry learning model to help guide their curriculum, instruction, and assessment in the library program and in the classroom. The researcher also gained insight into barriers and obstacles for success that the teacher librarian and the classroom teachers had to overcome to utilize an inquiry learning model. Wildemuth asserts that descriptive studies are appropriate for this type of study in order to, "...understand a particular phenomenon for the particular purpose of using that understanding to improve a system's or program's design" (p. 28). The outcome of the research resulted in recommendations for best practices in implementing an inquiry learning model.

Procedures

Data Sources

The participant population of this study was limited to teacher librarians who have completed their master's degree program or hold a state endorsement for teacher librarian; have at least one year of experience working as a teacher librarian at the elementary school level; and who work in an Iowa school district that is part of the Grant Wood or Mississippi Bend Area Education Agencies' (AEA) regional services areas. The inclusion of Grant Wood and Mississippi Bend AEAs for this research study was a purposive sampling. The researcher specifically selected these two AEAs in Iowa due to the larger school districts that they include.

Reviewing the "2014-15 Certified Enrollment by District, by AEA" data on the Iowa Department of Education website, the researcher sent an initial interest email and questionnaire (see Appendices A and B) to the elementary teacher librarians in the eight largest districts within the two stated AEAs. According to the enrollment data, the eight largest districts vary in student population from approximately 3,800 to 17,000 students. With assistance from the staffs of the Grant Wood and Mississippi Bend AEAs, the researcher identified a sample of approximately 80 elementary level librarians to contact. Prior to distributing the initial interest email and questionnaire, the researcher gained approval for the study through University of Northern Iowa's Office of Research and Sponsored Programs.

The initial interest questionnaire collected data using an online survey tool to determine which of the approximately 80 teacher librarians met the researcher's criteria and were also interested in participating in a face-to-face interview for the study. Participation in the research study was optional; however, qualified candidates were encouraged to participate by being informed in the initial interest email that identifying information, including their names, schools,

and school districts would be changed to pseudonyms in the final paper. Candidates were informed that the face-to-face interview process would be expected to take approximately 60 to 90 minutes to complete, and could take place at the candidate's school so that s/he didn't have to undertake the burden of travel. The researcher also provided access to the informed consent documentation by attaching it to the initial interest email (see Appendix F).

The recruitment of willing and qualified candidates resulted in a final list of seven participants. The researcher secured letters of cooperation from the participating school districts (see Appendices D and E) before further contact was made with participants.

When the researcher contacted the candidates to schedule interviews, the interview questions and the required informed consent form were provided to them (see Appendix F). At the interview, the researcher collected the signed consent form. During the interview, the researcher utilized a semi-structured format to gather data (see Appendix G). The questions were written to create a narrative dialogue between the researcher and the participant in order to better understand how successful partnerships are created between the teacher librarian and the classroom teacher specifically in regard to teaching an inquiry learning model.

The researcher used a digital recording device in order to collect data, and participants were cognizant of the recording when they signed the informed consent. The participants were informed that the digital recording would only be heard by the researcher and the researcher's faculty advisor, and that the digital recordings will be deleted after a two-year period of time.

In addition, in order to achieve triangulation of data, the researcher asked the interview participants to provide and describe at least one example of a lesson plan that the teacher librarian had successfully used to teach a stage in the inquiry learning process. Wildemuth (2009) advocates for collecting an existing document, such as a lesson plan, as a data source due

to the fact that, "...this type of data could be a more accurate representation of the phenomenon of interest than data collected through self-report..." (p. 158).

Data Analysis

The researcher used qualitative content analysis in order to interpret the data from the face-to-face interviews and the lesson plan documentation. This method was useful to the researcher because according to Zhang and Wildemuth (2009):

> Qualitative content analysis goes beyond merely counting words or extracting objective content from texts to examine meanings, themes, and patterns that may be manifest or latent in a particular text. It allows researchers to understand social reality in a subjective but scientific manner (p. 308).

Hsieh and Shannon (2005) offer three different methods for qualitative content analysis, and for this study the researcher used directed content analysis, a partially inductive method. Even though this researcher was not attempting to develop new theory, the use of inductive methods was important for identifying and later describing best practices that exist for adopting an inquiry learning model at the elementary level. Directed content analysis suggests that initial coding begin with relevant research findings, so using studies summarized in the literature review, an initial list of themes was recorded by the researcher. During data analysis of the interviews, the researcher found that additional themes emerged from the data. Zhang and Wildemuth (2009) find that use of the directed content analysis approach is, "... to validate or extend a conceptual framework or theory" (pp. 309-310). The final list of themes for data analysis can be seen in Table 1. When preparing the interview data, the researcher transcribed rich data sections by summarizing the participants' comments, as opposed to transcribing the data verbatim. After transcribing the data, the researcher coded phrases or portions of data with a particular theme from the list.

The researcher also used directed content analysis to code the lesson plan documentation. Specifically the researcher looked for elements that are generally part of all inquiry learning models, including whether or not students were engaged in note taking skills; finding reliable sources; evaluating sources; citing sources; synthesizing information; presenting new information; or evaluating and reflecting. The researcher noted whether the lesson represented a general overview to an inquiry learning model. The researcher also noted, in Table 4, whether or not the teacher asked a guiding question for the research, or whether the students were asked to generate questions to guide their research.

A limitation for collecting and analyzing the data from the interviews was that the information was self-reported by the teacher librarians. Adding the collection and analysis of the lesson plans strengthened the study due to the fact that it helped affirm or refute the integration of an inquiry learning process model by the teacher librarian and the school.

Table 1

Themes

Code	Abbreviation	Explanation
Connection	**Co**	Teacher librarian as the connection between subject-matter and resources, as well as real-world significance
Support	**S**	Administrative (including principal, instructional coach, and/or curriculum directors) support for inquiry model and collaboration
Practice	**P**	Frequency & Scaffolding of instruction and internalization of inquiry model (across multiple grade levels)
Schedule	**Sch**	Combination of flexible & fixed library scheduling; minutes working with inquiry & research instruction exceeding 30 min./week (during projects)
Flexibility	**F**	Willingness of teachers to meet outside of normal school hours due to limited collaboration time
Collaboration	**Col**	Teacher librarians and classroom teachers working together at a variety of levels
Common Language	**CL**	Use of a model for research to establish a common language across a building or district
Questions	**Q**	Starting research with an inquiry-based, higher order thinking question
Curiosity	**Cu**	Fueling student curiosity and questions
Common Core	**CC**	Connecting inquiry based instruction to Common Core State Standards
Relationships	**R**	Positive relationships built between teacher librarian and classroom teachers
Professional Development	**PD**	Time to meet as teacher librarians, and/or engagement in common readings; listening to or attending inquiry learning speakers/workshops. Also includes setting goals around collaboration and/or inquiry
Communication	**Cm**	Disseminating information to parents and teachers on inquiry-based research in the library through website, blog, newsletter, and/or Twitter

CHAPTER 4

RESULTS

The purpose of this study is to describe the best practices that elementary school teacher librarians employ in order to successfully adopt inquiry learning models within their schools. This study specifically focused on elementary school teacher librarians within the Grant Wood and Mississippi Bend AEAs.

Findings

This study included eight of the largest public school districts in Iowa from the Grant Wood and Mississippi Bend AEAs. The initial interest email, questionnaire, and the informed consent were sent by email to 72 teacher librarians. From this initial email, there was a 24% response rate. Eight teacher librarians responded directly to the email with the following reasons for not wanting to participate: one was not interested; one did not have enough time to participate in an interview; two were on maternity leave; and three did not use an inquiry learning model in their library programs. Nine other teacher librarians replied directly to the researcher by email or used the online questionnaire that was provided to indicate their interest in participating. Seven out of those nine respondents were eventually interviewed for the project. One respondent decided not to participate after the list of interview questions was shared, as she felt that she would be unable to provide enough information to be helpful. Another respondent completed the online questionnaire, but did not meet the qualifications to participate in the study, as she was still in her first year as a teacher librarian, and did not have her state licensure or master's degree.

