

## Research into Practice: LITERACY

# Building Young Readers' Comprehension and Engagement Through Inquiry and Research BY JULIE COIRO, Ph.D.

Ask teachers to describe what they see among students who are engaged and motivated while reading, and you'll hear stories about children who are curious, interested, goal-directed, and eager to talk with others and show them what they've learned. Not surprisingly, these observations are also supported by research that characterizes engaged readers as those who ask questions, actively explore personally relevant ideas, and share their learning with authentic audiences in ways that make them feel successful and important.

As Dewey (1997/1938) proposed almost a century ago, when curriculum is built around learner instincts to talk, investigate, construct meaning, and express new discoveries with others, meaningful and transformative learning happens quite naturally. More recently, a growing body of research suggests that students learn more deeply when they have opportunities to solve real-world problems through asking questions, collaboration, research, and the development of creative products (see Barron & Darling-Hammond, 2008; Fullan, McEachen, & Quinn, 2016; Larmer, Mergendoller, & Boss, 2015). While much of this research has been conducted with older learners, elementary-age children can also benefit from intentional opportunities to wonder, explore, think deeply, and share new ideas about things that matter to them (Casey & Bruce, 2011; Hertzog, 2007).

According to the Galileo Educational Network (1999–2017), "inquiry is a dynamic process of being open to wonder and puzzlements and coming to know and understand the world." The goal of inquiry is to promote in-depth understanding and disciplinary knowledge rather than superficial awareness of topical ideas (Wilhelm, 2007). Through inquiry and shared activity, students formulate questions and investigate widely to build new understandings and the knowledge to develop a solution or support a position. In the context of reading comprehension, inquiry is defined as "a *personal* search for meaning set in motion by interest in a problem" (Cornett, 2010, p. 8). There are at least four benefits to teaching reading as an inquiry-based process of personal meaning making.



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# INQUIRY HELPS ESTABLISH A MEANINGFUL PURPOSE FOR READING.

Reading comprehension has been defined as an active process of extracting and constructing meaning from a range of texts using a small set of powerful strategies (Pressley & Afflerbach, 1995; Duke & Pearson, 2002). Importantly, more than just *taking* meaning from a text, making meaning requires a willingness and ability to actively engage with information from a variety of sources (Eisner, 2002). Thus, reading to actively construct meaning requires effort, persistence, and concentration—all factors that are fueled by a reader's perceived interest and value in the task (Eccles, 2005).

Inquiry and research provide clear and personally driven purposes for reading beyond getting a good grade or pleasing a teacher. For example, the inquiry process includes opportunities for children to read in order to answer their own questions, share new insights with a real audience, and act on that knowledge with creative products (Galileo Educational Network, 2017). In turn, these authentic reading purposes promote young children's interest, perceived value, and desire to engage with challenging text (Collins, Brown, & Newman, 1989; Edelsky, 1991).

The inquiry process also helps to move readers beyond identifying main ideas within a single text and toward building a deeper understanding of the big ideas across multiple texts. Big ideas are those that lead readers to better understand basic truths about people and the world, which again helps establish a purpose for reading (Cornett, 2010). Turning a big idea into an essential question gives focus to the inquiry process and guides children toward research that helps them make connections to the real world (McTighe & Wiggins, 2004). Children explore the given resources, generate personally relevant questions about these big ideas, and use the inquiry process to discover and discuss how their new knowledge helps answer the essential questions. As a result, inquiry and research establish authentic and meaningful purposes for wanting to read, talk, and learn more.

#### INQUIRY AND RESEARCH CULTIVATE THE ACTIVE USE OF HIGHER-LEVEL READING COMPREHENSION STRATEGIES.

Reading activities framed in the context of sustained inquiry require students to actively coordinate higherlevel cognitive strategies that are essential to comprehension and critical thinking (Swan, 2003). We know, for example, that skilled readers actively set clear goals, that they read selectively to make decisions about their reading, and that they construct, revise, and question the meanings they make as they read (Duke & Pearson, 2002). We also know that engaged readers are those who work collaboratively with interesting texts as they ask questions, gain and share new information, and transfer their knowledge to new contexts (Guthrie, Wigfield, & Perencevich, 2004).

