Young Children’s Everyday Inquiry: A Field Study of a Young Girl’s Play Across Contexts

Danielle Keifert, Northwestern University, 2120 Campus Drive Evanston IL 60208, keifert@u.northwestern.edu

Abstract: This paper documents the naturally occurring ways in which very young children encounter opportunities for inquiry in their everyday lives. Understanding these early childhood practices is a necessary first step in drawing on these practices as resources for science inquiry learning. Using approximately 35 hours of interactional video data of a two-year-old girl in home and preschool settings, I describe the inquiry practices in which she engages at home, particularly how she orchestrates adult support for inquiry, and how she draws on aspects of her home inquiry practice in school. Based on her everyday experiences with inquiry and the common interactional arrangements of home and school environments, I suggest ways for conceiving of each setting as having affordances for the support of science inquiry among very young children.

Introduction

Researchers are seeking to identify resources for science classroom learning in the rich variety of practices found within children’s everyday lives. These resources include ways of thinking and talking about everyday experiences which are embedded within cultural communities and their practices (Bricker & Bell, 2007; Hudicourt-Barnes, 2003; Warren, Ogonowski, & Pothier, 2005). The literature documents everyday practices as rich, varied, and most importantly productive for science learning. However, few have spent time articulating the details of the interactional arrangements in which these practices are embedded (Stevens, Satwicz, & McCarthy, 2008), or examined how differences in the kinds of interactions across contexts impact participation in these practices as resources for learning. It is within interactions that individuals do the work of trying to understand everyday experiences. Individuals work together in interactions to mutually co-construct meaning, contexts, and the activity itself (Erickson & Schultz, 1997). If everyday activity provides resources for science inquiry, we must understand how people mutually orient to and “do” inquiry in their everyday lives.

I begin this paper with a discussion of current conceptualizations of everyday inquiry. I then follow one child across two settings to understand the ways she works to draw in adults to support her questioning, the responses of adults in various settings, and the resulting co-constructed activity. I also explore the affordances of the interactional arrangements in which these naturally occurring inquiry experiences occur across the multiple contexts of this child’s life, and how practices found in one context may be drawn upon in another.

What We Know About Everyday Inquiry

Current research shows that people build their knowledge based on everyday experiences. As toddlers, we build explanatory accounts to help us make predictions about what might happen in the future (Hawkins & Pea, 1987), and much of these explanatory accounts are influenced by the ways we learn to notice, ask questions, and provide explanations (Crowley, Callanan, Jipson, et al., 2001; Goodwin, 2007). From the very first moments of our lives, the communities in which we live shapes the ways we observe, think, and talk about the world (Cole, 2007). Despite the importance of these everyday experiences for very young children, we have an inadequate understanding of them (Callanan & Jipson, 2001). While existing research has examined young children’s causal questions in everyday settings (Callanan & Oakes, 1992; Hood & Bloom, 1979), causal questions are only one element of inquiry, and not all good inquiry takes the form of causal questions. There are also many ways of participating in inquiry beyond questioning. Thus, the existing literature provides only a start to understanding children’s early inquiry experiences. A more detailed examination of children’s encounters with inquiry within everyday contexts is needed.

Many researchers argue there are important similarities between everyday thinking and how scientists think about inquiry: both attempt to provide explanations of our world, and both use many of the same intuitive practices to understand complex phenomena (Hawkins & Pea, 1987; Ochs, Gonzales, & Jacoby, 1996). Dewey (1981) argues inquiry in all settings is the process of noticing a problematic situation and working to better understand that situation in a way that allows for a satisfactory resolution to the problem. This may include questioning, relating the problem to other problems, or representing and discussing the problem. Dewey’s definition of inquiry is applicable to both an informal everyday sense of inquiry as well as a formal scientific one, although the rules and norms for a satisfactory resolution in everyday inquiry are different than those for formal science (Hawkins & Pea, 1987). While everyday inquiry is not the same as classroom or professional science inquiry, it shares important patterns and can help build a foundation for later inquiry learning. Rather than see the everyday and scientific as dichotomies, some (Dewey, 1981; Ochs & Taylor, 1992; Stevens & Hall, 1998; Warren, Ballenger, Ogonowski, Rosebery, & Hudicourt-Barnes, 2001 among others) argue for a
continuum view that allows us to avoid the “prejudicial notion that there is some gap in kind (as distinct from degree) between the child’s experience and the various forms of subject-matter that make up the course of study” (Dewey, 1981, p. 472). Thus the challenge becomes how to characterize the inquiry activity of everyday practice in such a way that we can better understand how to draw upon these practices as resources for discipline learning. This includes understanding the practices themselves, but also considering how these practices do or do not move across context boundaries. Only a handful of researchers examine science and inquiry learning in both everyday and classroom environments, conceptualizing the everyday lives of children as places where they gain important resources for learning (Bricker & Bell, 2007; Hudicourt-Barnes, 2003; Mehus, Stevens, & Grigholm, 2010; Warren et al., 2001; Warren, et al., 2005; Zimmerman & Bell, 2007). However, only one set of these researchers has examined home and school contexts for preschool aged children (Mehus et al., 2010).

