

Synergy in Literacy Research Methodology

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Although a single research study can make a difference (Russell, 1961; Shanahan & Neuman, 1997), it typically takes a long line or lines of research to significantly deepen understanding of a phenomenon or to meaningfully inform practice (Duke & Martin, 2011; Shanahan, 2002). Thus, rather than perpetuating divisions in the field, we argue that lines of research work best when we marshal different methodologies to address the research topic or the problem of practice. The complexity of literacy teaching, learning, and development is such that no single research methodology is sufficient for understanding. Rather, insights garnered through one methodological approach must inform the pursuit of questions by another, and so on, creating a synergy of methodology over time (Duke & Mallette, 2004, 2011).

We begin this chapter with an overview of the rich array of methodologies that have been brought to bear in literacy research. We then present three insights about literacy teaching and learning that have resulted from research of several methodologies, each study building on the next. In the third section of the chapter, we discuss how theoretical constructs can develop through the application of research of multiple methodologies, taking emergent literacy theory as a case. We conclude with recommendations for enabling and encouraging synergy across research methodologies.

An Overview of Literacy Research Methodologies

In perusing research methods textbooks (e.g., Creswell, 2012; Johnson & Christensen, 2012), we found that the most common categorizations of research tend to be quantitative, qualitative, and mixed. However, like Shavelson and Towne (2002), we view this categorization approach as problematic:

It is common to see quantitative and qualitative methods described as being fundamentally different modes of inquiry—even as being different paradigms embodying quite different epistemologies (Howe, 1988; Phillips, 1987). We regard this view as mistaken. Because we see quantitative and qualitative scientific inquiry as being epistemologically quite similar (King, Keohane, and Verba, 1994; Howe and Eisenhart, 1990), and as we recognize that both can be pursued rigorously, we do

not distinguish between them as being different forms of inquiry. We believe the distinction is outmoded, and it does not map neatly in a one-to-one fashion onto any group or groupings of disciplines. (p. 19)

Instead, we suggest more nuanced categorization systems that emphasize the type of insights that methodologies can provide. One example of such a categorization system is to group methodologies by those that primarily tell us what is, what was, what happens when, and what can be. In Table 1, we group 15 research methodologies into these four categories (recognizing that in some cases, some could fall within another category instead or as well depending on the focus of the study). Each of the 15 specific methodologies is regularly employed in literacy research. Table 1 includes recent examples gleaned from the methodology described. An important point to make is that many studies in literacy research employ combinations of these methodologies within a single study. This is true, by definition, of mixed research, but it is also true of research that would not fit that designation. For example, an experimental study might employ verbal protocols as an outcome measure, or a case study may also be historical. In our view, this is not problematic but, in fact, to be encouraged, as it provides us with a greater range of tools to address the complex questions and problems facing our field.

Insights About Literacy Gained From Multiple Methodologies

Keeping the vast array of literacy research methodologies and the kinds of questions that they can address in mind, we now turn to three specific examples of important insights in the field of literacy research that have resulted from synergy across studies employing different methodologies. When multiple methodological approaches inform the formulation of new questions, and therefore the methodological design of future studies, our understanding of the complexities of literacy has the potential to expand in ways that relying on only one methodology does not allow.

Insight 1: Developing Children's Phonological Awareness Improves Word Reading

Current understanding in the field of literacy is that developing children's phonological awareness skills improves their ability to read words (e.g., Ehri et al., 2001; National Institute of Child Health and Human Development, 2000). To what researcher or study can we attribute this important insight? No one study or methodology can account for this knowledge; rather, multiple studies and methodologies, including research using technologies, linguistic analysis, correlational research, experimental studies, and quantitative meta-analysis, enabled this insight.

The development of this insight began with research seeking to describe children's phonological knowledge. Hoping to ascertain the conditions underlying individuals' perceptions of the speech stream, Liberman, Cooper, Shankweiler,

Table 1. Some Key Research Methodologies Used in Literacy Research

Research Methodology	Description ^a	A Recent Example of Findings Gleaned From This Methodology
What Is?		
Case study	<p>“Case studies seek to describe naturally occurring phenomena. These studies often focus on a single or small number of cases, such as one classroom or three reading groups at one grade level. Researchers typically identify themes or patterns, rather than making claims about cause–effect relationships.”^{7a}</p> <p>“Content analysis is a methodology for examining the content of something, such as instruction (e.g., how much instructional time is devoted to vocabulary instruction) or texts (e.g., what kinds of text, and in what proportions, are included in basal readers). Content analysis is more about the <i>what</i> in language, whereas discourse analysis is more about the <i>how</i> with language.”^{7a}</p>	<p>A study of two Sunni madrassahs in Mauritius has revealed that contrary to stereotype, local vernacular literacies and secular identities were both enacted in and influenced by practices within the madrassahs.^b</p> <p>A study of available print materials and activities involving written language in second-, third-, and fourth-grade classrooms showed an average of 1 minute per day of instructional time with informational text in grade 2 and 16 minutes per day in grades 3 and 4.^c</p>
Content analysis	<p>“This kind of research examines relationships among variables. Researchers often conduct these studies when they are interested in causes and effects but are unable to control or alter the variables. For example, correlational research might examine the relationship between exposure to lead paint and reading difficulties.”^{7a}</p>	<p>A study finds that adults’ morphological awareness, syntactic awareness, and vocabulary knowledge are all predictive of their reading comprehension, with syntactic awareness predicting both directly and indirectly through vocabulary knowledge.^d</p>
Correlational	<p>“This methodology tries to gain insight into the structures and meanings that underlie conversations and written texts. Researchers examine previously or newly recorded texts and develop systems for uncovering patterns in the texts.”^{7a}</p>	<p>A study examined college students’ instant messages and found 15 instant-messaging features used at specific reported frequencies; many paralinguistic cues were employed.^e</p>
Discourse analysis	<p>“Ethnography is a specific type of case study. Like case study research, ethnographic research explores phenomena by looking closely at specific examples. This kind of research typically involves extended, intense observations and emphasizes cultural contexts. Researchers often attempt to represent the perspectives of insiders.”^{7f}</p>	<p>A study of three Sudanese refugee families over 18 months revealed a variety of insights regarding the role of television in their lives, including the role that it played in helping the families learn about the U.S. context, as well as staying connected with their heritage culture.⁸</p>
Ethnography		

(continued)

Table 1. Some Key Research Methodologies Used in Literacy Research (Continued)

Research Methodology	Description ^a	A Recent Example of Findings Gleaned From This Methodology
Neuroimaging	“This kind of research tries to answer questions about neurological structure and/or function. Researchers examine images of the brain and brain activity. These studies are characterized by the use of specialized medical equipment and processes, such as electroencephalography or functional magnetic resonance imaging.” ^{7f}	A study found that children with word-reading difficulties showed less neurophysiological activity in some parts of the brain and more neurophysiological activity in other parts of the brain as compared with typically performing readers. ^h
Survey	“Survey research usually elicits reports from participants about themselves. The purpose of this kind of research is usually to understand something about the larger group to which the participants belong. For example, researchers might survey 100 kindergarten teachers across a state to learn about the beliefs of the kindergarten teachers in that state. This kind of research may involve different kinds of interactions, such as face-to-face or telephone interviews and computerized or mailed surveys.” ⁷ⁱ	A study surveyed high school teachers about their preparation for teaching writing and their writing instruction and assessment. Included in the findings was that most teachers did not believe they were adequately prepared to teach writing and that almost half did not assign at least one multiparagraph piece of writing per month. ^j
Verbal protocol analysis	“Verbal protocols, also referred to as think-aloud studies, typically gather information about people’s thought processes. Researchers often ask participants to complete a specific task, such as reading a book, and report what they are thinking. Participants from second grade to adulthood have participated in verbal protocol research.” ^{7j}	A study of the processes prompted by the graphics in informational text read by second graders revealed 17 distinct processes, many similar to those used with written text but others unique to graphics. ^k
What Was? Historical	“In historical research, researchers attempt to address a question about the past. They examine artifacts from or about the time period, such as diaries, photographs, court records, or legal documents. Researchers may also interview people associated with the event or topic. This kind of research often searches for patterns or themes that might inform current issues. For example, a researcher might examine past educational policies for the purpose of revising or creating present-day policy initiatives.” ^{7j}	A study examined the growth and impact of reading groups (e.g., book clubs), libraries, and other book-based institutions in Georgian England and found that they greatly increased the number and breadth of the reading public and made long-lasting contributions to literary life. ^l

