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Inquire Within: The Connection between Teacher Training in Inquiry Learning Methodology and Classroom Practice.

Ariel Sky Ashe
East Tennessee State University

Inquire Within: The Connection Between Teacher Training in Inquiry

Learning Methodology and Classroom Practice

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Ariel Sky Ashe

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Dr. Jane Broderick, Chair

Dr. Pamela Evanshen

Dr. Mary Langenbrunner

ABSTRACT

Inquire Within: The Connection Between Teacher Training in Inquiry

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This study describes the effects of an 11 week training for 2 preschool teachers focusing on

systematizing an inquiry learning approach inspired by the literature on Reggio Emilia inspired

practices. This study uses a qualitative, multi-methodology approach including interviews,

examination of classroom documentation, and examination of the Broderick and Hong Cycle of

Inquiry (© revised 2007) planning forms. Qualitative coding and narratives describe each

teacher's data taken at 3 intervals in the study and describe changes, challenges, and successes in

teacher practices. Results indicate that these teachers learned successful inquiry learning

strategies and grew in both their understanding of the process and their ability to translate this to

the classroom. Further studies are needed to determine the effects of adding administration to

the mentoring process and if a short-term training can change long-term classroom practices.

DEDICATION

This is dedicated to every teacher who knows there is a better way to teach young children and to every child who has touched and inspired my life. Together we make our way toward a vibrant, exciting future. I dedicate this also to my family and friends who have supported me in the last few years and to my mentor and guide, Dr. Jane T. Broderick. This adventure has enriched my life and sharpened my focus. Thanks to all.

ACKNOWLEDGEMENTS

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CHAPTER 1

INTRODUCTION

Above the door of every classroom and imprinted on the hearts of every teacher should rest the words "Inquire Within." The culture of schools should be built on the firm foundations of exploration, experimentation, and a love of living and learning. When schools respond to the natural curiosity of children and encourage their questions, the groundwork for a lifetime of enthusiastic learning is laid (Thompson, 1969).

Every parent, teacher, and administrator wants children to succeed academically, but the "how" of this equation is, and has been, in debate. The education system in America today is fraught with tension and uncertainty—children are not becoming proficient readers, school systems are burdened with financial concerns, and many areas are facing teacher shortages. American schools are declining when compared to other industrialized nations (Associated Press, 2005), and how to reverse this trend is of the utmost importance. As factory and industrial jobs move to developing nations, it is critical that children in the United States are given the skills to compete in a global economy and meet the demands of a workplace that is asking for increasingly complex and higher-end performances (Overbaugh & Lin, 2005).

Current and emerging research suggests that children, particularly at-risk children, who are given a quality early childhood education are more prepared to learn conceptually, work independently, think dynamically, and succeed in adulthood (Schweinhart & Weikart, 1997). Research shows that constructivism and social constructivism, most often associated with the work of Piaget and Vygotsky, are highly successful methods of teaching young children and encouraging the educational gains they need and have the right to receive (DeVries, 2002). These theories ask teachers to be facilitators of learning, not disseminators of knowledge and

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facts, and to believe in the inherent intelligence and integrity of young children (von Glasersfeld, 1996).

Educators have long known that for children to enjoy the process of learning, personal ownership over the process of learning and intrinsic motivation to learn must be fostered by the educational system (Eisner, 1990; Thompson, 1969). Inquiry learning, also called problem-based or emergent learning, is an education theory and practice that asks facilitators and learners (teachers and students) to use a culturally specific, multistep, and hypothesis-observation-reflection driven curriculum (DeVries, 2002). Inquiry learning looks at the culture that surrounds the children (state, region, town, classroom, and family) to enrich the classroom environment in a way that will support learning in a contextual way. The multimethodology approach of inquiry learning includes: research, group learning, representation of the problem in multiple ways (drawings/plans, clay representations, dramatic interpretations, etc…), the coconstruction of knowledge by learners and facilitators, cultural awareness and specificity, and a process (not product) orientation (Forman, Langley, Oh, & Wrisley, 1998; Rinaldi, 2001). The problem-solving techniques used in an inquiry exploration are unique to the children involved in a particular learning situation and the needs of the project. This specificity allows for learning to occur in a way that democratically addresses the multiple intelligences and learning styles of the many children in a classroom. When educators are sensitive to and plan for these differences, information and skills reach across all the knowledge areas thereby expanding the children's education holistically, authentically, and with a respect for their intelligence (Paley, 1992). With this underpinning, children are able to transfer the skills of critical thinking, problem solving, and collaboration to higher grades and life. These are skills that follow a child into adulthood and ease the transition to more complex learning (Paley; Schweinhart & Weikart, 1997).

While inquiry learning is a successful style of classroom teaching, it is underused and often misunderstood in American early learning environments. Many teachers are trained formally and informally (in school and by the modeling of other in service teacher's practices) to teach in more traditional ways (teacher as disseminator of knowledge, classroom management as a chief concern, and exploration as a supplement to facts and information as opposed to a teaching method in and of itself). With the growing concerns about the efficacy of traditional schooling, it is important that we work with teachers and children to explore, devise, expand, and explain ways of teaching that may help children overcome obstacles to becoming successful members of our complex and ever-changing world (Schweinhart & Weikart, 1997).

Purpose of Study

This study is a participatory action research study examining the efficacy of systematizing the inquiry learning approach for teachers. This study uses a multimethodology approach of interviews, examination of classroom documentation, and examination of planning materials focusing on the introduction of the Broderick and Hong Cycle of Inquiry Forms to determine the ways teachers in this study approach inquiry learning in the classroom. These data sets describe the participating teacher's growth through a short focused training as well as how this growth translates to classroom practice. This information will be helpful in understanding how training in inquiry methods can influence change in education, and help children succeed.

Research Questions

To determine the ways and extents to which teachers approach inquiry learning change in the classroom with the introduction of an inquiry system and training in that system, the following questions will be posed:

1. Do the teachers in the study gain competency in their ability to plan for inquiry learning?

2. Throughout the study does classroom documentation reflect the inquiry learning of the children?

3. Are teachers willing and able to use a systemized inquiry learning approach with regularity when accompanied by training?

4. During the course of the study, does classroom documentation become increasingly related to the inquiry process?

5. Do teachers in this study change their perceptions of children's abilities?

6. What are teachers and trainers barriers to the inquiry approach in this study?

Significance of the Study

There are numerous systems for configuring a constructivist classroom, and this study describes and helps to explain one experience of how inquiry learning can fit into American early learning classrooms. This study expands the conversation about both what methods work to achieve positive outcomes for children, as well as work toward a successful mentoring training in inquiry methodology. Additionally this study describes challenges that may occur and ways to improve future inquiry trainings. In order for a method to be successful, inservice teachers must feel confident, capable, and excited about their work. The data presented help refine and formulate a mentoring program for in service teachers attempting to use inquiry learning in their classrooms.

Limitations

This study is in alliance with two teachers in a laboratory school in Eastern Tennessee. One teacher is in a 3-year-old classroom and the other in a 4-year-old classroom. This study is limited to the period of time between October 2007 and February 2008. All members of the teaching staff at this facility had the opportunity to participate in the workshops;

however, only two teachers participated in this study. This study was limited primarily by time and scope. With more time and a larger teacher sample more influential findings could be gathered; however, the data found in this small study potentially will carve a path for a larger study with more significant consequences.

Definition of Terms

For the purpose of this study, the following definitions will apply:

1. Documentation of play: Written, pictorial, and other records of children's thoughts, work, and processes that are used as the basis for creating classroom artifacts as well as for planning and assessment

2. Learning extensions: Planned or unplanned play or learning experiences that build on learning that happened previously

3. Provocations: Questions or materials that are organized with the intention of inspiring children to work and play, usually to extend previous learning

4. Hypotheses: Informed guesses educators make about what children are thinking during learning experiences, or an informed guess about how children will extend learning during provocations

5. Emergent questions: Questions that arise, either from children or facilitators, during play as children learn and experience and facilitators observe the children engaging with materials and each other

6. Planning: The practice of using records of children's learning experiences and play to form hypotheses and design future learning experiences and provocations

7. Classroom documentation: Children's work (visual or transcribed) displayed in the classroom, usually for the purpose of making the children's learning visible to

the children and other members of the classroom community (parents, other

teachers, etc…)

8. Inquiry learning: Learning theory and practice that uses a format of mutual

    learning, careful questioning, and reflection to produce educational gains

9. Perception: The way a person sees himself or herself outside of his or her

    experiences

Overview of the Study

This paper is comprised of five chapters. Chapter 1 contains the introduction, purpose of

the study, research questions, significance of the study, limitations, definition of terms, and

overview of study. Chapter 2 is the review of literature related to the study, Chapter 3

contains the methodology of the study including: population, sampling method, procedures,

data collection methods and data analysis methods, and procedures. Chapter 4 is the data

analysis that includes analysis of three types of data (interviews, classroom documentation,

and planning forms) from three time periods in the study, and Chapter 5 contains the

conclusions including a discussion of research questions, implications, and

recommendations.

CHAPTER 2

REVIEW OF LITERATURE

Current Climate and Inquiry Implications

Learning is a magical act whose purpose is to release the mind from assumptions and certainties; it is the discourse between mind, body, spirit, pure gut instinct, and environment (Eisner, 1990). Traditional curricula pay close attention to lockstep acquisition of knowledge, and while no learning theory should ignore the need for content knowledge, traditional curricula often use content knowledge acquisition as an end, not a means. The constructivist practice of inquiry learning focuses on the integration of learning to enable future activities and educational adventures. This means that direct instruction is used in small amounts to give children skills that will allow a project to continue or progress. Direct instruction is a specific teaching strategy with the children's ability to work on an inquiry as the end goal. Inquiry learning is a multisymbolic approach that uses a wide variety of teaching strategies to reach learning goals. This allows learners to discover in many formats, and to discover which formats meet the needs of his or her particular learning style or project—this prompts higher order problem solving skills and calls on all children to become high order thinkers and doers (Eisner). To show children's progress and assess their progress and development, this approach uses authentic assessment forms such as portfolios, observations, and running records. These forms are difficult to transfer to public school systems that rely heavily on standardized tests; however, the aforementioned tools give information rich pictures of children's development and should be a part of a successful, developmentally appropriate assessment strategy (Bredekamp & Copple, 1997).

While leading researchers and education professionals laud the practice of constructivism and social constructivism, there is some resistance to its widespread application. With 2001's

No Child Left Behind Act (NCLB) the stakes for educators became higher, and a trickle down effect began. In order to meet new testing goals, lower grades are feeling pressure to work toward a more academic, rote focused, play poor curriculum that threatens the integrity of a developmentally appropriate early learning system (Scott, 2004). This legislation has both widespread support and widespread criticism. Educators are concerned that curriculum is being replaced by corporate created curriculum plans that often have prescribed lessons outlined for each day, while others are concerned that without testing, children will fall though the cracks and fail to succeed (Kane & Staiger, 2002). The changes in curriculum and assessment made in the wake of NCLB are not always research based and oftentimes do not demonstrate an understanding of or attention to contemporary education research and theory.   NCLB encourages the dominant view that education is simply and clearly the memorization of facts and the ability to perform well on standardized tests (Scott). Further concerns regarding NCLB are that test performances in small schools respond with more volatility in test results from year to year due to a small population. A valid worry is that these schools are punished and rewarded for biased score fluctuations (Kane & Staiger). Despite the good intentions of NCLB, some disparities have been created (or at least continued) in its wake, and public schools are still failing our children, particularly our at-risk and underadvantaged children (Kane & Staiger; Scott).

A constructivist education gives children the foundations for lifelong success in learning; however, in order for constructivism to make inroads in today's accountability marked system, preservice and inservice teachers must be both trained in this method and given a systematic way of implementing constructivism in general and inquiry learning in particular. These approaches and theories are not "go with the flow" or unstructured classrooms full of children working on

"what they want to do" but highly cultivated and intentional environments that engage children with their surroundings and are interested in promoting learning in both teachers and children. Constructivist classrooms engage and challenge children and teachers alike (Eisner, 1990).

Teachers have always had to stay vigilant to successfully incorporate constructivism in their classrooms, but 1986 proved an important year for progressing the practice of constructivism and social constructivism. In this year, the National Association for the Education of Young Children published *Developmentally Appropriate Practice in Early Childhood Programs,* a book (and position statement) that became a landmark in promoting the use of Developmentally Appropriate Practice (DAP) in the classroom. For years, constructivist practices had influenced the education of young children, but with the publishing of the NAEYC's position statement on Developmentally Appropriate Practices (DAP), the early childhood profession was given a handbook for practicing the theory of constructivism in the classroom. Through the 1986 position statement and the 1997 revisions, appropriate practice was acknowledged as a negotiation between the needs of the child, the parent, the teacher, and the community at large (Bredekamp & Copple, 1997). Bredekamp and Copple's work gave vision to the research on early learning (DeVries, 2002; Schweinhart & Weikart, 1997). With the test-rich environment that has emerged in the wake of NCLB, it is important for early childhood educators to remain committed to using the strategies that research indicates best serve our children. Inquiry learning is a highly successful, appropriate way to teach children that allows for authentic assessment while resisting the tide of formal testing that is sweeping over the educational environment (Blaustein, 2005). With the fate of children in the balance, it is imperative that teachers, parents, administrators, and communities at large begin seeking

alternative options to the traditional curricula and assessments that do, in fact, leave many children behind.

<div align="center">The History of Inquiry Learning</div>

Inquiry learning has gained a certain cache in recent years, but the history of contemporary inquiry learning is rooted in the Progressive Movement of the early 20th century where it was promoted by John Dewey and other forward thinking education theorists and practitioners (Henson, 2003). Taking on the idiom that education should be dulce et utile (sweet and useful), Dewey started laboratory schools that taught a problem-based curriculum through enjoyable encounters with information and skills. The Progressive Education Association (PEA) began in 1919 and pushed American education into a problem-based, holistic approach to teaching. In response to interest in the success of this methodology the PEA sponsored the Eight Year Study as a way of showing the advantages of a learner-centered approach to teaching (Kridel & Bullough, 2002). This study intended to show the benefits of The Progressive Education Association's curriculum, including: the social and personal needs of students, democratic methodology in the classroom, logic based decision making, and giving students the agency to be a critical part of the curriculum planning process (Kridel & Bullough). While the impact of the Eight Year Study has varying degrees of respect in the educational field, the Study Within a Study became an underreported, yet very significant, look at the success of students from the most learner-centered schools in the Eight Year Study. This document showed that children who were enrolled in schools that embraced and had a strong commitment to the Progressive curriculum did outperform their counterparts' in future educational ventures. The children from this secondary school background showed higher marks and success in college (Henson; Kridel & Bullough).

In 1916 a small group of dedicated individuals spearheaded by Lucy Sprague Mitchell began the Bureau of Educational Experiments, or the BEE. The purpose of the BEE was to collect data on child development and learning as it relates to the whole child. Specifically the BEE was interested in observing children carefully and using those data to work toward a form of education that would benefit children's growth and development holistically. In the school's first bulletin Lucy Sprague Mitchell wrote:

Our aim is to help students develop a scientific attitude towards their work and toward life. To us this means an attitude of eager, alert observations; a constant questioning of old procedure in the light of new observations; a use of the world as well as of books as source material; an experimental open-mindedness; and an effort to keep as reliable records as the situation permits in order to base the future upon actual knowledge of the experiences of the past.

Our aim is equally to help students develop and express the attitude of the artist towards their work and towards their life. To us this means an attitude of relish, of emotional drive, a genuine participation in some creative phase of work, and a sense that joy and beauty are legitimate possessions of all human beings, young and old. We are not interested in perpetuating any special "school of thought." Rather, we are interested in imbuing teachers with an experimental, critical and passionate approach to their work (Mitchell as cited in Antler, 1987, p. 309).

The early days of the Bureau were filled with excitement and bustle. The staff included people who were well versed in children's services whose disciplines included: a physician, psychologist, social worker, and several progressive teachers. The BEE's interest in careful observation of children in progressive education led to several hallmarks of the BEE; a close

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attention to the world around children, a responsive environment emphasizing active learning, and a movement toward quality children's literature. In 1918 the BEE began the Nursery school, a laboratory school that would give the BEE the ability to easily observe and assess children learning in a progressive environment (Antler, 1987).

Ten years after the start of the BEE, a committee was formed to examine and assess the Bureau's progress and decide future endeavors. It was through this effort that the BEE began its teacher education program. The BEE would continue in its previous ventures (children's literacy and literature, scientific observation of children) but would move toward a new way of influencing the face of education: the education of teachers (Perryman, 2000).

