

# 11 RESEARCH ON THE READING-WRITING RELATIONSHIP: INTERACTIONS, TRANSACTIONS, AND OUTCOMES

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The goal of this paper is to discuss the state of research and theory on reading-writing relationships. To this end, the review divides research and theory into three interrelated topics:

What do reading and writing share?

How do readers and writers transact with one another?

What do readers and writers learn when reading and writing are connected?

The first topic addresses the nature of and extent to which reading and writing involve similar, shared, and overlapping linguistic, cognitive, or social resources. The second topic considers how readers and writers transact with one another as they negotiate the making of meaning. The third topic explores the thinking and learning that occurs as learners shift back and forth from reading to writing according to goals they pursue in different subject areas such as science, social studies, and literature.

## WHAT DO READING AND WRITING SHARE?

Does development in reading go hand in hand with development in writing? If reading ability improves, should writing ability improve also? Do the same basic abilities and underlying processes govern reading and writing? Underlying a great deal of the curriculum development in reading and writing has been support for integrating the language arts. Traditionally, these developments or arguments have assumed that reading and writing together offer more than reading and writing apart. Such views often went hand in hand with the belief that reading involved reception and writing involved production. Tied to this notion was the assumption that undergirding reading and writing were similar prerequisite skills and abilities. That is, curricular developers (e.g., Durkin, 1988; Moffett & Wagner, 1983; Stauffer, 1980) have argued for the interrelationship of reading and writing based upon an assumption of underlying psychological identity or unity. If the skills and abilities undergirding reading and

writing knowledge and process are identical or highly similar, then the combination of reading and writing instruction could expedite literacy learning, or at least make instruction more efficient. There has even been debate over the need, at least at the elementary level, to teach *both* reading and writing if they share so much common knowledge (Graves, 1978); and it has been suggested that one reason for not including more writing instruction in the school curriculum has been the belief that it was unnecessary, given the great similarity of reading and writing (Shanahan, 1988). The strong belief in the underlying commonalities of reading and writing has been the basis for curricular innovations as diverse as the language experience approach, Fernald or V-A-K-T methods, strategies for phonics teaching, sentence combining, and integrated writing-based language arts programs.

### Shared Knowledge and Process

Over the years, several studies have attempted to address the basic assumption of psychological sharing. Such studies usually have attempted to estimate the amount of psychological similarity in reading and writing, most often through correlational techniques. Initial efforts of this type attempted to relate two rather general measures of reading and writing ability. More recently, however, such studies have become increasingly sophisticated in their design and relatively more specific in their measurements. Such studies have begun to focus on process sharing as well, rather than being limited to simple comparisons or correlations of the products of reading and writing.

#### *Performance-Based Correlational Studies*

A large number of studies have correlated product- or performance-based measures of reading achievement and writing ability. Such measures examine compositions or specific reading outcomes (i.e., amount of comprehension for a set of passages) as external manifestations of literacy knowledge or process. Since such studies have been thoroughly reviewed elsewhere (Applebee, 1977; Galda, 1983; Shanahan, 1980, 1988; Stotsky, 1982; Stotsky, 1983), this chapter will examine some of the recent work in this area, and it will reexamine some of the more ambitious earlier efforts in light of recent theoretical and empirical developments.

One of the most notable examinations of the relationship between reading and writing abilities was completed by Loban (1963, 1964), who argued that the relationship between reading and writing was "so striking to be beyond question" (Loban, 1964, p. 212). Loban based this conclusion upon data collected in conjunction with an extensive longitudinal study of the reading and writing abilities of 220 students across 12 grade levels. Student performance was measured using the Stanford Achievement Test; and writing was scored using holistic assessment procedures applied to a single writing sample done in response to a picture prompt. As Figure 11.1 depicts for the sixth grade, Loban compared the reading level achieved by students at various grade levels with ratings of their writing. As illustrated in the data for other grade levels, there was a definite positive relationship between reading and writing—especially for students who performed very well or poorly. As he stated:

*Every* child who writes at a superior level and the great majority who write at a high average level read above their reading age. On the other hand, *every* subject who writes at the illiterate level and virtually every subject who writes at the marginal level reads below his reading age. This is true for every year studied without exception. (Loban, 1964, p. 208)