The final group of seven candidates for participation represented five of the eight school districts originally selected. Having identified the districts willing and eligible for participation,

the researcher sent an email to request a letter of cooperation from each. Emails were initially addressed and sent to the school superintendents, and a sample letter of cooperation along with the informed consent was attached (See Appendices D, E, and F). The researcher followed up with each school district, as needed, to obtain the letters of cooperation in a timely manner and then forwarded the letters on to the Office of Research and Sponsored at University of Northern Iowa as required.

After receiving letters of cooperation, the researcher contacted each of the seven candidates individually by email to coordinate a face-to-face interview (See Appendix G). During the interviews, candidates answered semi-structured questions in order to arrive at a narrative dialogue between the researcher and the candidate about the adoption, implementation, and use of an inquiry learning model in curriculum, instruction, and assessment within each school. The researcher recorded the approximately one hour interviews on a digital recording device, in order to later be able to transcribe the data. Candidates also provided the researcher with a lesson plan, or another form of documentation from a lesson or unit that was carried out with inquiry learning in mind.

Following the completion of the interviews, each participant was assigned a pseudonym, Participant A, for example. Then the researcher transcribed rich portions of the data. Unrelated data were omitted during transcription; portions of data were summarized; and rich data were transcribed word for word in order to use as potential quotations in the report of findings. Interview data were coded according to the methods outlined in chapter three of this study, and final themes utilized are listed in Table 1. Table 2 represents a summary of specific participant attributes collected in this study. Table 3 was created once all interview data was coded in order to see patterns emerge from the data. Only remarks indicating the positive presence of the theme

were recorded in Table 3. Table 4 represents an analysis of the lesson plan documents that were presented to the researcher. The researcher then began to consider how the data addressed the research questions set forth in this study:

1. What have successful teacher librarians done in order to adopt and implement an inquiry learning model in their schools?
2. What obstacles or barriers have successful teacher librarians overcome as they work through adoption and implementation of the inquiry learning model?

Methods Successful Teacher Librarians Utilize to Implement Inquiry Learning

Analysis of Interviews

The qualifications of the participants interviewed in this study are noteworthy. Within the group of seven, they averaged 20.4 years of experience as teacher librarians. Many had additional years as classroom teachers that were not recorded as part of the data. All of the participants had master's degrees, with six out of seven holding degrees in library studies. One participant mentioned completing her National Board Certification in Library Media; however, the others were not questioned about this additional credential. Only one of the seven participants was responsible for two schools, although one was half-time in her district; one worked in a K-8 building; and one was also in charge of the Extended Learning Program for the current academic year. In terms of inquiry learning models, six of the seven participants interviewed identified the model that they used within their school, and stated that these models were also adopted or utilized at a district level as well. Participant B felt that her school and district did not have a specific model adopted, but she did feel that most of the teacher librarians in her district used a model.

Table 2

Participant Attributes

Participant	Master's Earned	Years Experience in Library	Full time/Half time Position in District	Number of schools responsible for	Grade Levels in School(s)	Model Adopted	Name of Model	Model implemented District-wide or School only
A	Yes	13	Full time	One	K-4	Yes	Big 6™	District-wide
B	Yes	16	Full time	One	K-6	Participant uncertain		
C	Yes	6	Half time	One	K-5	Yes	Big 6™	District-wide
D	Yes, in field other than library	15	Full time	Two	K-6	Yes	Pathways to Knowledge	District-wide
E	Yes	30	Full time	One	K-6	Yes	District-created model	District-wide
F	Yes, also National Board Certification in Library	35	Full time	One	K-8	Yes	Pathways to Knowledge	District-wide
G	Yes	28	Full time (Half Library & Half ELP)	One	K-6	Yes	District-created model	District-wide

Table 3

Frequency of Themes in Interview Data

Frequency of Themes	Participant A	Participant B	Participant C	Participant D	Participant E	Participant F	Participant G	Totals
Professional Development	1	3	1	1	4	3	3	16
Collaboration	2	1	2	0	3	3	3	14
Practice	3	0	3	0	1	4	2	13
Connection	2	1	1	0	3	2	2	11
Schedule	0	0	2	0	2	2	5	11
Support	1	0	1	0	1	1	1	5
Flexibility	0	0	1	0	1	2	1	5
Questions	0	2	0	0	0	0	2	4
Relationships	0	0	1	0	0	0	2	3
Communication	0	1	1	0	0	0	1	3
Common Language	1	0	0	0	0	1	0	2
Curiosity	0	0	1	0	0	1	0	2
Common Core	0	0	0	0	0	0	1	1
Totals	10	8	14	1	15	19	23	90

Professional Development

For the purpose of summarizing data in this study, the researcher chose to define professional development as any of the following: time allotted for teacher librarians to meet

collaboratively and to engage in general conversation or discussion of common readings on inquiry learning models with other teacher librarians within their district; a focused time spent listening to or working with an expert on inquiry learning models; and setting professional goals to further collaboration with classroom teachers in relationship to inquiry and research.

Related to this particular theme, the researcher was impressed by the number of participants who had interacted in a workshop or other types of professional meetings with inquiry learning experts. Participant C had formerly worked in another state, and during her experience there had taken a workshop with Barbara Stripling where she had been exposed to her information fluency continuum. This experience had sparked her interest, and continues to influence her teaching today. Participant D had studied under Dr. Pappas at her university, and eventually she worked in a district that had adopted Pappas and Tepe's Pathways to Knowledge Research Model. Participant E had once attended a talk by Michael Eisenberg discussing his Big6™ model; and later moved into a district that had created their own information literacy model that somewhat resembled The Big6™. Participant F was employed in a district that met with Dr. Jean Donham and Dr. Marjorie Pappas to discuss implementation of an inquiry learning model, and later adopted the Pathways to Knowledge Research Model.

Three of the participants (A, F, and G) worked in their current districts during the adoption of an inquiry learning model. These three participants spoke about the common readings that they shared prior to making the decision about which model to implement, as well as the amount of time that they devoted to the decision. Participant G specifically stated that the teacher librarians in her present district spent about a year and a half discussing existing models prior to deciding as a group to create their own model with a simplified number of steps but that also emphasized scaffolding, frequency, practice, rigor, and stamina as elements that teacher

librarians and classroom teachers had to ensure were in place for their students. Two participants also mentioned setting professional goals around collaboration and inquiry learning during the current and previous academic years.

Collaboration

Collaboration was defined as teacher librarians and classroom teachers working together to implement an inquiry learning model for curriculum, instruction, and assessment within the library. The researcher used guidance for levels of collaboration defined by Montiel-Overall (2010) in her work:

> Incidents involving scheduling and/or organizing were categorized as low level collaboration (Coordination). Incidents involving teachers/educators and librarians working independently and then coming together to share were categorized a mid level collaboration (Cooperation), and incidents in which idea sharing resulted in a jointly developed outcome were categorized a high level collaboration (Integration) (p. 36).

All participants interviewed described working at the coordination level with classroom teachers in their buildings on tasks such as pulling resources for classroom research that was not necessarily inquiry-based, as well as scheduling lab time and occasionally assisting during lab time when students were completing final research projects.

Participant C specifically discussed her approach to implementing an inquiry learning model in her building despite being limited in her role as a teacher librarian by being employed only half-time. Understanding the significance of using a model, she created units of research across all grade levels, kindergarten through 5th grade, and then presented them to her classroom teachers. Working at a cooperation level of collaboration, she asked for their assistance in fine-tuning the units. In her second year using this method, she described collaborative projects in her building as "evolving," and also said that this year teachers are more comfortable stepping in to assist or picking up where she left off if she happens to be absent.