In the context of inquiry, higher-level comprehension strategies such as purpose setting, questioning, inferring, connecting, analyzing, and synthesizing are framed as real-world problem-solving strategies (Cornett, 2010). Because sustained inquiry involves asking questions, setting goals, building evidence, and developing solutions (Buck Institute for Education, 2015), the inquiry process creates authentic opportunities for young readers to practice and apply these comprehension strategies as they grapple with challenging text around a common idea.

• The inquiry process creates authentic opportunities for young readers to practice and apply these comprehension strategies as they grapple with challenging text around a common idea. Supporting children as they flexibly integrate strategies to solve comprehension problems linked to big ideas also helps to cultivate children's deeper understanding of the world around them. The ability to ask questions, in particular, is essential to learning, reasoning, and understanding (Ram, 1991). Inquiry approaches that emphasize deep understanding are also associated with higher scores on standardized reading assessments (Weglinsky, 2004) and overall achievement growth in elementary school (Clarke, Gil, Sim, Patry, & Ginsler, 2014).

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#### INQUIRY AND RESEARCH PROMOTE ACTIVE ENGAGEMENT AND INTRINSIC MOTIVATION FOR READING.

A large body of research focuses on how children's intrinsic motivation to read and their level of reading engagement relate to reading comprehension (Wigfield, Gladstone & Turci, 2017). Unfortunately, many students in elementary, middle, and high schools are astonishingly low in their motivation, interest, and attitudes toward reading for enjoyment inside or outside of school (Mullis, Martin, Gonzalez, & Kennedy, 2003). Yet, research has shown that when individuals have regular opportunities to actively pursue their interests while working with others to deeply understand challenging information, they become intrinsically motivated to want to learn more (Deci, Vallerand, Pelletier, & Ryan, 1991; Swan, 2003). In addition, supported opportunities for children to make choices, receive feedback, and develop their own voice as part of the learning process build competence and foster respect and a sense of belonging. Both researchers and practitioners have documented that inquiry-based literacy instruction aligned with these principles fosters

positive changes in motivations for reading and attitudes toward learning (Guthrie, 2008; Guthrie, McRae, & Klauda, 2007; Harvey & Daniels, 2009).

### INQUIRY ENCOURAGES OPPORTUNITIES FOR SELF-DIRECTED LEARNING AND PERSONAL AGENCY.

Ideally, inquiry aims to move learners beyond building knowledge to express, reflect on, and apply their knowledge in creative ways (Hobbs, 2017). In the context of inquiry-based literacy instruction, learners are guided toward deciding how they will act on their knowledge in and beyond the classroom (Coiro, Dobler, & Pelekis, forthcoming). For example, young children might use their knowledge and creative products to start conversations, raise awareness, or change minds in ways that help others, including friends, family members, or people in their community. These actions, described by Edna Sackson (2017) as the "so what of learning," can foster students' beliefs that their learning is relevant and meaningful in ways that can help make a difference in the world.

Inquiry also provides opportunities for learners to develop self-regulatory skills needed for academic and life success (Coiro & Putman, 2014). These skills include goal setting, self-monitoring, time management, and self-evaluation (Zimmerman & Cleary, 2006). Early in the inquiry process, children engage in goal setting and strategic planning; during inquiry, children focus their attention and monitor their use of effective meaning-making strategies; and after inquiry, they reflect on their abilities and progress in accomplishing their goals. Thus, engaging in the inquiry process before, during, and after reading provides a natural and supported opportunity for young learners to engage in all three phases of self-regulation, including forethought, performance, and self-reflection (Zimmerman & Campillo, 2003). Offering repeated models and feedback about how inquiry can be applied to solve information problems builds students' confidence in how to apply these strategies to solve their own challenges. Over time, repeated success in these inquiry-based reading practices enhances one's sense of self-efficacy, which, in turn, promotes an increased sense of personal agency. In the context of inquiry, having personal agency means that young children feel capable in their ability to generate questions and guide their learning toward a deeper understanding that helps answer their essential question.

