CHAPTER 1

Introduction to Literate Thought

> *Much of modern culture, science and technology would not have been developed without the thought and memory aid of writing. Consider learning or teaching the basics of physics, chemistry, biology, or mathematics without a pencil or blackboard. Worse still, imagine trying to discover the principles involved in these or other subjects from a mass of data that had to be stored and manipulated using only human memory.*
>
> Rubin, 1995, p. 308

> *Many students have difficulty accessing academic content information that, traditionally, has been presented in print. Because much of the information that reflects school knowledge is obtained through printed texts, these students will lag in their knowledge development and not have ample opportunities to develop a high level of literate thought—that is, the ability to reflect upon information, solve problems, or develop other higher-level critical thinking skills. Students need opportunities to think about complex information through a captured mode other than print . . .*
>
> Paul & Wang, 2006a, p. 304

The main goal of this book is to introduce professionals and students to the multifaceted concept of literate thought. At first blush, it can be stated simply that literate thought comprises two complex constructs—*literate* and *thought*. Upon further reflection, it might be surmised that literate thought also incorporates aspects from other concepts such as *language*, *literacy*, *cognition*, and *comprehension*.

Traditionally, the term *literate* has been used to describe individuals who possess erudition and can access and interpret printed or written scholarly texts or materials (Olson, 1994; Paul, 2009; Paul & Wang, 2006a). These assertions can be inferred from the above passage by Rubin

(1995), who highlights the thought and memory aid associated with writing. As is discussed later, the process of writing serves several functions, one of which is to facilitate our external representations of reality. Indeed, writing is only one form of an external representation of reality.

It is possible to develop literate thought, or to become literate, in the *through-the-air* or *face-to-face* mode using spoken or sign communication or, specifically, the primary forms of verbal languages. This is implied, in part, in the second passage above by Paul and Wang (2006a). The through-the-air mode is the *real engine* for thought and communication and upon which secondary representations such as print or written language, Braille, and so on, are based (Paul, 2009; Pinker, 1994)—a point that is reiterated throughout this book.

This should not be construed as an *either–or* dichotomy; it is important to develop high levels of thought in both through-the-air and secondary (or captured) modes. In fact, it is doubtful that individuals can reach a competent level of literate thought in the secondary mode without also having competence in the primary or through-the-air mode (Cain & Oakhill, 2007; Nation, 2005; Perfetti, Landi, & Oakhill, 2005). With respect to linguistic and cognitive demands, there are similarities and differences between these two broad modes, as discussed later. Nevertheless, we argue that, in general, literate thought is mode-independent (i.e., not dependent on a specific mode).

In this chapter, we begin our response to at least two broad questions:

1. What does it mean to be literate?
2. What is literate thought?

To address these questions, it is necessary initially to discuss perspectives on writing (as part of literacy), particularly those views related to or implied by the two passages at the beginning of the chapter. The intention is to examine a few basic tenets of external representations and internal representations—the latter of which entails historical background on oral literacy or the oral tradition.

Subsequently, this chapter proceeds to a rendition of the concept of literate or, in this case, a literate mind. Finally, we describe the major requisites and relate literate thought to other areas that include New and Multiple Literacies, psychological and disciplinary models, and critico-creative thinking. These key concepts provide the background and in-

sights into the remainder of this book, including discussions of specific populations of students such as those with language/learning, sensory, and cognitive/developmental disabilities, and those who are English language learners (ELLs).

PERSPECTIVES ON WRITING

Rubin (1995)

Rubin (1995) asserted that, without the benefits associated with writing, it would be extremely labor-intensive to learn, acquire, use, or develop information from complex subjects such as physics, mathematics, and philosophy. Considering the sheer amount of available data in these disciplines, it is difficult to imagine how individuals could solve problems or develop theories if they had to depend on their personal memories without the aid of written language. Reasoning further, it has to be wondered whether religion with its sacred texts, and literature (based on spoken language), in particular, are even possible without writing.

Writing seems to be a tool that assists in the external representations of reality or meaning. External representations can be manifested as outlines, semantic or word maps, advance or graphic organizers, summarizations, syntheses, briefs, reports, and so on. The nature of internal representations (defined as being inside the head, cognitive representations) is often affected by the use and organization of external representations via the use of external aids or apparatus (e.g., pen and paper, computer, etc.). In fact, Rubin (1995) argued that it is doubtful that one can represent information internally (i.e., cognitively) without exposure to an external representation or external activity (e.g., observation of an event, etc.). After the initial exposure or experience, individuals can use their metacognitive (defined as thinking about thinking) skills to develop further their internal representations.

Ong (1982) and others (e.g., Luria, 1976) argued strongly that it is the specific phenomenon of writing (or written language) that made it possible for the complexity and development of thought present in societies that have print and technology. Thus, there would be no serious complex ideas or disciplines if it had not been possible to capture information via

the use of typography (print) or chirography (handwriting). Ong expressed the value and influence of writing emphatically:

> Oral cultures indeed produce powerful and beautiful verbal performances of high artistic and human worth, which are no longer even possible once writing has taken possession of the psyche. Nevertheless, without writing, human consciousness cannot achieve its fuller potentials, cannot produce other beautiful and powerful creations. In this sense, orality needs to produce and is destined to produce writing. Literacy, as will be seen, is absolutely necessary for the development not only of science but also of history, philosophy, explicative understanding of literature and of any art, and indeed for the explanation of language (including oral speech) itself. (p. 15)

If we consider carefully the remarks of Ong (1982), we can ask an interesting array of questions. For example, is writing per se responsible for the development of complex disciplines such as science or mathematics? Is writing related to a certain type of complex thought found in societies that have written language or literacy? Does writing affect the further development of spoken (or sign) language? Finally, with respect to one major goal of this book: Is writing (and reading) absolutely indispensable for the development of literate thought?