Four participants described varying practices that would fall within Montiell-Overall's continuum of an integration level of collaboration. Participant A has set a weekly forty-five minute meeting with each grade level team to discuss work being done in the classroom, and how it could be coordinated with work in the library, including inquiry-based research projects. She commented that often times the teams worked together to decide which steps of the research each would be responsible for teaching, for example, she typically taught finding reliable sources and using proper citations. Participant E discussed a similar situation. She would meet and discuss the process with teachers, for example for their concept-based biography research, and she would then assemble the group's notes and create a schedule to keep herself, classroom teachers, and students on pace to project completion.

Participant F and the team in her district approached collaboration slightly differently, but still at an integration level. When they adopted the Pathways to Knowledge Model in 1998, they wanted to ensure that teachers would utilize the model. Working in multi-disciplinary teams, they spent several years creating and implementing curriculum and assessments across language arts and social studies for multiple grade levels.

The researcher found that in the interview with Participant G, the definition of Montiel-Overall's integration level of collaboration was being met at the fullest extent. Participant G also worked within coordination and cooperation levels with her classroom teachers; however, it was the integration level of collaboration about which she spoke most highly. She had built into her schedule one hour each day for co-teaching with her colleagues. When her colleagues booked co-teaching time with her, typically far in advance, she stated that it all began with co-planning, "If we're truly going to plan, plan, plan a research project where we're going to co-teach together than I want to plan together." For her, when planning a lesson or unit that was going to be co-

taught, the integration level of collaboration was not optional, and teachers had come to see the benefits of respecting and working within those parameters.

Practice

In this study, the researcher defined practice as the frequency of inquiry-based projects that were completed in an academic year at each of the participant's schools, as well as scaffolding of instruction across grade levels. As suggested by Kuhlthau (2010), "...guided inquiry is a way of learning that accomplishes the objectives of 21st century schools" (p. 3), and it is not meant to be something that is only done once all other learning and preparation for testing has already taken place.

One theme that was commonly mentioned, it was described by five of the seven participants, was practice. Although it is discussed in varying ways, it is an element that is critical to successful implementation of an inquiry learning model. Participants A's and C's students were practicing across grade levels, as their teacher librarians worked collaboratively with teachers to make sure at least one inquiry-based research project was present at each grade level. Participant C's students were also working to internalize steps for their research model by learning a song provided on the Big6™ website. Participant E mentioned only being able to implement inquiry-based research with her 5th and 6th graders until recently. Now her instructional coach has gotten on board, and has helped to implement textbook-based research projects in other grade levels. Participant F stated that the spring was the heaviest time for research in her school, although they worked to practice throughout the school year. One way that her students practice and learn to internalize the steps on the Pathways to Research Model is by completing a group activity where they have to put the steps of the model in the correct order

prior to learning more about each step. This activity leads to group discussion about the process that is taking place at each step in the model.

Practice resonates in at least two ways in Participant G's school. First, as a team of teacher librarians who designed their own inquiry learning model, they built practice, frequency, and scaffolding in as essential elements that the classroom teachers and teacher librarians always require be in place for their students. Second, practice is a part of the culture of the school. In referring to one of her sixth grade colleagues, and the structure of her entire school day and year, she comments:

> I have one sixth grade teacher who kind of structures her whole entire year like this… Her units are all tied to core and she integrates her ELA standards and her social studies standards and she puts them altogether and pulls in her research, and this is what her kids do all year long…It comes back to that it's practice, practice, practice. You can't do it once… If they're not researching and researching and researching some more…sometimes we might be shocked at how much they don't internalize if they're not doing it on a regular basis…

This incorporation of regular research activities across the school year providing practice using the inquiry learning model are cited as key to the success of the model's implementation.

Connection

In this study, connection is thought of as the teacher librarian's role in bringing appropriate resources on a particular subject-matter to the classroom teacher and the students, as well as helping students see the connection between an inquiry learning model and its usefulness in real-world situations.

Almost all of the participants reference connecting students and teachers with appropriate resources for inquiry-based research. However, Participant E is more intentional in attempting to connect the inquiry learning model to real-life situations. One of her discussions with 5th and 6th

grade students who are learning the steps to the inquiry learning model asks students to relate the process to something such as going to the movies. "You have an information need...if you go through the steps and everything you need then you can be successful in the end. Then we talk about any information need, not just because we're doing this project here. That's what I want to try and get them to understand." In this way, the goal of creating connection is realized not only in the application to an immediate problem but also to the larger context of a student's lifetime of inquiry.

Schedule

The researcher defined schedule in this research study as teacher librarians who had more than 30 minutes a week to work with a given group of students on inquiry-based research. All seven of the teacher librarians interviewed mentioned working with fixed schedules, many of them covering teacher preparation time; however, participants C, E, F, and G described their schedules as fixed, yet flexible. Their ability to work with somewhat flexible schedules allowed for additional time to work with classes of students. Participant C was able to add computer lab time with her students starting this academic year, so that they could make further progress with their research.

Participant E met with students for a fixed 50 minute class period each week, of which the last 15 minutes was devoted to check out, but during the research project she was able to add an additional 25 minute block each week. The classroom teacher typically stayed and worked with her during the second 25 minute session. Participant F coordinated her own library schedule with the classroom teachers, and had the ability to change it weekly, if needed. Although rarely necessary, her classroom teachers knew that if she was teaching research in a upper grade level class that a lower grade level class may be moved to check out only for that

week. Participant G's schedule was the closest to a flexible schedule. She had one hour each day of the week built into her schedule for co-teaching, and she was working with her principal to determine if it was possible to add a second hour for this coming school year. This hour allowed her the freedom to co-teach daily for two weeks, if a classroom teacher wanted to plan research with her. When asked to explain her schedule further, she stated, "It sends a message that that's (co-teaching) important. It sends a message that that's what I want to be doing. It sends a message that when we research together, we're stronger." Participant G referenced the fact that her principal was keeping track of data related to her co-teaching, and he had seen data implications for positive student achievement since the school had opened a few years ago.

Support

The researcher chose to define support as administrative backing for implementation and use of an inquiry learning model. Administrative support could come from principals, instructional coaches, or curriculum directors at the district level. Five of the seven participants specifically discussed administrative support. Participant A spoke about the committee that implemented an inquiry learning model district-wide; the committee consisted of the K-12 teacher librarians, as well as the curriculum director. When participant C joined her school two years ago, she met with the principal about implementing an inquiry learning model for research, and because he knew about The Big6™ Model, he supported her decision to use it, and even gave her some tips based on his experience as a classroom teacher. Participant E was recently supported by her instructional coach when their district moved to a new reading series textbook. The instructional coach worked to help implement additional research assignments at the lower grade levels because she was primarily focusing her inquiry-based instruction at the 5th and 6th grade levels. Participant F was part of a district that as far back as 1998 had considerable

support for district-wide implementation of an inquiry learning model. Their district had a steering committee that guided the decision about the adoption and implementation of the Pathways to Knowledge model that they decided to use. Over the years, the committee changed membership multiple times, but key personnel involved were: teacher librarians, the technology director, language arts and social studies curriculum coordinators, and even an administrator. In more recent years, this participant has seen support for this initiative decrease, and the researcher's interview with her gave the participant reason to think more about their next steps in order to continue to support a district-wide implementation of an inquiry learning model. As mentioned in the schedule theme, participant G had the support of her principal. He had tracked data to begin to make a connection to her co-teaching and student achievement.