Research Methodology	Description ^a When?	A Recent Example of Findings Gleaned From This Methodology
Experimental and quasi-experimental	<p>“These designs investigate cause–effect relationships. Researchers typically identify a focus, such as the use of a particular instructional approach, and measure its outcomes. Researchers attempt to eliminate alternative explanations for outcomes by creating groups of participants who differ in only one way—for example, in receiving or not receiving a particular instructional approach. In experiments, researchers typically create groups by randomly assigning participants. In contrast, researchers use groups that already exist for quasi-experiments.”^{7f}</p>	<p>A study found that collaborative strategic reading, a specific approach to reading comprehension instruction, improves the reading comprehension of seventh- and eighth-grade students as compared with business-as-usual instruction in English/language arts classrooms.^{7g}</p>
Meta-analysis	<p>“Researchers use this methodology to synthesize the results of previous research. Researchers systematically collect studies that have addressed the same or similar questions, then conduct statistical analyses to identify trends across the collected studies. Quantitative meta-analyses often focus on the relative magnitudes of outcomes, such as the average effect of a particular instructional intervention.”^{7h}</p>	<p>A study examined the impact of morphological instruction on literacy skills across 22 studies and found that morphological instruction improves reading, spelling, vocabulary, and morphological skill regardless of age group studied, particularly for less skilled readers and when part of a broader intervention.⁷ⁱ</p>
Single-subject experimental	<p>“In this design, individuals are (or an individual is) studied in such a way that they each comprise their own comparison group. For example, in an ABA withdrawal design, repeated baseline assessments are administered (A), then an intervention is introduced and the subject assessed repeatedly again (B), and finally, the intervention is withdrawn and the subject assessed additional times (A). Differences in A and B suggest a possible impact of the intervention.”^{7j}</p>	<p>A study used a multiple-baseline design to examine the impact of a computer-based sight-word reading intervention on the sight-word reading of a sixth-grade student with an autism spectrum disorder and found that the impact was both positive and maintained.^{7k}</p>

(continued)

Table 1. Some Key Research Methodologies Used in Literacy Research (Continued)

Research Methodology	Description ^a	A Recent Example of Findings Gleaned From This Methodology
What Can Be?		
Formative or design	<p>"In this methodology, data are collected systematically for the purpose of informing design or practice to reach specified goals. Often, researchers and teachers work together to implement an instructional approach, investigate factors that might influence its outcomes, modify the approach to account for what they have discovered, and implement the revised instructional approach. This implement-investigate-and-revise process might continue for several rounds or until the original goal is achieved."⁶</p>	<p>A study aimed to improve understanding of how word selection and word organization might facilitate vocabulary acquisition among preschool children through the iterative implementation and analysis of a specific vocabulary intervention in preschool classrooms.⁶</p>
Instrument development	<p>This methodology explores what can be measured and how. "These studies examine the reliability and validity of assessments, attitude surveys, and other research tools. Along with other activities, researchers typically give the assessment to a number of participants and then perform statistical analyses to examine its validity and reliability."⁶</p>	<p>A series of studies examined the validity, reliability, and effectiveness of a formative and summative assessment tool that provides computer-generated evaluations of the substantive content and expository quality of writing.⁶</p>
Other		
Mixed	<p>"Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration."⁷</p>	<p>A study examined both the quality and quantity of comprehension instruction in special education classrooms and found that these special education teachers rarely taught students complex strategies and seemed unaware of teaching techniques to develop students' comprehension.⁵</p>

^aFrom "10 Things Every Literacy Educator Should Know About Research," by N.K. Duke and N.M. Martin, 2011, *The Reading Teacher*, 65(1), p. 14.

⁶"Multilingual Language and Literacy Practices and Social Identities in Sunni Madrassahs in Mauritius: A Case Study," by A.M.A. Owoodally, 2011, *Reading Research Quarterly*, 46(2), 134–155.

- “Availability and Use of Informational Texts in Second-, Third-, and Fourth-Grade Classrooms,” by J. Jeong, J.S. Gaffney, and J. Choi, 2010, *Research in the Teaching of English*, 44(4), 435–456.
- ⁴“The Relation of Morphological Awareness and Syntactic Awareness to Adults’ Reading Comprehension: Is Vocabulary Knowledge a Mediating Variable?” by Y. Guo, A.D. Roehrig, and R.S. Williams, 2011, *Journal of Literacy Research*, 43(2), 159–183.
- ⁵“Young People’s Everyday Literacies: The Language Features of Instant Messaging,” by C. Haas and P. Takayoshi (with B. Carr, K. Hudson, and R. Pollock), 2011, *Research in the Teaching of English*, 45(4), 378–404.
- ⁶From Duke and Martin, p. 15.
- ⁷“Television, Language, and Literacy Practices in Sudanese Refugee Families: I Learned How to Spell English on Channel 18,” by K.H. Perry and A.M. Moses, 2011, *Research in the Teaching of English*, 45(3), 278–307.
- ⁸“The Timing and Strength of Regional Brain Activation Associated With Word Recognition in Children With Reading Difficulties,” by R. Rezaie, P.G. Simos, J.M. Fletcher, J. Juranek, P.T. Cirino, Z. Li, et al., 2011, *Frontiers in Human Neuroscience*, 5, article 00045.
- ⁹From Duke and Martin, p. 16.
- ¹⁰“Teaching Writing to High School Students: A National Survey,” by S.A. Kiuahara, L.S. Hawken, and S. Graham, 2009, *Journal of Educational Psychology*, 101(1), 136–160.
- ¹¹“Picture This: Processes Prompted by Graphics in Informational Text,” by R.R. Norman, 2010, *Literacy Teaching and Learning*, 14(1/2), 1–39.
- ¹²*A Nation of Readers: The Lending Library in Georgian England*, by D. Allan, 2009, Chicago: University of Chicago Press.
- ¹³“Efficacy of Collaborative Strategic Reading With Middle School Students,” by S. Vaughn, J.K. Klingner, E.A. Swanson, A.G. Boardman, G. Roberts, S.S. Mohammed, et al., 2011, *American Educational Research Journal*, 48(4), 938–964.
- ¹⁴“The Effects of Morphological Instruction on Literacy Skills: A Systematic Review of the Literature,” by P.N. Bowers, J.R. Kirby, and S.H. Deacon, 2010, *Review of Educational Research*, 80(2), 144–179.
- ¹⁵“Extending Research on a Computer-Based Sight-Word Reading Intervention to a Student With Autism,” by J.S. Yaw, C.H. Skinner, J. Parkhurst, C.M. Taylor, J. Booher, and K. Chambers, 2011, *Journal of Behavioral Education*, 20(1), 44–54.
- ¹⁶“Developing Vocabulary and Conceptual Knowledge for Low-Income Preschoolers: A Design Experiment,” by S.B. Neuman and J. Dwyer, 2011, *Journal of Literacy Research*, 43(2), 103–129.
- ¹⁷“A New Formative Assessment Technology for Reading and Writing,” by T.K. Landauer, K.E. Lochbaum, and S. Dooley, 2009, *Theory Into Practice*, 48(1), 44–52.
- ¹⁸From “Toward a Definition of Mixed Method Research,” by R.B. Johnson, A.J. Onwuegbuzie, and L.A. Turner, 2007, *Journal of Mixed Methods Research*, 1(2), p. 123.
- ¹⁹“Teaching Reading in the 21st Century: A Glimpse at How Special Education Teachers Promote Reading Comprehension,” by J.K. Klingner, J. Urbach, D. Golos, M. Brownell, and S. Menon, 2010, *Learning Disability Quarterly*, 33(2), 59–74.

and Studdert-Kennedy (1967) engaged in research using the technologies of synthetic speech and spectrograms. At the Haskins Laboratories in New York, the researchers found that

the acoustic cues for successive phonemes are intermixed in the sound stream to such an extent that definable segments of sound do not correspond to segments at the phoneme level. Moreover, the same phoneme is most commonly represented in different phonemic environments by sounds that are vastly different. (p. 432)

Therefore, as a perception task, it is difficult for children to identify individual phonemes within spoken words.

Building on this work, and using an alternative way to investigate children's phonological awareness, researchers analyzed children's early writing attempts to ascertain how children categorized sounds in the speech stream (e.g., Chomsky, 1970; Read, 1971). First, using a naturalistic design, Read conducted linguistic analyses of preschool children's written productions, with particular attention to their spelling, to better understand how children heard sounds within words. The children in this study had not received spelling instruction in their homes or preschools; they primarily attempted to represent the sounds they heard in relation to the names of the letters they knew. By analyzing the estimated spellings of children who had relatively limited letter-sound knowledge, Read hoped to determine which phonological differences the children were able to parse out, thereby revealing certain features of their phonological awareness. Read found common patterns throughout these spellings, concluding that the children were developing a systematic and logical understanding of the relationship between the speech stream and orthography.

In recognizing a limitation of his naturalistic study (i.e., the data were collected from children who spontaneously wrote on their own), Read (1975) built on his own work with a series of studies in which "the experiments typically employed an XAB paradigm, in which the subjects were given sound X and were then asked, 'Is X more like A or B?'" (p. 21). Read elicited knowledge from children with more diverse backgrounds and a greater age range to examine the consistency of the patterns found in his original study. Taken together and using different methodologies, his research supported the notion that children are able to categorize phonemes and identify phonological relationships.

Armed with a better grasp of young children's developing and systematic understanding of phonemic awareness, researchers designed correlational studies to investigate the potential relationship between students' phonological awareness and their ability to read words, while accounting for possible confounding factors (e.g., Cunningham, 1990; Ehri & Wilce, 1979; Share, Jorm, Maclean, & Matthews, 1984; Stahl & Murray, 1994; Uhry & Shepherd, 1993). For example, in a correlational study examining the relationship among 39 individual attributes and reading ability, Share and colleagues found that phonemic segmentation was the most consistent and significant attribute in predicting students' reading ability at the end of kindergarten and first grade. Similarly, in their research with first-grade

students, Stanovich, Cunningham, and Feeman (1984) examined the relationship between reading comprehension and phonological awareness (among other constructs) and concluded at the end of the school year that phonological awareness was moderately and independently related to reading comprehension.