Before leaving the first passage, it should be highlighted that several scholars, notably, Luria, Ong, and others, have commented on the assertion that writing produces global effects on thinking and memory (e.g., see Olson, 1994; Rubin, 1995). It is now clear—albeit still debatable—that, if there are effects of writing, then these must be considered along with the effects of schooling, which often confound the issue due to the required tasks associated with literacy practices in the classrooms (e.g., answering levels of questions, providing levels of interpretations, and so on; see additional discussions in Scribner & Cole, 1981; Street, 1984). In any case, it might be that writing actually produces specific effects on thinking associated with a specific task such as working on a mathematics problem, composing poetry, or solving language puzzles, rather than global effects on thinking in general.

Paul and Wang (2006a)

Paul and Wang (2006a) offer another position on writing, namely, that it is only one external form of captured information, which can aid the process of thinking during the representation and understanding of

reality. This focus is on the product of writing (i.e., what is captured on paper or electronically) and not the process, which these researchers do acknowledge is equally as important. Essentially, this means that there are other external forms of captured information that are equivalent to or can provide similar benefits as does writing (Paul, 2009; Paul & Wang, 2006b; Wang, 2005). Given the range of difficulties that students, particularly students with disabilities, have with print (i.e., reading and writing), which can impede their growth in the development of complex cognition and through-the-air verbal language skills, Paul and Wang (2006a, 2006b) argued for the use of other external forms of captured information, in addition to print, in schools for instructional purposes (see also Chapters 3 and 6 to 9).

A similar analogy has also been made by Walmsley and Allington (1995), who suggested that part of the difference between good and poor or struggling readers and writers can be explained by instructional tasks reflective of weak content and impoverished information. Good readers and writers continue to improve intellectually because they can access challenging texts and are required to perform complex cognitive or metacognitive tasks in both the written and through-the-air modes. On the other hand, poor or struggling readers and writers are exposed to high interest, low vocabulary, easy-reading books and are also engaged in less rigorous, more literal, less-demanding cognitive and linguistic activities in the through-the-air mode.

From another standpoint, using inaccessible print or written language materials predominantly or solely can induce cognitive impoverishment or cognitive deprivation. This assertion has been compared to that of the *Matthew Effects* in reading as described by Stanovich (1986). Stanovich argued that good readers tend to become even better readers and can read to learn mainly via the process of reading voraciously. He labeled this situation as *the rich get richer*. On the other hand, *the poor actually become poorer* in the case of struggling or poor readers.

Poor readers do not read widely or frequently and tend to lag further and further behind their better-reading counterparts. As implied by Warmsley and Allington (1995) as well as Paul and Wang (2006a, 2006b), these readers (and writers) are not provided with opportunities to continue their acquisition of knowledge via the increasing development of their cognitive and metacognitive skills relative to their chronological age levels.

In Paul and Wang's (2006a, 2006b; see also, Wang, 2005) view, print literacy (reading and writing) is not the only road to the development of literate thought. Specifically, writing is not a general, global change agent; rather, writing is one form of captured information which influences the way individuals think and use their memory processes. There are other forms of captured information that do not involve print, such as the use of audiobooks (on CDs or DVDs) or videobooks (i.e., signing books on DVDs). Whether these *alternative* forms of captured information are equivalent to writing (process- and product-wise) is an open debate (see also, the discussion in Chapters 2 and 3). If so, then they can also serve, at the least, as external aids for thought and memory, and this would have pervasive educational or instructional implications for children and adolescents, particularly the ones who struggle immensely with information presented in print or written language venues.

Writing and External Representation

To recap, there are two broad types of representation—external and internal—and both are comprised of or influenced by cognitive and social processes, practices, strategies, and so on. As mentioned previously, external representations refer to processes and products outside the head whereas internal representations refer to actions inside the head.

We have argued that writing is one tool for producing and representing information externally. It aids in the development of memory and thinking and reduces the demands on memory to permit reflection and refinement. A complex process notwithstanding, writing can be viewed as one external form of captured information.

To minimize confusion, it is important to emphasize that we have labeled writing as one type of captured information. As discussed further in this book (see Chapters 2 and 3), writing is a reflection—albeit roughly—of the sounds of speech and even influences how one thinks about one's spoken language. Through writing, individuals can learn and develop a better and deeper understanding of intricacies related to phonology and other language components. Writing is also a form of communication and is driven by the activities of one's spoken language and cognition. Individuals write to convey what they know and to figure out (or construct) what it is that they think they know. Thus, writing is a mechanism for constructing meaning and reality—albeit it is not the only mechanism for this purpose.

Table 1-1 provides a summary of the broad views of writing.

Table 1-1. Highlights of Views of Writing

One View of Writing

- Without the benefits (i.e., as an aid for thought and memory) associated with writing, it would be extremely difficult to learn, acquire, use, or develop information from complex subjects such as physics, mathematics, and philosophy.
- If there are effects of writing, then these must be considered along with the effects of schooling, which often confounds the issue due to the required tasks associated with literacy in the classrooms.
- Writing produces specific effects on thinking associated with a specific task such as working on a mathematics problem, writing a poem, or solving a logic problem, rather than global effects on thinking in general.

A Second View of Writing

- The use of print literacy predominantly or solely with poor or struggling readers/writers can induce cognitive impoverishment or cognitive deprivation.
- Writing is only one form of captured information, which can and does influence the way individuals think and use their memory processes. There are other forms of captured information, not involving print, such as the use of audiobooks (on CDs or DVDs) or the use of videobooks (i.e., signing books on DVDs).

Additional Remarks on Writing

- Writing is a representation—albeit roughly—of the sounds of speech or of the spoken language and even influences how one thinks about one's spoken language.
- Via writing, individuals can learn and develop a better and deeper understanding of the intricacies of their spoken language (e.g., its phonology, morphology, syntax, and its use to express ideas and so on).
- Writing is a form of communication and is driven by the activities of one's spoken language and cognition. Individuals write to convey what they know and write to figure out (or construct) what it is that they think they know.

