INTRODUCTION

The Cycle of Inquiry Process

Children observe, experiment, explore, and form ideas about their world every moment of their day. Being witness to children's deep-felt curiosity and having the presence of mind to be in the moment and thinking with children is magical. It makes you want to jump in to photograph what is happening and record children's conversations to highlight their significance. When you make children's learning visible through documentation like this, do you notice the impact of these moments for you? How do they help you support children's continued interest in questioning, discovering, and learning? Looking carefully at what has captured your attention and sparked your curiosity is a first step in designing curriculum that emerges from children's inquiry.

Emergent curriculum is described as a continuous cycle of ongoing learning opportunities that emerge from teachers' careful observations of children's interests and thinking (Broderick & Hong 2011; Jones 2012). We adopted the term *emergent inquiry curriculum* to describe a curriculum that values teachers' thinking—their inquiry as to the meaning of children's play and explorations—and their development of next steps for learning based on their inquiry and questioning with children (Wien & Halls 2018). The cycle of inquiry (COI) system discussed in this book guides emergent inquiry curriculum. It embraces the ways children learn best. It is a tool for you to plan curriculum in response to children's curiosity and questioning, acknowledging the problems children encounter and identify as they act on their questions and taking seriously the solutions they hypothesize in relation to their experiences.

Children as Inquirers

The COI draws on children's natural sense of curiosity and questions about their world. Creating a path of learning that follows children's interests is often called *inquiry-based learning*. In a major study of research on how children learn best, the National Research Council (NRC 1999) found that they learn through the same processes that guide scientists in their research practices. These processes are currently the frameworks for the Next Generation Science Standards (NGSS 2019) and are highlighted here with examples of activities involving bluegrass music (a preschool inquiry studied in depth in this book), looking for worms, building with blocks, and balancing a mobile.

- Ask questions and define problems:
  - When exploring the instruments used in bluegrass music, children *ask questions* about what makes their sounds so different from one another when all have strings that are used to make the sounds.
  - Children *define the problem* of why the instruments sound different by developing hypotheses as to whether the size or shape of the instruments affects the differences in sounds.
- Develop and use models:
  - Children create a *model* of music that peers can read and play by representing the sounds of a set of handbells with color-coded marks on a page that match the same seven colors of the bells.
  - By drawing their ideas about where they think they'll find worms on the playground, children create a model that is a map representing their knowledge of the playground in relation to their current theories about locations of worms.

- Plan and carry out investigations:
  - With the map to guide their quest, the children *plan investigations* as they decide where to dig to locate worms on the playground.
  - They *carry out investigations* as they dig based on their map and plan.
- Analyze and interpret:
  - The children then *analyze* the findings of their search for worms, making notes on their map comparing where they found worms and where they thought they would find worms.
  - They also *interpret* the movement of these worms, using their findings to choose new methods for exploring the ways the worms will respond to their touch.
- Use mathematical and computational thinking:
  - As children build a tall tower or a bridge, they *use mathematical thinking* about shapes and how many blocks are needed.
  - They *use computational thinking* to determine the most efficient way to balance several items on either side of a mobile.
- Engage in argument from evidence:
  - Children *engage in argument from evidence* when they tell their friends why a precariously balanced set of blocks will fall over.
  - They also *engage in argument from evidence* to explain to friends that their hypotheses about finding worms in some locations did not match their findings.

These practices are inherent in curricula that value the opportunities for learning in everyday experiences. They also illustrate the importance that competent adults and peers have in facilitating children's learning (Bodrova & Leong 2006; NRC 1999; Pianta & Hamre 2009; Wood, Bruner, & Ross 1976). For example, as an effective teacher using the COI, you would recognize the learning opportunity embedded in children's desire to hunt for worms on the playground, providing paper and pencils for them to map out their theories as to where to locate these worms and then revisiting the maps with the children to discuss what they found (Lange, Brenneman, & Mano 2019). You would intentionally encourage the processes of modeling, collecting evidence, and analyzing as ways to direct and structure the children's inquiry toward more complex thinking and development (Bronfenbrenner & Ceci 1994; Fisher 2011; NRC 1999). Understanding that children's questions play a vital role in their learning, you would encourage them to continue to be curious and ask questions. As you use the COI, consider who is asking the questions in your classroom and how often you are empowering children to question and generate pathways for curriculum.