The next milestone of the BEE was the historic move to 69 Bank Street. In 1930, 14 years after the beginning of the BEE and 12 years after the start of the Nursery School, the BEE acquired the Fleischman's Yeast factory and storage building where the Bureau could expand the Nursery School, and have room for its latest addition, the Cooperative School for Teachers. Teachers were expected to be current practitioners and would work in one of eight cooperating progressive schools Monday through Thursday morning, then taking classes and attending seminars at Bank Street from Thursday afternoon to Saturday afternoon. This preparatory school was created to address the urgent need for trained progressive teachers (Grinberg, 2002; Perryman, 2000).

In 1943 the progressive education movement and Bank Street was given a great compliment and affirmation; the New York City Board of Education asked the BEE, then commonly known as Bank Street, to give a series of lectures and workshops on its methods for NYC public school teachers. By 1946 Bank Street offered night and weekend courses for

nonmatriculated students and sealed its reputation as a high quality teacher preparatory school (Perryman, 2000).

Bank Street continued on this path for many years, training teachers, conducting research, publishing, and creating holistic research based programs for children. With growing recognition of their abilities and work, the federal government in the early 1960s began using Bank Street's services, and in 1964 Bank Street was asked to help design the Head Start Program (Perryman, 2000). With the desire to educate those at risk because of poverty or handicap, the Bank Street model, due to its child-centered nature and attention to observation and authentic assessment, was determined to be a compatible fit with the Head Start mission (Greenberg, 1987; Perryman). It is a testament to the unyielding belief of progressive "nursery" educators and to Bank Street that Head Start consulted and modeled their program after developmental and holistic programs (Greenberg).

The Bank Street legacy is long and prestigious. Contemporary early learning practices owe much to Bank Street's research on both DAP models and teacher training, and its influence in spreading and championing quality, developmentally appropriate practice for children is significant. Bank Street has led the way not only for inquiry education but for teaching models that emphasize child-centered curriculum development and responsive teaching.

Another movement related to both Bank Street and the progressive education movement that has shaped the development of early childhood education in the United States is the Progressive reform Kindergarten movement. Frederick Froebel began the first Kindergarten in Germany in 1837. The movement spread quickly in Europe, and in 1837 the first Kindergarten was opened in the United States. At the turn of the 20th century many educators began to have second thoughts about the appropriateness of some of Froebel's methods. These educators,

influenced by John Dewey's methods and ideas, began supplementing the traditional Kindergarten materials and activities with arts, crafts, and songs and games. This movement emphasized learning from relevant life experiences and knowledge as a byproduct of social encounters and happenings. The progressive Kindergarten movement connected the work John Dewey did with primary students to young children. The reform Kindergarten format held in ideology for 80 or more years, and even today there are many similarities between the Kindergarten of the early 1920s and Kindergarten today (Spodek & Brown, 1993).

The history of American early learning practices is full of daring individuals and groups who have worked tirelessly to improve the lives of children. Contemporary thinking and research is showing that constructivist practices, based on many of the ideals and practices of the Progressive Education Association, is one of the most successful ways to teach young children. With growing concerns about the future of education and how to best help children succeed in school and in life, using research-based practice for children could turn the tides and give many children the advantage they need to succeed in a competitive world. We should expect nothing less for our children and should work with conviction and vigor toward those ends (Schweinhart & Weikart, 1997).

Inquiry Learning in Reggio Emilia, Italy

The history of American early childhood education is long and prestigious, but in the past few decades a small municipality in Italy, Reggio Emilia, has been making remarkable progress in early childhood education. This model has been called the Reggio Emilia approach and is based on inquiry learning, emergent curriculum, and intentional environments for young children. This world renowned program was developed in the wake of the destruction and pain of WWII. After WWII, the Italian government gave each municipality small grants to help in the

rebuilding effort. The municipality of Reggio Emilia, led by Loris Malaguzzi, used its money to begin a school for young children. As the school grew it became a system of schools all working within this approach. This approach is based on constructivist and social constructivist principles, is highly funded, and works with children, teachers, families, and the community at large to create an educational system that values and respects the rights of children to learn, explore, and create meaning (Gandini, Hill, Cadwell, & Schwall, 2005). As these programs have gained notoriety, educators from around the world have been given the opportunity to observe the value and importance of high quality, inquiry based early education. Educators have also been challenged to recognize the culture of the child in the way that Reggio educators view the child, as a valuable contributor to society. These Italians believe that children are as necessary as bankers, lawyers, doctors, and politicians (Rinaldi, 2001). The approach Reggio Emilia uses continues to grow and adapt to meet the ever changing needs of children and families. While there is little scientific research on the school systems of Reggio Emilia, the anecdotal reports, practice-research, and the work the children do in that municipality are impressive and speaks volumes about this programming.

<div style="text-align:center">Inquiry Practice and the Cycle of Inquiry</div>

The benefits of inquiry education are well documented. NAEYC is clear about appropriate environments for preschoolers and guides teachers to create an appropriate curriculum through a coherent, responsive, exploration rich environment full of concrete learning opportunities. These environments offer learning choices, freedom of movement, and respect for children's individual and cultural needs and recognize that each child is an individual with special and particular gifts and challenges (Bredekamp & Copple, 1997). Conversely, an inappropriate environment is marked by a rigid schedule, a prearranged curriculum, little or no

time for free choice learning, and an inattention to the individual needs of the children and the class as a whole (Bredekamp & Copple). Inquiry learning addresses the guidelines of Developmentally Appropriate Practices (DAP) by providing learning opportunities in an environment that respects the needs of the individual child while attempting to challenge the children through extensive projects that evolve through classroom meetings, children's interests, or current work with which the children are engaged. Teachers are challenged to structure the children's environment to meet the needs of both the project and endeavors that fall outside the scope of the project (Rinaldi, 2001). This balance allows for children to work across multiple learning centers in a variety of ways and gives enough structure to impart a stable learning environment but enough flexibility to meet the fluid needs of the children's learning.

Opportunities for learning in inquiry education are created by exposing children to a problem that is in the zone of proximal development or ZPD. The ZPD is the distance between autonomous knowledge and emerging knowledge. When teaching in the ZPD, students are put into a learning situation just slightly beyond their level of competency. The learner requires some "scaffolding," or assistance in reaching a new learning level (Sanders & Welk, 2005). This approach focuses learning, extends play, and clarifies and expands concepts.

Inquiry learning is often most successful when children are interested in problems just beyond their abilities. Teachers then provide materials, opportunities, and assistance for children to explore within the ZPD in order to help the children clarify their questions, experiment with their ideas and with materials, and eventually resolve their questions through hands-on learning and thinking.

Teachers have many responsibilities during these times of cognitive development and dissonance. These include:

- Documenting work

- Providing appropriate exciting materials for the project

- Inviting guest experts to help the children explore

- Acting as coinvestigator and facilitator

- Creating ways for the children to revisit ideas through documentation and exhibits

By using these methods teachers can help children and other learners understand their learning process and deepen their knowledge and reflect on their experiences and learning in order to extend the project, thus furthering the influence of the inquiry and expanding the knowledge base beyond a single occurrence (Fosnot, 1996).

Gandini and Goldhaber (2001, p. 136) describe the documentation process as a cyclical progression working from: "framing questions, observing, recording, and collecting artifacts, organizing observations and artifacts, analyzing/interpreting observations and artifacts; building theories, reframing questions, planning (projecting) and responding" with the cycle beginning as soon as it ends. This cycle is described as being nonlinear and unbound by the structure and neatness of guided or corporately created curriculum (Gandini & Goldhaber).

With the increasing demands placed on teachers, there are many and valid reasons why inquiry learning is regarded hesitantly and with some trepidation by American teacher-practitioners. There are several frequently cited reasons for teachers' hesitancy to adopt an emergent approach. Financial concerns include job security and the fear of being fired if test scores fall and not having the money to supply the materials needed in this approach. Cultural concerns are protests from parents, breaking away from the curriculum norms of American

school culture, and being ostracized by other teachers. Practical concerns include classroom management in an emergent classroom and how to plan for an emergent curriculum (Hyun & Marshall, 2003).

In order to accommodate and address the needs and concerns of American teachers attempting to use inquiry learning, Broderick and Hong (2005) have correlated the inquiry steps from the various texts about Reggio inspired practice and have systemized the steps. This system allows teachers to have an organized approach to using emergent inquiry. The Broderick and Hong Cycle of Inquiry Forms are a set of five organizational forms that guide teachers through the entire inquiry process while maintaining the spirit, developmental appropriateness, and extended learning opportunities that are hallmarks of inquiry learning (Broderick & Hong, 2005, 2007). These forms provide a systematic approach to inquiry teaching that walks practitioners through the steps from documenting children, to forming hypotheses, to creating research questions, to planning and assessing activities, to showing standards met and creating follow up activities. This system breaks down the inquiry process in a way that is more compatible with American didactic practices than the somewhat amorphous process described in many Reggio inspired texts.

Inquiry Education for Teachers

In the Reggio Emilia approach, teachers are given ample time to discuss projects and children's interests, plan, collaborate with other teachers, and reflect on the work of the classroom. This is in stark contrast to the typical American early learning environment in which teachers are rarely given planning time at all and very rarely with their coteachers (Phillips & Bredekamp, 1998). This difference is more than an attitude shift but a paradigm shift from a view of children as valuable when they reach adulthood to a view of children and teachers as

important and valuable members of society in a current time frame—a shift to the culture of the child from the culture of the child as a future adult. It is also a shift from viewing early childhood teachers as mere babysitters to valuable, talented, educated teachers of the young (Gandini & Edwards, 2001; Rinaldi, 2001). Teacher preparation and development are cornerstones of the educational workings in the Reggio Emilia preschool system. Teachers are guided to develop their own beliefs and attitudes through a careful and refined study of their own and others' research and practice. This approach empowers teachers to be confident, competent, invested members of a thinking community. Guided and prescribed curricula are unheard of, and teachers are supported in making authentic curriculum choices by using documentation and collaboration to guide the process (Terzi & Cantarelli, 2001). Gandini and Goldhaber (2001, p. 125) explain that in Reggio Emilia "documentation…is seen as the interpretation of close, keen observation and attentive listening, gathered with a variety of tools by educators aware of contributing their different points of view…that is why we need to compare interpretations [of observations of children] among colleagues."

The theories and practices of constructivism and social constructivism are part of the extensive teaching practice and professional development model in Reggio Emilia preschool system. The Reggio Emilia Approach is founded on social constructivism and constructivism. The schools of Reggio Emilia are imbued with these theories; professional development in this school system is based on the idea that teachers, like children, grow and develop along a cognitive continuum. Teachers in Reggio Emilia are expected to learn, process, grow, and progress through in house professional development (Phillips & Bredekamp, 1998). A common roadblock to the successful use of the inquiry approach is that many American educators don't have the cultural and educational familiarity with constructivism social constructivism or the

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Reggio Emilia approach that is a part of the common knowledge base of the educators in Reggio

Emilia. The process of changing pedagogical practices places the teacher-practitioner in a state

of cognitive tension, wherein the practitioner is asked to work outside traditional and

comfortable pedagogical frameworks. When practitioners are asked to use theory and concepts to

guide a collaborative negotiation about curriculum, many become overwhelmed and off put by

the process (Elliott, 2005). The Reggio Emilia model relies heavily upon collaboration with

other teachers and mentors. Using this collaborative model has been shown to be helpful in

allowing new practitioners to successfully navigate the introduction of inquiry learning practices

(Cadwell, 1997; Hyun & Marshall, 2003; Terzi & Cantarelli, 2001).

<div align="center">Expanded Definitions of Elements in the Inquiry Approach</div>

When beginning any new process it is important to develop a common vocabulary.

While these elements were briefly discussed in the definitions section, this section will give more

comprehensive definitions of these terms and some of their uses.

<div align="center">*Documentation*</div>

Documenting children's learning is an important element of any DAP classroom, but is of

particular importance to the inquiry learning teacher. Documentation serves several functions.

The most fundamental reason to document children is to identify places of learning, places of

interest, and places where children need assistance. Without documenting these areas, teachers

have a difficult time uncovering the nuance of learning in the early childhood classroom. With

documentation there are data to support classroom choices and to guide curriculum (Gandini &

Goldhaber, 2005). Documentation is also a way that teachers use the children's work to guide

the development of interest areas in the classroom. When there is learning in one area, providing

documentation in that area of the learning (commonly found in the form of documentation

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panels) can attract children to that area, and then to continue the play and learning.

Documentation also provides a tangible and authentic way of displaying learning to parents and

the community at large. The process of learning in the early learning classroom is not easily

captured in static measurement forms, but with documentation panels, books, and electronic

documentation, educators are provided with a format that suits the nonlinear, episodic, and

oftentimes spontaneous experiences of young learners. Finally, documentation is a sound

assessment tool. Documentation captures many of the daily, authentic milestones that can

escape one-time or snapshot assessment tools. Documentation assesses all learning areas and

shows both group and individual learning (Rinaldi, 2006).

Learning Extensions

Using documentation panels (and other forms of documentation) as part of the classroom

aesthetic grants children opportunities to study the learning that has occurred. It is important that

the inquiry classroom has past learning available so that those ideas can be furthered by the

children in unplanned activities, but teachers can also sponsor learning extensions by revisiting

previous learning. In the Reggio Emilia inspired classroom, circle time (called morning

meeting) is used as a time to take care of housekeeping but also for examining previous work

and for teachers and children to discuss the documentation in order to plan next steps or clarify

thinking about a project. By extending learning we ask children to think long term, plan

extensively, work collaboratively, and think divergently (Forman et al., 1998).

Provocations

Of the above tasks for an inquiry facilitator, one of the most challenging and subtle skills

is how to form a good question for children. Questions should provide opportunities for children

to think deeply and express ideas in multiple ways. Hallmarks of the inquiry approach include

helping children think critically and express ideas in a multi-symbolic way. When setting up

materials for children, it is important in the inquiry approach to remain aware of how the choices

of materials and the layout of material affect children's thinking and actions. It is the goal of a

provocation to provide a particular situation for children to learn in a guided direction. A

provocation asks children to work on a project and to discover where it leads—a provocation is

both a question and an enticement. Through the provocation process, teachers are more than

helping children learn and discover. In this method, by provoking children's thinking, teachers

go through a similar process of thinking and experimenting—teachers are asked to engage in

children's learning and their own professional development in direct and tangible ways (Dana,

Yendol-Hoppey, Snow-Gerono, 2006; Gandini & Goldhaber, 2001).

Hypotheses

Uncovering the knowledge of how to arrange a successful provocation is a process that is

guided by a host of information: the data on the children's words and actions, interactions

between the primary teacher and the collaborating teacher or mentor, and the curriculum

standards that must be met (Gandini & Goldhaber, 2001). Provocations are guided by the

hypotheses that are developed by examining the children's words and work. In the inquiry

process teachers develop hypotheses about the children's thinking and learn to "test" those

hypotheses with provocations. In this approach, teachers develop multiple hypotheses when

using one set of data. For example, if the children are discussing how big things are in relation

to each other (this is a big rock, but that is little, I am bigger than my baby brother but smaller

than my dad) hypotheses might include that the children are interested in proportion, in exploring

big and little in more detail, and exploring their place in their classroom and homes. From these

ideas teachers would develop provocations to test these hypotheses. Learning to create multiple

hypotheses gives teachers and children the freedom to explore a new dimension of a project, and eases the desire to have the right answer. By learning to question in more conceptual and process oriented ways, facilitators lose the need to have all the answers, and allow children to help determine the course of the curriculum. The questions became a guide to the learning process (Vecci, 1998).

Improvisational or Developmental Questions

The improvisational or developmental questions are sometimes the most difficult to frame in a developmentally appropriate way. When children are learning in the ZPD they need teachers to respond to their work with questions that are guided by tangible and concrete evidence—more "show me" and less "how and why" (Broderick & Hong, 2005; Elstgeest, 2001). This type of question should encourage the children's desire to explore and help them understand their problem as opposed to being given an answer (Elstgeest). Improvisational or developmental questions provide opportunities for facilitators to use research methods to highlight and extend children's learning. When questions become an integrated part of curriculum planning and real time classroom interventions, teachers and students become familiar with and comfortable with not knowing the answers and viewing learning as a journey that is worth taking.

Planning

The planning process in an inquiry classroom is process oriented and open to changes in direction. Teachers make choices about provocations and materials that may lead children toward a particular learning goal, but children are encouraged to follow their projects toward no prescribed end. Planning for the inquiry facilitator is a continuous, but thoughtful process that shows the development of children and teachers in a project. As a project grows and continues,

planning grows, too. Additionally, in this approach planning includes children. Children are given the opportunity to help guide the curriculum in authentic and literal ways. Planning is done without the children but also with children during morning meeting and during class work time.