ORALITY AND INTERNAL REPRESENTATION

As mentioned previously, literate thought can be developed in the spoken (or sign) language mode as well—that is, via the processes and products associated with the use of face-to-face or through-the-air communicative interactions, which may not be captured or represented externally (e.g., by external aids such as paper and pencil, etc.). Although this type of literate thought is or can be complex, it is different from the type of thought

that is aided by writing or any other external aid. This becomes evident in a discussion on orality or the oral tradition (Denny, 1991; Feldman, 1991; Olson, 1989, 1991; Rubin, 1995).

In describing orality, it should be possible to begin to conceptualize what it means to be literate—in the broad sense—that is, in a sense that transcends traditional literacy skills (e.g., reading and writing). The emphasis here is on the construction of internal representations of reality or meaning. There are constraints associated with the use of this mode (i.e., the limitations of human memory and cognitive processes).

To understand the issues of orality and constraints, let us start with Bruner (1986), who argued that there are basically two processes of thought or cognitive functioning that can be used to construct a model of reality or of meaning about events. One can be labeled the *narrative* and the other is the *logical argument*. Although both processes are complementary, each cannot be reduced to the other because they are radically different. Specifically, they are different with respect to their criteria for quality, creativity, and coherence.

In general, *logical argument* is most useful for the development of theories, laws, and other abstract entities, and requires external representational aids to be most effective. In contrast, the *narrative* functioning deals mostly with concrete ideas and events and is dependent on human memory and thinking within an internal mode of representation (i.e., inside the head). In other words, meaning is typically conveyed through the use of concrete, observable actions set in the realm of the narrative; there is no penchant for the deep, layered abstract representations of truths (Olson, 1994; Ong, 1982; Rubin, 1995).

As a consequence, the narrative is the predominant or sole form of cognitive functioning in the oral tradition or orality (particularly in nonliterate or nonprint cultures). How does the use of orality work? How do individuals construct meaning or reality via remembering situations, events, and dialogues in the oral mode? There have been attempts to analyze the oral tradition within the structure of psychological models such as schemas, scripts, story grammars, and other various comprehension models (Olson, 1994; Rubin, 1995; see also the discussions of several reading and comprehension models in Israel & Duffy, 2009; Paul, 2001, 2009).

In short, the oral traditions rely on themes presented in a narrative that emphasizes the use of words, which are rhythmic or cohere in some fash-

ion (e.g., ballads, songs, mnemonic or visual imagery) to aid in the internal representation of meaning or reality. Although the recall of the message is serial, the message itself is constrained by the organization of meaning, imagery, and even by the patterns of sounds (Olson, 1994; Ong, 1982; Rubin, 1995). With respect to the constraints of rhythm, for example, Rubin remarked that:

> . . . rhythm functions like other constraints or forms of organization to limit word choice, in this case to words with the correct number of syllables or stress patterns. In addition, the rhythm provides a global organization, allowing singers to select, substitute, and add or delete whole rhythmic units (e.g., verses) and still continue. Rhythm also emphasizes certain locations within lines, which facilitates other constraints, such as the placing of rhyme and alliteration on stressed syllables. (pp. 11-12)

There is little question that the use of the oral mode establishes constraints on thinking and memory because it does not employ the use of external representations. However, this does not mean that orality is not as complex as literacy (i.e., writing) or does not involve the use of genres (e.g., fiction, nonfiction). Although it has been argued that writing has led to the separation of text and the interpretation of the message associated with the text, this is also the case in the use of orality (Denny, 1991; Feldman, 1991; Olson, 1989, 1994). Thus, it is possible to develop literate thought in the oral mode, especially if individuals can access the message and reflect on it to provide interpretations by constructing a range or layers of meanings. Such endeavors are affected by the quality of one's cognition, particularly one's ability to remember, store, organize, and retrieve information, ranging from the simple to the complex.

Consider the following scenario as support for the above assertions. Prior to and even after the invention of the printing press, a substantial number of individuals still depended on others to convey information through the use of the oral mode (Olson, 1989). Individuals, designated as *readers*, would present the latest news, rulings, or nuanced information by reading the script to a specific community in a specific location. These readers did not participate in the discussion or debate—this was reserved for the group of listeners. The tasks of the reader (or, possibly someone else) were to read the document, reread it if necessary, and to record the major points or reactions offered by the community of listeners. The

listeners had to use their memories to debate the main points or to pass on important information to others.

The learning of trades was conducted primarily through oral discussions and apprenticeships. To develop the skills of a cobbler, for example, an individual would shadow the activities of an actual cobbler, first observing and listening intently to the wisdom of the master and then taking on and accomplishing increasingly difficult tasks until full mastery. Observation and apprenticeship are considered to be applicable even for modern occupations (e.g., teachers, doctors, etc.), albeit these vocations are usually accompanied by printed works.

In essence, anthropological data demonstrate that—similar to writing—oral genres also represent a separation of text and interpretation, which permits reflection and abstraction (Feldman, 1991; Olson, 1989, 1994). The separation of the content from the interpretation of the text is critical for the development of literate thought (or any other type of reflective or critical thinking). This separation is often said to represent the compelling power and influence of writing (see Chapter 3).

The quality of literate thought associated with orality can be quite different from that which entails the use of external representations such as writing. This is due to the limitations and constraints of internal representations versus those of external representations. It has been demonstrated that oral cultures that exist within a larger mainstream culture with print literacy are quite different from oral cultures within a larger society that is virtually nonliterate or does not possess print literacy (Olson, 1994; Rubin, 1995). Individuals are affected by the conditions of literacy (i.e., writing), and this shapes their thinking about and use of information in the oral traditional mode within the larger literate (i.e., print-based) society. This influence can be seen in the organization and presentation of the information in the traditional oral mode; that is, individuals have developed a complex, nuanced use of spoken language, resulting in a rather sophisticated organization and presentation of their thoughts (e.g., larger vocabulary, longer sentences, more complicated, difficult ideas, etc.). In the rest of the book, we examine further the concept of representation, both internally and externally.

Table 1-2 provides a summary of major points for the oral tradition or orality.