This paper furthers prior work by examining everyday inquiry practices as they are embedded in naturally occurring activity. I focus on examining extensive video interactional data of one two-year old child, Marie, across both home and preschool settings over the course of several months. Through observations of Marie’s everyday interactions with her parents, brother, preschool peers, and teachers, I identify and analyze opportunities for inquiry within naturally occurring interactions. In this paper I (1) identify the characteristics of Marie’s inquiry, particularly with regard to the ways in which she orchestrates resources to understand phenomena and support her inquiry, and (2) examine how different interactional arrangements (across home and school settings) affect the inquiry practice. I conclude this paper with (3) a discussion of some of the ways we might begin to conceive of the affordances of each particular context as we consider the design of future science inquiry learning, and pose questions raised by this cross context analysis.

**Research Methods**

The data in this paper come from the LIFE Center’s Early Learning Across Contexts (ELAC) project led by Reed Stevens. ELAC is designed to explore the everyday lives of young children across multiple settings. The data consist of over 500 hours of video data from both home and school settings for seven focal participants (2 to 5 years-old) across five classrooms in two different preschools in a large urban Western city. Observations were made over period of three to six months in 2009. By observing children in multiple settings and among different interactional arrangements (e.g., with parents, peers, siblings, teachers) ELAC seeks to capture the diversity and complexity of the social environments within which and through which young children learn.

For the purposes of this paper I focus my analysis on one child, Marie. At the beginning of observation Marie is two years old but she turned three during the study. She has an older brother, Evan, who is six at the beginning of observations and turned seven during data collection. Marie’s mother (a doctor) and father (a marine biologist) share responsibility for child-care within their home. We have four months of observations for Marie at home (20 hours over 11 days), and three months of video of Marie at school (14.5 hours over 8 days).

My process of analysis followed guidelines set forth by Erickson and Schultz (1997) and Pomerantz and Fehr (1997). After initial capture of video data, content logs were created describing major activity and interactions (Jordan & Henderson, 1995). I then viewed the video again, following interactional analysis methods to look for patterns in the interaction. Interactional analysis examines everyday social interactions and the underlying social organization of those interactions as demonstrated through the activity of the participants in their mutual orientation to each other and the context (Goodwin & Heritage, 1990). A primary assumption of this approach is that the conduct of everyday life is sensible and meaningful for those involved in the interaction (Pomerantz & Fehr, 1997). When observing children, Ochs (1979) articulates the need to pay special attention to the multiple ways in which children may participate in interactions, particularly as children may follow different norms than adults. Ochs highlights children’s gesture and gaze as particularly important for very young children’s communication. As such, my full transcripts (not included here for purposes of brevity) include separate columns for action, gaze, and body orientations temporally aligned with talk for each interaction.