Conclusion

The skills learned in an inquiry rich classroom are life-long learning skills. They foster enthusiasm and confidence in the educational realm, and in the social and personal lives of children. Inquiry learning asks teachers to be active participants in the learning process. By assuming the philosophy of inquiry learning, facilitators frame questions in order to clarify and extend children's learning not shove it in a conventional, designed direction; additionally, teachers become more fully engaged in their art and craft, thereby improving the overall tone of the classroom environment. Research shows that using a constructivist curriculum leads to positive outcomes for children (Schweinhart & Weikart, 1997). This study will provide an illustration of the process involved in mentoring teachers in a high quality inquiry based emergent curriculum. A rich description of this process can assist teacher-educators, mentor teachers, and curriculum specialists gather a nuanced view of the conflicts, celebrations, and breakthrough moments that teachers may encounter as they progress in a journey toward emergent inquiry curriculum planning.

CHAPTER 3

METHODOLOGY

This research study describes and examines the relationship between a short, focused training in inquiry teaching and teacher classroom practices. This training provides two teachers mentoring and support in an inquiry process using the Broderick and Hong Cycle of Inquiry System. One subject is a teacher of 4-year-olds and the other is of 3-year-olds. For this study, the independent variable is the teacher training in inquiry implementation using the Broderick and Hong Cycle of Inquiry System; the dependent variable is the amount and quality of inquiry learning that occurs in the classroom. The dependent variable is measured using a multi-methodology approach that includes: teacher interviews, an examination of classroom documentation, and an examination of planning using the Broderick and Hong Cycle of Inquiry System. These measures are discussed in depth in the measures section.

Sample and Data Collection Methods

The convenience sample (a sample that is non-random, and comprised of subjects who are willing and available participants) is comprised of two teachers. A teacher of 3-year-old children and one of 4-year-old children are part of the study; both teachers are from one laboratory school in northeast Tennessee. Demographics gathered in the interview include the years of teaching experience, education level, and any professional development in inquiry learning. Informed consent was given, and permission to proceed with the study was received from the director of the school. Data were collected and stored on the university campus in a locked and approved location. All items were destroyed or returned to the cooperating teachers upon the completion of the initial data analysis. As stated earlier, this study began in October 2007 and ended in February 2008.

This is a participatory action research study, meaning the study developed as needs arise during the study, i.e. the design of the training was created for the particular needs of these two teachers as discovered through the preliminary interview and following training sessions. Due to the action-research nature of this study, there was no control group.

Measures

This research study employed a multi-methodology, qualitative system for information gathering and data analysis. Multi-methodological studies allow the research to have internal validity, additionally this format produces a wealth of material from which useful and substance rich data are collected. A qualitative analysis of these data was appropriate for the small sample size and the qualities of the data (narrative, participatory action research, and the evolution of the study over time) that was collected. There were three methods used: interview, collection of classroom documentation, and review of planning materials.

Interview

The interview was the first measurement taken. There was an introductory interview that gave a baseline for the teacher's understanding of inquiry and the use of inquiry in the classroom. As this is a participatory action research study, the information about the teacher's understanding of inquiry guided the training, as was the account of how much inquiry is used in the classroom pre-intervention. The transcriptions of these interviews were coded for the following indicators: positive and negative language in reference to inquiry, positive or negative reference to children's abilities, positive or negative reference to collaboration, positive and negative language about documentation, and additional codes of interest that the coders added as needed. These codes were drawn from the interviews and coded by both the principle investigator and the secondary coder. Coding was done on a line-by-line basis of the

transcription then put into a table for ease of access to the information. This type of coding showed major shifts and trends in the teachers' language, while the qualitative narrative gave voice to details and nuance as well as describing the overall character of the interview. Sample questions for the initial interview are: How would you define inquiry learning? What kind of inquiry learning is used in your classroom and school? Has any of your professional development had an inquiry learning component, and if so can you describe that? What are some elements of an ideal learning environment for children? The initial interview was one-on-one, however, follow-up interviews were structured as was determined appropriate by the study subjects and the principal investigator.

Elements of Documentation

Initially the data to be collected were classroom artifacts, with emphasis on how visible the artifacts were, how the artifacts extended and showed learning opportunities, and how available the artifacts were to children in the classroom. Initially classroom artifacts were to be coded by the following criteria: artifacts placed at children's eye level in order to revisit work (in proximity to original project), artifacts showing extensions of projects (i.e. examples of multistep, multiday projects), artifacts available for inquiry learning (projects remain in centers to be used in future play), and teacher voice, hypotheses, and ruminations in the artifacts. Once the study was underway, it became clear that there were many developmental steps to creating documentation panels. The literature does place a lot of emphasis on this part of the process, but for a beginner there are many, many skills that must be developed before artifacts or panels can be produced. Because of this newfound information, a more accurate representation of the shift in documentation was a checklist of the elements of documentation including: children's words, teacher's interpretations, teacher's questions, pictures, children's artifacts, and ownership of the

work (child vs. adult). Along with this checklist was a qualitative narrative that gave depth and description to the data.

Planning Materials

The final assessment strategy was a review of planning materials. The planning materials are the Broderick and Hong Cycle of Inquiry Forms (2007) and are coded in two ways: first using the Broderick and Hong rubric for assessing the Cycle of Inquiry Forms, second in a qualitative narrative. The Broderick and Hong Cycle of Inquiry Forms (Appendix C) have five separate organizational forms. The first form is for running records to capture children's words and actions and teachers' initial thinking about children's actions and words. The second form is for teachers to write detailed hypotheses about the data from the first form. This is a narrative form. The third form asks teachers to write "big idea" research questions on one side of the page and to brainstorm interventions and questions on the other side of the page. The fourth form is for designing up to five implementations including materials, set up, and procedures. The fifth form is an evaluation for teachers to reflect on the intervention. The Broderick and Hong Cycle of Inquiry Rubric uses a leikart scale to assess teacher's use of the forms from a one to a four. The levels are unacceptable, below target, target, and exceptional. There is one rubric to measure the running records, one to measure the teacher's interpretation of children's thinking, one that evaluates the research, questions, and interventions designed for the children, and one to evaluate the materials and the materials set up. This tool is not yet reliable, but gives important information about the progression of ideas in each teacher's process. The planning forms are also evaluated by a qualitative narrative.

Results, Reliability, and Themes

Inter-rater reliability will be garnered through the coding of the data by the researcher and a secondary coder. The team will attempt to negate any inconsistencies through discussion and compromise; however if a resolution cannot be met, the reasons why agreement could not be reached will be discussed in a narrative way.

Coding themes include:

- Language in reference to inquiry, positive or negative

- Language in reference to collaboration, positive or negative

- Language in reference to children's abilities, positive or negative

- Language in reference to documentation , positive or negative

Other themes that are important or interesting for evaluation are coded in an open coding section and all coding is accompanied by a qualitative narrative. By gaining insight into these themes, the research team will gain knowledge about how inquiry can be better implemented, the most successful intervention and training strategies for helping teachers learn this process, and potential roadblocks to inquiry development in a classroom or school.

Procedures

1. At the end of October 2007 the Institutional Review Board gave permission for this study to begin. The first step was to obtain consent from the two teachers, Sheila and Wendy, who were the newest full-time members of the teaching staff. Anonymity was guaranteed, so their names have been changed for the purpose of this study. Having given both a verbal and written explanation of their responsibilities, rights, and roles in this study, both teachers graciously agreed, and consent was garnered. After this initial step, arrangements were made to record the first interviews within the next work week. It was at this time that the center director requested

that I allow all the staff to attend the weekly meetings. I consulted both my committee and the

participating teachers. All of us agreed that as long as the work could be conducted, there would

be no conflict by allowing the staff—on a voluntary basis—to be in the weekly meetings to

provide collaborative planning and brainstorming.

The initial plan was to have six weekly meetings, starting at the end of October and

ending in the middle of December. The week of Thanksgiving would not be a meeting week, but

teachers would be expected to continue planning, documenting, and engaging in inquiry with

children.

2. Weekly meetings were arranged to take place during the second hour of weekly staff

meetings. In these meetings we established a format combining instruction and inquiry learning

and curriculum planning using the Broderick and Hong Cycle of Inquiry Forms.

3. Weekly meetings continued over the course of 8 weeks, with the schedule allowing for 6

weeks of meetings. In all there were 6 meetings in an 8 week period. Toward the end of the

semester Sheila, Wendy, and I made plans for our mid-study interview. Both Wendy and Sheila

requested that we do the interview with all three of us present in order to allow for a more

conversational tone and to proceed in the spirit of collaboration. They believed that together

they could help each other express the changes and challenges of their experiences during this

training. We all agreed to this change in format and made plans for the interview to take place.

This would be the 6th meeting in the 8th week of the study.

4. In the mid-study interview it was determined that we all were still desirous of time together.

None of us felt we had completed the work needed in this study or in their practice. Because of

this we all agreed to extend the study into the Spring 2007 semester. Additionally, both Wendy

and Sheila expressed a need for more one-on-one planning time with me, and we arranged for

the three of us to have one meeting each week just for our work while still maintaining the time during the staff meetings. Wendy and Sheila were excited to have time to ask specific questions, work on documentation, and generally connect about this project in a more private, focused way. This new phase began shortly after the start of the semester, in late January 2008 and continued until the end of February 2008. The time in the Spring semester added 5 working weeks, for a total of 11 working weeks within an 18-week period.

5. At the end of February, when Spring Break came upon us, we began winding up the study, and planned for a final interview. While the final interview signified the end of our weekly meetings, I gathered data (classroom artifacts and other documentation) for 1 week after that final meeting time.

CHAPTER 4

DATA AND ANALYSIS

Purpose Revisited

The purpose of this study is to examine and describe the relationship between a short,

focused training in inquiry teaching and the classroom practices of the participating teachers.

This study described a small sample of the successes, challenges, and outcomes that two

preschool teachers experienced as they progressed in their understanding of inquiry learning and

emergent classroom practices. When we know more about the specific processes of individual

teachers, we can possibly apply this understanding to new studies for training teachers in

preprimary classrooms, both public and private. The structure of this study relies on the

independent variable being the teacher training in inquiry implementation using the Cycle of

Inquiry System, and the dependent variable being the amount and quality of inquiry learning that

occurs in the classroom. The dependent variable is measured using a multimethodology

approach that includes: teacher interviews, an examination of classroom documentation, and an

examination of planning using the Broderick and Hong Cycle of Inquiry System.

Data Collection and Analysis Procedures

The multimethodology of this study includes three types of data taken at three intervals.

The data consisted of tape recorded and transcribed interviews, planning forms, and classroom

documentation. The data were taken at three intervals, at week 1 and 2, weeks 5 and 6, and

weeks 11 and 12. The interviews and classroom artifacts were analyzed using thematic and open

coding with a qualitative narrative accompanying the codes, and the Broderick and Hong Cycle

of Inquiry Forms were coded using the accompanying rubric developed by Broderick and Hong

to identify the developmental level of teachers using their forms. Qualitative anecdotal

narratives accompany the planning materials (Rossman, 1998). Each set of data was analyzed

by the principal investigator and another coder to validate the codes, and the same coder

reviewed the findings and checked for accuracy and truth of representation in this paper. The

multimethodology and having a peer examination with a secondary coder helped establish

qualitative validity (Merriam, 1998).

<div align="center">Research Questions Revisited</div>

The following questions are addressed throughout the analysis of the data.

<div align="center">*Research Questions*</div>

1. Do the teachers in the study gain competency in their ability to plan for inquiry learning?

2. Throughout the study does classroom documentation reflect the inquiry learning of the
   children?

3. Are teachers willing and able to use a systemized inquiry learning approach with
   regularity when accompanied by training?

4. During the course of the study, does classroom documentation become increasingly
   related to the inquiry process?

5. Do teachers in this study change their perceptions of children's abilities?

6. What are barriers to the inquiry approach in this study?

A detailed description of all three data samples is provided, followed by detailed answers to

the research questions.

<div align="center">Data Sample One of Three</div>

This data sample was taken between the 1st and 2nd weeks of the study. The interview

was done immediately, and the planning materials and documentation came shortly after the

initial encounter. As was stated previously, the cooperating teacher's names have been changed

to assure anonymity. Thematic coding for all interviews included the cooperating teacher's positive or negative reference toward children's abilities, and positive or negative reference toward collaboration, positive or negative reference toward inquiry, positive or negative language about documentation. Codes that were unforeseen were open coded without a positive or negative demarcation and included administration, materials, follow through, and parent interactions. The predetermined codes were marked either positive or negative by line number. The open codes were simply noted anecdotally and reflected reoccurring or particularly striking comments made by the cooperating teachers. The open codes were not marked by line because they describe tone or generalities that represent outlying ideas that of further investigation.

<div align="center">

First Interviews

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Sheila Interview One

    Demographic information. Additional demographic information was gathered including her education: bachelor degree in Early Childhood Education with Pre-K – 4th grade licensure, and this was her first year teaching in a classroom as the lead teacher. She was employed in the public school system for 2 years as an instructional assistant previous to this employment. Table 1 shows the number of Sheila's utterances in her first interview that related to the four areas of coding.

Table 1

Sheila Interview One Coding

	Child Abilities	Inquiry	Collaboration	Documentation
Number of positive responses	6	6	4	5
Number of negative responses	1	1	5	1

Open codes in Sheila's first interview were:

- Materials

- Questions posed to the children

- Questions asked by the children

- Reflection on personal practice

Sheila shows strong positive responses to child abilities, inquiry and documentation, but highly mixed responses to collaboration. These, as well as the open coding will be explained in the following narrative.

Child abilities. From the beginning Sheila had a very strong view of the child and his or her abilities. She primarily gave positive responses to this code but did indicate that she was not getting the quality of thinking from the children that she desired, and that she wanted to help the children learn to ask quality questions, as well as to learn how to pose quality questions to the children that will help them think and learn. Sheila did have one negative code for image of the child, but for full disclosure, it is important to understand the context of that answer. She wants the children to understand how to ask questions and propose ideas, which she addressed in open coding. At the time of the initial interview her class just wasn't at that point.

Inquiry. Sheila had a very positive response to inquiry, and her only negative reference to inquiry was regarding her lack of continuing education in this area. She desired more, but

received very little training in this process outside her university education. Her undergraduate degree gave her some training in this approach, but this was her first opportunity to experience inquiry as a classroom teacher.

Collaboration. While she was positive about many things in the interview, she was conflicted about the role of collaboration in her personal practice. Sheila indicated that she had experienced challenges to collaboration in the past, and that when she presented opportunities for others to help her (especially in documenting children's work and thinking) she didn't get the help she expected. This was discouraging for her, and was a place of tension for Sheila in this process.

Documentation. Sheila liked documentation and was interested in using documentation to share learning with parents and administrators. She wanted to have all the members of her teaching team be a part of her documentation process but wasn't getting help from her support team. This was similar to her feelings about collaboration and was another site of tension and discomfort for Sheila.

Open coding. In her interview Sheila spoke about the importance of materials in her classroom and that if she could, she would add more natural materials and experiences, more science, and more opportunities for children to experiment. She also had a strong desire to work with developing the questions she poses to children as well as helping children pose quality questions. Finally, she described an active reflective process but kept her process private, not sharing her reflections with anyone.

Wendy Interview One

Demographic information. Demographic information includes that she has an associate degree in Early Childhood Education and is only a few semesters away from a bachelor degree in

50

the same field. She is a 19-year veteran in the field with both classroom and administrative

experience. Table 2 shows the number of Wendy's utterances in her first interview that related

to the four areas of coding.

Table 2

Wendy Interview One Coding

	Child Abilities	Inquiry	Collaboration	Documentation
Number of positive responses	7	7	7	4
Number of negative responses	0	0	0	1

Open codes in Wendy's first interview were:

- Materials

- Classroom environment

- Having support for her process

Wendy shows a strong positive reaction to child abilities, inquiry, collaboration, and

documentation. These as well as the open codes are discussed in the following narrative.

Child abilities. Children in Wendy's experience were talented learners, and her view of

them was positive, but her planning was more "for" children and less "with" children. While the

codes do not indicate any negative association, her previous way of working with children was in

a more top down manner.

Inquiry. Wendy was interested in inquiry learning but had no experience using the type

of emergent inquiry education focused on in this study. In the past her curriculum had focused

more on thematic planning implemented in a hands on, developmentally appropriate way.