Table 1-2. Highlights of the Oral Tradition or Orality

Orality and Internal Representation

- The narrative is the predominant or sole form of cognitive functioning in the oral tradition or orality (particularly in nonliterate or nonprint cultures).
- The narrative deals mostly with concrete ideas and events and is dependent on human memory and thinking within an internal mode of representation, that is, inside the head. In other words, meaning is conveyed through the use of concrete, observable actions set in the realm of the narrative; there is no penchant for the abstract representations of truths.
- The oral traditions rely on themes presented in a narrative that emphasizes the use of words that are rhythmic or cohere in some fashion (e.g., ballads, songs, mnemonic or visual imagery) to aid in the internal representation of meaning or reality.
- There is little question that the use of the oral mode establishes constraints on thinking and memory, especially because it does not employ the use of external representations.
- Orality is as complex as literacy (i.e., writing) and also involves the separation of text and the interpretation of the message.

LITERATE MIND

We have reached the point where we can provide an initial response to one of our two questions presented at the beginning of the chapter: What does it mean to be *literate*? Or, to put it metaphorically, what does it mean to possess a literate mind? The concept literate should be compared to that of *illiterate*. Similar to other ill-structured, slippery, complex notions, it is difficult to define or even describe these terms adequately.

Let us start by stating that literate, or having a literate mind, refers to an individual's ability to access (e.g., perceive visually or auditorally) and interpret (comprehend, apply, etc.) learned (e.g., serious, scholarly, academic, nuanced) information either through-the-air or in captured modes. This is a rather simple description, but it broadens the traditional concept of being literate as well as that of illiterate, especially if the focus is on captured forms of information.

Historically, literate and illiterate have been associated with only print literacy. Traditionally, if a person was considered literate, then this meant

that s/he could access and interpret information captured in the print or written mode. Conversely, if a person was labeled illiterate, then s/he could not access and interpret information captured in the print mode at a certain literacy level in society (e.g., functional literacy).

These traditional descriptions present problems when considering historical figures such as Socrates and Homer. Socrates did not read or write anything; his philosophy was recorded (i.e., written) by one of his most famous pupils, Plato (e.g., see discussion in Copleston, 1985). Homer, the exemplar for the oral tradition or orality, was blind; as one account goes, he dictated his most famous stories [poems] (e.g., *The Illiad*, *The Odessey*) to his listeners with one or more persons recording (writing down) what he said.

There are several controversies regarding the historical Homer as well as the manner involving the composition of his poems. In any case, given the constraints of human memory, Homer is purported to have begun each new episode by synthesizing or summarizing the events of the previous one. This is distracting to most individuals who read, for example, *The Illiad*. Nevertheless, it is hypothesized that Homer employed this technique to ensure that he remembered where he left off by asking if his listeners concurred with his summary (Homer, 1898).

It would be shortsighted or, perhaps, erroneous to label either Socrates or Homer as illiterate. For that matter, it would be narrow to label individuals who are blind or severely dyslexic as illiterate if they have been able to access print information in alternative formats such as audiobooks or videobooks (Braille literacy is a special condition, which is discussed in Chapter 7). The above situations require a reconceptualization of the notions of literate and illiterate in light of what is required to develop literate thought, especially in a captured mode.

An individual who possesses a literate mind or is literate is able to engage in reflective or literate thinking (i.e., reasoning, etc.) on a range of learned information in any type of mode. Within this framework, a person is illiterate if s/he cannot access and interpret learned information in any mode—not just via the print mode. Thus, let us suppose that a person can access and interpret *Moby-Dick* via an audiobook mode but not via the print mode. This person is still considered literate, in our view.

At the least, we should describe the modes, through-the-air or captured, in which an individual is considered literate or illiterate, rather than simply label someone as being literate or illiterate in general. This

leads to our second question posed at the beginning of the chapter: What is literate thought?

LITERATE THOUGHT

In previous publications (Paul, 1998, 2001, 2006, 2009; Paul & Wang, 2006a, 2006b; Wang, 2005), literate thought has been described as the ability to think creatively, critically, logically, rationally, and reflectively on information presented in either a through-the-air mode or captured or preserved as in print, CD, or DVD. Admittedly, this is a rather vague description, given the slippery or ill-structured concepts contained in the description, namely, *creativity*, *criticism*, *logic*, *rationality*, and *reflectivity*. However, it will become clear that literate thought involves—but is more than—what Bruner (1986) has termed *logical argument* and what others have labeled *metacognition* (Baker & Brown, 1984) or *critico-creative thinking* (Norris, 1992).

At the least, literate thought incorporates three types of thinking—*critical*, *imaginative*, and *wild*—often used to create new ideas or to solve problems in diverse areas such as science, art, and philosophy (see discussion in Beveridge, 1980). There is no doubt that *thinking* is difficult to define or describe as it is also slippery or can be labeled as an ill-structured or ill-defined concept. Thinking can be random or organized; it can be creative, critical, logical, rational, and reflective—similar to the description of literate thought provided earlier.

It seems that thinking is too ambiguous and that it might be unproductive to inquire about thinking in general. For example, it has been argued that the focus of the development of critical thinking—or any other type of structured, deliberate, reflective thinking—should be within a specific discipline or content area, albeit some attention can be given to the development of general thinking skills (Kuhn, 2005; Norris, 1992; see also, Chapter 5). Consider this example: Chess players are good with a certain type of thinking related to the game such as planning ahead, visualizing moves, examining board positions quickly, and so on. This does not mean that chess players can use the same skills effectively in other domains that require similar areas of expertise. In fact, there seems to be evidence that chess players cannot perform as well beyond the

constraints of the game of chess (Rubin, 1995; see also, Tulving & Craik, 2000).