Flexibility

Flexibility was defined for this research study as the willingness for teachers to meet to collaborate with the teacher librarian during non-traditional times, such as before or after school, and during a lunch break. Given that most of the teacher librarians that participated in this study worked to cover preparation time for classroom teachers, meeting during the school day was not necessarily an option. Only participant A had weekly meetings with each grade level team that were regularly scheduled, and occurred during the school day. Participant C described planning with teachers in the hallways and by email. She mentioned needing to know who would return emails, and who you needed to talk with face-to-face. Participant E had seen a change within her district during her tenure. She used to be part of their team planning times, but recently their structure had changed and she now provided classroom teachers with a break so that they could meet as PLC's (Professional Learning Communities) while she taught their students in the library. Because of this change, she now had to find time to meet with the teachers over lunch.

Participant F also described having to meet over lunchtime to collaborate with teachers due to newly added responsibilities in her district regarding management of technology resources. Participant G was insistent on planning time in order to coordinate her co-teaching lessons. She and the teachers who wanted to co-teach with her met before or after school. The only time she was willing to plan quickly, in the hallways, was when classroom teachers asked her to review a skill with her students, for example how to use an AEA online resource.

Questions

The researcher defined the subtheme of questions as the teacher librarian or classroom teachers asking inquiry-based questions requiring higher level thinking (that is, "strategic and extended thinking" according to Webb's Depth of Knowledge Levels, or "evaluating and creating" according to Bloom's Revised Taxonomy of Educational Objectives) as part of the research. This theme was only discussed by two of the teacher librarians interviewed. Participant B referenced starting student research by asking a question, and not just reporting on facts. This was something that she also nudged all of her classroom teachers to do as well. Participant G spoke about the influence of Wiggins and McTighe's, *Understanding by Design* in her practice and collaborative work with classroom teachers. When they plan together, they always start with the enduring question and think about what they want the students to be able to do when they were done. Participant G was passionate about this practice:

> I like starting with the end in mind and working backwards from there. That open-ended inquiry question needs to drive whatever we're doing. Whether it's a two day project; whether it's a two month project. And that's huge. If we're not doing that effectively, it's just a dead president report, and then this (pointing to their inquiry learning model) is all for naught. I'm sorry, that's a waste of their time. They can Google that information. So, making sure it's (the enduring question) thought-provoking, tied to Core, it will require deep thinking, they'll have to make a critical analysis of the information that they're researching.

The act of questioning is not just a skill taught to students as they pursue lines and methods of inquiry but a professional domain shaping the interactions of teachers with each other in the crafting of curriculum.

Relationships

In her closing remarks about implementing an inquiry learning model, Participant C stated that she had worked hard to implement a model, and felt that it was best for the students. She remarked that collaboration started with building relationships. Participant G felt that success could be found in implementing inquiry-based research by knowing her teachers, and understanding how much she could encourage certain teachers to work collaboratively. She believed that it also functioned like "the pebble in the stream affect," and that teachers would tell their co-teachers about positive collaborative experiences with her, and in turn more teachers would ask to collaborate.

Communication

In this study, the researcher defined communication as the teacher librarian communicating information about student work with an inquiry learning model to parents and classroom teachers through newsletters, blogs, library websites, or social media. Three participants (B, C, and G) specifically mentioned communicating information in this manner. Participant F, who did include library comments on her school newsletter, specifically stated that the interview question about communicating the use of an inquiry learning model to parents gave her something to consider for future practice. Participant B sent out updates at fall and spring conferences to parents about happenings in the library; however, she didn't feel that the information was closely looked at by parents. Participant C was also the webmaster for her school, so she included information about research projects done in the library on her portion of

the school newsletter each month. Participant G was using a library-specific Twitter account to encourage parents, teachers, and administrators to follow her activities. On a continuous basis she included comments and pictures about the rigorous work that students accomplished in the library.

Common Language

Donham (2001) maintained that having a consistent, common language for research amongst all teachers was one reason to adopt an inquiry learning model in a school. For the definition of this theme, the researcher utilized Donham's notion that adopting a model led to a common language for students. Two participants (A and F) referred to this principal of common language in their interviews, and one was employed by a school district that had worked with Dr. Donham when they implemented their inquiry learning model. She stated, "One of the things we felt is that we wanted a common language, so that our kindergarteners all the way up to our 12th graders used the same terminology for understanding research. Also across curriculum areas too." The other participant didn't use the term "common language," but the researcher felt that her comments meant something very similar:

> Think it's been good that we've got a common inquiry model because I think it helps to scaffold that learning up for kids so that they're focusing then and [*sic*] by the time they get up the ladder, they've kind of been through the process enough that they know that there is a strategy, that there is a process, and they can focus on the content and not so much on the process.

Both Participants A and F were in agreement as to the benefits to their districts of using a common inquiry learning model with a common language for students as they move from kindergarten through 12th grade.

Curiosity

The introduction to this study references both Kuhlthau's and Donham's thoughts regarding curiosity and inquiry, as both believe that curiosity is where inquiry begins. For the theme of curiosity, the researcher noted participants who were interested in student curiosity and questions during the inquiry learning process. Participants C and F specifically mentioned the quality of curiosity. When discussing the fact that she added research to her curriculum for kindergarten and first grade this school year, Participant C believed that the younger students have a natural instinct to want to learn new things. Participant F described wanting to be part of the appreciation and presearch stage, specifically referencing a Holocaust project with which she helps her 8th grade students. She would like to enter into the process at the beginning of the project and get them curious about the different possibilities for topics.

Common Core

The researcher defined common core as participants making positive connections between inquiry learning and the Common Core State Standards. As presented in the justification for this research study, research and writing are present throughout the Common Core State Standards (2010). The standards suggest that as early as second grade students should participate in shared research projects. In the interviews for this study, only Participant G made positive connections between the Common Core and inquiry-based research. She believed that the Common Core was potentially one missing element in the inquiry model that she and the other teacher librarians had recently created for use in their district. Expressly she said, "We are now consciously doing all of this (inquiry-based research) in conjunction with core. If it's not tied to core standards, the research won't happen, or shouldn't be happening."

Analysis of Lesson Documentation

In order to achieve triangulation of data, and confirm the participants' statements about their use of an inquiry learning model in their instruction, the researcher collected lesson artifacts from each participant. For the researcher, this proved to be a difficult part of the research process, as the participants all provided different types of artifacts. As the researcher worked to coordinate the interviews, several questions were asked by the candidates about providing a lesson plan. Participant B asked if she could provide her lesson in the format of interactive white board files. At the conclusion of their interview, Participant D provided a formal lesson plan based loosely on The Big6™ model, but it was not a lesson that she had ever taught before. She told the researcher it was a lesson that she would ideally like to teach if she had more time with her students. Participant E provided an overall summary of her unit in the format of an annotated schedule that she used to work with her teachers on their concept-based biography unit this spring. Participant G stated that she would need to withdraw from the research project because she didn't have formal lesson plans. In her collaborative work with teachers, she described her process as fluid, as she and her teachers collected notes and ideas on paper and by email, and made changes based on students' needs after every class period. After discussing this with her by email, the researcher wanted to proceed with an interview regardless of the fact that she would not be able to provide a written lesson plan. For her artifact, Participant G allowed the researcher to photograph a planning chart that she had for a 5th grade inquiry-based project on which she worked collaboratively.

Given all of the variables in the materials presented, the researcher compiled Table 4 to conduct a qualitative content analysis of the lesson documentation; in a similar manner to the way the data from the transcribed interviews were analyzed. The researcher documented the

type of artifact that the participant provided, as well as the grade level it focused on and the inquiry learning model being used. Then she documented whether or not the teacher began with an enduring question, or if the teacher encouraged students to arrive at their own inquiry-based questions, and what stages of the inquiry learning model the students engaged in during the particular lesson or the unit outlined.