Thematic planning is the use of a theme (ex. The Ocean, The Circus) or curriculum developed

from a book where activities stem from ideas in a work of children's literature. The thematic approach relies heavily on the teacher as disseminator of knowledge imparting knowledge in a top (teacher) down (child) hierarchy.

Collaboration. Wendy was very excited about collaborating with the entire staff and Sheila especially. She saw collaboration as a chance for the staff to come together for the betterment of everyone. She was especially drawn to the idea that teachers of all age groups would work together, from infants to Pre-K teachers learning from and with one another.

Documentation. Wendy showed an overall enthusiasm for documentation. She had seen Sheila's previous documentation work and was inspired to learn how to communicate in that way. Her only negative code was for her lack of documenting her personal practice not about documentation itself.

Open codes. Wendy, as with Sheila, had a strong desire to enhance her materials with natural elements and to have a loft, an expanded dramatic play center, and lots of field trips! She expressed concern that she would need extra help and wanted to make sure that provisions had been made to accommodate her needs

Cycle of Inquiry Planning Forms Set One

Planning materials were coded using the Broderick and Hong Cycle of Inquiry Rubric (see Appendix F) which codes the teacher's use of the Broderick and Hong Cycle of Inquiry Forms from levels one to four. Level 1 is unacceptable, Level 2 is below target, Level 3 is target, and Level 4 is exceptional

Sheila COI Set One

. Table 3 shows Sheila's first planning set level of development as expressed by the

Broderick and Hong rubric score system followed by a qualitative narrative.

Table 3

Sheila COI Rubric Coding One

	Documentation Record	Interpretation of Children's Thinking and Doing	Developing Research Questions Part One	Developing Research Questions Part Two	Materials
A	3	3	3	3	3
B	3	3	3	3	3
C	3	3	3	—	—

Sheila's overall code would be a three, or on target.

Documentation record. Sheila was unsure she would be able to take running records, her

preferred method was using sticky notes for anecdotal notes and her personal reflections on the

children's learning. To comply with the researcher's request for a running record, Shelia had a

teaching assistant help take a very short running record during free play that was used during the

first planning session.

Interpretation of children's thinking and doing. Sheila was interested in the children's

discussion about measuring that had been previously discussed in their classroom. She was also

attracted to their questions about going to the museum, a field trip they had taken earlier in the

week. The line of inquiry Sheila decided to follow included the children's thinking about size

and quantity (the larger the measurement, the larger the object, bigger spaceships are expressed

by bigger numbers) and being able to use this knowledge in their play and conversations.

Developing research questions part one. Several ideas to help the children have ownership over a measuring unit were:

- Homemade measuring units

- Unit cubes

- Small vs. big drawings

- Having the children do small, close observations and re-representations

- Limiting the use of color in their re-representation to help focus on form and shape, not color

 Limiting color choices was appealing because it related to a previous museum field trip to see a black and white portrait exhibit. While this color project was exciting, Sheila chose to plan for the line of inquiry related to furthering the children's experience with measuring. A benefit of developing many research questions at this time is that teachers will have the opportunity to revisit and see if they might want to develop plans in areas already identified, knowing that these ideas are all directly linked to the children's play.

Developing research questions part two. Sheila planned an intervention that would introduce a concrete measuring unit based on a body part (like a finger) in morning meeting. Sheila then planned to have various bits of ribbon, leather string, twine, and yarn at the table. Teacher assistants would then help the children choose a piece of material and cut it to a specific length. They would then use the measuring tool in a variety of experiences in the classroom and on field trips.

Materials. The project planned from these forms was to explore measuring tools and for the children (with assistance) to make their own measuring tools. These materials were unusual and exiting, but the materials by themselves did not explain the project. The materials only made

sense for this project with fairly direct instruction. This is not necessarily a shortcoming of the

exploration but an observation made by the researcher about the needs of these particular

materials and their use in this way.

Wendy COI Set One

Table 4 shows Wendy's first planning set level of development as expressed by the

Broderick and Hong rubric score system followed by a qualitative narrative.

Table 4

Wendy COI Rubric Coding One

	Documentation Record	Interpretation of Children's Thinking and Doing	Developing Research Questions Part One	Developing Research Questions Part Two	Materials
A	2	2	2	3	3
B	2	2	3	3	3
C	2	2	2	—	—

Wendy's overall code was a two, working toward a three, but a two, or below target.

Documentation record. Wendy took her own running records. She was excited to learn

every part of this process and took to heart the importance of this step. She took two sets of

running records, one that was somewhat contrived with Wendy asking guided questions, and the

other of the children in natural conversation during free play. We used the natural conversation

set of data and designed planning forms around her children's words. This was one of the very

first times she had taken running records, and taking that into account she did very well. She did

not capture the actions of the children but did learn that it is important to work with authentic

conversations, and in doing this she described a conversation full of discussion about elephants

and watering holes.

Interpretation of children's thinking and doing. Ideas about children's thinking focused on what specific animals need, language such as watering holes that relate to wild animals, and learning more about animals' habitats. These ideas came from data, but the discussion about what the children are thinking and doing stays within the realm of Wendy's prior thematic approach. The ideas about animals' needs and habitats might have been interesting to the children, but missed the underlying concepts imbedded in the play. Some hypothetical ideas might be about what children think makes a home, what things are needed to survive vs. what makes living comfortable, or maybe even places we get our necessities. Given Wendy's past experience of working with themes and planning based on books, her thinking about this project makes sense, yet the training process in this study is helping her discover a more emergent way of engaging with children and materials. This becomes evident in later planning forms.

Developing research questions part one. The main ideas discussed in this form and during the planning session were:

- Wild vs. domestic animals

- The needs, habitat, and survival of each type of animal

- Similarities and differences in the animals.

The thinking was that these children were interested in the specifics of animal life, and that we could help them gain new knowledge by using revisiting previous experiences and having new experiences.

Developing research questions part two. Intervention ideas included asking the children what they know about wild and domestic animals (perhaps a KWL chart) and thinking with the children about what animals need to live and where they live. This idea was to give the teachers and children enough information to plan for a more complicated intervention.

Materials. The intervention Wendy planned was to pose questions about wild vs.

domestic animals, in morning meeting and to set up pictures, books, documentation of previous

knowledge (pictures of trips to the zoo, the children with their own animals, etc…), plastic

animals and building materials in the block center and on table. When analyzing these planning

forms, it is worth noting that the materials selected are very well chosen and the set up is

appropriate. The materials speak for themselves, meaning they direct the play without an adult

having to give direct instruction. They are open-ended, and balance a purpose for play while not

directing the play toward a predetermined end.

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Elements of Documentation Set One

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Sheila Elements of Documentation Set One

Table 5 is a checklist of the elements of documentation found in Sheila's first set of

documentation as well as a column explaining where the element was found in the data.

Table 5

Sheila Elements of Documentation Set One Checklist

Element	Available	Where observed
Children's words	X	Running record
Teacher's interpretation/questions	X	Her field notes
Classroom documentation	X	Pictures from camera
Child focused/initiated	X	Planning forms
Next steps	X	Her field notes

This set of documentation began with a fieldtrip to the museum the class took to see an exhibit of

portraits of Holocaust survivors. Sheila had one or more examples of each element.

Children's words. The running records are of the children's words not actions. They do

have some of the elements of the first stages of documenting children's words. There weren't

actions with the words, and the words were children's responses to direct questions. Natural

actions/responses might tell us more of the children's true intentions than the words alone. She

was, perhaps, attempting to follow what she thought she was supposed to do, when methods she

indicated were more comfortable to her (anecdotal records, sticky notes) might have yielded a

fuller description of the work than the running record taken in the museum. Let it be noted that

Sheila declared her dislike of running records, and that she prefers anecdotal notes and sticky

notes, and that she hopes to get a video recorder to use in the near future. She understands the

importance of children's specific words but has preference, time, and resource constraints that

hinder her taking running records.

Teacher's interpretations and questions. Sheila's intentions are clear in her field notes.

She wants the children to have a visceral experience and to think about what the people in the

photographs are thinking and feeling as well as helping them focus on details that are evident in

large pictures. She wants the children to see how both emotion and elements of composition that

are highlighted in these black and white portraits.

Classroom documentation. Sheila took pictures at the museum and of their follow-up

projects. Their art hung in the room, and Sheila revisited the work with the children during their

follow-up activities. Photos were set up with specific materials as part of a follow-up activity.

In this way the pictures become provocations for learning.

Child focused or initiated. The documentation of the children at the exhibit shows that

while the project was not initiated by the children, the emphasis of the work was on the

particulars and import of their learning.

Next steps. Her next steps thinking includes having the children take portraits of their

classmates in black and white, working with black and white media in the art center, and printing

their photographs to make them visible. Her photographs of the children's work done after the

exhibit shows them creating black and white collages that seem to focus on negative space and

composition. In all of the work the children can be seen engaged in the work, collaboration with

peers, and in collaboration with Sheila. Even in this first documentation set, Sheila seems to

have a sophisticated approach to education and to working with children to cocreate knowledge.

Wendy Elements of Documentation Set One

Table 6 is a checklist of the elements of documentation found in Wendy's first set of

documentation as well as a column explaining where the element was found in the data.

Table 6

Wendy Elements of Documentation Set One Checklist

Element	Available	Where observed
Children's words	X	Running record
Teacher's interpretation/questions	—	—
Classroom documentation	X	Pictures on camera, craft of caterpillar in classroom
Child focused/initiated	—	—
Next steps	—	—

Wendy's class was learning about the work of Eric Carle when we first began this study. They

had been reading *The Very Hungry Caterpillar* and were learning about the life cycle of the

butterfly. Wendy had examples of children's words and classroom documentation.

Children's words. The running records were a direct question and answer format with

Wendy asking a question with a projected outcome and the children responding. Wendy was

perhaps attempting to meet her perceived expectations of this research study. At the time she

took these running records we had not begun working on these skills, I had only introduced the

idea of running records with a cursory definition. This was her very first experience practicing

this skill.

Teacher's interpretations and questions. None seen

Classroom documentation. Wendy had the caterpillar displayed in the classroom and

took pictures of the children throughout their entire experience, from making the dough to

painting the caterpillar.

Child focused or initiated. Wendy's example of classroom documentation focuses on a

particular theme with an intended outcome and product. At the start of our work she explained

that this type of curriculum was typical in her classroom. Wendy showed many wonderful

aspects to her teaching including her attention to children, allowing children to be inherently

involved in the work, and setting goals for the curriculum and working toward those ends.

Next steps. None seen

Data Sample Two of Three

Second Interviews

This interview was done in a conversational manner with the two participants and the

primary investigator discussing the project to this point and possible plans for the remaining

weeks of the study. For this section coding was conducted in the same manner as the first

interview, with positive and negative responses in predetermined categories, and open codes.

This interview did not have set questions but was a conversation between the two cooperating

teachers and the principle investigator. Due to the conversational tone of this interview, many

more themes appeared than would have in a one-on-one interview. It seemed important to list

the themes here. Not all of these relate to the specific research questions of this study but may

reveal how teachers working in an emergent practice see all their experiences as closely linked and holistic.

Main themes of the conversation included:

- Collaboration between Sheila and Wendy

- Collaboration of the whole school

- Thinking about the lasting gains the children are receiving

- Their professional backgrounds

- How and why they were in their current positions

- Wendy's growth

- Parent involvement

- Ways to improve future trainings

Sheila Interview Two

Table 7 shows the number of Sheila's utterances in her second interview that related to the four areas of coding.

Table 7

Sheila Interview Two Coding

	Child Abilities	Inquiry	Collaboration	Documentation
Number of positive responses	8	3	7	3
Number of negative responses	0	0	1	1

Sheila's only mid-study open coding was a strong response to her previous workplace and its contrast with her current school.

Child Abilities. Sheila's language regarding children's abilities grew tremendously from the beginning of the study to the mid-study interview. In the first interview she had six positive and one negative reference to child abilities. In the second interview she had eight positive responses and no negative responses. While she began with a strong image of the child, as her classroom and projects became more refined, she was able to see and express her growing achievements with the children.

Inquiry. This interview had less of a focus on inquiry as a discussion topic. Inquiry seemed more of foundation for all the other conversations. In fact, all three of Sheila's references to inquiry were about how much Wendy had grown in the process and giving her encouragement keep working on her practice.

Collaboration. The most striking part of Sheila's progress occurred in the collaboration code. Her one negative reference to collaboration was that she had been told that she had too much documentation in her room and was asked to tone down the classroom documentation. This line was marked negative for collaboration and documentation. This one comment didn't hinder her progress; instead she grew from being hesitant about collaboration to being really excited about sharing ideas and working with other adults toward a common goal. At the time of this interview she was forward thinking, and enjoying co-creating knowledge with children, her assistant teachers, and Wendy.

Documentation. One of Sheila's goals was to use documentation panels to show learning to explain how projects and exploration could lead to great learning experiences that meet many state learning standards. She really wanted to show parents and administration how powerful this approach can be and the true scope of learning that can occur in a responsive, emergent classroom. This leads to the final piece of the interview. Sheila had a strong desire to work

more closely with her administration to complete her vision for her classroom and the school. She expressed regret that the administration had not been a more integral part of the study and felt that in the future that would be needed to allow for a vision of inquiry learning to be represented in the entire school.

Open coding. Before this teaching job, Sheila was a teaching assistant in a public school. The lead teacher had a very different instructional style, focusing on thematic predetermined curriculum modules. She relayed that children were not allowed to draw with creativity or freedom of expression, being told that "dogs are brown they aren't purple" and that there was a right way and wrong way to complete tasks. When the position she holds now became available, she experienced a deep knowing that she was meant to take the new job because it was at a school that has a strong desire to develop an adaptation of the Reggio Emilia approach. Since her exposure to this approach in her undergraduate work, she had wanted to teach in a school working toward an active emergent practice.

She had become licensed to teach in the public schools, but because of her classroom experience in public schools her faith in that system was so shaken that she doubts whether she will ever return. What she did gain from public school was a true understanding of standards and a desire to meet them in a developmentally appropriate way. She explained how even the simple activity of taking a walk meets multiple standards, it is just up to teachers to show and explain these creative DAP teachable moments to parents and administrators.

Sheila's overall tone was very positive and forward thinking. She was excited about the future of her teaching, the school, and her newfound desire to collaborate.

Wendy Interview Two

Table 8 shows the number of Wendy's utterances in her second interview that related to the four areas of coding.

Table 8

Wendy Interview Two Coding

	Child Abilities	Inquiry	Collaboration	Documentation
Number of positive responses	1	2	4	4
Number of negative responses	0	2	3	0

Open codes were learning environments and expectations.

Child abilities. Wendy didn't talk a lot about children's abilities in this interview. The one positive code was speaking to her continuous appreciation for the brilliance of children and the knowledge they share.

Inquiry. Wendy's coding from the preliminary interview to the mid-study interview was dramatically different. In the preliminary interview she was very excited and eager to begin and responded almost totally positively. In her second interview, at the mid-way point, Wendy expressed much more conflict about the process and her role in the inquiry classroom. She was feeling somewhat conflicted about how to blend the new inquiry approach with her favorite parts of direct teaching. In her past positions she had emphasized academic curricula, but now she was excited about learning how to make her classroom more "natural" by using natural elements as materials, using nature as a teaching concept, and learning to "enjoy and simplify" her classroom. While she still liked using academics, she felt like the emergent approach she was

learning in this study had alleviated some of meeting academic goals that were disconnected to children's interests and thinking.

Collaboration. She saw the study as the beginning of a larger collaborative movement at the center. Wendy also expressed her excitement about making progress in overcoming her natural tendency to shy away from asking for help. Conversely, she felt disappointed that she had asked for help from the staff, who at the time were enthusiastic about helping, but later did not follow through on their promise. Wendy also spoke of the need for a more cohesive mentorship including administration and echoed Sheila's sentiment that there was a need for more extensive training involving all levels of staff working toward a common goal of an emergent, inquiry based program.

Documentation. She talked with anticipation about making her first panel, and with great respect for the artifacts Sheila had made. Documentation was one of the things driving Wendy in her project. She believed in the power of documentation, and saw it as an important skill that would add great value to her classroom and her teaching skills.

Open coding. Wendy discussed in some detail her past experience as an administrator and how her previous position left her disillusioned with child care. In her previous experience she was underappreciated, underpaid, and overworked, and she was so upset by her old job, that she almost left the field. For Wendy her current position represented a return to the classroom and a desire to renew her enthusiasm for her field.

Sheila Cycle of Inquiry Planning Forms Set Two

Table 9 shows Sheila's second planning set level of development as expressed by the

Broderick and Hong rubric score system. These data also have a qualitative narrative discussion.