The understanding of the need for and development of phonological awareness through naturalistic and descriptive studies, along with the establishment of a strong and predictive relationship between phonological awareness and reading, provided a solid framework for research designed to investigate causation. Researchers have used experimental, quasi-experimental, and some mixed research designs to examine the effects of phonological awareness instruction on reading (e.g., Ball & Blachman, 1991; Bradley & Bryant, 1983; Ehri & Wilce, 1985; Lundberg, Frost, & Petersen, 1988; Treiman & Baron, 1983; Williams, 1980).

As one example of a quasi-experimental study, Lundberg and colleagues (1988) provided 235 preschool children with a training program designed to improve children's phonological awareness. The children had not received reading instruction prior to taking part in this eight-month program, nor did they receive any reading instruction while involved in the program. Consisting of meta-linguistic games and exercises, the program statistically significantly improved children's phonological and phonemic awareness skills, such as rhyming and phonemic segmentation, as compared with the control group. Further, by following both the control and the experimental groups for several years, the researchers found that children who had received the phonological awareness training outperformed the control group on reading measures in the second grade.

Similarly, Ball and Blachman (1991) conducted an experimental study in which they randomly assigned 90 kindergartners from three urban public schools to receive (a) training in both letter-sound relationships and segmenting words into phonemes, (b) training in only letter-sound relationships, or (c) no intervention. After seven weeks, the researchers found that the group receiving both letter-sound training and instruction in phonemic segmentation statistically significantly outperformed students who only received letter-sound instruction, as well as the control group, on measures of spelling and early word reading. Overall, these studies have contributed to the field by demonstrating that phonological awareness can be taught to young students and that this instruction benefits their word reading.

With such a large mass of individual studies examining the impact of phonological awareness instruction on word reading, some researchers in the field began to ask questions regarding what the body of evidence as a whole says about the effects of phonological awareness instruction on children's word reading (e.g., Bus & van IJzendoorn, 1999; Ehri et al., 2001). To address these questions, a different methodology became appropriate: quantitative meta-analysis. In their quantitative meta-analysis, Ehri and colleagues (2001) examined 52 peer-reviewed studies and concluded that phonological awareness instruction significantly affects both the reading and spelling of early readers. The researchers found instruction in phonological awareness to be most effective when (a) instruction also included

letters, (b) students learned in small groups, and (c) it did not make up the main or only focus of literacy teaching (e.g., instruction for 5 to 18 hours of the year was most beneficial). These results have helped us better understand that phonological awareness plays an important role in early reading instruction as well as the circumstances under which phonological awareness instruction is most effective.

Our current understanding of how developing children's phonological awareness improves their word reading arose over time as researchers built on the findings of one another, created new questions, and explored these inquiries through multiple methodologies.

Insight 2: Text Structure Instruction Improves Reading Comprehension

A variety of instructional factors influence students' reading comprehension development, such as discussions of text in class (e.g., McKeown, Beck, & Blake, 2009) and rich vocabulary instruction that includes a wide variety of words taught in meaningful contexts (e.g., Stahl & Nagy, 2006). Similar to our insights about phonological awareness, the insight that text structure instruction can improve reading comprehension originated through studies of various research methodologies.

Research on text structure is commonly recognized as beginning with a discourse analysis and experimental study published by Meyer in 1975 in a book entitled *The Organization of Prose and Its Effects on Memory*. This study examined the structure of texts, at the time referred to as their "content structure," and the ideas that readers recall from the text. As Meyer noted,

structure variables have been demonstrated to have an influence on the learning and retention of information in lists of words, but little research has been done investigating the effects of structure variables on the learning and retention of information in normal text. (p. 1)

Meyer's (1975) study included 105 undergraduates enrolled in a psychology course at Cornell University, randomly divided into five 21-subject groupings. Each subject grouping read three different sets of long passages. In two sessions, a free-written recall and a recall with signaling words from the passage were implemented to test each subject grouping's capacity to recall the text based on the content structure. The content structure proved to have a definite impact on the recall of information within a text.

As literacy and language research entered the 1980s, Meyer, Brandt, and Bluth (1980) conducted a correlational study investigating the relationship between reading ability and use of text structure in reading comprehension. The participants were 102 ninth-grade students divided into reading proficiency groups, as determined by the SAT and a district-developed reading comprehension test. The researchers found a strong relationship between comprehension skills and use of text structure; stronger readers made greater use of text structure.

In a subsequent quasi-experimental study, McGee (1982) examined the comprehension of third- and fifth-grade good and poor readers. Students read 125-word passages with expository themes and provided oral recalls, which were audiorecorded for measurement of superordinate, subordinate, and total idea units recalled within each passage. Fifth-grade good readers demonstrated greater awareness of text structure and recalled more total and superordinate ideas than other groups, suggesting that use of text structure is facilitative of comprehension even for elementary-age readers.

Research demonstrating the importance of text structures in proficient reading led to research investigating whether teaching readers to use text structure improves comprehension. A series of quasi-experimental and experimental studies addressing this question were conducted throughout the 1980s. For example, a quasi-experimental study by Taylor (1982) investigated the impact of teaching fifth graders to attend to text structure and verbalize a macrostructure for expository text. Specifically, the experimental group used a series of summarization tasks focused on text structure. The control group received more conventional reading instruction, with traditional comprehension questions to be completed after reading an expository text. Taylor concluded that instruction in text structure improved understanding of text organization and recall of text ideas.

Shortly afterward, Taylor and Beach (1984) published an experimental study examining the effect of seven weeks of text structure instruction on seventh-grade students in the context of social studies textbooks. The experimental treatment group received seven weeks of instruction in text structure, which improved “students’ recall for relatively unfamiliar social studies material” (p. 143).

Around this same time, building on the findings of Meyer (1975), Taylor (1982), and others, Englert and Hiebert (1984) shed further light on the relation of structure knowledge to reading comprehension. Their study involved readers of two age groups (third and sixth grade), three reading ability levels, and four text structures (comparison/contrast, description, enumeration, sequence), with a measure focusing on how well students could distinguish statements related to the text from those that were unrelated. Again, older readers and more skilled readers were more attuned to text structure, and they were better able to distinguish statements that were related to the text from those that were unrelated. The researchers also found some differences in performance patterns for different text structures, which was an important point for the field. This study further motivated research on instructional interventions around text structure.

Building on Englert and Hiebert’s (1984) and Taylor and Beach’s (1984) research, Armbruster, Anderson, and Ostertag (1987) designed an experimental study to investigate the impact of providing seventh graders with instruction in a specific text structure—problem/solution—and use of a hierarchical summary procedure with social studies text. As compared with a group receiving instruction in answering questions after reading social studies material as well as a business-as-usual control, the intervention was effective at improving students’ text comprehension. The major findings of these quasi-experimental and

experimental studies in the 1980s involved various contexts for using text structure to improve reading comprehension. Studies using text structure instruction with various instructional audiences continue today (e.g., Gaddy, Bakken, & Fulk, 2008).

Now into the 21st century, a variety of methodologies are being used to deepen understanding of the role of text structure in reading comprehension. For example, Kendeou and van den Broek (2007) designed a study “to investigate the effects of readers’ prior knowledge, as well as text structure, and the possible interaction of the two, online—that is, during comprehension of text” (p. 1568). This study employed verbal protocols, as used by Meyer (1975), as well as a quasi-experimental design. The findings revealed an interaction between college students’ prior knowledge and use of text structure when reading.

Teaching students to recognize and understand text structure improves reading comprehension. This insight has been developed through studies of several different research methodologies, including discourse analysis, verbal protocols, correlational studies, quasi-experimental research, and experimental research. Collectively, these studies have provided us with another set of instructional practices to support the development of reading comprehension.

Insight 3: Teaching a Process Approach to Writing Fosters Writing Development

The complex definition and multifaceted understanding of a process approach to writing has evolved over time. Pritchard and Honeycutt (2006) explained, “Today, most researchers of the process model recognize that it involves both procedural knowledge and many other kinds of strategies that can be nurtured and directly taught” (p. 276). Additionally, the writing process is an act of problem solving that is recursive in nature. As writers develop, they come to understand and employ procedural, strategic knowledge in more efficient and automatized ways (Pritchard & Honeycutt, 2006). More specifically, Graham and Sandmel (2011) have delineated the following fundamental principles of the process writing approach:

Students engage in cycles of planning (setting goals, generating ideas, organizing ideas), translating (putting a writing plan into action), and reviewing (evaluating, editing, revising). They write for real purposes and audiences, with some of their writing projects occurring over an extended period of time. Students’ ownership of their writing is stressed, as is self-reflection and evaluation. Students work together collaboratively, and teachers create a supportive and nonthreatening writing environment. (p. 396)

The current understanding of process writing and the nature of implementing a process model of writing to foster writing development derive from the synergy of writing research over time and across methodologies.