The concept of thinking has interested scholars and philosophers for centuries. Dewey (1933) expounded on the various types of thinking, especially a type of thinking that is most effective for and should be the main goal of education—reflective thinking or reflective thought. Dewey's description is probably most applicable to the emphasis of this book—albeit he seemed to highlight critical thinking skills and the use of a scientific approach in his rendition of reflective thought:

> Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends constitutes *reflective thought*. (p. 9)

One perspective on a few components, activities, and processes associated with literate thought has been captured somewhat by the description of *creative cognition* by Smith (1995, p. 33):

> Creative cognition involves many complex mental activities, such as formulating and reconceptualizing problems, generating divergent ideas, transcending mental blocks, visualizing, exploring ideas, discovering interesting combinations of ideas, using and adapting one's expert knowledge, discovering insight, and refining ideas. Examples of basic cognitive processes that underlie these activities include encoding, storage and retrieval of information, attention, mental imaging, conceptualization, analogical reasoning and rule-based thinking, and metacognition.

If a coherent, adequate understanding of literate thought is to be developed, then it is necessary to construct a model or a narrative compilation of strategies or skills that incorporates findings from several domains that have been researched such as language, literacy, cognition, and comprehension—domains mentioned at the beginning of this chapter (Israel & Duffy, 2009; Kintsch, 1998; Kintsch & Rawson, 2005). Literate thought, similar to the construct of comprehension, needs to be understood from a multiple-perspective, multifaceted view. The focus in this chapter is on describing briefly three broad requisites and on highlighting the issue of decontextualized literate language.

Requisites of Literate Thought

There are three broad requisites of literate thought (Paul, 2001, 2009; Paul & Wang, 2006a, 2006b; Wang, 2005):

1. Adequate proficiency in a bona fide language;
2. Understanding and application of a metalanguage or specialized vocabulary associated with a specific discipline or area and with general society or culture; and,
3. Ability to access and interpret decontextualized literate language.

Other factors to consider include overall cognitive ability, experience, the affective domain, and so on. Nevertheless, the above three broad requisites are of importance and relevance here.

Literate thought is not an all-or-nothing phenomenon. The development of or proficiency in the three major areas above is not an all-or-nothing phenomenon either. This is instructive to remember when working with children with disabilities or those who are English language learners (ELLs), who exhibit a wide range of experiences as well as varying levels of proficiency in the use of English, both in the spoken and written modes.

Bona Fide Language

To describe briefly what it means to possess a bona fide language is a challenging task, given the myriad of theories and models that exist, involving either cognitive, social, or environmental/behavioral factors and their computations or combinations (Lund, 2003; Paul, 2001, 2009; Pence & Justice, 2008). A simplified view is offered here: Possessing a bona fide language should mean that an individual has developed a level of proficiency in the integrative use of the major language components such as phonology, morphology, syntax, semantics, and pragmatics (for a detailed description of these components and language development, see Crystal, 1995, 1997, 2006; Pence & Justice). Most children develop an adequate language level by the time they start formal schooling—at about age 5 or 6—with the more difficult aspects of phonology accomplished by age 8 or so.

There is little argument that an adequate level of proficiency in a language—however this is defined or described—is critical for the subsequent development of print literacy skills (reading and writing), for an understanding of disciplines such as mathematics and science, and for continued growth in cognition and metacognition (McGuinness, 2004, 2005). Nevertheless, there is more to reading, writing, and content

knowledge than just possessing language skills. In a similar vein, possessing a bona fide language is necessary, but not sufficient, for literate thought.

Metalanguage

The second major requisite for the development of literate thought is the acquisition and use of a metalanguage. The term *metalanguage*—as used here—refers to the specialized (or *rare*) vocabulary or terminology, often associated with a particular discipline, content area, or topic. For example, to develop a deep understanding of the game of baseball, individuals need a working knowledge or familiarity of terms such as *balk*, *bean ball*, *bunt*, *double play*, *fielder's choice*, *forced play*, *hit*, *hit-and-run*, *home run*, *pitch out*, *run-batted-in*, *spit ball*, *steal*, *suicide bunt*, and so on. It also helps to be knowledgeable about the rules of the game of baseball.

It is critical to understand these terms as they are applicable to events in a baseball game. For example, in everyday colloquial usage, the word *theory* has a more general meaning than that which occurs in scientific disciplines. These colloquial usages can cause problems for individuals when they encounter the manner in which such terminology is used in specialized disciplines or content areas (for related discussions, see Baker & Brown, 1984; Israel & Duffy, 2009; Pearson & Fielding, 1991; Pearson & Stephens, 1994).

Another perspective on metalanguage can be gleaned from the controversial work of Hirsch and his colleagues (Hirsch, 1987; Hirsch, Kett, & Trefil, 2002). Hirsch has argued that the development of reading, particularly critical reading in general and in specific content areas such as physics, mathematics, and so on, is dependent on a working knowledge or familiarity of terminology or concepts in the wider culture of society. This has been coined *cultural literacy* (Hirsch; Hirsch, Kett, & Trefil).

Returning to our game of baseball, consider the following statement:

> *Both the trajectory and spin of the knuckleball are most effective if the velocity of the pitch does not exceed 100 kilometers per hour. Otherwise, the movement is not sufficiently erratic or fluttery, making it somewhat easier for the batter to hit the ball.*

To comprehend the above statement, an individual needs an understanding of basic terms in mathematics and physics as well as basic terms in the topic of baseball. In fact, the use of vocabulary and concepts from other

fields or disciplines tends to deepen and broaden the understanding of a particular topic. This use is common in school settings and even in academic texts or materials (Hirsch, 1987; Hirsch, Kett, & Trefil, 2002). In sum, both a specialized and broad metalanguage is important for the development of literate thought.

Decontextualized Literate Language

The third major requisite for literate thought is proficiency in handling decontextualized literate language. Typically, decontextualization should be contrasted with contextualization. In both situations, however, one can use literate language, albeit contextualization provides more support to aid with understanding or comprehension.

Let us consider contextualization. Spoken (or signed) communicative exchanges can occur in through-the-air or face-to-face contexts. Such exchanges are considered natural (i.e., typical manner for receiving and expressing information) and redundant (i.e., the use of overlapping cues—verbal and nonverbal—to minimize misunderstandings). For example, if there is a breakdown in communication, individuals might repeat the statement, gesture or pantomime, rephrase the statement by using different words or paraphrase, or use concrete examples, demonstrations, or explanations with visual supports (e.g., pictures, objects, graphic designs, etc.).