Table 9

Sheila COI Rubric Coding Set Two

	Documentation Record	Interpretation of Children's Thinking and Doing	Developing Research Questions Part One	Developing Research Questions Part Two	Materials
A	n/a	3	4	4	4
B	n/a	4	4	4	4
C	n/a	4	4	—	—

Sheila's overall code for this mid-study planning was a four, or exceptional.

Documentation record. Sheila didn't take running records, but used her more

comfortable methods of anecdotal records and sticky notes. While running records are

recommended in this system, when teachers reach a level four they sometimes develop their own

systems for documenting children. For this reason the documentation record section was coded

not applicable. This was an exciting planning session that began with Sheila's account of the

children using blocks to build structures.

Interpretation of children's thinking and doing. Originally the children built triangle

structures with big blocks and connecting blocks, but through planning and experimentation they

discovered that a rectangle figure could fit all their friends inside the shape, whereas the triangle

would not hold the whole class. Sheila told us that at first they used the word fort to describe

their structure, but then they added tent and tree house as names for their structures. Previous to

this planning session she presented a provocation for the children. She built a small scale

structure with a box and then invited the children to add natural materials (sticks, bark, and leaves) to the box in order to help them see the parts of a building and the shapes included in buildings, and to focus their thinking about building for future phases of this investigation. Through this provocation Sheila learned that the girls in the class want to have tea inside the structure and the boys want to fight bad guys, but that they all want to be able to play together.

Developing research questions part one. The planning included a consensus that the children were thinking about:

- Structures

- Natural building materials

- Natural structures

- Different kinds of dwellings

Sheila's intervention ideas included:

- Identifying the parts of structures and their purposes

- Thinking about different kinds of materials

- Influences of different materials on the "parts" of a building

- Consideration for conditions, like environment, that create specific needs

- Identifying the qualities of natural building materials.

Developing research questions part two. From all our ideas Sheila was most interested in helping the children learn to design structures with particulars that would make the structure workable.

Materials. She decided to give them the big blocks and connecting blocks, large swaths of fabric, and pictures of different kinds of structures. Her intention was to scaffold children toward thinking about drawing plans for their structures. Her plan was to draw instructions for a

structure and have the children follow her drawings to build that structure. A later line of

investigation would be to invite the children to draw and build their own plans. We developed

several ideas from this one planning session so Sheila could have multiple provocations and

ways of stimulating the children's ideas, interests, and thinking.

Wendy Cycle of Inquiry Planning Forms Set Two

Table 10 shows Wendy's second planning set level of development as expressed by the

Broderick and Hong rubric score system. These data also have a qualitative narrative discussion.

Table 10

Wendy COI Rubric Coding Two

	Documentation Record	Interpretation of Children's Thinking and Doing	Developing Research Questions Part One	Developing Research Questions Part Two	Materials
A	3	3	3	3	3
B	3	3	3	3	3
C	3	3	3	—	—

Wendy's overall code was a three, or on target.

Documentation record. Wendy had taken running records that were relevant, nuanced,

and focused on current learning. The running records focused on the children's preparation for

the classroom getting a hermit crab. They were talking about what the hermit crab would need

and how they would take care of the hermit crab.

Interpretation of children's thinking and doing. The thinking about children's ideas was

that the children are interested in the responsibilities, jobs, and general care of the hermit crab.

They were also interested in who in the class would take on these responsibilities and showed

understanding of how important their care of a live creature would be.

Developing research questions part one. Wendy was interested in helping the children learn more about hermit crabs and adding materials that would let them think in different ways about hermit crab care and hermit crab life. She was interested in taking a field trip to the library with the children to help them have some real experience with research and help give them ownership over the process, she was also interested in creating a dramatic play center with hermit crab accessories.

Developing research questions part two. For the intervention planning it was decided, in order to help the children see from a hermit crab's perspective and to be able to role play a hermit crab's life, that Wendy would add boxes with backpack-like arm straps to the dramatic play center to act as a hermit crab shell, oven mitts for claws, beach pictures, blocks, and sandpaper to help the children feel the sandy texture a crab would feel in its natural habitat. She would also add a special journal for recording what the classroom looks like from the point of view of the hermit crab. This was both interesting for the children because they are asked to take on a new viewpoint and because it helped them understand the world from a new perspective. One of the goals Wendy had for her classroom was to help them understand how their actions affect others. This intervention met the needs of the project and the overarching goals of Wendy for the classroom. In this way the intervention was more thoughtful and provocative than hermit crab project as a "theme" or surface investigation.

Materials. Wendy's materials were innovative and creative. She created a project for the children that used materials to further both the children's play and her intentions for the project.

Sheila Elements of Documentation Set Two

Table 11 is a checklist of the elements of documentation found in Sheila's second set of

documentation as well as a column explaining where the element was found in the data.

Table 11

Sheila Elements of Documentation Checklist Set Two

Element	Available	Where observed
Children's words	—	No words, but anecdotal notes
Teacher's interpretation/questions	X	Planning forms
Classroom documentation	X	Pictures
Child focused/initiated	X	Planning forms
Next steps	X	Planning forms, conversations

Children's words. This documentation set including anecdotal records and photographs

of a visit to local trees and a juniper patch that the children could play in and under. During their

field trip the children discovered that the underneath of the juniper acts as a shelter of sorts.

Teacher's interpretations and questions. Sheila's intention (gathered from my field notes

during planning sessions) was to help the children see and have an introduction to the various

types of dwellings that are in the world. She wanted to strengthen the connection between the

shelter of the trees and how shelters are or could be constructed.

Classroom documentation. In centers as part of provocations, not permanent

documentation, the pictures of their field trip were paired with pictures of tree houses,

indigenous shelters, and fantastical renderings of natural dwellings. Concurrently, the

documentation shows the children becoming very interested in building structures (sometimes

the children called them castles) and in having the whole class involved in the project. This second set of Sheila's documentation shows growth in her ability to facilitate multiple lines of inquiry and her ability to construct a curriculum that respects the ideas and desires of the children while promoting state learning standards.

Child focused or initiated. Children, the teacher, and the environment (the third teacher) were involved in this project. The children had learned to trust Sheila enough to ask for more space to explore their ideas and hypotheses. Sheila helped scaffold their building by assisting in the roofing process. She introduced a tablecloth that she knew to be an appropriate material that would help them meet their goals of building a shelter, and without giving them solutions as to how, she was able to guide their ideas. They developed a roof that would allow enough room inside the structure for all the participants and not fall on top of them during play. This was a multiday project. These are wonderful examples of how one project can encompass multiple lines of investigation with 1) the idea of working with structures, 2) the idea of working with shapes, 3) the idea of the group working together. The classroom as a whole became a unit working together, and for Sheila this was one of her finest personal accomplishments.

Next steps. One next step Sheila planned was to have the children draw the trees. The documentation shows the children paying close attention to the structure of the trees. She was thinking that if the children could observe closely and telescope in from the large structure of the trees to the small interpretation, perhaps seeing how nature builds with shape and design.

Wendy Elements of Documentation Set Two

Table 12 is a checklist of the elements of documentation found in Wendy's second set of

documentation as well as a column explaining where the element was found in the data.

Table 12

Wendy Elements of Documentation Set Two

Element	Available	Where observed
Children's Words	X	Running records
Teacher's Interpretation/Questions	X	Planning forms
Classroom Documentation	X	Notebook
Child Focused/Initiated	X	Documentation, verbal anecdotes, planning forms
Next Steps	—	—

Children's words. Wendy's running records were really good. She had learned to

capture important and relevant conversations and play. She took running records over a period

of time to show how children were progressing with a particular set of ideas.

Teacher's interpretations and questions. Wendy's planning showed complex questioning

and thoughtful interpretations of the children's work, ideas, and words.

Classroom documentation. The first set of documentation was easel paintings cut into

the shape of hermit crabs in their shells. This was one of Wendy's first attempts to work with an

emergent idea. While it was much more like her old way than the inquiry we were working

toward, her next artifacts were more inquiry oriented. They included a mock hermit crab habitat

that the children could practice their care by raking the sand, scooping the droppings, and

arranging the trimmings and decorations. This was accompanied by the actual habitat and a

notebook full of the children's observations and ideas of the hermit crab's care and life.

Wendy's second set of documentation shows a distinct change from a theme focused curriculum to a more emergent and inquiry focused approach. The hermit crab habitat and mock habitat were wonderful experiences for the children, but Wendy was most impressed by the children's drawings. She introduced the idea of the children sketching their ideas and observations in morning meeting, and then put the special sketch book in the hermit crab center. The children produced some sophisticated renderings. This had a twofold effect, 1) the children had a specific and meaningful place to explore and experiment with their ideas, and 2) Wendy was able to visually and definitively track the children's process. By allowing space, time, and a sense of importance to the hermit crab project, Wendy began her journey toward working with the children in an emergent, inquiry way.

Child focused or initiated. This set of documentation showed that Wendy learned to work as a cocreator of knowledge with children. She embraced the children's input and came up with activities that were focused on the children and had their thinking in mind.

Next steps. Wendy didn't have any specific next steps to this project. She wanted to observe their play and record their new ideas and plan from those observations.

Data Sample Three of Three

Third Interview

Sheila Interview Three

Table 13 shows the number of Sheila's utterances in her third interview that related to the four areas of coding.

Table 13

Sheila Interview Three Coding

	Child Abilities	Inquiry	Collaboration	Documentation
Number of positive responses	4	2	7	1
Number of negative responses	0	0	0	0

Sheila had positive reactions to all areas of coding but maintained her growth in collaboration, discussing this far more than the other areas.

Open codes:

- Trust

- A sense of accomplishment

- Inquiry as an anchor

Child abilities. She began the process with an understanding of the culture of the child that is in line with this inquiry approach, and her understanding of inquiry learning was fairly developed, but she blossomed into an awareness of the need and beauty of collaboration with children in this short amount of time. At the start of the study she used inquiry as a separate center activity and primarily as a large group activity. By this point she was in a mindset of

embedding inquiry into any part of the classroom that would help sustain a project and that would allow children to discover inquiry in their own time and ways.

Inquiry. Sheila's interview indicated that she grew into an accomplished inquiry teacher. At the beginning of this study she would put out provocations in the morning and then put them away. It seemed to be part of her daily activities, not her classroom philosophy, which limited the potential for inquiry to become a meaningful skill for the children. As her experience in the classroom grew and as the study progressed, she developed a new approach to provocations and inquiry. Her focus shifted from inquiry as a classroom activity to inquiry as a full time part of her materials and curriculum, allowing the children to explore and question throughout their learning times. She learned to allow the materials to become imbedded in her classroom, not waiting for a certain time to introduce them but allowing these clues or seeds, as she called them, to guide the learning during the entire day and allowing children to experiment at their own pace and in their own time. This shift was as important as her collaboration. It led to a depth of learning with her children that would not have been present if her previous path had continued. As all of her children became interested in one long-term project, there were unlikely collaborations between children, and there was a sense of peace and calmness in the classroom.

Collaboration. Through this experience Sheila gained a belief in the power of collaboration and learned to trust that others can be invested in the process and help. By the end of our time together she had become comfortable with other people's ideas and was receptive to using other people's ideas. Collaboration became second nature to Sheila, and she learned to count on other people to help her and her children in the classroom.

Documentation. Sheila didn't talk a lot about documentation in this interview. She focused more on inquiry and her classroom. The one code for documentation was that Sheila

was now using documentation as a way of reflecting on her practice. When she documented she was able to see her classroom more clearly, and she didn't need to have a journal; her documentation had become her journal.

Open codes. Her final interview was filled with a feeling of success and accomplishment. She was almost done with her 1st year of teaching, had learned so many things about her craft, and had a wonderful self-confidence about her abilities as a teacher. She also felt a sense of trust—related to her newfound comfort with collaboration—in her coworkers and in the children. She was now able to relax into her position and enjoy both the children and adults in her classroom. Related to all the above codes is a small part of the conversation in which she expressed that inquiry had helped ground her in her practice. This was her 1st year, and she had been able to use this approach to give her solid footing in her new position.

Wendy Interview Three

Table 14 shows the number of Wendy's utterances in her third interview that related to the four areas of coding.

Table 14

 Wendy Interview Three Coding

	Child Abilities	Inquiry	Collaboration	Documentation
Number of positive responses	4	3	2	2
Number of negative responses	0	0	0	0

Wendy's responses were all positive, and she had a positive reflective tone.

Open Codes

- Balance

- Renewal

- Reflection

Child abilities. Wendy's growth through this process was as wide as it was deep. While her responses in the first interview were all positive and excited, her responses in the final interview were positive but based on her experience not her hopes or aspirations. She learned to trust that the children were competent learners and even mentioned that sometimes the day just seemed to plan itself, that given the freedom to learn in their own way's the children would.

Inquiry. She had experienced success in a project and had found some common grounds between her enjoyment of and comfort with academics and her true curiosity and admiration of the inquiry approach.

Collaboration. Wendy told of the great work the whole center had done to collaborate and work together as a team. She saw everyone working together more toward a single goal. She felt especially close to Sheila and felt comfortable and comforted in their relationship, mentioning her gratefulness that Sheila would provide positive feedback for her work and was supportive when things were less than perfect. She agreed that she had learned to slow down the process and had learned to be comfortable with a project running from one week to the next, overlapping and not being nicely packaged. Wendy was still in the process of becoming comfortable with this process but felt very proud of her accomplishment and of herself for stepping outside her comfort zone, using a totally new approach and trusting in herself and her peers.

Documentation. Wendy was still very excited about documentation, and she wanted to create a documentation piece for her classroom. We established a time to do that and discussed

how much good material she had gathered that we could use to highlight the project and the children's learning.

Open coding. This interview was very reflective for Wendy. She discussed how much she had grown and how this process had been one of renewal for her. She had remembered why she loved working in this field and discovered that she was, in fact, a lifelong learner. She was discovering a balance between the ways she had taught for 19 years and the way she was learning to teach now, and that felt like a big accomplishment to her. Overall she felt positive about her experience and was looking forward to using her newfound skills in future endeavors.

<center>*Cycle of Inquiry Planning Forms Set Three*</center>

Our final planning session did not produce planning forms. Neither teacher had taken running records. Each teacher expressed a need to prepare their children for Kindergarten, and worked in various ways and degrees to accommodate those needs. Below is a qualitative narrative of each teacher's thoughts and concerns. This session might not have been fruitful for planning, but it did reveal a need for this training to include a more detailed and focused training on how to allow a project to shift and how to continue a project. It also brings up the need for more planning on how to plan for Kindergarten transition and the goals of each center and classroom to this end.

Sheila COI qualitative narrative. Sheila's class was shifting its project interest to drawing houses and other structures. They were still interested in the parts of a structure, but the project emphasis was changing. Sheila was taking anecdotal records and had recently gotten a video recorder for her classroom. She was observing, exploring materials, and seeing where this line of inquiry could take the classroom. She was also feeling some pressure for her children to be ready for Kindergarten.

She was adding some direct instruction in her classroom but not to the exclusion of inquiry, and in many cases she was blending direct instruction into her inquiry planning. Sheila felt more comfortable with her ability to use inquiry to prepare her children for their next academic step but was aware and making accommodations for the perceived or real needs of today's Kindergarteners

Wendy COI qualitative narrative. Wendy's classroom had experienced quite a bit of sickness, leaving her without a full class for several weeks. There seemed to be waning interest in the hermit crab project, and Wendy didn't know if she wanted to continue in this vein. Simultaneously, Wendy was very concerned about her children's ability to move forward and was adding some academic methods with her class. While the final interview revealed major growth with inquiry, the final sets of planning forms did not match the development of the previous set. It's almost as if Wendy is still caught between two paradigms. She was clear in her desire to continue with inquiry but could not yet meld the two philosophies into one format that was comfortable for her.

Elements of Documentation Set Three

Sheila Elements of Documentation Set Three

Table 15 is a checklist of the elements of documentation found in Sheila's third set of

documentation as well as a column explaining where the element was found in the data.

Table 15

Sheila's Third Documentation Set

Element	Available	Where observed
Children's Words	X	Anecdotally and in the documentation panels
Teacher's Interpretation/Questions	X	Planning forms, documentation panels
Classroom Documentation	X	Classroom
Child Focused/Initiated	X	Planning, documentation
Next Steps	—	—

Children's words. The children's words were used in documentation panels to show how

they were relating to the process and learning through doing. The children's words were still not

being used for planning but were being used in the documentation.