Emig’s (1971) case study of 12th graders’ composing processes is often referred to as the first empirical study of students’ writing processes. The eight

16- and 17-year-old students participated in four individual sessions in which they talked about their own composing processes (i.e., verbal protocols). This enabled Emig to identify various components of composition and their role in the writing process. She also found the writing instruction within classrooms to be abstract, simplified, and teacher centered, thereby illustrating the need for writing instruction that recognizes process and accounts for individual development and progress. Emig explained that one of the major contributions of this study was its “unique effort to utilize case studies for eliciting data about how students behave as they write” (p. 5). Making the composing process more visible contributed to the knowledge base regarding the writing process.

Building on Emig’s (1971) work, Graves (1975) used a mixed design to examine and explain the writing process. Data collection and analysis occurred in four phases and included several methodological techniques. In phase 1, Graves analyzed the writing of 94 students, whereas phase 2 included observations of 14 students. In phase 3, he conducted interviews of 17 children, and phase 4 focused solely on a 7-year-old boy. Graves explained that

this approach made it possible to follow findings from the several larger settings to an individual case and, conversely, from the case and/or small group findings to all-class profiles and to the entire group of seven year old children studied. (p. 229)

Concurrently, Shaughnessy (1977) implemented an informal content-analysis approach to examine the errors of 4,000 New York City College basic writing students. Through an examination of their writing, she found distinct patterns in their errors. Shaughnessy suggested that these errors reflected their “linguistic situation” (p. 121); the students were quite proficient in their language use, yet as writers, they were beginners. Shaughnessy’s work broadened the construct of the writing process to include a sociocultural lens; however, early on, reference to her work focused on how categories of errors informed an understanding of writing as a process.

Flower and Hayes (1980) expanded on this pioneering work of studying the process of writing, with the aim to examine writing as a “problem-solving, cognitive process” (p. 22). They used verbal protocol methodology to examine the composing process of expert and novice adult writers. The novice writers were college students, and the experts were teachers of writing and rhetoric. The verbal protocol included the writers recording their composing process for the same problem. The problem consisted of a situation that participants needed to solve through their writing process (e.g., writing for a particular audience or assignment). Flower and Hayes found that composing is a problem-solving process that is influenced by purpose and goals. The purpose includes the audience and the assignment itself, whereas the goals include the reader, the persona, creating meaning, and the text. By identifying the importance of purpose and goals, researchers found this problem-solving process to be describable and teachable. Students could be taught to think about the writing problem in a different way by

attending to purpose and goals, which Flower and Hayes (1981) referred to as the “cognitive process theory of writing” (p. 365).

Perl and colleagues (1983) framed their research in this process theory of writing (Flower & Hayes, 1981) to explore the writing process from the perspective of the teacher. They conducted an ethnographic study of 10 teachers as they developed their own writing process. The researchers found that the teachers’ level of implementation and understanding of a process approach influenced the process approach that they used within their own classrooms. Ethnography enabled Perl et al. to fully describe and account for the teachers’ experiences as writers and as teachers of writing. This methodology enhanced the knowledge base about how writers enacted the writing process by also accounting for the teacher’s perspective and suggesting important possible characteristics of writing pedagogy, including establishing a community of writers and providing models of a writing process.

Bereiter and Scardamalia (1984, 1987; Scardamalia, Bereiter, & Goelman, 1982) also built on the findings of Flower and Hayes (1980, 1981) to focus on factors that influence the writing process. They conducted several studies with writers of varying ages (from third graders to graduate students) to identify the cognitive and production factors that enhance or inhibit the writing process, particularly in relation to mentor texts. Bereiter and Scardamalia (1987; Scardamalia et al., 1982) employed verbal protocols and what they termed clinical-experimental actions within their work. Interviews were used in conjunction with written products and questionnaires. Students were assigned to groups writing different mentor texts (e.g., explicit lists, examples) to see their influence on the writing process. An individual’s schema was found to influence the way that he or she implemented the writing process and the written products created. Additionally, the importance of the cognitive factors influencing a process approach to writing was emphasized.

In 1994, Needels and Knapp sought to learn whether adherence to a writing process pedagogy was associated with writing quality. They conducted a correlational study of 26 fourth-grade and 16 sixth-grade students to examine the relationship between writing quality and a process approach to teaching writing. Researchers used writing samples, daily teacher logs, observation coding forms, and classroom reports. Using regression analysis, they found that more than 40% of variance on writing quality was accounted for by adherence to a process approach model. Additionally, the implementation of the model did not have negative effects on writing mechanics. Further, the process approach implemented in this study incorporated skills and strategies, while emphasizing a sociocognitive perspective. The researchers built on the understandings illustrated through the case studies, verbal protocols, and ethnography by quantifying a relationship between writing quality and a process approach to writing.

Goldstein and Carr (1996) employed a survey to examine the relationship between writing quality and a process approach to writing. They looked at the National Assessment in Educational Progress writing data of fourth, eighth, and

twelfth graders from 1992 in conjunction with a survey that each student filled out about the instructional writing practices of their teachers. The researchers found that the students of teachers who encouraged the elements of process writing were generally better writers and averaged higher scores on writing than the students of teachers who did not. Their findings support the relationship between instruction encouraging a process approach to writing and writing quality.

Experimental and quasi-experimental studies were conducted to study the effectiveness of process writing instruction on writing quality. Graham and Sandmel (2011) examined these findings in a meta-analysis, which included 29 studies published through 2009, that met their criteria for inclusion (i.e., experimental or quasi-experimental design; quasi-experimental included a pretest; control condition was defined; treatment was the process writing approach as defined; outcome measures were writing quality, motivation, or both; students were in grades 1–12; effect size could be calculated). The results of their meta-analysis revealed a statistically significant effect, demonstrating that with general education students, instruction using a process writing approach improved writing quality. However, no other significant effects were found in their meta-analysis (e.g., process writing instruction did not produce significant improvement in writing quality with struggling writers; process writing instruction also did not significantly improve motivation). With the limited number of studies that examined struggling writers ($n = 5$) and that measured motivation ($n = 7$), Graham and Sandmel's findings accentuate shortcomings in the quantity of experimental and quasi-experimental research that has investigated the effectiveness of process writing instruction. Yet, equally important, their meta-analysis highlighted weaknesses with the quality of these studies.

The findings from Graham and Sandmel's (2011) meta-analysis clearly underscore the need for more experimental and quasi-experimental research on the effectiveness of process writing instruction as well as the importance of returning to mixed research studies, such as those conducted by Emig (1971), Graves (1975), and Bereiter and Scardamalia (1987), to better understand student responses to writing process instruction.

Our knowledge of the process approach to writing as a complex combination of cognitive and social problem solving, procedural knowledge, and strategies, which can be influenced by instruction, developed over time and arose from studies of several different methodologies. The insights gained from each study have contributed to a greater understanding of process writing as a whole. However, work still needs to be done to better understand the factors, processes, and practices influencing process writing, and a variety of methodologies will undoubtedly be helpful to continued work in this area.

It is important to note that although a single study could influence practice or spark interest in a new area of research, insights about literacy phenomena develop over time and are strengthened and enriched when examined from lines of research through the use of multiple methodologies. For the insights detailed in this chapter, we purposely represented each line of research chronologically,

by selecting representative studies, to demonstrate how individual studies build on one another. However, within each insight, the studies highlighted often represent a sample of an individual's or group's research, as scholars' lines of research often comprise numerous contributions across the span of their careers. Thus, it is important to consider that the richness of theories within these insights resulted from a synergy of research methodologies that is both linear and recursive.

As an illustrative example, the cognitive process theory of writing (Flower & Hayes, 1981), as described in insight 3, provided a theoretical framework for research on process writing. However, the development of this framework was grounded in the earlier research of scholars who subsequently expanded and investigated this construct. That is, Flower and Hayes credited Scardamalia and Bereiter in conducting "some of the most exciting and extensive research in this area," as they "have looked at the ways children cope with the cognitive demands of writing" (p. 374), through verbal protocol and experimental methodologies. Further, Flower and Hayes cited Perl's case study research in contributing to their understanding of writing as goal directed. In addition to these and numerous other studies, Flower's and Hayes's own prior studies, using verbal protocol methodologies, influenced the development of their cognitive theory of writing. Thus, synergy in the development of literacy constructs is dynamic; it is created linearly as newer research builds on the methodologies of previous research and recursively as scholars use studies and methodologies informed by their research in developing new research.

Understanding Theoretical Constructs of Literacy Through Multiple Methodologies

To examine how synergy of research methodologies informs broad literacy theories, we explore emergent literacy. Emergent literacy research has been, and continues to be, fraught with dissent among researchers (see, e.g., McGill-Franzen, 2010; Stanovich, 1990). Scholars have debated issues of methodology (e.g., what counts, or counts more, as research) and philosophy (e.g., development, or what is most important to develop). In addition, current scholarship on emergent literacy is often embedded in early literacy or literacy learning in early childhood, both of which take a broader focus on literacy from birth to age 8. Yaden, Rowe, and MacGillivray (2000) described emergent literacy as "an identifiable, though changing theoretical stance" (p. 445). The evolving and contested nature of emergent literacy theory makes it a rich example for our purposes. That is, the wide array of methodologies used in emergent literacy research provide compelling support for how multiple research methodologies advance theory.