Teachers as Researchers

Careful observations are the first component of the COI process. You will design emergent inquiry curriculum in response to what you reflect on in your detailed observations of children. Observation records have been essential artifacts in early childhood education since the first child laboratories were developed in the early twentieth century, when the study of children was in its infancy. The observations in these early settings provided theoretical knowledge about the way children respond to their environment (Ginsberg & Opper 1988; Piaget [1926] 1997, [1947] 2003; Vygotsky [1934] 1986). Observations show whether children are capable of specific observable behaviors that are identified as standards, such as being able to take turns in conversation or coordinate movements in work that requires complex fine motor skills (Boehm & Weinberg 1996; Nilsen 2016). Teachers all make decisions about what they will do tomorrow in relation to what they have noticed about the way children behave today, designing adjustments based on their observations of children (Curtis 2017).

Teachers typically document children's behavior to assess developmental learning outcomes, each according to a standard, and use these observation records as a general guide for curricular planning. The thinking processes of children are not observable behaviors; therefore, they are typically not recorded by teachers. Yet children's thinking is directly linked to what they are learning and how.

For example, as Jillian repeatedly draws a cat, she is *thinking*, and learning, about the body parts and shapes of the body. Her teacher, observing Jillian's actions over time, thinks Jillian is also trying to organize the lines on the page to represent each body part with appropriate proportion and placement. The teacher notes this, and from this inference she designs a curricular extension with clay and several photo images of cats in various positions. Her *teacher thinking* is that the manipulation of clay will help Jillian focus on the relationship of body parts to the shape of the body.

Teachers' thinking has an enormous influence on the curricular decisions they make. Teachers often search for the child's point of view, measuring this against their own perspectives to interpret and make meaning within the context of their classrooms. They learn about children's interests and develop hunches about children's questioning and provide materials in response to what they notice. The COI process enables teachers to capture this sort of thinking about children's thinking as an essential part of their curricular planning processes. The COI process is, therefore, an action research approach to planning curriculum. The COI system presented in this book asks you to become a teacher researcher (Baker & Davila 2018; Stremmel 2007), gathering observation data and honing skills for analyzing and interpreting the data to frame questions and hypotheses about children's thinking so you can design curricular extensions that link to and support children's thinking and inquiry. Through these processes you will become curious about and study your own teaching and learning and experience the joy of being an inquirer with children (Baker & Davila 2018; Stremmel 2007).

The COI System

This book introduces a COI system as a structure you can use to design emergent inquiry curriculum. We've adapted the phases of the COI system from the work of other individuals in the field of early childhood who have also been inspired by the Reggio Emilia approach (Gandini & Goldhaber 2001; Stremmel 2007). What is unique about our COI system is that each phase represents your thinking processes, and five forms allow you to clearly break down and articulate your thinking processes for designing emergent inquiry curriculum:

- As you observe children carefully, you record their words and actions on the COI Observation Record form.
- Your observations lead you to think about and then record the meaning within the play you observed on the COI Interpreting Thinking form.
- You consider questions you and the children have that can guide the children's inquiry a bit further, brainstorming and recording these as curricular ideas on the COI Curricular Action Plan form.
- This brainstorming leads you to design a COI Inquiry Provocation Plan, where you narrow down these many ideas into a provocation for next steps in learning.
- Following the implementation of the provocation, you revisit the session and evaluate it as a learning experience for both you and the children using the COI Reflective Evaluation form.

Ideally, you will learn to focus on each thinking process in a progression that is outlined by the chapters in this book. You will practice working with all the phases in order each time you develop a plan from an observation. As you follow the steps of a COI process (see the figure on page 4), you will learn how to adapt the use of the forms to a flow that makes sense in your own setting. For example, you may observe particular play experiences for many days before moving on through the COI phases, and you may develop more than one curricular plan from these observations. You may also learn ways to add to previously developed COI forms as a method for extending the curricular plans, a process you will see in the incinerator project example followed throughout the book.