Teacher's interpretations and questions. Sheila's final documentation set is a

continuation of the ideas in the second set. The children were still very interested in buildings,

blocks, structures, and alternative dwellings. Sheila continued to facilitate multiple lines of

inquiry with multiple sets of materials. Some children were using the unit blocks to build

buildings and one child his home. One child build windows after the class took an architecture

walk and took pictures of windows, doors, awnings, stairs, et cetera. There were children

building with geometric tiles to make three dimensional buildings and with geometric magnets to

design a wide array of designs. The children took responsibility for this project and with the skilled facilitation of Sheila they were able to explore a set of ideas with depth and width.

Classroom documentation. Sheila used documentation to show the children's learning but also to help scaffold the children's projects. She used pictures of the children working and of other inspirational pictures to help the children explore previously unseen ideas and relationships with materials.

Child focused or initiated. In this set of documents Sheila showed the children engaging in a breadth of experiences. While earlier in the project the class had come together to have a single experience, they now were taking their ideas away from a group mentality and exploring them again in a more personalized way. Sheila allowed for this shift from group learning to more individual learning and facilitated multiple experiences simultaneously. A project that began with children playing in a juniper patch became a deep investigation of architecture, building, form, and function. The project then added the element of a focused and individual investigation on all these particulars.

Next steps. Sheila didn't have next steps clearly outlined, and at this point she indicated in the interview that she was doing lots of observations and thinking about where the children were going with their studies. She's allowing herself to keep open to next steps when they become clear. Again, this shows that she is learning to slow down.

Wendy Elements of Documentation Set Three

Table 16 is a checklist of the elements of documentation found in Wendy's third set of

documentation as well as a column explaining where the element was found in the data.

Table 16

Wendy's Third Documentation Set

Element	Available	Where observed
Children's Words	X	Documentation panel
Teacher's Interpretation/Questions	X	Documentation panel
Classroom Documentation	X	Outside classroom
Child Focused/Initiated	X	Documentation panel
Next steps	X	Documentation panel

Children's words. For this documentation panel Wendy used children's words from the

entire process to show how the children grew in their knowledge and sophistication through their

project.

Teacher's interpretation and questions. Wendy's panel included many examples of how

she saw the children's learning and of the questions she posed to the children, both in words and

in materials. Examples include running records from the morning meeting and the mock hermit

crab habitat center.

Classroom documentation. Wendy's third documentation set was a documentation panel.

It was very important to her that she was able to make a panel during our work together, so at our

final meeting we worked on a documentation panel highlighting the learning in a unique and

beautiful way. Wendy found an old plexi-glass classroom terrarium and decided to use that as

the structure to house documentation. We put the entire arc of learning into this documentation,

including children's words and work, teacher thoughts, next steps, and the learning that occurred. This happened at the very end of our time together, and while Wendy had wanted to do this earlier, and was very hesitant to do it on her own, she had a natural sense of how the pieces should fit together. All that I helped her with was the technology, uploading pictures and printing them, creating the right size font and using text boxes to help shape the words to fit particular places in the terrarium.

Child focused or initiated. Wendy worked to show that this project was based on the children's interests and what their words and actions told of their ideas and assumptions.

Next steps. Wendy's next steps included adding more dramatic play to the classroom. She had noticed that the children were thinking about what size shell the hermit crab would need for a home and how we could help them think about proportion and how much room we need in a home.

Analysis of Research Questions

Six research questions guided this study. Following is a detailed analysis of each item.

Research Questions

Research question 1: Do the teachers in the study gain competency in their ability to plan for inquiry learning?

Both Wanda and Sheila became more competent in their abilities to plan using the Broderick and Hong Cycle of Inquiry Forms. As noted in Table 17, Sheila's COI rubric score increased from all 3s (target) to mostly 4s (excellent), and in Table 18 it is evident that Wendy's COI rubric score increased from mostly 2s (below target) to all 3s (target). While there weren't completed Cycle of Inquiry Forms to score in the third set of data, both teachers were continuing to think and work toward a more nuanced understanding and application of inquiry learning.

This thoughtfulness was evident in their third interviews. In this interview each commented on

the ways in which they had grown as inquiry facilitators through this process. Wendy stated:

"They're [the children] are involved in the planning process and they are kind of showing me

where to go, following what they're interested in, and their developmental level at that time" and

"I'm not up at 3 and 4 in the morning looking at lesson plans on the internet, or the cute thing, or

the, you know, activities to plan, um…its just a very natural, warm environment…" While

Wendy reflected on her planning, Sheila discussed how her method of reflection changed

throughout the study: "I think that through my documentation I reflect more and that's where I

get down to the, yeah, there's more self-reflection in my documentation, as well, 'cause that's

where the nuts and bolts are, I'm getting down to details." These statements from Sheila and

Wendy are indicative of the ways that their use of inquiry as a planning tool grew throughout the

study; each teacher was able to see clear and tangible changes in her teaching strategies and

methods. Tables 17 and 18 track the progress of Sheila and Wendy as each became familiar with

the Broderick and Hong Cycle of Inquiry Forms and grew in her abilities to facilitate emergent

inquiry in the classroom. Tables 17 and 18 show a compilation of their rubric scores showing

that, in addition to their affirmations of growth, their forms became more complex, thoughtful,

and innovative.

Table 17

Sheila's Cycle of Inquiry Rubric Scores

	Documentation Record			Interpretation of Children's Thinking and Doing			Developing Research Questions Part One			Developing Research Questions Part Two			Materials		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
A	3	—	—	3	3	—	3	4	—	3	4	—	3	4	—
B	3	—	—	3	4	—	3	4	—	3	4	—	3	4	—
C	3	—	—	3	4	—	3	4	—	—	—	—	—	—	—

Table 18

Wendy's Cycle of Inquiry Rubric Scores

	Documentation Record			Interpretation of Children's Thinking and Doing			Developing Research Questions Part One			Developing Research Questions Part Two			Materials		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
A	2	3	—	2	3	—	2	3	—	3	3	—	3	3	—
B	2	3	—	2	3	—	3	3	—	3	3	—	3	3	—
C	2	3	—	2	3	—	2	3	—	—	—	—	—	—	—

Research question 2: Throughout the study does classroom documentation reflect the inquiry

learning of the children?

There was evidence in this study that classroom documentation reflected inquiry, became

more complex, and became increasingly related to the current project. As noted in Tables 19 and

20, each teacher collected pieces of data that would become classroom documentation. At the

beginning of the process each teacher collected data on the children, but as the study progressed,

their data became increasingly related to the inquiry projects in their respective classrooms. At the beginning of the study Sheila collected pictures of the children, but the pictures were more related to the activity, not the thinking and inquiry. In data set 3 her skills had increased to the point that she was taking pictures that demonstrate children engaged with materials and their environment in ways that were linked to their project. Similarly, Wendy in data set 1 began without a clear concept of how to take running records for inquiry planning. Her initial running records consisted of her asking children specific questions and recording the answers, very quickly, by data set 2, she was able to take running records that captured authentic conversations and actions of the children during inquiry related play. While each teacher grew in her skills, the short span of this study made it difficult for the teachers to frequently produce documentation panels. Another element of the study that was not considered in the preliminary planning was the learning curve that especially Wendy experienced in collecting classroom data. While planning time was set aside for creating documentation panels, teaching Wendy the primary skills needed to document children's learning in this approach was not part of the original schedule and is little discussed in the literature; however, this became a necessary building block in Wendy's training.

Despite the unforeseen challenges of time and skill sets, each teacher increased the quality and amount of classroom documentation by learning how to capture valuable documentation focusing on the inquiry learning of the children. Sheila captured more detailed documentation that showed children's learning in a variety of cross-curricular ways such as architectural forms emerging through artwork and collage; Wendy became very skilled at taking running records and planning next steps that used children's words and actions as a guide for interventions such as their interest in hermit crab habitats leading to planning for a dramatic play

area focused on child-sized hermit crab materials. Tables 19 and 20 show the kinds of classroom

documentation Sheila and Wendy collected through the study and where it was visible in the

materials.

Table 19

Sheila's Classroom Documentation

Data Sample	Element	Available	Where observed
1	Children's words	X	Running record
2		—	No actual words, but detailed anecdotal notes
3		X	Documentation panel
1	Teacher's interpretation/questions	X	Her field notes
2		X	Planning forms
3		X	Planning forms, documentation panels
1	Classroom documentation	X	Pictures
2		X	Pictures
3		X	Classroom
1	Child focused/initiated	X	Planning forms
2		X	Planning forms
3		X	Planning, documentation
1	Next steps	X	Her field notes
2		X	Planning forms
3		—	—

Table 20

Wendy's Classroom Documentation

Data Sample	Element	Available	Where observed
1	Children's words	X	Running record
2		X	Running records
3		X	Documentation panel
1	Teacher's interpretation/questions	—	—
2		X	Planning forms
3		X	Documentation panel
1	Classroom documentation	X	Pictures from camera, classroom object
2		X	Notebook
3		X	Hallway outside class
1	Child focused/initiated	—	—
2		X	Documentation, anecdotes, planning forms
3		X	Documentation panel
1	Next steps	—	—
2		—	—
3		X	Documentation panel

Research question 3: Are teachers willing and able to use a systemized inquiry learning approach with regularity when accompanied by training?

The short answer is, yes. Each teacher was eager to be a part of this study, and each was more than willing to use the Broderick and Hong Cycle of Inquiry System. The forms acted as a guide for the teachers. Wendy found the *Child Observation Form* very helpful in learning to take running records, and Sheila used this form as a place to write her anecdotal records. Each teacher also used the *Child Observation Form* to write her initial thoughts and hypotheses about the children's words and actions. The *What Are the Children Thinking and Doing* form was used as a place for the teachers to take their initial ideas about the children's words and actions and give them more depth and thought. This form we worked on collaboratively, and both Sheila and Wendy talked through their ideas as we planned together. We always used this form, but sometimes when we were short on time and the teachers needed to return to the classroom we

didn't write lengthy descriptions while we talked, but to save time we recorded short phrases to help the cooperating teacher to remember our intentions. The third form, the *Inquiry Planning Form* helped in culling out the important big ideas. This is where Wendy chose to use a drawing journal, and where Sheila developed big idea questions related to the classroom discussions about dwellings. These big ideas became questions to pose to children about tree houses, tee pees and tents. This form was also done collaboratively. This step was critical in each teacher's thinking and planning process and shows direct links between the data from the children and the work the teachers were thinking would help stimulate and encourage thinking about the project. This is clear in Sheila's second data set. In this planning form she progressed from developing big idea questions about tree houses, teepees, and tents to developing questions for the children about how different building materials change the structure of dwellings. This development is important because it illustrates how Sheila moves from concrete thinking, teepees, and tents, to conceptual questions about form, function, and intentional choices; it is in this form that Sheila's thinking process and development became visible.

The fourth form was the *Implementation Form*, and it was a form that encouraged both Sheila and Wendy to become creative with their interventions and to experiment with new ideas and materials combinations. In the first set of COI data each teacher had good ideas for her interventions, but there was only one intervention planned for each project; Sheila wanted to work with measuring and planned the intervention of creating a new measurement unit and asking questions such as: "What do you want to measure?" and "What could should we measure on our [classroom] walk?" In this same data set Wendy wanted to explore animals and building materials and planned questions such as: "What is a domestic animal? What is a wild animal? What do each need to live?" and "Where do they [domestic and wild animals] live?" These

questions were followed by a provocation of animals and building materials set up to help the children explore the research questions in a concrete way. By the second data set each teacher was willing to think about, or maybe had enough experience to be comfortable with, multiple ideas for interventions. Sheila's intervention planning had ideas relating to "building structures that are stable, describing, naming, and determining the importance of parts of a structure, and researching different kinds of dwellings. These were planned as three separate and distinct interventions that were related to the children's big idea thinking. Wendy's second planning session included two distinct intervention ideas; the first was to create a list of all the materials needed to create a hermit crab habitat and for hermit crab care, the second was a response to the question "How can they [the children] experience a hermit crab's journey?" with the intervention being to develop a child sized hermit crab habitat including boxes for shells and mittens for claws. We did not always plan for multiple interventions, but the ideas were brainstormed so that the teachers had numerous ideas on hand in order to meet the sometimes unclear needs of the children. This part of the planning form was always used by each teacher, and as the study progressed, each became more flexible in her approach to the *Implementation Form*.

The final form in this set is an evaluation form, and we did not use this in a formal way. We informally discussed the successes or challenges of each intervention, but did not use the *Reflective Evaluation* form specifically. Having it as a guide influenced our conversation and gave a platform for our discussion, but we didn't write down our reflective discussions. Using these forms was helpful to the teachers in different ways. For Wendy it gave her a guide and tangible steps to follow. Wendy didn't say this directly but showed this in her attention to the forms and to having the ideas in the "right" sections, meaning that running records were in the *Child Observation Form* and big ideas in the *Inquiry Planning Form* without understanding that

there can be fluidity between the forms. This pattern spoke to her attention to the forms and her use of the forms as a guiding tool that assisted her in learning this approach. Sheila used the forms to refine her process and to help her slow down and to encourage her collaboration—when she was using the forms she was engaging with our group and building trusting professional relationships. She repeatedly spoke of learning to trust in collaboration saying things like: "I thought it was going to be all on me…and I found that if you take the time to show them, they will [help]." As Sheila planned for interventions that were more complicated and accessed multiple centers simultaneously, she became more inclined and inspired to collaborate and trust in her coteachers. Her trust in collaboration evolved as her planning evolved. While she never directly said that the planning forms encouraged her collaboration, her forms became a testament to her newfound belief in others to help her and her children in project implementation.

In addition to the above mentioned data, each teacher expressed her willingness to participate in this study by participating in all meetings that were scheduled, by working gladly, enthusiastically, and candidly on classroom projects and documentation for the duration of the study, and by producing three sets of data. Neither Wendy nor Sheila stopped participating in the study, each teacher worked through the initial time frame, and both teachers asked for and completed additional training weeks.

Research question 4: During the course of the study, does classroom documentation become increasingly related to the inquiry process?

Both Sheila and Wendy's documentation became more about the process of learning and the children's intentions as the study progressed. Wendy learned to watch the children and pay attention to their language and actions, recording pertinent and subtle information in the running records and moved away from recording children answering her direct questions. This is seen in

her increased scores from set one to set two and in Table 18, and led to an in-depth project about hermit crabs. As Wendy's skills increased, so did her ability to facilitate inquiry based on actual words and actions of the children, and she moved away from her former methods of more arbitrary thematic learning. In her final interview she said: "Planning used to be, like, theme based where I would be planning gout all these little things to do…it has evolved into a process of, um…they kind of plan for me…it's like they'll say 'well, do this' and I'll put the questions out there, you know, kind of plant the seed and then they, they grow." Sheila also progressed toward more inquiry motivated documentation. Sheila moved from taking pictures of children having an experience to taking pictures of children working together and independently with "ideas" and "materials." For example, in her first set of classroom documentation Sheila took pictures of children at an art exhibit. The pictures were of the children having the experience of going to the museum. The children were looking at the artwork and then walking to the next piece of art. The children were not engaging with the art or with materials, and the planning did not show that the children were engaging with big ideas about art or museums. At the end of the study she was capturing pictures of the children's work and their play that was directly related to the planning materials and their ideas about their project. In these pictures children were actively working on building a big block structure that would be large enough for all the class to enter at the same time. This same set of photos shows other children building full scale window shapes that are very similar to the window pictures taken on their architecture walk. The quality of the second set of documentation was geared toward showing the underlying meaning of children's learning and work and inherently related to the children's big ideas.

This shift in Sheila's approach helps children make connections between past lines of inquiry and present learning. These connections allow inquiry to progress in an organic and

multifaceted way, thus engaging multiple children in multiple ways with one set of ideas. An example of this is that she provided the children materials across the classroom, like collage and small blocks, that would inspire thinking about their discussions about teepees and their architecture walk, and then she captured this work in photographs and a collection of collages. She is allowing for inquiry to be in many areas of the classroom as opposed to her previous way of having "project time" in the morning. At the end of the study she promoted multiple ways of exploring one big idea and showed a sophisticated approach to emergent inquiry. Her documentation became increasingly focused on inquiry and emergent projects and captured these ideas in pictures, anecdotes, and artifacts like collages and drawings.

Research question 5: Do teachers' in this study change their perceptions of children's abilities?