Emergent Literacy

The construct of emergent literacy (Clay, 1966; Teale & Sulzby, 1986) marked an ideological shift away from the idea that reading development does not occur

until a particular age when children are *ready* to read. Rather, emergent literacy theory posits that literacy develops from birth, with many important steps toward reading occurring in the years leading up to conventional reading and writing.

Methodologies in Emergent Literacy Research

To demonstrate the breadth of research methodologies that have contributed to understanding emergent literacy, this subsection focuses on the methodologies used in the research reviews conducted by Mason and Allen (1986) and Whitehurst and Lonigan (1998). These reviews are, of course, products of their time. Examining long-standing reviews allows us to see the range of research methodologies that were influential relatively early in the development of emergent literacy theory. Current research on emergent literacy is both diverse and voluminous. Consider, for example, that the *Handbook of Early Literacy Research* (Dickinson & Neuman, 2006; Neuman & Dickinson, 2003, 2011) has generated three comprehensive editions of research reviews published in the course of just seven years. Thus, with the proliferation of research in emergent literacy, more current reviews tend to focus on subtopics within emergent literacy.

Mason and Allen (1986) conducted a review of emergent literacy research to provide a conceptual understanding of emergent literacy, along with implications for instruction. They categorized the research into the following four areas: (1) social and linguistic contexts, (2) oral and written language, (3) emergent reading and writing skills and knowledge, and (4) instructional practices. Interestingly, they reflected on the importance of methodology:

More descriptive than experimental research is reviewed. One reason is that emergent literacy represents a new perspective. Establishing this perspective involves the development of new constructs and linkages among causative factors, a step that is usually initiated with descriptive research techniques. In addition, a larger number of Emergent Literacy variables that affect later reading and writing success are being studied. These include oral language, story listening comprehension, and error patterns in early attempts to write and read. (p. 4)

Twelve years later, Whitehurst and Lonigan (1998) theorized that emergent literacy encompasses two distinct, yet related, domains (i.e., outside-in skills and inside-out skills), which they explained through a modified version of Whitehurst's (1996) theoretical model. It is important to note that Whitehurst and Lonigan recognized the limitations of their model, and that their model was not completely embraced in the field. Further, their notion of two distinct domains, and what constitutes each domain, remains unsettled. Whitehurst and Lonigan's review focused on: (a) addressing the multitude of skills, behaviors, and experiences of emergent literacy theory; and (b) the inclusivity of a range of methodologies used in emergent literacy research.

In juxtaposing these two reviews, it is evident that both include similar aspects of emergent literacy (i.e., context, oral and written language, book reading,

emergent reading, emergent writing, skills, interventions), which still represent the areas reflected in recent work. For example, the first five sections of the latest edition of the *Handbook of Early Literacy Research* (Neuman & Dickinson, 2011) focus on these same topics: (1) developmental processes, (2) family and sociocultural contexts, (3) pedagogy, (4) interventions and professional development, and (5) policy.

Another similarity between the two reviews is in how they conceptualized and defined emergent literacy. Mason and Allen (1986) suggested that

this area of study, which is becoming known as “emergent literacy,” replaces the terms “reading readiness” and “early reading and writing.” According to Teale and Sulzby (1986), the phrase “emergent literacy” was coined by Clay (1966). “Emergent” denotes the process of becoming, and “literacy” denotes the interrelatedness of writing and reading in young children’s development. The study of emergent literacy represents “a new perspective which stresses that legitimate, conceptual, developmental literacy learning is occurring during the first years of a child’s life” (Teale & Sulzby, 1986, p. 28). (p. 3)

Whitehurst and Lonigan (1998) stated,

The term “emergent literacy” is used to denote the idea that the acquisition of literacy is best conceptualized as a developmental continuum, with its origins early in the life of a child, rather than an all-or-none phenomenon that begins when children start school....For instance, the “reading readiness” approach, which preceded an emergent literacy perspective and is still dominant in many educational arenas, has as its focus the question of what skills children need to have mastered before they can profit from formal reading instruction. Such perspectives create a boundary between the “prereading” behaviors of children, and the “real” reading that children are taught in educational settings....A second distinction between an emergent literacy perspective and other perspectives on literacy is the assumption that reading, writing, and oral language develop concurrently and interdependently from an early age from children’s exposure to interactions in the social contexts in which literacy is a component, and in the absence of formal instruction...the term “emergent literacy” is typically attributed to Clay (1966). A more formal introduction of the term and field of inquiry was heralded by Teale and Sulzby’s (1986) book, *Emergent Literacy: Writing and Reading*. (pp. 848–849).

Table 2 provides an overview of the research methodologies used in the studies reviewed by Mason and Allen (1986) and Whitehurst and Lonigan (1998), organized chronologically by the areas of emergent literacy in the two reviews.

In examining the bodies of research in these two reviews, we found a difference in the time between them. Mason and Allen (1986) focused on research from 1970 to 1986, whereas Whitehurst and Lonigan (1998) predominantly focused on research from 1980 to 1997. As such, the overlap of time was only about six to seven years, with approximately 35% of the studies during this time frame reviewed by both groups. In addition, in several areas, they reviewed different studies by the same researchers. The underlying similarities are striking and provide a strong research-based foundation of knowledge in (a) the

Table 2. Emergent Literacy Research Reviewed by Mason and Allen^a (M&A) and Whitehurst and Lonigan^b (W&L)

Reviewer	Research Reviewed	Method ^c	Focus
Context/Experiences			
M&A	Clay, M.M. (1970). Research on language and reading in Pekeha and Polynesian children. In D.K. Bracken & E. Malinquist (Eds.), <i>Improving reading ability around the world</i> (pp. 132–141). Newark, DE: International Reading Association.	Descriptive, observation	Cultural, social
M&A	Goodacre, E. (1973). Great Britain. In J.A. Downing (Ed.), <i>Comparative reading: Cross-national studies of behavior and processes in reading and writing</i> (pp. 360–382). New York: Macmillan.	Correlation	Cultural, social
M&A	Sakamoto, T., & Makita, K. (1973). Japan. In J.A. Downing (Ed.), <i>Comparative reading: Cross-national studies of behavior and processes in reading and writing</i> (pp. 440–465). New York: Macmillan.	Correlation	Cultural, social
M&A	Thorndike, R. (1976). Reading comprehension in 15 countries. In J.E. Merritt (Ed.), <i>New horizons in reading</i> (pp. 500–507). Newark, DE: International Reading Association.	Correlation	Cultural, social
M&A	Chesterfield, R. (1978). Effects of environmentally specific materials on reading in Brazilian rural primary schools. <i>The Reading Teacher</i> , 32(3), 312–315.	Quasi-experimental	Classroom (instructional materials)
W&L	Ninio, A. (1980). Picture-book reading in mother–infant dyads belonging to two subgroups in Israel. <i>Child Development</i> , 51(2), 587–590.	Mixed methods	Home and classroom experiences
M&A	Wells, C.G. (1981). <i>Learning through interaction: The study of language development</i> . New York: Cambridge University Press.	Discourse analysis	Cultural, social
Both	Heath, S.B. (1982). What no bedtime story means: Narrative skills at home and school. <i>Language in Society</i> , 11(1), 49–76.	Ethnography	Home experiences, socioeconomic status, story reading
Both	White, K.R. (1982). The relation between socioeconomic status and academic achievement. <i>Psychological Bulletin</i> , 91(3), 461–481.	Meta-analysis	Home and classroom experiences, socioeconomic status (<i>continued</i>)

Table 2. Emergent Literacy Research Reviewed by Mason and Allen^a (M&A) and Whitehurst and Lonigan^b (W&L) (Continued)

Reviewer	Research Reviewed	Method ^c	Focus
Both	Anderson, A.B., & Stokes, S.J. (1984). Social and institutional influences on the development and practice of literacy. In H. Goelman, A. Oberg, & F. Smith (Eds.), <i>Awakening to literacy</i> (pp. 24–37). Exeter, NH: Heinemann.	Descriptive, observation	Home experiences, socioeconomic status
M&A	Dyson, A.H. (1984). Emerging alphabetic literacy in school contexts: Toward defining the gap between school curriculum and child mind. <i>Written Communication</i> , 1(1), 5–55.	Case study	Home and classroom experiences, writing
M&A	Allen, J. (1985). Inferential comprehension: The effects of text source, decoding ability, and mode. <i>Reading Research Quarterly</i> , 20(5), 603–615.	Correlation, comparative	Classroom (instructional materials)
M&A	Evans, M.A., & Carr, T.H. (1985). Cognitive abilities, conditions of learning, and the early development of reading skill. <i>Reading Research Quarterly</i> , 20(3), 327–350.	Correlation, comparative	Classroom (instructional approach)
M&A	Juel, C., & Roper/Schneider, D. (1985). The influence of basal readers on first grade reading. <i>Reading Research Quarterly</i> , 20(2), 134–152.	Correlation, comparative	Classroom (instructional materials)
Both	Wells, G. (1985). Preschool literacy-related activities and success in school. In D.R. Olson, N. Torrance, & A. Hildyard (Eds.), <i>Literacy, language, and learning: The nature and consequences of reading and writing</i> (pp. 229–255). New York: Cambridge University Press.	Correlation	Home experiences, socioeconomic status, story reading
Both	Feitelson, D., & Goldstein, Z. (1986). Patterns of book ownership and reading to young children in Israeli school-oriented and nonschool-oriented families. <i>The Reading Teacher</i> , 39(9), 924–930.	Descriptive, observation	Home experiences, socioeconomic status
M&A	Heath, S.B. (1986). Separating “things of the imagination” from life: Learning to read and write. In W.H. Teale & E. Sulzby (Eds.), <i>Emergent literacy: Writing and reading</i> (pp. 156–172). Westport, CT: Ablex.	Ethnography	Home experiences, socioeconomic status, story reading