#### UNDERSTANDING TECHNOLOGY USE AS PART OF INQUIRY

Researchers have begun to outline the important role that technology can play in fostering engagement, deeper learning, and digital literacy skills as part of inquiry. Some have introduced instructional frameworks for implementing Internet research and comprehension in the context of purposeful inquiry projects. One study found compelling evidence across ten fifth-grade classrooms that instruction in Internet inquiry significantly increased students' ability to comprehend, synthesize, and evaluate online resources compared to nine fifth-grade classrooms that had more traditional reading instruction (see Kingsley, 2011). Explicitly weaving supports for online reading skills into inquiry-based instruction can foster young students' ability to generate high-quality inquiry topics, effectively search for and determine the credibility of online sources, and connect ideas across texts to synthesize what they learned about their focus of inquiry (Kingsley & Tancock, 2013).

Teachers who collaborate with librarians to implement guided inquiry-based approaches to learning can positively impact children's reading and information literacy skills. Elsewhere, teachers are integrating elements of guided reading, reciprocal teaching, and online reading comprehension to support first graders as they transition to reading on the Internet (Salyer, 2015), and they are discovering how inquiry and online reading instruction can positively transform teaching and learning with elementary school children from low-income homes (Dwyer, 2013) or those learning English as a second language (Castek, 2008). Finally, research has shown that teachers who collaborate with librarians to implement guided inquiry-based approaches to learning can positively impact children's reading and information literacy skills (Chu, Tse, & Chow, 2011; Kulthau, Maniotes, & Caspari, 2007).

In the past few years, I have been working with Beth Dobler, another university literacy professor, and Karen Pelekis, a first-grade teacher, to consolidate the ways that technology can be used to support and extend literacy and learning in elementary classroom settings (Coiro, Dobler, & Pelekis, forthcoming). One framework that has emerged from this work is a continuum that lays out five purposes for integrating technology with learning outcomes that are naturally woven into the inquiry process (see Figure 1). This framework is grounded in important knowledge goals outlined in Bloom's Digital Taxonomy developed by Andrew Churches (2009) and the Depth of Knowledge Levels outlined by Norman Webb (2002). Our framework also integrates ideas about how technology can support children's desire to use digital tools to create, reflect, and act on knowledge gained through inquiry (Hobbs & Moore, 2013).

*Figure 1. Personal Digital Inquiry (PDI) Knowledge Continuum (reprinted with permission from Coiro, Dobler, & Pelekis, forthcoming)* 

			DIGITAL	DIGITAL EXPERIENCES TO DEEPEN	
Lower-Order Thinking		LEARNING	<b>&gt;</b>		
(Options for Purposeful U	ses of Technology)			Higher-Order Thinking	
Acquire Knowledge	Build Knowledge	Express Knowledge	Reflect on Knowledge	Act on Knowledge	
Learners receive digital information given or modeled by others.	Learners use technology to connect new informa- tion to prior knowledge.	Learners use technology to share their new knowledge with others.	Learners use technology to reflect on and evaluate their inquiry processes and products.	Learners use technology to translate their knowledge into action.	

The Personal Digital Inquiry Knowledge Continuum is designed to illustrate the important role that technolgy can play in supporting opportunities for children to develop both lower-order thinking skills used to acquire and build knowledge and higher-order thinking skills used to express, reflect, and act on knowledge in a digital world. Our hope is that teachers can use this continuum, and a growing body of examples from real classrooms, to inspire their design of inquiry-based experiences with technology that promote higher-order thinking and active engagement in their classrooms.

### WHAT IS PERSONAL DIGITAL INQUIRY?

After several years of exploring purposeful ways of integrating technology and inquiry with educators from around the world at an annual Summer Institute in Digital Literacy at the University of Rhode Island (see Hobbs & Coiro, 2016), we have also come to realize the important role that classroom culture plays in growing engaged readers and self-directed learners at any age. In his book Creating Cultures of Thinking: The 8 Forces We Must Master to Truly Transform Our Schools, Ron Ritchhart (2015) explains that schools and teachers, "send important messages about what learning is, how it happens, and what kinds of learning are of value" (p. 20). That is, the beliefs, expectations, values, and routines that we promote as part of learning are important indicators of our classroom culture. If we seek to transform our classrooms into spaces that build upon and benefit from a culture of inquiry, it is important to clarify how to create and sustain such a culture with young learners. One important cultural force in inquiry-based classrooms involves opportunities to think deeply, to engage with others, and to create meaning—in short, "opportunities to learn" (p. 143). Importantly, these opportunities focus on the process as well as the products of learning.