I focused my initial analysis of Marie at home on one particular sequence of activity. This activity occurs during one afternoon of pool play when Marie and Evan are home with Dad. I chose this sequence because it illustrates a broader pattern of an inquiry practice within the full corpus of Marie’s family data. During the 35 minutes of play in their backyard pool several series of questions, conversations, and explorations occur. In this article I focus on a sequence of questions and explorations about attempting to read a thermometer and to understand how water changes with temperature. Using this interactional pattern as a base of comparison, I discuss similar patterns within all of the data of Marie at home. My analysis of Marie at school examines whether she initiates or engages in this inquiry practice when at school. One particular school interaction will be examined in depth to determine to what extent Marie may be engaging in a similar pattern of activity, drawing on features of interaction similar to those within the home inquiry practice. Finally, I consider the interactional features that are present across contexts and raise questions about the extent to which interactional preferences and norms within contexts enhance or inhibit Marie’s inquiry practice.
**Marie’s Inquiry at Home**

In this section I provide a series of verbal snapshots from an unfolding interaction initiated by Marie and focused on a thermometer. I will examine this interaction with the thermometer, consider the broader activity of the afternoon of pool play in which it occurs, bring to bear relevant examples found throughout the home data, and compare these interactions with relevant literature. I begin this analysis by presenting the unfolding interaction in terms of Marie’s initiation and Dad’s response. I then consider the role of questions and interactional preferences, before concluding with a discussion of the co-construction of these interactions and argue that within these interactions Marie and Dad together orient to an established family practice.

**Marie as Initiator**

Marie frequently initiates inquiry interactions, often times with repeated requests. Marie repeatedly asks “What is this for?” while Dad is interacting with Evan, and is eventually successful in gaining Dad’s attention. These tactics for gaining Dad’s attention might not be considered appropriate within adult social norms, but Ochs (1979) asserts that we must recognize children operate under different norms for both verbal and non-verbal communication. An adult repeating a question eight times would likely be heard as inappropriate, but in this case, Marie’s repeated questioning is successful at initiating an interaction with Dad without admonishment from him, suggesting the repetitions are considered appropriate for this child-parent interaction.

This pattern of Marie initiating inquiry interactions is also visible across multiple instances throughout the home data. In the afternoon of pool play Marie offers ten total invitations (e.g. “Look Dad! Look Dada” while pointing to a bug, or “Look it! Look at down there!” while jumping and pointing to a spot on the pool floor). Eight of these invitations result in interaction, and four interactions are extended consisting of more than one back-and-forth exchange. During other observations, Marie initiated extended inquiry interactions with Mom when at the zoo regarding a crow’s feather she found in a field, with Mom when observing their recently hatched butterflies, and with Dad when asking why he was moving a plant in their garden. These examples show a pattern of Marie orchestrating support for inquiry from both Mom and Dad. Through these initiations Marie demonstrates an ability to recognize phenomena and objects that she has questions about and that she sees as interesting or problematic. This evolving habit of noticing suggests Marie’s developing epistemology in a way similar to the developing habits of noticing described by Stevens and Hall (1998) in their description of disciplined perception. Marie also demonstrates her interest in exploring these phenomena and objects with Dad as well as her ability to successfully draw Dad into interaction to explore these problems.

**Dad Responds To and Shapes Unfolding Inquiry**

Dad’s response to Marie’s question is critical for supporting the unfolding inquiry. During pool play, both Marie and Evan make bids for Dad’s attention. When Dad responds to Marie’s initiations (as he does 8 out of her 10 initiations, although sometimes only after Marie’s repeated requests) he does so by shifting his focus of talk and gaze, as well as shifting his body orientation and location in the pool to engage with Marie. In the case of the thermometer, Dad begins by physically facing Marie while responding to her question:

<table>
<thead>
<tr>
<th>Dad: That’s for telling the temperature of something. Telling whether something, it tells you whether it's hot or cold.</th>
<th>Dad moves closer to Marie and thermometer.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dad: Look if. See the red in there. The red line? If the red is, if the red line goes up in here in this red area it’s hot. And if it goes in the blue area it’s cold.</td>
<td>Dad points to various parts of thermometer in Marie’s hand as he describes how the thermometer works.</td>
</tr>
</tbody>
</table>

Through this interaction Dad provides a further explanation of how the thermometer works, describing hot and cold with regard to the colors and lines printed on the thermometer.

After Dad’s initial response to Marie’s question, he prompts her to further explore the thermometer by encouraging Marie to try to read the thermometer, saying, “So is it hot or cold right now?” At this point we also see Dad has shifted his gaze from the thermometer to looking at Marie as he asks the question. Both his question and his gaze indicate to Marie that an answer is expected of her. After Marie’s response that it is cold, Dad provides a correction of her thermometer reading by saying, “It’s sort of in the middle, isn’t it?” He continues to provide additional information to Marie about reading the thermometer by explaining that the temperature is “starting” to get warm and reading “about twenty-five degrees”. This interaction involves back and forth exchanges between Marie and Dad in which Dad supports an exploration of what the thermometer is and how to use it. Through these exchanges, Marie has an opportunity to explore the object about which she first asked. Together, Marie and Dad co-construct an opportunity for inquiry in response to Marie’s initial question.