Reviewer	Research Reviewed	Method ^a	Focus
W&L	Stevenson, H.W., & Newman, R.S. (1986). Long-term prediction of achievement and attitudes in mathematics and reading. <i>Child Development</i> , 57(3), 646–659.	Correlation	Experiences
Both	Teale, W.H. (1986). Home background and young children's literacy development. In W.H. Teale & E. Sulzby (Eds.), <i>Emergent literacy: Writing and reading</i> (pp. 173–206). Westport, CT: Ablex.	Descriptive, observation	Home experiences, socioeconomic status, story reading
W&L	Raz, I.S., & Bryant, P. (1990). Social background, phonological awareness and children's reading. <i>British Journal of Developmental Psychology</i> , 8(3), 209–225.	Correlation	Home experiences, socioeconomic status
W&L	Snow, C., Barnes, W.S., Chandler, J., Goodman, I.F., & Hemphill, L. (1991). <i>Unfulfilled expectations: Home and school influences on literacy</i> . Cambridge, MA: Harvard University Press.	Mixed methods	Home experiences, language
W&L	Bryant, D.M., Lau, L.B., Burchinal, M., & Sparling, J.J. (1994). Family and classroom correlates of Head Start children's developmental outcomes. <i>Early Childhood Research Quarterly</i> , 9(3/4), 289–309.	Correlation	Home and classroom experiences
W&L	Dickinson, D.K., & Smith, M.W. (1994). Long-term effects of preschool teachers' book readings on low-income children's vocabulary and story comprehension. <i>Reading Research Quarterly</i> , 29(2), 104–122.	Correlation	Classroom (book reading, teacher talk)
W&L	Bus, A.G., van Ijzendoorn, M.H., & Pellegrini, A.D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. <i>Review of Educational Research</i> , 65(1), 1–21.	Meta-analysis	Home story reading
W&L	Purcell-Gates, V. (1996). Stories, coupons, and the "TV Guide": Relationships between home literacy experiences and emergent literacy knowledge. <i>Reading Research Quarterly</i> , 31(4), 406–428.	Mixed methods	Home practices, knowledge, socioeconomic status
Emergent Reading			
M&A	Clay, M.M. (1967). The reading behavior of five-year-old children: A research report. <i>New Zealand Journal of Educational Studies</i> , 2, 11–31.	Descriptive, observation	
Both	Ferreiro, E., & Teberosky, A. (1982). <i>Literacy before schooling</i> (K.G. Castro, Trans.). Exeter, NH: Heinemann.	Content analysis	(continued)

Table 2. Emergent Literacy Research Reviewed by Mason and Allen^a (M&A) and Whitehurst and Lonigan^b (W&L) (Continued)

Reviewer	Research Reviewed	Method ^c	Focus
M&A	Ehri, L.C., & Wilce, L.S. (1985). Movement into reading: Is the first stage of printed word learning visual or phonetic? <i>Reading Research Quarterly</i> , 20(2), 163–179.	Correlation	
W&L	Ehri, L.C. (1988). <i>Movement in word reading and spelling: How spelling contributes to reading</i> (Technical Report No. 408). Champaign: Center for the Study of Reading, University of Illinois at Urbana-Champaign.	Experimental	
W&L	Tunmer, W.E., Herriman, M.L., & Nesdale, A.R. (1988). Metalinguistic abilities and beginning reading. <i>Reading Research Quarterly</i> , 23(2), 134–158.	Correlation (path analysis)	
W&L	Whitehurst, G.J. (1996, April). <i>A structural equation model of the role of home literacy environment in the development of emergent literacy skills in children from low-income backgrounds</i> . Paper presented at the annual meeting of the American Educational Research Association, New York.	Correlation (structural equation modeling)	
Emergent Writing			
M&A	Clay, M.M. (1975). <i>What did I write?</i> Exeter, NH: Heinemann.	Content analysis	
M&A	Bissex, G.L. (1980). <i>Gnys (genius) at wrk (work): A child learns to write and read</i> . Cambridge, MA: Harvard University Press.	Case study	
Both	Ferreiro, E., & Teberosky, A. (1982). <i>Literacy before schooling</i> (K.G. Castro, Trans.). Exeter, NH: Heinemann.	Content analysis	
M&A	Temple, C.A., Nathan, R.G., & Burris, N.A. (1982). <i>The beginnings of writing</i> . Boston: Allyn & Bacon.	Content analysis	
M&A	Graves, D.H. (1983). <i>Writing: Teachers and children at work</i> . Exeter, NH: Heinemann.	Mixed methods	
Both	Harste, J.C., Woodward, V.A., & Burke, C.L. (1984). <i>Language stories and literacy lessons</i> . Portsmouth, NH: Heinemann.	Descriptive, observation	
M&A	Goodman, Y.M. (1986). Children coming to know literacy. In W.H. Teale & E. Sulzby (Eds.), <i>Emergent literacy: Writing and reading</i> (pp. 1–14). Westport, CT: Ablex.	Content analysis	

Reviewer	Research Reviewed	Method ^a	Focus
Both	Sulzby, E. (1986). Writing and reading: Signs of oral and written language organization in the young child. In W.H. Teale & E. Sulzby (Eds.), <i>Emergent literacy: Writing and reading</i> (pp. 50–89). Westport, CT: Ablex.	Content analysis	
W&L	Sulzby, E., Barnhart, J., & Hieshima, J. (1988). <i>Forms of writing and rereading from writing: A preliminary report</i> (Technical Report No. 437). Champaign: Center for the Study of Reading, University of Illinois at Urbana-Champaign.	Content analysis	
Intervention			
Both	Clay, M.M. (1979). <i>Reading: The patterning of complex behavior</i> . Portsmouth, NH: Heinemann.	Quasi-experimental, instrument development	Reading Recovery
Both	McCormick, C.E., & Mason, J.M. (1984). <i>Intervention procedures for increasing preschool children's interest in and knowledge about reading</i> (Technical Report No. 312). Champaign: University of Illinois at Urbana-Champaign; Cambridge, MA: Bolt Beranek & Newman.	Quasi-experimental	Book reading
M&A	Tharp, R.G., Jordan, C., Speidel, G.E., Au, K.K., Klein, T.W., Calkins, R.P., et al. (1984). Product and process in applied developmental research: Education and the children of a minority. In M.E. Lamb, A.L. Brown, & B. Rogoff (Eds.), <i>Advances in developmental psychology</i> (Vol. 3, pp. 91–142). Hillsdale, NJ: Erlbaum.	Mixed methods, formative design	Kamehameha Early Education Program
M&A	Huck, C., & Pinnell, G.S. (1985). <i>Reading Recovery in Ohio: An early intervention effort to reduce reading failure</i> . Unpublished manuscript.	Quasi-experimental	Reading Recovery
M&A	Feitelson, D., Kita, B., & Goldstein, Z. (1986). Effects of listening to series stories on first graders' comprehension and use of language. <i>Research in the Teaching of English</i> , 20(4), 339–356.	Quasi-experimental	Teacher read-aloud
W&L	Whitehurst, G.J., Falco, F.L., Lonigan, C.J., & Fischel, J.E. (1988). Accelerating language development through picture book reading. <i>Developmental Psychology</i> , 24(4), 552–559.	Experimental	Dialogic reading (shared book reading) (continued)

Table 2. Emergent Literacy Research Reviewed by Mason and Allen^a (M&A) and Whitehurst and Lonigan^b (W&L) (Continued)

Reviewer	Research Reviewed	Method ^c	Focus
W&L	Valdez-Menchaca, M.C., & Whitehurst, G.J. (1992). Accelerating language development through picture book reading: A systematic extension to Mexican day care. <i>Developmental Psychology</i> , 28(6), 1106–1114.	Experimental	Dialogic reading (shared book reading)
W&L	Neuman, S.B., & Roskos, K. (1993). Access to print for children of poverty: Differential effects of adult mediation and literacy-enriched play settings on environmental and functional print tasks. <i>American Educational Research Journal</i> , 30(1), 95–122.	Experimental	Literacy-enriched play
W&L	Senéchal, M., & Cornell, E.H. (1993). Vocabulary acquisition through shared reading experiences. <i>Reading Research Quarterly</i> , 28(4), 360–374.	Correlation, comparative	Shared book reading
W&L	Arnold, D.H., Lonigan, C.J., Whitehurst, G.J., & Epstein, J.N. (1994). Accelerating language development through picture book reading: Replication and extension to a videotape training format. <i>Journal of Educational Psychology</i> , 86(2), 235–243.	Experimental	Dialogic reading (shared book reading)
Language			
M&A	Chomsky, C. (1972). Stages in language development and reading exposure. <i>Harvard Educational Review</i> , 42(1), 1–33.	Correlation	Story reading
Both	Ninio, A., & Bruner, J. (1978). The achievement and antecedents of labelling. <i>Journal of Child Language</i> , 5(1), 1–15.	Content analysis	Story reading
Both	Snow, C.E. (1983). Literacy and language: Relationships during the preschool years. <i>Harvard Educational Review</i> , 53(2), 165–189.	Correlation	Story reading
W&L	Butler, S.R., Marsh, H.W., Sheppard, M.J., & Sheppard, J.L. (1985). Seven-year longitudinal study of the early prediction of reading achievement. <i>Journal of Educational Psychology</i> , 77(3), 349–361.	Correlation (path analysis)	Literacy
Both	Sulzby, E. (1985). Children's emergent reading of favorite storybooks: A developmental study. <i>Reading Research Quarterly</i> , 20(4), 458–481.	Content analysis	Written, narrative