Contextualized language is grounded in the immediate context—the here-and-now, the concrete and visible. It is presumed that the sender (speaker, signer) and receiver (listener, watcher) share basic background experiences or knowledge and a common language related to the topic of conversation.

Up until the preschool years, the language and interactions of children and parents is predominantly contextual with a minimal use of literate or even abstract expressions. Consider the following example.

Parent:	*This is an elephant (showing a picture). Tomorrow, we will go to the zoo and see lots of animals. The elephant is one animal that we will see. Let's look at the elephant. Here's the elephant's nose (pointing to the trunk of the elephant). It is also called a trunk. Now you point to the elephant's nose.*
Child:	*[Points to the elephant's trunk].*
Parent:	*The elephant has four legs. Can you point to the legs?*

Child: *[Points to each of the four legs]. That's a tail! [Pointing to the tail of the elephant].*

Parent: *Yes, that is the elephant's tail. The tail is long [uses finger to trace the length of the tail].*

Decontextualization refers to situations that have been removed from context (i.e., not live or current) and that have been captured such as in print, audio, or video. Thus, materials in print such as textbooks, children's literature, or audiobooks, and videobooks are examples of decontextualization. If we capture the above exchange between the parent and child in print or on a DVD with audio (and no print), this would become a decontextualized event with the use of contextualized language. Even though the event is captured, it should be fairly easy for children (or anyone else) to understand.

On the other hand, most of the information in school or learned situations presented in either the face-to-face mode (e.g., lectures, discussions, debates, etc.) or in the captured mode (e.g., in print texts or videos) contains decontextualized *literate language*. This type of language relies heavily on the use and understanding of language itself, in order for individuals to construct meaning of the topics of conversations or the meaning of texts (i.e., captured information). Consider the following example of literate language use, which can be presented in context (i.e., live or current) or captured and decontextualized in print (as it is here) or on videotape.

Teacher: *Today, we are going to discuss the American Civil War. You have been reading about the Civil War for the past week. Yesterday, someone said that the Civil War was similar to another event in American history. Does anyone remember what was discussed?*

Student: *Yes, Jane said that the American Revolution should actually be considered a civil war. Because America was still part of Great Britain, this revolution was actually a civil war.*

Teacher: *Very good! Now let's discuss the causes of the Civil War. Then, for fun, we can compare the causes of the Civil War with the causes of the American Revolution. Despite the similarity between these two conflicts, they do have different causes or maybe not.*

Much of the academic learning and success in schools requires the development and use of decontextualized literate language (Bailey, 2007;

Shanahan, 2009). And, much of this information is presented via written materials or print. In academic settings, the interactions involve participants (e.g., students, readers) who have read, listened to, or viewed a text and are requested to perform specific tasks such as taking a test, retelling a story, answering questions, or relating, sharing, or discussing/debating the information.

Table 1-3 provides a few principles related to the use of decontextualized and contextualized language.

Table 1-3. Characteristics of Decontextualized and Contextualized Language

Decontextualized Language

- The construction of meaning involves the use of literate language with the dialogue and other elements being independent of the communicative context or situation.
- Comprehension is dependent on proficiency in the language utilized, including the structures.
- Much of the language used in classroom situations and in academic texts is reflective of decontextualized language.
- In general, the nature of shared knowledge and experiences is not explicit; thus, there are cognitive and experiential demands placed on the reader or listener.
- Comprehension or understanding is facilitated by knowledge of the metalanguage of specific topics and, sometimes, by knowledge of the general metalanguage associated with general societal usage (as in cultural literacy).

Contextualized Language

- Comprehension of the message is supported by redundancies and other cues associated with interpersonal communications or interactions (e.g., repetitions, paraphrasing, non-verbal cues, etc.).
- The construction of meaning or understanding is a process of negotiation between the speaker/signer and the listener/watcher.
- This type of language is reflective of everyday, nonacademic conversations or dialogues and is often used predominantly with young children or those for whom English is not a first language (in the initial stages).
- Nonlinguistic and situational or context cues are critical and present in this type of language use.
- Shared background knowledge and experiences and shared language are present.
- Focus is on the *here-and-now*, the concrete.

LITERATE THOUGHT AND OTHER DOMAINS

To render a more complete description of literate thought, it is indispensable to become familiar with basic information from other related domains. For example, in the subsequent chapters of this book, we synthesize a few salient theoretical and research findings from ill-structured, seemingly diverse areas such as the New and Multiple Literacies (Chapter 3), cognitive and disciplinary models (Chapter 4), and critico-creative thinking (Chapter 5). Taken together, we assert that the goal of education is to develop literate and critical thinking skills (see also, Kuhn, 2005). Brief introductory descriptions of these areas are presented below.

New and Multiple Literacies

There has been a proliferation of *literacy* terms emulating from the concept of the New and Multiple Literacies (Bloome & Paul, 2006; Paul, 2006). For sure, the meaning of the word *literacy* is now broader than possessing the ability to read or write (see Chapter 3). Influenced by the New and Multiple Literacies (defined as digital media literacy, for example, e-books, hand-held devices such as wireless phones, Blackberries, iPad and other microcomputers) and sociocultural models of literacy (e.g., Israel & Duffy, 2009), we have a growing scholarly field called *Literacy Studies*.

Literacy Studies is not concerned with the development of specific skills in literacy, that is, reading and writing. Rather, the focus is on the social contacts of individuals with the various forms of literacy. Theorists and researchers are interested in the roles that literacy (the broad view) plays in the lives of individuals within social institutions such as schools, places of worship, and other locations (e.g., restaurants, etc.) in communities. Knowledge of literacy practices, contexts, and other aspects of language use (speaking, signing, etc.) results from the social construction of reality—the main epistemology of this field (see Noddings, 1995; Phillips & Soltis, 2004; Pring, 2004; Ritzer, 2001, for accessible descriptions of social constructivism).