Although much literature tends to focus on the ways in which parent explanations shape children’s understanding and sometimes the ways in which parents shape the actual types of interactions with a phenomena that children have (Crowley, Callanan, Jipson, et al., 2001; Crowley, Callanan, Tenenbaum, & Allen, 2001; Crowley & Galco, 2001; Crowley & Jacobs, 2002; Fender & Crowley, 2007), most of these studies
do so within the context of a highly designed setting such as a science museum exhibit. However parents’ actions serve to shape children’s experience and interpretation of the world well before they are old enough to benefit from these kind of designed settings (Cole, 2007). In this section I presented some of the ways that, in response to a child’s initiation, parents impact children’s experiences in daily encounters with everyday phenomena by shaping interactions and providing material resources to support inquiry.

The Role of Questions

Questioning, exploring, and observing are interrelated through this practice, as they are within the practices of science inquiry more broadly. Questions help to drive much of the activity throughout this and other inquiry practices (Penney & Stevens, 2011). While Marie’s first question (“What is this for?”) is an information query, other forms of questions play an important role in the interactions. Another question form includes those of a more imaginative nature: hypothetical “What if?” questions. A question of this form occurs in a later portion of the thermometer interaction when Dad asks Marie what will happen if the pool is one hundred Celsius.

| Dad: And, Marie, you know what happens if it goes up up up, way up to here? | Marie drops thermometer. Dad moves toward Marie, picks up thermometer. |
| Dad: If it gets up to a hundred do you know what will happen? | Marie: What? |
| Dad: Water will start to boil and turn into steam. | Dad holds thermometer, looks towards Evan. |
| Dad: Would you like to be in there if it was a hundred degrees Celsius? | Dad steps away. Marie watches thermometer. Evan picks up thermometer. |

Dad’s last question asks Marie and Evan to imagine what it would be like to be near (or in) boiling water. This sort of hypothetical question asks the children to imagine being in the pool with boiling water, and what boiling water is like to experience. This form of imaginative embodiment is an important way that children can engage in inquiry and reasoning and a practice which is used by scientists (Ochs, et al., 1996).

Hypothetical questions may also be causal questions. Later in the afternoon of pool play, we see Marie initiating an interaction focused on a white spot on the otherwise blue pool floor. Marie has been pointing out the spot with excited talk (“Look it! Look it down there!”) and gesture (pointing and jumping on the spot) for 40 seconds while Dad and Evan continue the thermometer interaction. Dad finally shifts to a shared focus on the spot with Marie, affirming that Marie has noticed something interesting through both his shift in gaze towards the spot and his comment of “Oh! That is an interesting…” This affirmation reinforces for Marie that this sort of thing is of value to perceive, and his continuing response, “Why do you think it’s white there?”, encourages exploration, further reinforcing her evolving disciplined perception. This causal question about why the pool floor is white only in that one spot asks Marie to consider possible explanations for why something is the way it is. This is an important question form within scientific inquiry practices (Hawkins & Pea, 1987).

Interactional Preferences

Although at times we see Marie interacting with both a parent and her brother, there is interactional evidence to suggest that within the inquiry practice she has a preference for interaction that involves only herself and a parent. In the pool interactions we see this in a few ways. First, when Marie does invite a participant by name it is only Dad. Second, although there are a few occasions when Marie shares a joint-focus with Evan and Dad, in both cases she quickly leaves the interaction and shortly begins to attempt to draw Dad’s attention to a new phenomenon. For example, when Evan asks a question Marie terminates her interaction with the thermometer by walking to another place in the pool, and then attempts to draw Dad’s attention to a spot on the pool floor. Shortly thereafter, once Evan joins Dad and Marie near the spot on the pool floor, Marie walks away and returns to the thermometer. Through these actions Marie is working to initiate and maintain interactions in which only she and Dad share the joint focus.