Participant A provided a unit that she has used with 2nd grade students on researching an animal of interest by using a *Zoobooks* magazine. It was evident in the materials provided that the participant was utilizing steps from The Big6™ inquiry model; however, the project did focus on one teacher-provided resource. Seeking information from a variety of sources, locating and evaluating those sources would have been limited, but given that the lesson was geared toward 2nd grade, that was appropriate.

Participant B provided slides from her interactive white board on how to take notes "caveman style." In her description of the lesson during the interview, and in her slides it is difficult to determine how this fits in with inquiry learning other than the fact that note taking is generally a step in most inquiry processes. This correlates with the fact that Participant B did not identify a specific inquiry learning model that her school or her district was using.

Participant C provided shared links to multiple documents she used to create research unit packets for her 3rd grade students where they suggest an undiscovered habitat for a tourist to visit. The documents that form the packet paint a picture that the participant is utilizing steps in The Big6™ inquiry model; however, it does not include a guiding question suggested by the teacher nor does it appear to have the students brainstorm questions that they have about the habitat research prior to beginning their use of teacher-directed resources.

Participant D provided a formal lesson that required 3rd grade students to create a KWL chart about an animal research project. In the interview, Participant D stated that this was not a lesson that she had ever taught, but she would teach it in an ideal situation. Presently, she did not use an inquiry learning model in her teaching. Even though she stated that the lesson was based on The Big6™ model, the researcher is not completely certain what stage of the process is being taught. The researcher stopped short in the interview of asking further questions about this lesson, and is making the assumption that the KWL lesson would be geared toward the task definition stage of The Big6™.

Participant E provided an annotated schedule and informal lessons outline of a 5th grade concept-based biography research unit. In the project, each student was tasked with researching how their person from history exemplified a specific character trait. Lessons on note taking, key word searching, finding and evaluating multiple types of resources, and putting a finished product together all were present in the outline provided. One element of an inquiry model that was missing from the outline was the student evaluation of the process and the product.

Participant F provided a single lesson that was an introduction and overview of the steps of The Pathways to Research model that her district uses. Even though the lesson was an introduction compared to the fact that some of the other participants had provided documentation of entire units of instruction, it did have something that most of the others were missing. The lesson did include an essential question to help guide student learning, "Why should I use a research model?"

Participant G did not provide a lesson plan or a unit plan to the researcher, and she almost dropped out of the research study due to the requirement. In the interview, she spoke about how her collaboration with teachers was more fluid than a lesson plan would permit. She spoke about

the co-planning process that often involved brainstorming through email and even on construction-paper charts. She allowed the researcher to photograph a co-planning document, done on construction paper, for a 5th grade Revolutionary War project that included the enduring question the entire project was focused around, "What are themes that are catalysts for conflict?" The document also included that the students would be explaining how "the colonist form of government led to frustration and eventually was a catalyst for declaring war on Great Britain." The document noted that this was a level three in Webb's Depth of Knowledge.

Table 4

Analysis of Inquiry Learning Model Documentation

Analyzing Documents from Teacher Librarians	**A**	**B**	**C**	**D**	**E**	**F**	**G**
What kind of document did they provide?	Unit of instruction (multiple days)	Interactive white board slides from notetaking lesson	Unit of instruction (multiple days)	Lesson - creating KWL chart	Unit of instruction (multiple days)	Lesson - Overview of Inquiry Model	Photo of coplanning document
Inquiry learning model used	Big6™	Uncertain	Big6™	Big6™	District created	Pathways to Knowledge	District created
Grade level document aimed toward?	2nd grade	4th and 5th grades	3rd grade	3rd grade	5th grade	5th and 6th grades	5th grade
What portion of inquiry learning is the document demonstrating. For example:							
Teacher asking an enduring question to engage curiosity in order to engage learners in an inquiry project	not present	not present	not present	not present	not present	Present: Why should I use a research model?	Present: "What themes are catalyst for conflict?"
Teacher encouraging students to formulate a question, out of curiosity, in order to engage learners in an inquiry project	somewhat present, students are researching an animal of interest (found in a Zoobook). Have to formulate questions that interest them	not present	somewhat present, students are researching a biome and presenting characteristics to future tourists. Research appears open-ended/undefined.	somewhat present, in lesson students are beginning to generate questions to research	somewhat present, project is concept-based. Students find person that interests them to reseach and match with character trait	not present	Not enough information present in photo to determine
Student engaged in: Note taking skills	present	present	present	not present	present	not present	
Student engaged in: Finding reliable sources	One source used, teacher provided	not present	Students using multiple sources from teacher-provided list	not present	Students using multiple sources with teacher guidance	not present	
Student engaged in: Evaluating sources	One source used, teacher provided	not present	not present	not present	present	not present	
Student engaged in: Citing sources	present	not present	present	not present	present	not present	
Student engaged in: Synthesizing information	present	not present	present	not present	present	not present	
Student engaged in: Presenting new information	present	not present	present	not present	present	not present	
Student engaged in: Evaluating and reflecting	present	not present	present	not present	not present	not present	
Teacher: Presenting a general overview of inquiry learning	not applicable	not applicable	not applicable	not applicable	not applicable	This lesson is meant to be an introductory, overview of all of the steps of the Pathways model	

Barriers Successful Teacher Librarians Overcome to Implement Inquiry Learning

Most of the participants interviewed work persistently to implement inquiry learning within their schools; however, it was not without having barriers that they had to overcome. Despite best efforts, several of the participants were still struggling to overcome some of their barriers. Several obstacles were discussed throughout the interview process with participants. Resources, both human resources and access to technology and print resources, were discussed by several participants. Participant B spoke about her district's use of a new textbook series that created the problem of all research units happening within the school at the exact same time of year. One approach that she was attempting to get her teachers to consider was whether or not that unit could be taught at different times of year, so that she was available to participate, and so that print and technology resources were available to everyone. Participant F described a similar situation with spring being the time of year when research occurred most frequently in her school. She resolved the issue by involving herself in the research process with her older students, and rescheduling her classes with lower grades or by having the students check out library books with her aide. Participant G recognized that even though it was her goal to work with 100% of her teachers collaboratively, it had not happened yet, and in turn this was a way for her to overcome the barrier of not being available to everyone when needed.

Many of the participants interviewed dealt with the barrier of limited time for collaboration, especially as their districts had shifted over the years to having them cover teacher prep time, as opposed to being able to attend teacher planning and PLC meetings. Despite this obstacle, several had found ways to work within their limited schedules. Participants E, F, and G met with their teachers during nontraditional times such as lunch and before or after school. This practice suggests that they had built relationships with their classroom teachers and in turn

teachers had experienced the advantage it would provide their students to spend personal time collaboratively planning with the teacher librarian.

Participants D and F spoke about the added responsibility in their district of teacher librarians being IT (information technology) contacts within their building. Since their district had implemented a new wireless device for teacher and student use this school year, it had taken up a large portion of their time. Some of their responsibilities included training teachers on software associated with the device, devoting their collaboration time as a group of teacher librarians to learning about software and hardware, building check out schedules and procedures for the new devices, and general troubleshooting. Participant D was still struggling with this barrier, and it affected her ability to implement instruction in inquiry-based research within her schools. Participant F described herself as busy with this new technology, but she still believed strongly enough in inquiry learning that she continued to make sure it was implemented. The interview though did give her pause to reflect that her district had hired a number of new teacher librarians this past year, and that their group would have to ensure that they allotted training for the new librarians on the district use of the Pathways to Knowledge research model.