As noted in Table 21, Sheila began with an elevated appreciation for children's abilities, but both Sheila and Wendy's perception did change from the beginning of the study to the end. At the beginning of the study Wendy indicated that she followed the leads of the children, but then came to realize that she had really been working toward an end that she designed. At the end of this project Wendy had learned that the children were very capable of telling her how to progress without her needing to design the project, and both her interviews and her documentation showed her perception of children's abilities had become more sophisticated and was guided by a deeper understanding of children's potential. In the final interview Wendy states: "I've had to kind of step out of that small way of thinking into a broader way of thinking and a higher level of thinking myself and um, just to figure out listening to the children's conversations and, and, just taking the documentation notes and interacting and just becoming involved in their play and their higher level of thinking and things that they think about and what they're learning about…" This statement is a direct reflection of a shift in her perception of

children's abilities. A belief in the children's abilities to create knowledge gave Wendy the confidence to facilitate a lengthy project about hermit crabs that involved multiple centers and inventive interventions without thematic plans or activities.

Sheila's first interview began with comments of children as not being ready to pose complicated questions in the classroom. She said: "…to start with children young enough that its just second nature to them to ask questions. Unfortunately we don't get that [asking questions] right now." Sheila was speaking about her desires for an inquiry environment, and she was aware that the children in her care had not experienced emergent inquiry, and that they were unaccustomed to asking and answering quality questions. This was an observation of her children's abilities, but in a short amount of time she was able to see the children learn to ask sophisticated questions and work toward complicated, multistep solutions. She was able to find children's questions in their use of materials and in their desire to work together to understand buildings and structures; this project took place over the course of several weeks. In the final interview Sheila reflected on this and stated: "Yeah, they've come a long ways…there's a difference between just freedom of just go [and play] and then when I set those things out in their centers, and like you say, you plant the seed and you hope they grow and go and I think they've learned. They find my seeds and then they go 'oh, gosh.'" Another way that Sheila changed was in her facilitation of materials. At the beginning she had the inquiry at a separate time of the day and primarily presented as a large group activity. At the end of the study she had the inquiry embedded in the centers and it was a part of the entire day and for all of the children. Sheila didn't indicate that her starting point for materials was because of her view of the child, but perhaps what happened was that Sheila learned to trust that she could facilitate in a holistic way and that the children were ready to have inquiry as a full-time part of their classroom, and Sheila

was ready to acknowledge their growth. This can't be specifically supported by data but perhaps

offers a new viewpoint from which to explore materials choices.

Table 21 is a culmination of Sheila's interview coding. This table shows how her

conversation about these elements changed over the course of the study.

Table 21

Sheila's First, Second, and Third Interview Coding

	Child Abilities			Inquiry			Collaboration			Documentation		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Number of positive responses	6	8	4	6	3	2	4	7	7	5	3	1
Number of negative responses	1	0	0	1	0	0	5	1	0	1	1	0

Table 22 is a culmination of Sheila's interview coding. This table shows how her

conversation about these elements changed over the course of the study.

Table 22

Wendy's First, Second, and Third Interview Coding

	Child Abilities			Inquiry			Collaboration			Documentation		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Number of positive responses	7	1	4	7	2	3	7	4	2	4	4	2
Number of negative responses	0	0	0	0	2	0	0	3	0	1	0	0

Research question 6: What are barriers to the inquiry approach in this study?

The project was so successful in so many ways, and rather than barriers there were

opportunities to expand and improve this study. Both teachers had positive experiences. Wendy

said: "I feel like a lot of this style of learning and wherever I go, wherever life's journey takes me I'm gonna take some of this with me," and Sheila said: "I think through this experience we've gotten closer. And that we can all come to each other much easier now and be able to ask for help and ask for materials and just to say what you think." Barriers would imply there were hurdles to overcome, but with this project it evolved naturally and organically. As the teachers needed help or encouragement we made every effort to meet their needs. Limitations and recommendations are discussed in Chapter 5.

CHAPTER 5

DISCUSSION

Summary

The purpose of this study was to describe the process of systematizing the inquiry

learning approach for teachers. Two teachers were chosen to be part of a multimethodology

approach including interviews, collection and description of classroom documentation and an

examination of planning materials, particularly the Broderick and Hong Cycle of Inquiry Forms.

These sets of data were to describe the ways teachers in this study initially understand and

approach inquiry learning and to illustrate the participating teacher's growth through a short

focused training and study of emergent inquiry curriculum using the Cycle of Inquiry System.

My hope for this study was that it would give important information regarding the more wide

spread use of this particular approach, and what pitfalls occur in this form of training, what

improvements can be made in future endeavors, and help these teachers become more skilled in

their craft and strengthen their relationships with each other and with inquiry as a teaching

practice.

Findings

The findings of this study came in a variety of ways. While the research questions

guided this process, the detailed examination of all three data sets gave depth of description to

the process and showed how much development occurred in a short amount of time. While a

summary of the findings regarding the research questions follows, the limitations and

recommendations are findings in and of themselves. Because of the rich and descriptive format

of qualitative, participatory action research, findings occurred at all stages of the study. As we

made discoveries together, such as the need for more one-on-one planning time, adjustments were made to the schedule and the format of the study. Below is a summary of the findings of the research questions, followed by the limitations and recommendations.

Research Questions

1. Do *the teachers in the study gain competency in their ability to plan for inquiry learning?*

Each teacher made linear progression (as shown in Tables 17 and 18) in their ability to plan inquiry curriculum, and each teacher stated that she became more skilled in facilitating this process in her interviews. Both the interviews and the data support that the teachers did make positive gains in their ability to plan for inquiry learning in their classrooms.

2. *Throughout the study does classroom documentation reflect the inquiry learning of the children?*

Both teachers furthered their skills in documenting inquiry learning in their classrooms. Sheila grew in her ability to capture documentation that reflected thinking and learning over experiences, while Wendy became skilled at taking running records and pictures of activities related to the project. The study was split into two parts by Winter Break, and Wendy had a large learning curve in order to learn how to document children, but these unexpected happenings allowed for a deeper understanding of the time and skill involved in documenting children in emergent inquiry classrooms.

3. *Are teachers willing and able to use a systemized inquiry learning approach with regularity when accompanied by training?*

Each teacher completed the initial training and asked to extend the time frame of the study in order to increase their understanding of emergent inquiry practices and their ability to

use this method in their classrooms. Both cooperating teachers were willing, professional partners in this process.

4. *During the course of the study, does classroom documentation become increasingly related to the classroom inquiry process?*

Both Sheila and Wendy learned to document children in order to progress and understand the projects in their rooms and the thinking of their children. For Sheila this manifested as documentation that showed children engaged in cross-curricular learning and using a variety of materials to explore one big idea. Wendy learned to take meaningful and informative running records and to document the children's work and actions with pictures. The planning forms, interviews, and classroom documentation all tell of Sheila and Wendy's progress in documenting children.

5. *Do teachers' in this study change their perceptions of children's abilities?*

Both Sheila and Wendy's perception of children's abilities did change from the beginning of the study to the end. Wendy became skilled at using data about children to guide an emergent inquiry approach and also learned to trust in the knowledge and capability of children. Sheila's first interview began with observations of children in her classroom not being ready to pose complicated questions. In a short amount of time she found the children had learned to ask sophisticated questions and work toward complicated, multistep solutions. In her own way and with a variety of outcomes, each teacher did change her perceptions of children's abilities.

6. *What are barriers to the inquiry approach in this study?*

Given the opportunity to repeat this study, additional training in extending a project and linking learning standards to the project would be a helpful addition. Including administration in

the training would also be a desired supplement, as would more time for one-on-one planning and support, and videotaping cooperating teachers for reflection, and giving technological support to teachers who are less skilled with computers, digital cameras, and other technologies.

<div align="center">Limitations</div>

This study was limited in three major ways.

1. Sample size was limited to two participating teachers. This restricted the ability of this study to give a more comprehensive description of the changes and challenges teachers go through when learning an inquiry approach.

2. Time limited this study in two major ways. The first was in the amount of time Wendy and Sheila had to actually participate in training. The second way this training was limited by time was the lack of a longitudinal follow up or follow-up trainings.

3. The third way this study was limited was by only allowing for teachers to be participants in the study. In future trainings directors should be included, as should support staff that help with planning or curriculum decisions.

<div align="center">Recommendations</div>

This study was a pilot. It describes the changes two teachers, one with lots of experience and less education and one with lots of education and less experience, undergo when trained in inquiry practices using the Cycle of Inquiry System (Broderick & Hong, 2007).

As this was a pilot, the time frame was abbreviated, a longer study is recommended in order to build on teachers' skills and observe teachers in order to assure sustainability of the process. It is unclear how much teachers will use this approach after the initial training is complete, and longitudinal data would show retention rates and help in planning for follow-up trainings.

Another recommendation is to analyze teachers' use of materials. The study of materials was only one aspect of this research, but further investigation is needed to understand how the teacher's image of the child is reflected in choices of materials and how the materials are presented to the children. This line of investigation might focus on how and if teachers use materials differently as their image of the child grows, and if more sophisticated materials can be correlated with a more sophisticated image of the child.

Logistically, it is recommended that a follow up study allow more time for one-on-one planning and support as well as classroom time with the children and teachers. This process is sometimes difficult because it asks teachers to shift their classroom approach and give up traditional power roles. Additional time to help teachers navigate the disequilibrium of this process would be helpful, as would planned one-on-one time with cooperating teachers from the beginning of the study.

An integral part of documentation is technology. It is recommended that follow-up studies have a technology training component to give basic skills to teachers who are less familiar with technology, but also an added component would be experimenting with different types of technology such as personal digital assistants (PDA) as a data management tool, digital video recorders, digital audio recorders, and laptop computers in the classrooms for teachers to make use of naptime for documentation and planning. Videotaping cooperating teachers during their classroom teaching in order to add to the reflective process, and experiment with a variety of reflection methods such as digital audio recording and separate reflective conversations with the researcher would be further recommendations.

Above is a sample of recommendations, but there are many ways that this study could be expanded, improved, and extended; additional recommendations are:

1. In a follow-up study include directors and support staff that help with planning or curriculum.

2. Expand the study to include more teachers and more trainers.

3. Complete an interrater reliability study with the Broderick and Hong Cycle of Inquiry Forms (2007) for the potential to code larger samples with greater statistical impact.

4. Expand the study to include follow-up trainings for refining the approach.

5. Develop a train the trainer for directors or curriculum specialists.

6. Include teacher reflections in a way that works for the teachers. Digital audio recorders are a possible choice for this recommendation.

7. Include training in how to extend a project when it is winding down.

8. Help teachers with a transition plan toward the end of the training so they feel confident in their abilities to continue in the process.

These recommendations are in no way comprehensive but are thoughtful responses to the experiences of the researcher and the cooperating teachers. Each study will have cultural specificities, but the recommendations and limitations have general implications for follow-up studies.

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APPENDICES

Appendix A

Interview Questions

Interviewer:
Cooperating teacher:
Date:

1. How would you define inquiry learning?

2. What kind of inquiry learning is used in your classroom and school?

3. Has any of your professional development had an inquiry learning component, and if so can you describe that?

4. What are some elements of an ideal learning environment for children?

5. What do you think are some of the pros and cons of collaboration?

6. What kind of structure for children is provided in a classroom that focuses on inquiry learning?

7. What kind of administrative assistance is needed in an inquiry learning environment?

8. How do you use children's work and artifacts in your classroom?

9. How do you document your own teaching process?

10. How often does another educator or administrator observe you?

11. Is there anything you want to change in your classroom?

12. What do you want to develop in your personal teaching?

Appendix B

Coding Sheet for Interview

Date:
Cooperating teacher:
Coder:

Positive or negative language referring to:
**Please code positive with a + and negative with a -

Inquiry	Documentation	Collaboration	Children's abilities

Cycle of Inquiry Levels of Development Forms (© Broderick / Hong revised 2007)
Documentation Record Section

CHILD OBSERVATION FORM   Date of observation: Page #

By working with documentation of children's actions / words we focus our discussions on "evidence" and de-privatize our discussions (Reggio Study Group)
NAME OF OBSERVER/s:

AREA OF THE CLASSROOM: *Participant:* *Details of area and the set up of materials:*		
TIME *&* *NAMES* *3 - 5 minute* *intervals*	*DESCRIBE: ACTIONS = what you see* *and* *WORDS = what you hear*	*WHAT DO YOU WONDER* *NOTES: raise your questions &* *speculate about the meaning of* *children's actions and words.* *These are your hypotheses of* *what you THINK children THINK* *& KNOW.*

NAME OF OBSERVER:
CHILD OBSERVATION FORM   **Page #**

TIME & NAMES 3 - 5 minute intervals	DESCRIBE: ACTIONS = what you see and WORDS = what you hear	WHAT DO YOU WONDER NOTES: raise your questions & speculate about the meaning of children's actions and words. These are your hypotheses of what you THINK children THINK & KNOW – not what they do.

NAME OF OBSERVER: **Page #**

WHAT ARE THE CHILDREN THINKING AND DOING?
What are their intentions and strategies for what they say and do?

Try your best to use sentence & paragraph form, by stating:
- *What is their intention*
- *I think they are doing "X" because of "Y"*
- *As a result of your analysis tell us what they know*

NAME OF OBSERVER: **Page INQUIRY-**
PLANNING FORM

What do you want to study with the children? *What do the children want to study?* *These are called the Big Ideas for future exploration* *Base this on the previous two forms*	▪ *What kinds of interventions/questions can you develop that are guided by your evidence?* ▪ *What materials will you use to help children experiment with their theories (thinking)?* ▪ *These will promote children's reasoning & problem solving* ▪ *Match at least 4 of these to each idea in the left column*

This the 1st of 5 Implementation forms. *Plan a series based on your Big Idea list.*
Document each implementation and attach each to its corresponding subset form. If the observation leads to changes in the subset form, create a new one & attach them all together
BIG IDEA

TIME *Of planned activity*	*LIST PARTICIPANTS HERE*	**DATE** **ROOM**
WHAT DO YOU THINK THE CHILDREN ARE THINKING?	EVIDENCE: Provide data from your observations that backs up the ideas posted in the box to the left.	
PLANNING: What is your question (Big idea) that you want to study with the children, and / or what do the children want to study?	What materials will you use to help children experiment with their theories (thinking)?	

How will you set up the materials?	What 4 questions will you prepare to pose to the children?

PROCEDURE: IMPLEMENTATION: number the steps

BIG IDEA: Subset one
BIG IDEA

TIME *Of planned activity*	*LIST PARTICIPANTS HERE*	**DATE**
		ROOM
WHAT DO YOU THINK THE CHILDREN ARE THINKING?	EVIDENCE: Provide data from your observations that backs up the ideas posted in the box to the left.	
PLANNING: What is your question (Big idea) that you want to study with the children, and / or what do the children want to study?	What materials will you use to help children experiment with their theories (thinking)?	

How will you set up the materials?	What 4 questions will you prepare to pose to the children?

PROCEDURE: IMPLEMENTATION: number the steps

BIG IDEA: Subset two

TIME *Of planned activity*	*LIST PARTICIPANTS HERE*	DATE
		ROOM
WHAT DO YOU THINK THE CHILDREN ARE THINKING?	EVIDENCE: Provide data from your observations that backs up the ideas posted in the box to the left.	
PLANNING: What is your question (Big idea) that you want to study with the children, and / or what do the children want to study?	What materials will you use to help children experiment with their theories (thinking)?	

How will you set up the materials?	What 4 questions will you prepare to pose to the children?

PROCEDURE: IMPLEMENTATION: number the steps

BIG IDEA: Subset three

TIME *Of planned activity*	LIST PARTICIPANTS HERE	DATE
		ROOM
WHAT DO YOU THINK THE CHILDREN ARE THINKING?	EVIDENCE: Provide data from your observations that backs up the ideas posted in the box to the left.	
PLANNING: What is your question (Big idea) that you want to study with the children, and / or what do the children want to study?	What materials will you use to help children experiment with their theories (thinking)?	

How will you set up the materials?	What 4 questions will you prepare to pose to the children?

PROCEDURE: IMPLEMENTATION: number the steps

BIG IDEA: Subset four

TIME *Of planned activity*	*LIST PARTICIPANTS HERE*	**DATE** **ROOM**
WHAT DO YOU THINK THE CHILDREN ARE THINKING?		EVIDENCE: Provide data from your observations that backs up the ideas posted in the box to the left.
PLANNING: What is your question (Big idea) that you want to study with the children, and / or what do the children want to study?		What materials will you use to help children experiment with their theories (thinking)?

How will you set up the materials?	What 4 questions will you prepare to pose to the children?