The interactional evidence to support a preference within this family for interaction with one child at a time is furthered by examining interactions from Dad’s standpoint. When Dad invites either child to engage in an activity by name, he only does so with one child at a time. We see this when he names Marie in his hypothetical question about the thermometer. Dad does occasionally split his attention between Marie and Evan, as seen in examining his gaze (after both Evan and Marie chime in with “What?” in response to Dad’s question about being in a pool that was one hundred degrees); Dad looks at Evan, not Marie, as he answers the question he posed. However, on the whole, Dad goes to great lengths to maintain an interaction with one child at a time.

Co-Constructors of a Family Practice

Marie and her parents play different roles within the co-constructed inquiry. Marie often serves as the identifier of the phenomenon of interest through her observations of phenomena or artifacts, and her requests for Mom
and Dad to pay attention to those foci. When these initiations are successful, Dad or Mom will then share a joint-focus with Marie. This joint-attention can be seen through both the talk—when a shared talk focus is established—as well as gaze and body observations—how gaze and bodies orient towards the focus and other participants within the interaction. Once a shared focus has been established, Mom or Dad tend to shape the nature of the inquiry that is occurs. For example, Dad does this, through the description of the thermometer and his attempts to help Marie learn how to read the thermometer.

Adults are often conceptualized as providing support for children as they encounter phenomena, but we do not as often characterize children as agents in gaining that support. Marie’s act of drawing attention to the phenomena she finds problematic and interesting (as shown through her questioning) leads to sustained inquiry only when Dad or Mom engage with Marie, but also only as long as Marie demonstrates interest. Thus this is a co-constructed practice in which both the actions of Marie and parent are critical components of developing inquiry. However, although the practice is co-constructed, Marie often plays the pivotal role of bringing attention to the focus of inquiry. She has developed a sense of how to initiate the inquiry practice with her observations and questions. She is also gaining experience with hearing and asking many forms of questions (information seeking, imaginative hypothetical, causal) that are a part of the inquiry practice.

The pattern of interaction demonstrated in this paper, along with reoccurring evidence of this pattern throughout the home data, support the argument that this inquiry practice is well established within this family. This claim is supported by the frequency with which the practice occurs in the short pool playtime (12 short, 7 extended interactions in 36 minutes, 30% of total pool playtime), suggesting the participants’ familiarity with the practice. Related to this is the participants’ repeated shared orientation to the practice, and postural movements to maintain the practice (McDermott, Gospodinoff, & Aron, 1978). Finally, the existence of the practice within other interactions between Marie and her parents on many of the observed days supports that this inquiry practice is a well-established routine through which Marie engages with both Mom and Dad.

**Finding the Home Inquiry Practice at School**

It is an open question whether and how practices such as this family’s inquiry travel across contexts (Stevens, Wineburg, Herrenkohl, & Bell, 2005). Does Marie carry her inquiry practice beyond the home context? This question is worth exploring in detail, because if want to leverage practices that are embedded within particular contexts for discipline learning, we need to understand the interactional arrangements in multiple settings that can support the practice. As shown in the above analysis, Marie competently engages her parents in inquiry of phenomena that interest her at home. In this section of analysis, I consider an interaction between Marie and a teacher to determine if Marie brings any characteristics of her home inquiry practice into her interactions within the preschool setting. In particular, I look to see if Marie has similar success in recruiting adults in preschool to joint inquiry as she does frequently at home, and examine how she attempts to draw others into interaction.

As we consider the ways Marie may bring aspects of her home inquiry practice to the preschool setting, we can examine the ways in which Marie may draw attention to interesting phenomena or attempt to draw adults into interaction. However, the ways in which other participants within the preschool setting interact with Marie is a critical component of whether an interaction similar to the home inquiry practice occurs. Thus, as we examine the following episode that took place during snack at Marie’s preschool (approximately one month before the afternoon of pool play), we will look both for the ways in which Marie attempts to initiate interactions as well as the ways in which adults and other children respond to Marie’s initiations.