One additional barrier to the adoption of an inquiry learning model was the implementation of the Common Core State Standards, as well as the state mandated reading assessments. Participants D and E specifically described these issues as potential obstacles for implementation of inquiry-based research. Participant D stated, "With the emphasis on reading, and the assessments, and progress monitoring, the teachers don't want to take the time to work through a research model." Participant E questioned,

> I think another barrier is that there has been so much focus on Common Core and all the curriculum stuff...inquiry learning model, hopefully it'll stay alive, but that might be a challenge to keep it going. Luckily, at least in my building, the

> teachers are really still supportive and really want to work with it. So, it makes me wonder why we aren't talking about it so much as district librarians.

Participant G expressed a different understanding of the Common Core State Standards as detailed above in the first research question. Her collaborative practice with classroom teachers and inquiry learning involved connecting all research back to the Common Core.

Summary

This study found that overall five of the seven teachers librarians interviewed (Participants A, C, D, E, F, and G) were finding success implementing an inquiry learning model within their schools. Two of the librarians interviewed (Participants B and D) were still working to overcome obstacles in order to successfully implement an inquiry learning model in their schools, but both were interested in doing so in the future.

Many themes emerged from this study that suggested ways in which teacher librarians could find success in implementing an inquiry learning model in their schools. The only theme that was in common to every participant was some form of professional development. Just over half of the participants (four out of seven), had been part of an opportunity to hear inquiry learning experts speak first-hand which had in turn influenced the practice in the classroom for at least three of those seven. Collaborating with classroom teachers, even though they were doing so at various levels according to Montiel-Overall's definitions, as well as acting as a connection for resources, and the opportunity to work within a schedule that had fixed and flexible components to it all aided in the implementation of inquiry learning. Being an advocate for practice across multiple grade levels, but also throughout the year was a significant theme for successful implementation as well.

Teacher librarians whose schools seemed to be gaining the greatest benefits from implementing an inquiry learning model within their curriculum, instruction, and assessment also

discussed themes such as: support from their administration; flexibility in when they were willing to collaborate with teachers; using the model as a common language within their school for research; beginning inquiry research with higher order thinking questions; building positive relationships with classroom teachers and administrators; communicating to parents through their websites and social media; and understanding the connection between the Common Core State Standards and inquiry-based research. The majority of the teacher librarians interviewed were finding ways to work around barriers or obstacles in order to successfully implement an inquiry learning model.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Purpose Statement

This study was intended to illustrate the best practices that teacher librarians in the largest school districts within the Grant Wood and Mississippi Bend AEAs were utilizing in order to successfully implement an inquiry learning model within their schools. The study was also intended to describe obstacles or barriers that these teacher librarians had to overcome in order to successfully implement an inquiry learning model.

Conclusions

Themes generated by this research study were well documented in previous studies, including studies discussed in the literature review portion of this paper. Kuhlthau (1988) was concerned with the user's knowledge about and experience with the information search process. Harada and Yoshina (1997) studied students' ability to assess their own understanding of an information search process, and they found that practice and feedback helped students improve understanding. This research study found that five of the seven participants were implementing research projects utilizing their school-adopted inquiry learning model, at least once per grade level at the minimum, or in the most ideal situations, throughout the school year and across multiple grade levels contributing to their students' formation of a mental model (Pitts, as cited in McGregor & Stripling, 1985) and their ability to internalize the model (Donham, 2001). Only two participants referred to the terminology common language or common terminology (Donham, 2001; Herring and Bush, 2001), suggesting that further professional development could illustrate for teacher librarians how their use or continued use of one inquiry learning

model within their building could strengthen their students' understandings of the information search process and, in turn, make their students better lifelong learners.

Pitts (as cited in McGregor & Stripling, 1985) and Kuhlthau (1988) both found that in general students choose to engage in research on topics that they already know about or topics that they perceive are easy to research. This can be related to Engel's (2013) thoughts on the significance of modeling questions and encouraging curiosity, as well as Kuhlthau (2010) and Donham's (2014) notions that inquiry starts with curiosity. This research study found a significantly low occurrence of participants who made comments that were eventually linked to the themes of questions (4 positive references) and curiosity (2 positive references). Several of the unit plans that were provided as further documentation confirmed the lack of teacher or student directed questions that would help promote student curiosity on the topic. Teacher librarians need to be made aware of the research surrounding curiosity and questioning so that they can further their understanding of how instruction related to generating questions out of curiosity, building background knowledge on a topic, and expanding keyword searches will enable students to reach a greater depth of understanding in their research.

Pitts' (as cited in McGregor & Stripling, 1985), as well as the American Association of Teacher Librarians (AASL, 2007) both concern themselves with teacher librarians recognizing their role as a connection between subject matter material and the process of seeking information. AASL specifically wants students to make a connection between the use of an inquiry learning model both in the classroom and in the larger world. Although most participants related comments about their role in the connection of subject matter and the information seeking process, only one participant spoke specifically about how she modeled the use of an inquiry learning model in a real-life situation. This finding suggests the need for teacher librarians to

seek additional ways to make the connection for students in how this model is a useful tool for their future, both inside and outside the classroom.

Montiel-Overall (2010) studied and wrote about levels of collaboration, ranging from coordination to cooperation to integration. Part of her findings was the importance of relationship building in successful collaborative relationships. In this research study, there were only three positive references to relationships in the interviews. In particular, the researcher wonders about the connection between the theme of relationships and flexibility. The researcher found that in general participants who made comments about meaningful relationships spoke more about the flexibility of classroom teachers working with them on scheduling issues that then allowed participants to co-teach or have additional time to work with students on inquiry-based learning projects. All of this information suggests to the researcher, the importance of educating teacher librarians in the significance of building positive relationships with their classroom teachers.

Bush and Jones (2010) conducted a Delphi studied that arrived at leadership as one of the top five dispositions of a teacher librarian. Several themes that emerge from this research study could be connected to the theme of leadership, including: relationships, support, flexibility, and schedule. Participants who made positive references to these themes were successfully implementing inquiry learning models within their schools. Shannon (2009) also writes about the support of principals impacting the success of teacher librarians' work. Five of the seven candidates referenced administrative support from curriculum directors, instructional support coaches, and principals; however, only Participant G spoke specifically about her principal's support of co-teaching and the fact that he was tracking data related to her co-teaching and looking for additional ways to add co-teaching to her schedule. These conclusions reaffirm the

necessity of providing professional development to teacher librarians to build their understanding of the importance of their leadership and advocacy roles, as well as strengthening their positive relationships with their principals.

Overall, this study resulted in positive findings. A majority of the teacher librarians were successfully implementing an inquiry learning model within their schools, and doing so intentionally or instinctively in coordination with many of the themes identified as important in the reviewed literature. However, not all of the teacher librarians who chose to participant were successful. The researcher found that two of the participants interviewed were not overcoming barriers and implementing district-adopted inquiry learning models in their schools. This led the researcher to wonder about factors that may have contributed to the participants' decision to not implement the inquiry learning model. Resulting questions include: 1) was the amount of instructional time with their students comparable to that of their colleagues in the same district, and 2) was there a lack of professional development time and communication with the other teacher librarians, and if so, why. Also, at least one of the participants used language in her interview that echoed Kuhlthau's (2010) finding that only after testing skills are taught and if there is time to spare then inquiry would be a priority. This suggests to the researcher that the need to emphasize the teacher librarian's role in working collaboratively with classroom teachers to implement an inquiry learning model within schools is ongoing. Kuhlthau's (2010) insistence on guided inquiry as "...a way of learning that accomplishes the objectives of the 21st century schools" (p. 3) needs to remain in the forefront of advocacy for the work of teacher librarians.