Tyner (1998) provided one framework for categorizing the multitude of literacy-related terms that have emerged from the New and Multiple Literacies. She has categorized two groups of literacies: tool literacies and literacies of representation (see also, Chapter 3). *Tool literacies* refer to those entities that are used to manipulate information such as computer

literacy and technological literacy (e.g., text messaging, etc.). *Literacies of representation* entail specific domains of information or knowledge such as mathematics literacy, medical literacy, and legal literacy as well as the traditional print or script literacy. Other examples of literacies of representation are discussed later in this text.

In Chapter 3, the impact and contribution of the New and Multiple Literacies are explored with respect to understanding literate thought. These new types of literacies seem to challenge our current assumptions of knowledge—especially knowledge generated by behavioral or cognitive frameworks. The effects or implications of the New and Multiple Literacies on the development of literate thought in children with disabilities or those who are English language learners are examined more extensively in Chapters 6 to 9.

Cognitive and Disciplinary Structures

There is no doubt that literate thought has been influenced predominantly by cognitive models of language and knowledge, albeit contributions from social and cultural viewpoints are acknowledged in this book. In Chapter 4, the emphasis is on two broad domains: cognitive models and disciplinary structures (see also Phillips & Soltis, 2004). There are clearly other viable cognitive domains, which are mentioned in this text; however, the above two domains offer critical insights pertinent to our interests.

Cognitive models are concerned with the manner in which individuals construct or develop their understanding of topics and ideas in their environment (Phillips & Soltis, 2004). The influence of the childhood development models of Piaget and Vygotsky, and other theories on cognitive information-processing and cognitive flexibility are also discussed. From one standpoint, the *name* of the cognitive model might not be critical given that there are a preponderant number of positions ranging from predominantly cognitive to cognitive social (Lund, 2003; Pence & Justice, 2008; Phillips & Soltis, 2004). Rather, what needs to be explicated is the fact that individuals are actively involved in the cognitive *construction* of meaning or reality (Israel & Duffy, 2009). Such construction is influenced pervasively by a number of factors, including the relationship between language and thought.

The construct of disciplinary structures poses epistemological challenges for theorists, researchers, and practitioners (Donovan & Bransford,

2005; Israel & Duffy, 2009; Phillips & Soltis, 2004). It can be debated whether a discipline such as mathematics or science has a structure (often called knowledge structure). It seems clear that, for example, some mathematical concepts are easier than others and are often acquired or learned early. Intuitively—and there is some supportive research—any particular discipline seems to have a structure with concepts on varying difficulty levels. Thus, an individual may need to understand a piece of information at one stage before proceeding to learning information in the next stage. With respect to mathematics, one needs to understand addition prior to engaging in multiplication.

The work of Rand Spiro on cognitive flexibility (e.g., Spiro, Collins, & Ramchandran, 2007; Spiro, Vispoel, Schmitz, Samarapungavan, & Boerger, 1987; see also, Cartwright, 2009) provides a different, perhaps differentiating, perspective on this issue. Spiro and his colleagues argue that a distinction needs to be made between well-structured disciplines such as science and mathematics and ill-structured ones such as history and philosophy. Inadvertently, this seems to be a distinction between the so-called *hard* sciences and the *soft* disciplines.

In our view, there is a range of structures from well-organized to loosely-organized within all disciplines. It seems that disciplines such as physics and chemistry contain more well-structured concepts that can be arranged hierarchically with respect to levels of difficulty. On the other hand, sociology and education possess mostly ill-structured concepts, which certainly have coherence but not strict levels of difficulty. The overall type of structure associated with a discipline may be reflective of its status as a *science*, with regard to the accumulation of knowledge or the rendition of logical arguments (Noddings, 1995; Pring, 2004; Ritzer, 2001). In any case, the notion of disciplinary structure does impact the nature and development of literate thought.

To develop high levels of literate thought, we argue that there needs to be a match between the *level* of cognitive development of the individual and the *difficulty* of the required tasks associated with the structure of the discipline. Most breakdowns in learning in school and clinical settings are due to mismatches between these two broad entities. Thus, a certain degree of understanding seems to be necessary for fostering effective instructional or clinical practices (Fenstermacher & Soltis, 2004; Phillips & Soltis, 2004). Specifically, there are formidable challenges for educators and clinicians in considering this issue for children with disabilities or for children who are English language learners.

Critico-Creative Thinking

Another aspect of literate thought is the ability to engage in critical or critico-creative thinking. By now, it should not be a surprise that it is difficult to define or describe critico-creative thinking because it is also an ill-structured domain (Norris, 1992). To borrow Spiro's rendition of a Wittgenstein phrase, critico-creative thinking requires crisscrossing-the-landscape strategies (Spiro et al., 2007; Spiro et al., 1987; see also, Cartwright, 2009). This means that it is critical to access multiple cognitive features (strategies, perspectives, skills) for addressing and resolving problems from multiple perspectives.

In Chapter 5, we examine whether it is possible to develop general critical thinking skills or whether these skills need to be related to a specific discipline such as mathematics, science, social studies, psychology, and so on. It might be that skills in one domain do not apply indiscriminately to working on problems in another domain. On the other hand, it has been argued that there are general guidelines for developing thinking skills with the most robust example being the application of the concept of metacognition from reading to all other content areas, especially mathematics and science (Baker & Beall, 2009; Donovan & Bransford, 2005; Paris & Stahl, 2005).

One of the most challenging topics is the evaluation of critico-creative thinking. What does it mean to be an effective critico-creative thinker? Who makes this determination and how? It seems that—at the least—individuals need a deep understanding of a specific topic or content area in order to develop skills associated with being a critical thinker in that topic or content area.

Possessing a deep understanding is necessary, but not sufficient for critico-creative thinking. Individuals also need to examine critically all prominent views—including contradictory ones—on a particular position or topic in a particular domain. After much dialogue and reflection, one can state his or her current position, which should always be tentative (see, e.g., reflective thinking or thought in Dewey, 1933). This is considered the strong version of critico-creative thinking (Applegate, Quin, & Applegate, 2008; Brown & Keeley, 2007; Flage, 2004; Halpern, 1997; Kuhn, 2005). The strong version leads or should lead to a refinement or further development of one's thinking.