During the episode that follows, several children are gathered around a table eating their morning snack. All the children in this particular classroom are ages two to three years. Jane, Scott, and Marie are seated on one side of the table, while Anne and Rose are on the other side. Stacey, a teacher, stands nearby as she takes care of the class cricket terrarium. After a question from Marie and a request from Scott to see the crickets, Stacey places the terrarium on the snack table in front of the children and then sits down between Anne and Rose. Shortly after Stacey moves the terrarium to the snack table, Marie begins to ask questions about the crickets. Marie begins by asking an imaginative hypothetical question: “What’s if the crickets got out?” This begins a pattern of back and forth questions and responses between Marie and Stacey. Stacey responds to Marie’s question that she doesn’t think the crickets can escape from “the cricket house.” She says this is because they (the classroom) have a good cricket house.

Marie’s question is of a similar type to a hypothetical question Dad might ask as part of the home inquiry practice (“Would you like to be in here if it was a hundred degrees Celsius?”). Stacey’s response emphasizes, and supports with evidence (they purchased a good terrarium), why the cricket escape won’t happen. In the continuing interaction, Marie keeps asking imaginative hypothetical questions about a cricket escape (“What if they got out and they crawled over your head and onto your eyes?”; “What if they got out and … chase them?”; “What if crickets get out and got on your head for a whole week?”) After each variation of the question, Stacey provides an explanation that communicates in one way or another that the crickets cannot escape and should not escape for safety reasons. There is a playful pattern to the back and forth in which Marie
finds new and ever more dramatic ways of describing a cricket escape while Stacey explains how it’s not safe for them and she would return them to their home.

Within this playful exchange Marie is once again demonstrating her ability to identify a phenomenon of interest and to initiate an interaction to explore that phenomenon. Marie uses imaginative hypothetical questions similar to those used by her parents during home inquiry interactions to start and maintain this interaction. Thus Marie is drawing on home inquiry practices (hypothetical questions) while at school. However, Marie’s repetition of her question may indicate she is not getting the kind of response from Stacey that she wants (and is therefore not exploring the idea of a cricket escape in the way she desires). Additionally, it is important to note that this is the only episode within the 14.5 hours of school data in which Marie asks this kind of question, though Marie does on two occasions propose imaginative hypothetical situations to teachers. The sparseness of inquiry practice or related components in school may be the result of Marie’s peers and teachers not orienting with Marie to shared inquiry in response to her initiations, as is the case in the example provided. This suggests a challenge for Marie if she continues to want to explore phenomena of interest to her in this school setting.

Home & School as Settings for Marie’s Inquiry Practice
This section addresses the issue of the relationship between the interactional arrangements and Marie’s inquiry practice. This is a comparative analysis of the home and school contexts. This includes a consideration of the similarities between home and school setting with regard to the interactional affordances of both contexts that support Marie’s inquiry. It also includes a discussion of some of the differences between the affordances that could allow for different kinds of inquiry interactions.

The interactional arrangements both at home and school provide opportunities for children to ask questions. The afternoon of pool play and observation of crickets share several common interactional features. First, both arrangements had children and adults constrained within one area, allowing for the occasioning of mutual orientation to a shared focus. At the same time, neither of the arrangements has pre-defined topic of conversation (although of course every context has some limits). Because the children were physically constrained within an area, but not otherwise expected to interact in any particular way, they were free to discuss and explore anything within their immediate area. For Marie in the pool available material resources include the thermometer, while at school, once Stacey moves the terrarium to the snack table, available resources include the crickets. The provision of material resources of interest to Marie (e.g., thermometer, cricket terrarium) serves as a critical component of these arrangements. I would argue that these features of the arrangements supported the extended interactions, and in the case of the thermometer reoccurring interactions, around a shared focus.

There are also important differences between the interactional arrangements found within the home and school settings. Most obviously, the number of children present in the school setting creates a different set of affordances for interactions. While at home it is possible and preferred to engage in single child-parent interactions, this is much more complicated to accomplish at school. Although the teacher to student ratio at Marie’s school allows for many single child-adult interactions, in the observations of Marie engaging in such interactions these tend to be short and interspersed with adult engagement with other children or adults. Additionally, although a few of these interactions include imaginative type exploration proposed by Marie to an adult (Marie imagines what might hatch out of an egg and discusses it with a teacher, Marie creates a clay snake and talks about its features with a teacher), the cricket episode is the only such case of extended imaginative questioning in which Marie is involved at school. There is some interactional evidence (not presented here) that suggest one-on-one is not a preferred form of interaction in the school setting. If Marie only engages in inquiry at home in one-on-one interactions with adults, then she may not initiate inquiry interactions with either her peers or groups of teachers and peers at school where these groups interactions are the preferred arrangements. These differing preferences, or norms, for interaction within home and school may have significant impacts on whether practices familiar within one context will be drawn upon in another context.