Recommendations for Future Research

Improvement for this particular study would involve refashioning the questions asked and materials gathered for analyzing lesson documentation in order to triangulate data for answering

the research questions. The researcher may have gained further insight had she asked questions around Pitts' research on mental models. Additional questions may have included: 1) in this lesson or unit, how did you teach your students about which resources to use, and 2) in this lesson or unit, how did you build background knowledge and key word searching skills, so that students' research was not limited by their own current knowledge, rather than broadening their knowledge. Analyzing lesson documentation proved to be difficult given the differences in the materials that were provided by each participant. Potentially the researcher, given additional time, could have observed the participants teaching a portion of an inquiry-based research project; asked participants to provide a sample of student work that was a result of the inquiry-based instruction; or met with classroom teachers who were colleagues of the teacher librarians interviewed in order to obtain their perspective on implementation of an inquiry learning model.

The researcher also believes that areas of interest for future studies may include issues such as the use of teacher librarians as IT (information technology) contacts for their schools to take care of troubleshooting issues that would seem to fall more into the role of a district computer support specialist. If districts were able to support additional trained technicians to provide networking and troubleshooting skills for their teachers, would more teacher librarians have the flexibility in their schedules to realize co-teaching of inquiry-based research in a manner similar to what Participant G was able to achieve in her school? A second separate issue for further research would be the relationship between implementing an inquiry learning model in conjunction with the Common Core State Standards. Given that only Participant G made a clear connection of the relevance between inquiry and the Common Core, it seems pressing that this issue be explored in further detail in the near future.

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APPENDIX A

INITIAL INTEREST EMAIL

Email subject heading: Adoption of an inquiry learning model

Dear (Name):

Hello. My name is Michelle Kruse, and currently I am completing my master's degree at University of Northern Iowa in the School Library Studies program. As part of my degree, I am completing a research study concerning the adoption of an inquiry learning model at the elementary school level.

I have received your contact information through the local AEA. I am sending you a link to a questionnaire to find out if you would be willing to take part in a face-to-face interview as part of my research study. I would like to conduct interviews with elementary teacher librarians within the Grant Wood and Mississippi Bend AEA's who have completed their master's degree or hold a state endorsement for teacher librarian; have a minimum of one year of experience as a teacher librarian; and who have adopted inquiry learning models (examples may include Big6™ model or Kuhlthau's Information Search Process Model, among others) within their school. Participants could expect the interviews to take approximately 60 to 90 minutes.

Participation is voluntary, and there are no foreseeable risks. The completed research paper will utilize pseudonyms for all names of teacher librarians, schools, and school districts. If you have any questions, please contact my faculty advisor or myself.

Michelle Kruse
Graduate Student, School Library Studies
University of Northern Iowa
mj405540@uni.edu
563-543-2234

Dr. Joan Bessman Taylor
Assoc. Professor, Curriculum & Instruction
University of Northern Iowa
joan.taylor@uni.edu
319-273-2192

You can also contact the office of the IRB Administrator, University of Northern Iowa, at 319-273-6148, for answers to questions about rights of research participants and the participant review process.

Complete the questionnaire within the next two weeks if you are interested in participating in an interview: https://www.surveymonkey.com/s/WV7MW65. If you would prefer not to participate, please do not complete the questionnaire.

Please also see attached informed consent information related to the interview process. Participants will be required to sign this informed consent form prior to being interviewed. It is not necessary to return the form at this time.

Sincerely,
Michelle Kruse

APPENDIX B

INITIAL INTEREST EMAIL QUESTIONNAIRE

This is an initial questionnaire to determine interest in participating in a graduate research study for Michelle Kruse, a University of Northern Iowa student in the School Library Studies Program. The study is focused on best practices for adoption of an inquiry learning model at the K-5 level. Research questions being addressed through face-to-face interviews will include:

A. What have successful teacher librarians done in order to adopt and implement an inquiry learning model in their schools?
B. What obstacles or barriers have successful teacher librarians overcome as they work through adoption and implementation of the inquiry learning model?

The purpose of this questionnaire is to determine if candidates who are interested in taking part in an interview meet the qualifications outlined in my research study. Completion of this questionnaire includes implies your interest in participating in a 60-90 minute face-to-face interview. If you would prefer not to participate, please do not complete the survey. Your confidentiality will be maintained to the degree permitted by the technology used. Specifically, no guarantees can be made regarding the interception of data sent via the Internet by any third parties.

Please complete the following questions.

1. Please record your first and last name.
2. What is your title in your present position?
3. Which AEA are you part of? (Grant Wood AEA or Mississippi Bend AEA or other)
4. What is the name of the school district you are employed by?
5. What is the name of the school you are employed by?
6. Have you completed your master's degree or a state endorsement for teacher librarian? (Yes, it is completed; No, it is in progress; Other)
7. How many years have you been a teacher librarian/media specialist?
8. Has your school adopted an inquiry learning model (Yes, we have; No, we have not; Other)
9. Would you be interested in participating in a face-to-face interview for this research study regarding adoption of an inquiry learning model within your school? (Yes, please contact me to set up a time; No, I am not interested; Maybe, but I need more information first. Please contact me.)

The survey can be found at: https://www.surveymonkey.com/s/WV7MW65.

APPENDIX C

THANK YOU/REMINDER EMAIL

Dear (Name):

Hello. A week ago you received an email from me inviting you to participate in my research study. Currently I am completing my master's degree at University of Northern Iowa in the School Library Studies program. As part of my degree, I am completing a research study concerning the adoption of an inquiry learning model at the elementary school level.

You were asked to complete the initial questionnaire if you would be willing to take part in a face-to-face interview as part of my research study; work within the Grant Wood or Mississippi Bend AEA; have completed your master's degree or hold a state endorsement for teacher librarian; have a minimum of one year of experience as a teacher librarian; and have adopted inquiry learning models (examples may include Big6™ model or Kuhlthau's Information Search Process Model, among others) within your school.

If you have not yet completed the questionnaire, I ask that you consider it. Once again, participation is voluntary. Please find the questionnaire at: https://www.surveymonkey.com/s/WV7MW65. If you would prefer not to participate, please do not complete the questionnaire.

Please also see attached informed consent information related to the interview process. Participants will be required to sign this informed consent form prior to being interviewed. It is not necessary to return the form at this time.

Thank you kindly,

Michelle Kruse
Graduate Student, School Library Studies
University of Northern Iowa
mj405540@uni.edu
563-543-2234

APPENDIX D

EMAILED REQUEST FOR LETTER OF COOPERATION

Dear Superintendent's Name:

My name is Michelle Kruse, and currently I am a graduate student in University of Northern Iowa's School Library Studies program. In order to finish my master's degree, I am completing a research study concerning the adoption of an inquiry learning model at the elementary school level.

I am writing to seek a letter of cooperation, as needed to meet the requirements of my Human Participants Review application for University of Northern Iowa, from your district. PARTICIPANT'S NAME has completed my initial interest questionnaire and is willing to participate in an interview for my project.

Following my research, I intend to write my findings in the final portion of my research paper to complete my master's degree requirements. In order to maintain confidentiality, pseudonyms will be used in place of specific names of teacher librarians, schools and school districts.

Please respond to this request with a written letter of cooperation, if you approve. The letter may be emailed to me at: mj405540@uni.edu. To facilitate this process, I have provided a sample letter of cooperation provided by University of Northern Iowa. I am also attaching the Informed Consent document that the interview participant will sign and give to me prior to the interview.

Thank you in advance for your assistance.
Sincerely,

Michelle Kruse
Graduate Student, School Library Studies
University of Northern Iowa
mj405540@uni.edu
563-543-2234

APPENDIX E

ATTACHMENT FOR EMAILED REQUEST FOR LETTER OF COOPERATION

Date

Dear Michelle,

The **NAME** School District is pleased to collaborate with you on your project "Best Practices for Adoption of an Inquiry Learning Model in K-5 Education."