Reviewer	Research Reviewed	Method ^a	Focus
W&L	Purcell-Gates, V. (1986). Lexical and syntactic knowledge of written narrative held by well-read-to kindergartners and second graders. <i>Research in the Teaching of English</i> , 22(2), 128–160.	Descriptive	Written, narrative
M&A	Snow, C.E., & Ninio, A. (1986). The contracts of literacy: What children learn from learning to read books. In W.H. Teale & E. Sulzby (Eds.), <i>Emergent literacy: Writing and reading</i> (pp. 116–138). Westport, CT: Ablex.	Content analysis	Story reading
W&L	Dickinson, D.K., & Snow, C.E. (1987). Interrelationships among prereading and oral language skills in kindergartners from two social classes. <i>Early Childhood Research Quarterly</i> , 2(1), 1–25.	Correlation	Story reading
W&L	Pappas, C.C., & Brown, E. (1988). The development of children's sense of the written story register: An analysis of the texture of kindergartners' "pretend reading" texts. <i>Linguistics and Education</i> , 1(1), 45–79.	Content analysis	Written, narrative
M&A	Lartz, M.N., & Mason, J.M. (1989). <i>Jamie: One child's journey from oral to written language</i> (Technical Report No. 453). Champaign: University of Illinois at Urbana-Champaign.	Case study	Written, narrative
W&L	Pikulski, J.J., & Tobin, A.W. (1989). Factors associated with long-term reading achievement of early readers. In S.McCormick & J. Zutell (Eds.), <i>Cognitive and social perspectives for literacy research and instruction: Thirty-eighth yearbook of the National Reading Conference</i> (pp. 135–143). Chicago: National Reading Conference.	Correlation	Literacy
W&L	Scarborough, H.S. (1989). Prediction of reading dysfunction from familial and individual differences. <i>Journal of Educational Psychology</i> , 81(1), 101–108.	Correlation	Story reading
W&L	Bishop, D.V., & Adams, C. (1990). A prospective study of the relationship between specific language impairment, phonological disorders and reading retardation. <i>Journal of Child Psychology and Psychiatry</i> , 31(7), 1027–1050.	Correlation	Literacy
W&L	Dickinson, D.K., & Tabors, P.O. (1991). Early literacy: Linkages between home, school and literacy achievement at age five. <i>Journal of Research in Childhood Education</i> , 6(1), 30–46.	Correlation	Literacy

(continued)

Table 2. Emergent Literacy Research Reviewed by Mason and Allen^a (M&A) and Whitehurst and Lonigan^b (W&L) (Continued)

Reviewer	Research Reviewed	Method ^c	Focus
W&L	Crain-Thoreson, C., & Dale, P.S. (1992). Do early talkers become early readers? Linguistic precocity, preschool language, and emergent literacy. <i>Developmental Psychology</i> , 28(3), 421–429.	Correlation	Story reading
W&L	Payne, A.C., Whitehurst, G.J., & Angell, A.L. (1994). The role of home literacy environment in the development of language ability in preschool children from low-income families. <i>Early Childhood Research Quarterly</i> , 9(3/4), 427–440.	Correlation	Story reading
W&L	Sénéchal, M., Cornell, E.H., & Broda, L.S. (1995). Age-related differences in the organization of parent–infant interactions during picture-book reading. <i>Early Childhood Research Quarterly</i> , 10(3), 317–337.	Discourse analysis, comparative	Story reading
W&L	Sénéchal, M., LeFevre, J., Hudson, E., & Lawson, E.P. (1996). Knowledge of storybooks as a predictor of young children's vocabulary. <i>Journal of Educational Psychology</i> , 88(3), 520–536.	Correlation	Story reading
W&L	Sénéchal, M., LeFevre, J., Thomas, E.M., & Daley, K.E. (1998). Differential effects of home literacy experiences on the development of oral and written language. <i>Reading Research Quarterly</i> , 33(1), 91–116.	Correlation	Story reading
Skills			
M&A	Mason, J.M. (1977). <i>Reading readiness: A definition and skills hierarchy from preschoolers' developing conceptions of print</i> (Technical Report No. 59). Champaign: University of Illinois at Urbana-Champaign; Cambridge, MA: Bolt Beranek & Newman.	Descriptive, observation	Alphabetic principle (training, intervention)
Both	Mason, J.M. (1980). When do children begin to read? An exploration of four year old children's letter and word reading competencies. <i>Reading Research Quarterly</i> , 15(2), 203–227.	Descriptive, observation	Alphabetic principle
Both	Bradley, L., & Bryant, P.E. (1983). Categorizing sounds and learning to read—a causal connection. <i>Nature</i> , 301(5899), 419–421.	Quasi-experimental	Phonological awareness

Reviewer	Research Reviewed	Method ^a	Focus
W&L	Jorm, A.F., Share, D.L., Maclean, R., & Matthews, R.G. (1984). Phonological recoding skills and learning to read: A longitudinal study. <i>Applied Psycholinguistics</i> , 5(3), 201–207.	Correlation	Alphabetic principle
M&A	Lundberg, I. (1984). Learning to read. <i>School Research Newsletter</i> (National Board of Education, Sweden), August.	Correlation	Phonological awareness
W&L	Mann, V.A., & Liberman, I.Y. (1984). Phonological awareness and verbal short-term memory. <i>Journal of Learning Disabilities</i> , 17(10), 592–599.	Correlation	Phonological awareness
M&A	Perfetti, C.A. (1984). Reading acquisition and beyond: Decoding includes cognition. <i>American Journal of Education</i> , 93(1), 40–60.	Correlation	Phonological awareness
M&A	Peterman, C., & Mason, J.M. (1984, November). <i>Kindergarten children's perceptions of the form of print in labeled pictures and stories</i> . Paper presented at the annual meeting of the National Reading Conference, St. Petersburg, FL.	Correlation	Alphabetic principle
W&L	Share, D.L., Jorm, A.F., MacLean, R., & Matthews, R. (1984). Sources of individual differences in reading acquisition. <i>Journal of Educational Psychology</i> , 76(6), 1309–1324.	Correlation	Phonological awareness
W&L	Stanovich, K.E., Cunningham, A.E., & Feeman, D.J. (1984). Intelligence, cognitive skills, and early reading progress. <i>Reading Research Quarterly</i> , 19(3), 278–303.	Correlation	Phonological awareness
M&A	Juel, C., Griffith, P.L., & Gough, P.B. (1985). Acquisition of literacy: A longitudinal study of children in first and second grade. <i>Journal of Educational Psychology</i> , 78(4), 243–255.	Correlation	Phonological awareness
W&L	Perfetti, C.A., Beck, I., Bell, L.C., & Hughes, C. (1987). Phonemic knowledge and learning to read are reciprocal: A longitudinal study of first grade children. <i>Merrill Palmer Quarterly</i> , 33(3), 283–319.	Correlation	Phonological awareness
W&L	Wagner, R.K., & Torgesen, J.K. (1987). The nature of phonological processing and its causal role in the acquisition of reading skills. <i>Psychological Bulletin</i> , 101(2), 192–212.	Correlation	Other cognitive (rapid naming)
W&L	Ball, E.W., & Blachman, B.A. (1988). Phoneme segmentation training: Effect on reading readiness. <i>Annals of Dyslexia</i> , 38(1), 208–225.	Experimental	Phonological awareness (training, intervention) (continued)

Table 2. Emergent Literacy Research Reviewed by Mason and Allen^a (M&A) and Whitehurst and Lonigan^b (W&L) (Continued)