Briefly, our vision of Personal Digital Inquiry (PDI) is one that engages teachers and students in opportunities for collaborative discussion and reflection that lead to knowledge building, knowledge expression, and personal action (Coiro, Dobler, & Pelekis, forthcoming). As such, a productive PDI project includes regular opportunities for every learner to engage in four core sets of practices:

- Wonder & Discover: All learners have opportunities to engage with content and experiences that prompt their own questions about a topic and have time to explore resources and discover new ideas about the world around them.
- **Collaborate & Discuss:** All learners have opportunities to engage in joint conversations around shared interests, discuss interpretations, make connections, and negotiate differences in their thinking.
- Create & Take Action: All learners have opportunities to express their interests and new understandings through creative work designed to start conversations, raise awareness, take action, or change minds in their learning community or beyond.
- Analyze & Reflect: All learners have opportunities to analyze content in order to build their understanding of challenging information and reflect on their choices at multiple points (e.g., before, during, and after) in their inquiry process.

These four sets of practices can be woven into what we call the PDI framework (see Figure 2). This flexible framework is designed to help visualize and intentionally plan for these opportunities as part of inquiry in the literacy curriculum. Learners may move through these opportunities in varied sequences with varied levels of support and varied amounts of technology use, but our experiences suggest that successful inquiry-based projects make room for all four sets of practices.

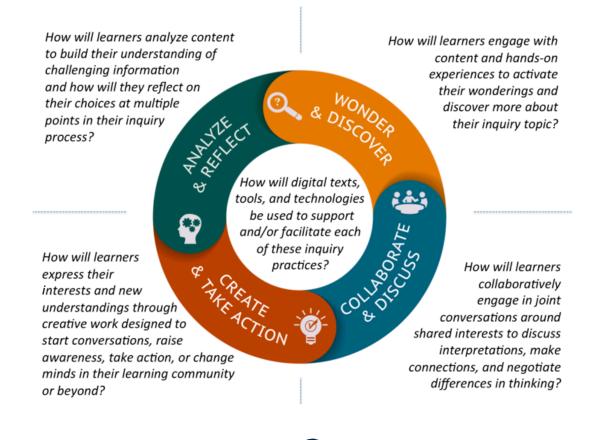
Questions aligned to each of these interconnected PDI practices can serve to guide and support the initial planning of one or more of these inquiry practices without being constrained by the use of technology (see Figure 3). Once the desired learning outcomes have been considered, the question in the center of the figure is designed to prompt discussion and informed choices about which instructional practices and technologies, if any, would be most apt to support meaningful inquiry in the literacy classroom.

It is our belief that digital inquiry practices designed to engage students' curiosity and their desire to learn promote intentional opportunities for children to document the process and craft creative products of their learning. In turn, these practices give relevance to what students learn in school and help them make connections to what they see in their worlds outside of school. Evidence from working to design sustained inquiry experiences suggests that embedding opportunities to wonder and discover, collaborate and discuss, create and take action, and analyze and reflect can most definitely foster engagement and deeper learning among educators (Hobbs & Coiro, 2016; Hobbs, Coiro, Daunic, & Friesem, 2015). The journey ahead looks promising as my colleagues and I turn to documenting exemplars of how teachers and librarians in Grades K–5 are collaboratively using the PDI framework to design personal digital inquiry experiences that promote engagement and deeper learning among students in their classrooms.



*Figure 2. The PDI Framework (reprinted with permission from Coiro, Dobler, & Pelekis, forthcoming)* 

Figure 3. PDI Questioning Tool (reprinted with permission from Coiro, Dobler, & Pelekis, forthcoming)



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