We understand that participating in this research will include a 60 to 90 minute digitally recorded face-to-face interview with a qualified candidate. We had ample opportunities to discuss the research with you and to ask for clarifications. Furthermore, Michelle Kruse and key personnel for this project will maintain confidentiality of all research participants in all phases of this project. According to our agreement, project activities will be carried out as described in the research plan reviewed and approved by the University of Northern Iowa Institutional Review Board.

We look forward to working with you, and please consider this communication as our Letter of Cooperation.

Sincerely,

[Name of representative]
[Title of representative]

APPENDIX F

UNIVERSITY OF NORTHERN IOWA
HUMAN PARTICIPANTS REVIEW
INFORMED CONSENT

Project Title: Adoption of Inquiry Model Interview

Name of Investigator: Michelle Kruse

Invitation to Participate: You are invited to participate in a research project conducted through the University of Northern Iowa. The university requires that you give your signed agreement to participate in this project. The following information is provided to help you make an informed decision about whether or not to participate.

Nature and Purpose: The study is designed to describe the best practices in adoption of an inquiry learning model within an elementary school.

Explanation of Procedures:
Initial Interest Email and Questionnaire

An initial interest email with a link to a questionnaire done in Survey Monkey will be sent to the approximately 70-80 teacher librarians in the Grant Wood and Mississippi Bend AEAs. The human participants review informed consent form will be attached to the initial email to notify interested participants of the form that he/she would need to sign prior to the interview.

Grant Wood AEA provides an online directory of teacher librarians. Mississippi Bend AEA has provided a list of teacher librarians and a letter of consent (attached to this application). Participants who are interested in participating will fill out a brief questionnaire using a link provided. The questionnaire will help the principal investigator determine if the participants meet qualifications outlined in this application, and if they are interested in participating. Participants' names, schools, and contact information will be kept confidential.

Semi-Structured Interview

Approximately four to ten participants who meet qualifications will be contacted for a semi-structured, face-to-face interview. Interviews will take approximately 60 to 90 minutes, and be held at the participants' schools. The principal investigator will obtain letters of cooperation from the school districts once the final interview participants are selected. Prior to starting the interview participants will be asked to sign the human participants review informed consent form. Participants will have had access to the informed consent form in the initial email.

Interviews will be recorded with a digital recording device. Rich portions of the interview will be transcribed, coded, and analyzed.

Discomforts and Risks: The risks of this study are no greater than those of day-to-day life. Should critical comments be made during response to interview questions, the researcher will not be attributing these using the participant's name or district of employment. The participant

interviews will be recorded for purpose of data collection. The principal investigator will remove personally identifiable information, and use pseudonyms to minimize invasion of privacy. There is no foreseeable physical risk or risk of injury.

Benefits and Compensation: Individual participants will have a sense of satisfaction from helping inform best practices, and ultimately better library service for the children we serve. This could improve local practice as well as practice on the state or even national level.

Confidentiality: Information obtained during this questionnaire which could identify you will be kept confidential, and the summarized findings will include no identifying information.

Right to Refuse of Withdraw: Your participation is completely voluntary. You are free to withdraw from participation at any time or to choose not to participate at all; you will not be penalized for doing so.

Questions: If you have questions about the study or desire information in the future regarding your participation or the study generally, you can contact Michelle Kruse at mj405540@uni.edu or 563-543-2234, or the principal investigator's faculty advisor, Dr. Joan Bessman Taylor, Curriculum & Instruction, University of Northern Iowa, at joan.taylor@uni.edu or 319-273-2192. You can also contact the Office of Research and Sponsored Programs, IRB Administrator, University of Northern Iowa, at 319-273-6148, for answers to questions about rights or research participants and the participant review process.

Agreement:
I am fully aware of the nature and extent of my participation in this project as stated above and the possible risks arising from it. By completing the interview, I hereby agree to participate in this project. I acknowledge that I have received a copy of this consent statement. I am 18 years of age or older.

_____ _____
(SIGNATURE OF PARTICIPANT) (DATE)

_____
(PRINTED NAME OF PARTICIPANT)

_____ _____
(SIGNATURE OF INVESTIGATOR) (DATE)

_____ _____
(SIGNATURE OF INSTRUCTOR/ADVISOR) (DATE)

[NOTE THAT ONE COPY OF THE ENTIRE CONSENT DOCUMENT (NOT JUST THE AGREEMENT STATEMENT) MUST BE RETURNED TO THE PI AND ANOTHER PROVIDED TO THE PARTICIPANT. SIGNED CONSENT FORMS MUST BE MAINTAINED FOR INSPECTION FOR AT LEAST 3 YEARS]

APPENDIX G

REQUEST FOR AN INTERVIEW TIME

Hello, Name.

We have been approved by Name Community Schools and UNI to set up an interview for my research project. The interview will take approximately 60 to 90 minutes. As part of the interview, I am also requesting a lesson plan where you would have taught about (or taught with) an inquiry learning model, or a particular stage in the inquiry learning process. The lesson can be for any grade level, K-5. You can provide the lesson plan at the interview, or if you would like, you can email it to me prior to the interview.

I am attaching the interview questions for your convenience, but I would ask that you please do not respond to the questions in writing. We will go through the questions when we meet face-to-face for the interview. I will also need your signed Informed Consent Form the day of the interview.

If you would please send me a few times that might work well for you for the interview, I can begin to figure out a schedule for us to meet.

Participation in the interview for my research study is voluntary, so at any point if you wish to withdraw from this process, please let me know.

Thank you again for your interest in assisting me with this project.

Michelle Kruse

APPENDIX H

SEMI-STRUCTURED INTERVIEW QUESTIONS

1. Please state your title.
2. Please state the school district in which you are employed.
3. Have you completed your master's degree or do you hold a state endorsement for teacher librarian?
    a. If yes, what is the title of your degree or state endorsement?
    b. If no, is your degree or state endorsement currently in progress?
4. How many years have you been a teacher librarian?
5. Has your school adopted an inquiry learning model?
    a. What inquiry learning model in particular does your school use?
    b. Has this model been adopted just by your school, or by the entire school district (either at the elementary level, or continuous K-12)? Please differentiate.
6. Prior to the decision, did your school or district leaders suggest any specific readings regarding the adoption or implementation of an inquiry learning model?
7. How was the decision made to adopt the particular inquiry learning model that your school or school district is using?
    a. Who was involved in the decision making process?
    b. How was information disseminated to the instructional staff that was not part of the decision?
8. Did your school or district offer or attend any training for implementation of the chosen inquiry learning model? Please explain.
    a. If training was offered, who lead the training?
    b. Can you please describe the training?
9. How do you utilize the inquiry learning model in your curriculum, instruction, and assessment?
10. How do the classroom teachers utilize the inquiry learning model in their curriculum, instruction, and assessment?
11. Describe the collaboration that takes place between you and the classroom teachers, specifically in regard to instruction utilizing the inquiry learning model? For example, can you describe one or two instances when you have worked collaboratively with teachers? Is this typical for you to work with classrooms teachers to plan instruction utilizing an inquiry learning model?
12. How do you ensure that students internalize the inquiry learning model that you have adopted?

13. Are there any assessments in your school's curriculum that incorporate the inquiry learning model?
    a. If yes, please describe an assessment that incorporates the inquiry learning model and the grade level it occurs at?
    b. Is this particular assessment a collaborative effort between you and the classroom teacher(s)? Please elaborate.
14. Do you educate parents about inquiry learning?
    a. If yes, can you describe a time that you worked to educate parents about the school or district's inquiry learning model?
    b. What relevant information might I find on your school library website?
15. Do you have any other general comments in regard to adoption of an inquiry learning model or collaboration with classroom teachers for creation of curriculum, instruction, and assessment utilizing the inquiry learning model?
16. Will you please provide at least one lesson plan that you use to teach inquiry learning to the researcher to examine as a data source? Can you describe this lesson? How was the lesson created and implemented?