Reviewer	Research Reviewed	Method ^c	Focus
W&L	Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. <i>Journal of Educational Psychology</i> , 80(4), 437–447.	Correlation	Phonological awareness
W&L	Lundberg, L., Frost, J., & Petersen, O. (1988). Effects of an extensive program for stimulating phonological awareness in preschool children. <i>Reading Research Quarterly</i> , 23(3), 263–284.	Quasi-experimental	Phonological awareness (training, intervention)
W&L	Byrne, B., & Fielding-Barnsley, R. (1991). Evaluation of a program to teach phonemic awareness to young children. <i>Journal of Educational Psychology</i> , 83(4), 451–455.	Experimental	Phonological awareness (training, intervention)
W&L	Gathercole, S.E., Willis, C., & Baddeley, A.D. (1991). Differentiating phonological memory and awareness of rhyme: Reading and vocabulary development in children. <i>British Journal of Psychology</i> , 82(3), 387–406.	Correlation	Other cognitive (phonological memory)
W&L	Gough, P.B., & Walsh, M.A. (1991). Chinese, Phoenicians, and the orthographic cipher of English. In S.A. Brady & D.P. Shankweiler (Eds.), <i>Phonological processes in literacy: A tribute to Isabelle Y. Liberman</i> (pp. 199–210). Hillsdale, NJ: Erlbaum.	Correlation	Alphabetic principle
W&L	Gathercole, S.E., Willis, C.S., Emslie, H., & Baddeley, A.D. (1992). Phonological memory and vocabulary development during the early school years: A longitudinal study. <i>Developmental Psychology</i> , 28(5), 887–898.	Correlation	Other cognitive (phonological memory)
W&L	Torgesen, J.K., Morgan, S.T., & Davis, C. (1992). Effects of two types of phonological awareness training on word learning in kindergarten children. <i>Journal of Educational Psychology</i> , 84(3), 364–370.	Experimental	Phonological awareness (training, intervention)
W&L	Byrne, B., & Fielding-Barnsley, R. (1993). Evaluation of a program to teach phonemic awareness to young children: A 1-year follow-up. <i>Journal of Educational Psychology</i> , 85(1), 104–111.	Experimental	Phonological awareness (training, intervention)
W&L	Bowey, J.A. (1994). Phonological sensitivity in novice readers and nonreaders. <i>Journal of Experimental Child Psychology</i> , 58(1), 134–159.	Correlation	Phonological awareness

Reviewer	Research Reviewed	Method ^a	Focus
W&L	Stahl, S.A., & Murray, B.A. (1994). Defining phonological awareness and its relationship to early reading. <i>Journal of Educational Psychology</i> , 86(2), 221–234.	Correlation (factor analysis)	Phonological awareness
W&L	Wagner, R.K., Torgesen, J.K., & Rashotte, C.A. (1994). Development of reading-related phonological processing abilities: New evidence of bidirectional causality from a latent variable longitudinal study. <i>Developmental Psychology</i> , 30(1), 73–87.	Correlation (latent variable modeling)	Other cognitive (phonological memory, rapid naming)
W&L	Byrne, B., & Fielding-Barnsley, R. (1995). Evaluation of a program to teach phonemic awareness to young children: A 2- and 3-year follow-up and a new preschool trial. <i>Journal of Educational Psychology</i> , 85(1), 104–111.	Experimental	Phonological awareness (training, intervention)
W&L	Rohlf, M., & Pratt, C. (1995). Phonological awareness, verbal working memory and the acquisition of literacy. <i>Reading and Writing</i> , 7(4), 327–360.	Correlation	Other cognitive (phonological memory)
W&L	Johnston, R.S., Anderson, M., & Holligan, C. (1996). Knowledge of the alphabet and explicit awareness of phonemes in prereaders: The nature of the relationship. <i>Reading and Writing</i> , 8(3), 217–234.	Correlation	Phonological awareness, alphabetic principle
W&L	McBride-Chang, C., & Manis, F.R. (1996). Structural invariance in the associations of naming speed, phonological awareness, and verbal reasoning in good and poor readers: A test of the double deficit hypothesis. <i>Reading and Writing</i> , 8(4), 323–339.	Correlation (structural equation modeling)	Other cognitive (rapid naming)
W&L	Wagner, R.K. (1996, April). <i>Meta-analysis of the effects of phonological awareness training with children</i> . Paper presented at the annual meeting of the American Educational Research Association, New York.	Meta-analysis	Phonological awareness (training, intervention)

Note. The reviews are organized chronologically by the areas of emergent literacy in the two reviews.

^a“A Review of Emergent Literacy With Implications for Research and Practice in Reading,” by J.M. Mason and J. Allen, 1986, *Review of Research in Education*, 13(1), 3–47.

^b“Child Development and Emergent Literacy,” by G.J. Whitehurst and C.J. Lonigan, 1998, *Child Development*, 69(3), 848–872.

^c“Descriptive research is a broad “what is?” methodology in which researchers “describe or enumerate a phenomenon” (according to Shanahan) without attempting to change the context. (Quotation from *What Research Has to Say About Reading Instruction* [3rd ed., p. 10], edited by A.E. Farstrup and S.J. Samuels, 2002, Newark, DE: International Reading Association.)

development of emerging reading and writing; (b) the importance of context, experiences, and language; and (c) the relationships between skills and reading outcomes.

Yet, most important given the focus of this chapter is the breadth of methodologies used by researchers whose work has contributed to the influential conceptualization and theorization of emergent literacy presented by Mason and Allen (1986) and Whitehurst and Lonigan (1998). In examining Table 2, readers can clearly see that a broad perspective, which embraces the methodological affordances of numerous research studies, is necessary to understand the complexity of emergent literacy. For example, understanding the importance of children's context and experiences in their emergent literacy development and growth has been advanced through research using descriptive, correlational, meta-analysis, ethnographic, content analysis, and discourse analysis methodologies. It is through the plethora of methodological lenses, offering more sophistication than would be possible with a singular methodological focus, that our understanding of emergent literacy has developed.

As noted earlier, the reviews that were the focus of our analysis are from 1986 and 1998, demonstrating that multiple methodologies informed the early development of emergent literacy theory. Since the publication of those reviews, emergent literacy theory continues to develop and expand.

In 1997, McGee and Purcell-Gates suggested, "the field of emergent literacy is alive and well" (p. 317). A decade and a half later, this sentiment still applies and is reflected in the sheer volume of research published in the past 20 years. Further, as Sulzby and Teale (1991) noted, "one strength of emergent literacy research currently is the openness of researchers to use many different methodologies," (p. 749) another view that is still relevant and clearly reflected in research today. The following studies, which feature a small sampling of methodologies currently used in research, exemplify the continuous development of emergent literacy theory:

- *Case study*: Exploring story dictation and vocabulary development (Christ, Wang, & Chiu, 2011)
- *Correlation*: Used in cluster analysis to create profiles of at-risk preschool children (Cabell, Justice, Konold, & McGinty, 2011)
- *Experimental study*: Using randomized design to determine the effectiveness of curricular approaches (Lonigan, Farver, Phillips, & Clancy-Menchetti, 2011)
- *Formative experiment*: Designed to explore, develop, and modify an intervention for children ages 3–5 and their low-literate parents (J. Anderson, Purcell-Gates, Jang, & Gagné, 2010)
- *Instrument development*: Examining a measure of emergent literacy learners with special needs (Baker, Spooner, Ahlgrim-Delzell, Flowers, & Browder, 2010)

- *Meta-analysis*: Examining the effects of instruction on alphabetic knowledge (Piasta & Wagner, 2010)
- *Mixed methods*: Using a longitudinal design to explore the relationship between young children's home culture and their literacy development (Sonnenschein, Baker, & Serpell, 2010)

In reflecting on the current state of emergent literacy, Teale et al. (2009) noted, "We *have* come a long way" (p. 93), an insight clearly supported through multifaceted research. At the same time, however, there still remains much to learn. We look forward to the continued evolution of understanding, following in what is now a long tradition of contributions from rich and diverse methodological resources.

Moving Forward

The examples of synergy of research methodologies presented in this chapter were made possible because scholars read and drew on work of multiple methodologies. In each of the three insights, as well as theory development, scholars have contextualized their research in extant research reflective of numerous methodologies. Interesting, and noteworthy to future scholars, is that the groundbreaking work in each example was indeed dissertation research (e.g., Clay, 1966; Emig, 1971; Graves, 1975; Meyer, 1975; Read, 1971).

To continue, and expand, the degree to which a broad range of methodologies inform development of insights and theory in the field, we must continue to ensure that scholars read and work from and across a broad range of research methodologies. This task is in some respects more daunting now than it has been in the past. However, one way to encourage synergy of research methodology is for journal editors to actively seek representation of a broad range of methodologies within their journals or edited volumes. Editors can also encourage reviewers, and act themselves, to draw authors' attention to cases in which relevant work of different methodologies is not included within their literature reviews. Grantors can fund work of multiple methodologies and bring together scholars working within the same topic using different methodological approaches. Professional organizations and conference organizers can do the same, encouraging symposia, for example, in which multiple methodologies are represented.

Still, the greatest responsibility for culling from research using a range of methodologies lies with the individual scholar. Reading widely, seeking to understand the methodologies, findings, and perspectives of scholars working in related areas, even if in seemingly unrelated ways, is an important responsibility. As argued at the outset of this chapter, the complexity of literacy teaching, learning, and development is such that no single research methodology will be sufficient for understanding.

QUESTIONS FOR REFLECTION

1. How does synergy in literacy research contribute to the development and confirmation of theory?
2. How did the accumulation of evidence from methodologically different studies form the foundation of theory and practice in emergent literacy?
3. How can you conceptualize a study using synergistic methods that would add to the body of research literature on emergent literacy or process writing?
4. What benefits accrue from synergistic approaches to literacy research?

NOTE

*When this chapter was written, Mallette was at Southern Illinois University, and Duke was at Michigan State University.

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