There is also a weak version of critico-creative thinking in which the objective is simply to defend one's view against the attacks of others. In essence, one's view does not or might not actually change or evolve in this

situation (Applegate, Quin, & Applegate, 2008; Brown & Keeley, 2007; Flage, 2004; Halpern, 1997; Kuhn, 2005). This can lead to what has been labeled paradigm inflexibility or paradigm incommensurability (Kuhn, 1996; Nickles, 2003), resulting in substantial ongoing conflicts within disciplines or between individuals holding different worldviews (Noddings, 1995; Phillips & Soltis, 2004; Pring, 2004; Ritzer, 2001).

Obviously, labeling critico-creative thinking as strong, weak, or some other descriptor is open to interpretation. Critico-creative thinking seems to involve reasoning, problem solving, deductive or inductive thinking, hypothesis testing, and other skills. Regardless of the type of critico-creative thinking and despite the difficulties in defining and evaluating it, many educators seem to believe that this is an important skill to develop, especially in the content areas. Ironically, critico-creative thinking may be related to one's conception of the structure of a discipline, including its methodology and research approaches.

EDUCATION FOR THINKING AND THE FUTURE

There have been numerous debates on the grand aim of formal education or schooling (Fenstermacher & Soltis, 2004; Noddings, 1995; Pring, 2004; Rippa, 1997). These debates have been influenced by the status of education and educational research within the university and the academic community. The following question has been debated vociferously: Is education a science, an art, or something else (Pring, 2004)? Whatever education is, there has been a wide proliferation of goals, ranging from the basic development of the three Rs (reading, writing, and arithmetic) to the lofty goal of assisting individuals to be meaningfully engaged in a participatory democracy (Fenstermacher & Soltis; Noddings; Pring; Rippa).

Kuhn (2005) reiterates some of these goals in her book, but settles on the goal of developing critical thinking skills, particularly inquiry and argument skills, as the most important aim of education. We concur with her main points; nevertheless, in our view, the goal of education should be to develop literate thought, and this is reiterated in Chapter 10.

Literate thought has cognitive, social, and affective dimensions; nevertheless, literate thinking—indeed all forms of reflective thinking—is pre-

dominantly an individual activity. Students—including those with disabilities and those who are ELLs—need to be encouraged to develop higher levels of literate thinking with respect to any particular topic, discipline, or area of interest in school and social settings. All students can develop and improve in the area of literate thought. A number of students require a tremendous amount of assistance, opportunities, and encouragement, especially if one corollary is to help students become independent thinkers.

What does the future look like? What will be the nature of an effective literate-thinking person? Much of the focus has been on methods such as employing the scientific approach and reflecting on or understanding an empirical reality. However, this view may be shortsighted. With the proliferation of ideas about virtual realities, multiple realities, and possible realities, educators and clinicians need to extend their strategies so that students can handle these different types of realities.

In one sense, as discussed in Chapter 10, we might need a new dose of the *humanities* within all of the content areas or disciplines. Indeed, the approaches and attitudes associated with the humanities seem to be important not only for critical or reflective thinking but also for a type of thinking labeled as *wild* (or *imaginative*), mentioned previously (Beveridge, 1980). In any case, the focus should be on the development of imagination, intuition, creativity, and, of course, literate thought. In fact, all of these skills might be mandatory for survival in a *brave new world*.

SUMMARY

The intent of this chapter is to introduce the reader to the concepts of literate thought and related issues. We provide a few underpinnings of literate thought and connect this construct to others such as the New and Multiple Literacies, cognitive and disciplinary models, and critico-creative thinking.

A few major points are:

- The capacity to think and the manner of thinking have been influenced by the invention of writing. As an external aid to thought and memory, writing facilitates thinking and permits reflection and interpretation of texts.

- Writing produces specific effects on thinking associated with a specific task such as working on a mathematics problem, writing a poem, or solving a logic problem, rather than global effects on thinking in general.
- Other external forms of captured information are, might be equivalent to, or can provide similar benefits as does writing. Examples include audio books and videobooks (without the accompaniment of print).
- Given the range of difficulties that students, particularly students with disabilities, have with print (i.e., reading and writing), which can impede their growth in the development of complex cognition (or thinking skills), it is critical to use other external forms of captured information, in addition to print, in schools for instructional purposes.
- The oral traditions rely on themes presented in a narrative type of cognitive functioning that emphasizes the use of words that are rhythmic or cohere in some fashion (e.g., ballads, songs, mnemonic or visual imagery) to aid in the internal representation of meaning or reality.
- It is possible to develop literate thought in the oral mode, especially if individuals can access the message and reflect on this message to provide interpretations or, in other words, to construct a range of meanings.
- A literate mind refers to an individual's ability to access and interpret learned (e.g., serious, scholarly, academic) information.
- Literate thought has been described as the ability to think creatively, critically, logically, rationally, and reflectively on information presented in either a through-the-air mode or captured or preserved as in print, CD, or DVD.
- The three broad requisites of literate thought are:
  1. Adequate proficiency in a bona fide language;
  2. Understanding and application of a metalanguage or specialized vocabulary associated with a specific discipline or area and with general society or culture; and,
  3. Ability to access and interpret decontextualized literate language.
- The multifaceted concept of literate thought is related to and influenced by other ill-structured, seemingly diverse, domains such as the

New and Multiple Literacies, cognitive and disciplinary models, and critico-creative thinking skills.

QUESTIONS FOR REFLECTION AND DISCUSSION

1. What are a few broad views or perspectives of writing?
2. Discuss a few points regarding the nature of internal and external representations of reality.
3. According to the authors, what does it mean to be literate or illiterate?
4. What is literate thought? List and briefly describe the three broad requisites.
5. List and describe the major domains that have influenced the model of literate thought.

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