Conclusions
Dewey, among others (e.g., Nasir, Rosebery, Warren, & Lee, 2006; Stevens & Toro-Martell, 2003), argues for connecting inquiry experiences across settings in order to guide children’s development. If Dewey is right, we must consider the unique affordances of home, school, and other settings in which children have opportunities for everyday inquiry with regard to how educators (e.g. parents, teachers, museum designers) can best connect the types of everyday experiences described in the above analysis with future experiences. In particular we should consider how children orchestrate support for inquiry, and the role of adults in shaping naturally occurring everyday inquiry, the available material resources, and purposefully designed learning opportunities.

We see Marie drawing adults (Mom, Dad, Stacey) into interactions about real-world phenomena that are problematic and interesting to her. Adults then impact the development of Marie’s observations of scientific phenomena as well as her epistemological theory of how to go about asking questions by shaping the way in
which those interactions unfold (Cole, 2007; Goodwin, 2007). In some ways Mom and Dad have already met Dewey’s insistence of providing future opportunities for the development of inquiry through repeated engagement in their shared inquiry practice. It is possible such a sustained series of experiences with inquiry, particularly if it is on one topic, would support the development of particularly rich science knowledge domains as Crowley and Jacobs have observed (2002). This possibility is supported by Crowley and Jacobs’ assertion that knowledge is collaboratively constructed within joint-engagement in examining phenomena of interest in a close child-parent relationship. If this is the case, then the analysis of Marie’s experiences at home may be the first step in connecting everyday inquiry and knowledge with the more highly developed inquiry and knowledge found in Crowley and Jacobs’ islands of expertise. This may happen over time if Marie’s questioning of everyday phenomenon is continually supported by Mom and Dad through sustained interactions, provision and exploration of resources (e.g., books, film, internet), or other activities described by Crowley and Jacobs. This sort of sustained and joint-attention activity is one that is particularly well suited to the affordances of an environment in which one-on-one interactions are preferred, as is the case in Marie’s home.

Within the classroom, attention to connecting the classroom questioning to other opportunities may end in a different form of activity. Because of the affordances of the classroom—the large number of students in particular—peer discussion and exploration are possible (and may be preferred) forms of interaction. For example, Stacey could encourage all the students to think about why it would be dangerous for crickets to be loose in the classroom. Further interaction could lead to examining sources of information including their own observations of the classroom, experiences with bugs at home, or resources like books and the internet. Regardless of the direction in which the particular conversation flows, given the children’s interest in the crickets and their eagerness to discuss the crickets throughout snack time, by connecting this experience to others designed to foster the children’s inquiry, a community of science could be fostered. In so doing, Marie and the other children’s interest in the crickets could be the base for meeting the explicit goals of science inquiry education in providing opportunities for observing, questioning, seeking out resources, and explaining within a community of science learners (NRC, 1996).

Within this paper I identified the way in which Marie draws adults into interactions about phenomena and objects of interest to her. I’ve also discussed a particular practice of inquiry in which Marie often engages with her parents. Through examining how Marie draws on similar forms of noticing and questioning in the school context, it seems that Marie is carrying some aspects of this home practice across context boundaries. However, the cricket episode is one of few within the data of Marie at school during which Marie utilizes imaginative hypothetical exploration or otherwise seems to draw on features of her home inquiry practice. Thus, it may be that the differing affordances of common home and school interactional arrangements (particularly the preferences for one-on-one versus many-on-one arrangements) inhibit Marie from drawing on her home inquiry practice in school. If resources like Marie’s inquiry practice are to be utilized in classrooms for science inquiry learning, further studies examining interactional affordances of settings may shed greater light on the ways in which interactional arrangements can be designed to support children’s use of resources from other settings.

**References**


**Acknowledgments**

I would like to acknowledge the efforts of Reed Stevens, Siri Mehus, Lauren Penney, Linda Grigholm and others involved in the initial collection of the Early Learning Across Contexts data. I would also thank to thank Reed Stevens and Lauren Penny for their input on the multitude of revisions of this paper.