PROCEDURE: IMPLEMENTATION: number the steps

BIG IDEA: Subset five

TIME *Of planned activity*	*LIST PARTICIPANTS HERE*	**DATE**
		ROOM

WHAT DO YOU THINK THE CHILDREN ARE THINKING?	EVIDENCE: Provide data from your observations that backs up the ideas posted in the box to the left.
PLANNING: What is your question (Big idea) that you want to study with the children, and / or what do the children want to study?	What materials will you use to help children experiment with their theories (thinking)?

How will you set up the materials?	What 4 questions will you prepare to pose to the children?

PROCEDURE: IMPLEMENTATION: number the steps

CHANGING Subset form: If your observation leads you to a change in the subset planning form you will complete a new form. In the new form you will change the top 2 boxes to reflect the thinking in the most recent observation, so this will be the evidence supporting the change in your plan

TIME *Of planned activity*	*LIST PARTICIPANTS HERE*	**DATE** **ROOM**
WHAT DO YOU THINK THE CHILDREN ARE THINKING?		EVIDENCE: Provide data from your observations that backs up the ideas posted in the box to the left.
PLANNING: What is your question (Big idea) that you want to study with the children, and / or what do the children want to study?		What materials will you use to help children experiment with their theories (thinking)?

How will you set up the materials?	What 4 questions will you prepare to pose to the children?

PROCEDURE: IMPLEMENTATION: number the steps

REFLECTIVE EVALUATION: *evaluate for each implementation and attach to that form*
A. Child/ren's reaction:
B. Evaluate learning: What student learning did you observe? How do you know it was learning?
C. What went well?
D. What did not go as planned?
E. How will you build on this learning?
F. What curriculum standards are met from the Tennessee Standards?

Cycle of Inquiry Levels of Development Forms (© Broderick / Hong 2005)
Documentation Record Section

1 page

Levels of Understanding	Level 1 Unacceptable	Level 2 Below Target	Level 3 Target	Level 4 Exceptional
Documentation Records				
a. Amount of data	Not enough data for uninformed reader to interpret the events	Enough data for the uniformed reader to interpret that a sequence or event has occurred This is not just a middle of an event where meaning can't be interpreted	Captures enough details to interpret sets of events that have potential for developing many interpretations Would stay with one play event and stop when it ends	They know to continue to record children's play through event changes to potentially recognize conceptual links across changes
b. Accuracy for ease of use	Details of actions are not differentiated from dialogue Teachers and children are not differentiated	Teachers focus more on verbal aspects of the observation Teachers do not record enough data on the actions of the children and teachers they observe	Details of actions are differentiated from dialogue Teachers and children are differentiated Teachers record enough data to interpret or describe a product or process	They invent methods for recording complex behavior or products
c. Intentionality for use in curriculum development	Teacher observes without specific intentionality This is an assignment	Teacher has an awareness of developmental milestones Looking at stages and ages	Teacher has intentional focus for the observation related to children's goals and thinking Knows what is interesting to document	Teacher can now facilitate and document at the same time without losing the intentionality. Documentation may occur to link concepts across different play areas or episodes
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Levels of Understanding	Level 1 Unacceptable	Level 2 Below Target	Level 3 Target	Level 4 Exceptional
Interpretation of Children's Knowledge and Thinking				
a. Interpretations relate to what children know and think	Interpretations don't reveal understanding of children's developing knowledge or meaning	Interpretations reveals emerging understanding of children's developing knowledge or meaning Their notes question children's prior knowledge Ideas about knowledge relate to whole child domains (social emotional, cognitive, fine & gross motor, language) as opposed to children's developing strategies and theories Pulls out ideas from children that remain at the level of a topic of interest Not related to children's theories (ideas) but is about topics	Interpretations zero in on what children think They recognize children's goals and strategies They develop questions about what children know They notice (without necessarily questioning) out of the ordinary events or behavior Interpretations reveals connections / relationships between meaningful events / ideas of children observed The relational aspect is embedded in children's theories Interpretations are clearly related to planning	Interpretations reveal more than one way to explain children's goals and strategies Can break down goals and strategies into components that can be used to plan logically, developmentally across a continuum

b. **Teachers include questions about and wonder with the children**	**Questions are primitive and relate to information that any novice or lay person might know about children** **Too surface oriented and tied to the literal actions and words of children** **Asking, "Is that red," when the object is red**	**Wondering is from teacher's perspective about what curriculum "should" contain** **They are playing with dinosaurs so we'll do a dinosaur unit when the thinking is more about powerfulness of dinosaurs** **Teachers' wondering is to get to the "right" answer**	**Questions show a desire to know from children's perspective** **Questions point out information (oddities) from children that could seem out of context if not analyzed further, as well as gaps in children's understanding** **Questions contain a possibility to study many threads of children's developing thinking, that one set of data shows many lines of inquiry**	**Teachers can now link the diverse threads of inquiry to help children make connections between subsections of a big idea** **Teacher is inductively building theory with children so they construct knowledge to fill in the gaps teachers observed earlier**
d. **Elaborations on Interpretations that bring details of observation into the hypothesis form**	**The hypotheses are basically copied from the wondering section of the Child Observation Form**	**The hypotheses are focused on more literal aspects of the actions and words of children** **Following what children say when the actions may really reveal more of what children think and vice versa** **Missing the underlying concept of the play**	**They generate more hypotheses about children's thinking** **They are able to link evidence (data) to their hypotheses** **They know they need to base this on the data; they value the data**	**They are able to bring their own words to an interpretation of how the data (evidence) links to their hypotheses** **Their elaborations now extend their original hypotheses for adding more potential lines of inquiry**
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Levels of Understanding	Level 1 Unacceptable	Level 2 Below Target	Level 3 Target	Level 4 Exceptional
What do you want to study with or about children?				
a. **Teacher as researcher**	No curiosity about children's ideas, or the effects of materials and the environment on children's developing ideas No negotiation because they have low expectations of what children can do and what children know What children do now is their level; minimal knowledge of milestones or stages Teachers have knowledge that they give to children Focus on getting children to the correct answer and what children don't know	Research Questions are related more to what teachers think children "should" know related to standards or their basic ideas of EC curriculum: literacy center, or fine motor development, numbers Repetition of experience is learning If it worked do it over again The expect children can do things related to standards and milestones	Research Questions are related to what teachers think children might want to know They focus on gaps children have in their theories They focus on exploring dimensions children don't see yet They believe children have the potential to explore and see things unknown; things teachers can identify They believe they can explore and learn with children within a level that they as teachers (individuals) already understand phenomena	Research Questions are at a level that they will invite negotiation among children and adults They accept the idea that children's inquiry may stump them, that they may have to research the topic for successful facilitation of learning They find a lot of resources to support their learning It's OK to follow one specific thread of inquiry; knowing they can help children relate the threads over time

b. **Open-endedness** **of research** **questions**	**Questions are close – ended** **Teachers try to question to get correct answer or an answer teacher wants to hear** **List of questions generated is too short or too long**	**Questions are a mix of closed-ended and open-ended** **One or two questions might be open-ended** **Questions have ability to engage children for a short period**	**Questions are more open-ended than closed-ended** **Questions will foster reasoning and problem solving** **Questions have potential to be broken down into increments but instead of seeing them as lessons for learning along a continuum that can be linked, sees them as separate lines of inquiry**	**Questions are all open-ended** **Questions show an understanding of the continuum and how to take the next step as well as link separate investigations along a continuum** **Questions seek the reciprocity of children's own inventive questioning and using the children's perspective in a reciprocal negotiation**
c. **Big Idea** **development**	**No Big Ideas included in the questions** **Focus on milestones, ages and stages** **Focus on correct answer or topic surface, or just manipulation of materials**	**Ideas are not complex, they aren't "Big" yet** **Ideas are not accurately linked to children's developing thinking or knowledge** **Ideas are to correct children's misconceptions without trying to facilitate the learning of "why" and "how"** **They are planning way in advance based on one observation; not understanding that the next**	**Big Ideas are linked to children's developing thinking and knowledge** **Big Ideas will promote reasoning among children** **Big Ideas will invite children's curiosity & engage children for long periods in inquiry that feels like play** **Big Ideas link the ideas of a small group to a larger group of children**	**Big Ideas lead to problem solving** **Children are given much more time to investigate and solve their own problems in the process** **Teachers seek situations that engage children in more problem solving and conversation with peers than with adults, so adults are participant observers**

Levels of Understanding	Level 1 Unacceptable	Level 2 Below Target	Level 3 Target	Level 4 Exceptional
		observation could totally shift the planning		
Developing Facilitation Strategies: Interventions / Questions to Pose				
a. **Relationship to Research Questions**	**No relation to Research Questions** **Are out of context** **Are related to superficial aspects of materials or decoration or exploration**	**A relation to Research Questions is apparent but the question has an intended outcome / response** **Relates to the Research Questions but will not promote reasoning or engage children for a long period of time**	**Welcomes unanticipated outcomes / responses** **The relationship to the Research Questions will promote reasoning and engage children for a long period of time**	**Questions help children to reflect on their actions** **The question can sustain a relationship to the Research Questions and lead to new Interpretations that are at a higher level of knowledge along a conceptual continuum**
b. **Open-endedness of Facilitation Strategies: Intervention / Questions to Pose**	**The generated list is not strategy oriented or closed-ended** **It is oriented towards instructional steps or disjointed ideas** **Outcome is even hard to consider in any way** **Whatever children do is OK** **Lots of materials may seem good or materials may**	**Developing enough facilitation strategies is difficult and questions are disjointed from one another so that they would be better suited to facilitating separate activities** **Facilitation strategies engage children for a short period of time** **The facilitation strategies focus on outcome** **Materials are**	**Developing enough facilitation strategies, at least 4 per research question** **The facilitation strategies in each list correlating to each research question in the left hand column are linked to one another and can be used to successfully facilitate one activity** **The facilitation**	**Developing a wealth of facilitation strategies that help children think about their own thinking and articulate their own questions** **The many sets of facilitation interventions are now seen as potentially linked and can extend in increments over time** **Questions are open-ended and teachers realize**

be too limited **Staying in comfort zone with conventional ideas about materials that aren't inventive and unique**	related to promoting and instant reaction from children that can't sustain interest for long periods Or, materials may give away the answer so children don't solve their own problems	strategies are focused on children's thinking yet not on reflective thinking **Materials are able to sustain existing play** **Materials are meaningful to each child / group in diverse ways** **Using familiar materials in uncommon ways**	that the questions are more a backup to materials presented, and a basis for any statements or non-question type intervention **Questions initiate negotiation among teachers and children** **Materials can extend play towards better understanding of theory or new theory development** **Materials themselves can pose a question / present a problem to solve** **Are inventive with creating new materials**

Levels of Understanding	Level 1 Unacceptable	Level 2 Below Target	Level 3 Target	Level 4 Exceptional
Teacher's media literacy/ materials to help children experiment with their theories (thinking)?				
a. Choice of materials in relation to Interpretations	No relation to Interpretations Materials are close – ended The are not enough materials or there are too many materials so children are distracted from the conceptual exploration into busywork	The materials relate to the children's intentions but will not promote reasoning Materials encourage a surface exploration that distracts towards the material itself – like decorative elements Materials have ability to engage children for a short period	The materials relate to the children's intentions and will promote reasoning The materials welcome unanticipated outcomes / responses Materials provoke curiosity and long term engagement	Materials help children to reflect on their actions and articulate their own questions Materials help children to test their intentions and lead to new goals that are at a higher level of knowledge along a conceptual continuum Materials show expectation of multiple representations
c. Set up of materials	Materials distract from original intentions of children They are too sparse or overwhelmingly busy No knowledge about materials potential beyond consumer aspect (conventions seen in consumer media)	The materials appear to be interesting & related to the concepts but reveal a lack of knowledge as to the potential of the material Influenced by consumer aspect of their experience with materials Order is more important than aesthetics	The materials are visual cues for the intended play The materials have the potential to direct learning towards testing children's intentions and developing new knowledge Aesthetics are important yet not experienced as essential to the inquiry	There is an awareness that placement of materials invites: ▪ specific actions ▪ interaction ▪ sequences There is an awareness that presentation of materials may not occur all at once in one session, that some may be

	No consideration of aesthetics			**added over time; timing is essential**
				Placement of materials frame questions
				The visual cues of the materials are intentionally related to the concepts of the inquiry
				Aesthetics are as important as the inquiry

Sections that constitute the flow in this form	Documentation Records	Interpretation of Children's Knowledge and Thinking Section	Developing Research Questions Section	Teacher's media literacy
Inquiry Implementation: Levels of Understanding				
Level 1 Unacceptable	No trace of using the documentation	No relationship to the documentation or other sections in this implementation section	No relationship to the Interpretation of children's knowledge and thinking	No relationship to the Big Idea
Level 2 Below Target	Comes from the documentation Is a literal interpretation Represents what they think children will think in the session they are now planning, not what children thought previously as evidence for planning	Is not the actual data but an interpretation of the data May or may not relate to the documentation Relates to what children will think and not what children thought in previous play	Not really a Big Idea Idea is focused on a single attempt to implement play Learning takes place in one set activity, mostly focusing on skill Data is not guiding intentional conceptual lines of inquiry Not comfortable with researching the unknown or utilizing unknown resources	Focusing on closed-ended experiences There is an expectation that the exploration or lesson will end in one session The next session will move to another idea that may be unrelated to this first exploration

Level 3 Target	Highly value the documentation record for what they can learn about children Revisiting, even multiple reviews with specific intentions, are valued as a process of sorting through complex decisions about curriculum development Transfer the value of revisiting onto the children Recognize value of collaboration in analyzing documentation for curriculum development	Really look closely at all the wonderings from the Documentation Record Section They are able to elaborate on the wonderings with their own words, which clarifies Big Idea understandings in their terms as well as children's so negotiation is beginning to be a possibility See the ways that the threads of learning (sub Big Ideas) can tie into standards, so they bring content knowledge into their hypotheses	Motivation is seen in teacher candidates excitement to implement the ideas they are generating They are challenged by the process in a way that they want to challenge children; the challenge is seen in the transfer of study ideas from teacher's perspective to students that both appear on this form They appreciate seeing both perspectives of teacher / child in planning Highly motivated to research the unknown & value the use of unknown resources Many points of view reflect collaboration among different adults in this planning but they might appear as separate lines of inquiry	Materials provide open-ended explorations There is an expectation that explorations will progress for many sessions There is an understanding that small changes in materials affect large changes in children's thinking so they are able to hold back on big changes Not quite able to zero in on a micro focus of study but can bring a few of these into one setting. There is an expectation that the materials will provide answers to children's questions while generating new questions; this will occur through children's representation (conversation, constructions, drawings, play, etc.)

| Level 4 Exceptional | See documentation as a pedagogy

Rely on collaboration for planning

Rely more on going back to children for planning in group sessions with children (classroom meeting and discussions to revisit with children and planning what to do next in those sessions)

See the potential for children to document their own learning (also a way to transfer this to older children in primary and secondary school settings!) | Don't miss any opportunity to analyze

Often will go back to children for questioning and clarification

Insert sub Big Idea links across developing areas of knowledge which leads to the potential for all areas of interest to be explored over time with connections to the Big Idea

Allow more time for planning

Time opens up and curriculum slows down | The many points of view presented in this section appear as having potential to be integrated through the organization of the planners

The unknown is expected and exciting

Research questions are inspirational in a big way, not just for better understanding children and for planning best practice BUT this changes teachers internally

Teacher is a researcher | Teachers recognize a need to create materials to support the children's study b/c these cannot be found commercially

The materials are open-ended with a recognition for some information on technique or process that teachers can offer to help children develop better understanding or to enhance children's meaning making process; they understand the timing of when to offer such tools

They purposefully select groups of children from various levels of understanding of the Big Idea to support a collaborative efforts that unites the different perspectives, and helps children at all levels deepen their understanding together |
|---|---|---|---|---|

				The materials focus in on an aspect of inquiry that is very focused almost as a micro-study yet children are engaged fully with this in-depth look

VITA

ARIEL SKY ASHE

Personal Data: Date of Birth: May 2, 1977

                          Place of Birth: Spruce Pine, NC

Education: M. A. Early Childhood Education, East Tennessee State

                          University, Johnson City, Tennessee, 2008

                          B. A. Drama, Literature University of North Carolina Asheville

                          Asheville, NC 1998, 2003

                          West Florence High School, Florence, South Carolina, 1994

Professional Experience: Upper East Tennessee Human Development Agency, Child Care

                          Resource and Referral Specialist, 2008

                          The Children's Center, Teacher 1999-2003, 2005-2006

Professional Presentations: Association of Constructivist Teachers, Johnson City, Tennessee,

                          2008

                          East Tennessee Early Childhood Conference, Johnson City

                          Tennessee, 2007, 2008