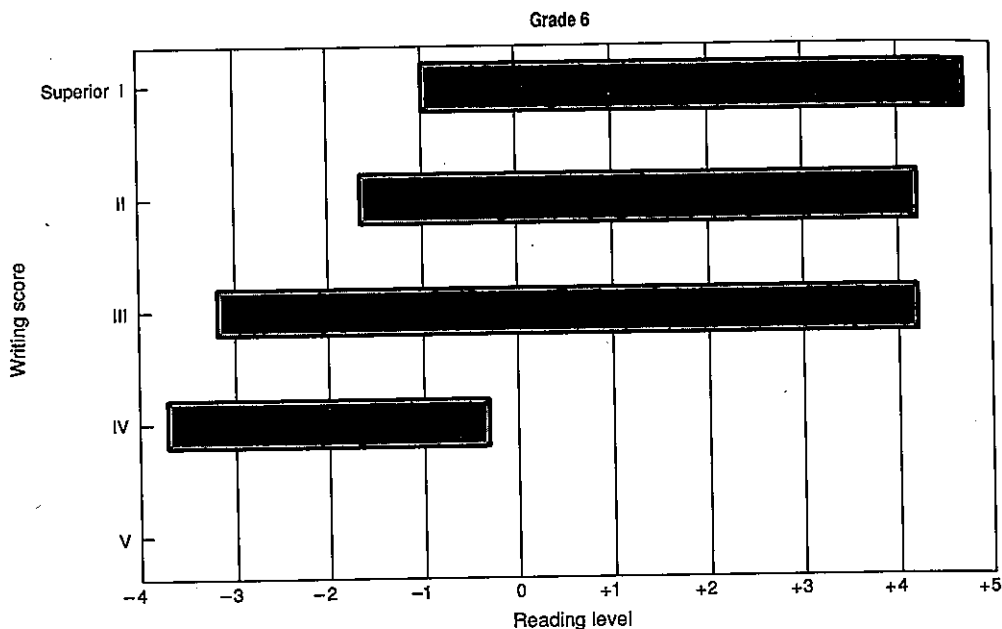


FIGURE 11.1 Loban's study: relation between reading and writing—written language scores compared to reading achievement above or below grade level. Source: From *Relation between reading and writing, grade 6*, by Walter Loban. In *The language of elementary school children*. Copyright © 1963 by the National Council of Teachers of English. Reprinted with permission.

Loban's study is most notable because of its large sample size, its emphasis on students across grade levels, its early emphasis on reading-writing relations, and its influential effect upon thinking in the field. The findings from Loban's study are probably overstated, however. First, among the average students there was considerable variation in reading and writing performance. The leveling of subjects that was used might have disguised real differences that existed. Second, across grade levels the correlations varied substantially, suggesting that the relationship was less consistent than was claimed. Third, the findings might have been an artifact of the measures examined—a group standardized test and a single writing sample represent a severely restricted sample of student work. Fourth, the findings may have been influenced by the instructional histories of the students. Loban omitted details as to the nature and amount of reading and writing instruction received by students in his study.

The results of some more recent research suggest that Loban's straightforward interpretation is probably misleading. Martin (1977), in a careful examination of case-study data from six Australian children (aged 12 years 9 months to 14 years 6 months), concluded that two subjects scored low on reading and writing mechanics and high on writing expression, a third child was a capable reader yet his writing was not of good quality, a fourth child was high on writing mechanics and low in reading and writing expression, and the final two subjects either did well or poorly in both reading and writing. "Despite the small numbers studied, the evidence suggests that reading and writing are intertwined, but in ways that are not easily predictable" (Martin, 1977, p. 52). Similarly, in a study that focused on process rather than performance, Tierney (1983) was able to identify students who were good readers-poor writers and poor readers-good writers. Frith (1980), in a study of word recognition-word production

relations, was able to identify similarly disparate and, according to Loban's claims, unlikely samples.

Recently studies have attempted to be more explicit with regard to the types of knowledge that might be shared across reading and writing, and there has been a serious effort to describe how reading and writing relations might vary across proficiency and grade levels. Juel, Griffith, and Gough (1986) explored across grades one and two the relationship between word recognition, spelling, reading comprehension, and writing quality in a longitudinal study across grades one and two. Shanahan (1984) and Shanahan and Lomax (1986, 1988) examined the relationship between lexical, phonemic syntactic, and organizational-structural information, using second- and fifth-grade cohorts. Schewe and Froese (1987) examined the correlation between selected comprehension scores and writing measures for a small sample of fourth graders. Cox, Shanahan, and Sulzby (in press) have considered the relationship between the use of cohesive ties and cohesive harmony in the writing of narrative and expository text with reading comprehension performance. In all of these studies, reading and writing were significantly related on certain measures and not on others. Correlations varied by grade levels and correlations were maximized when reading and writing were viewed as interactive rather than unidirectional phenomena.

Shanahan (1984) and Shanahan and Lomax (1986, 1988), for example, examined 256 second and fifth graders in perhaps the most exhaustive analysis to date, finding that the correlation between reading and writing measures accounted for 43 percent of the variance. For beginning readers, phonics and spelling ability accounted for most of the total variance; as proficiency increased, however, writing measures such as vocabulary diversity and story structure (combined with a prose comprehension score) accounted for most of the variance. When alternative models of specific relationship patterns were tested against the data, an interactional view proved most tenable—that is, a model in which reading and writing relationships were defined as mutually interacting with each other rather than in a unidirectional fashion. Such a finding prompted Shanahan and Lomax (1986) to offer the following conclusion:

The interactive model was robust with regard to its ability to summarize data collected from diverse samples of readers and writers. Reading influences writing, *and* writing influences reading; theories of literacy development need to emphasize both of these characteristics similarly. These findings suggest that reading and writing should be taught in ways that maximize the possibility of using information drawn from both reading and writing. (p. 208)

Such studies suggest that knowledge sharing in reading and writing is a likely phenomenon, though it is neither as simple nor as complete as was once assumed. Correlations between performance variables have been generally moderate, even in multivariate studies. Evidently reading and writing knowledge is either not identical or it is used or instantiated in strikingly different ways in reading and writing.

While correlational studies of the knowledge sharing between reading and writing have made a contribution to unraveling the precise nature of reading-writing relationships, some obvious cautions should be heeded as we extrapolate conclusions. First, correlational findings indicate the extent to which measures co-vary or change together. Such findings provide a necessary, but not a sufficient condition for confirming the actual knowledge sharing that takes place in literacy development. Second, these studies have relied entirely upon the examination of reading and writing products and have simply inferred sharing on the basis of connections between these products. Such evidence does not provide adequate proof of knowledge sharing. Third, correlational findings depend upon the measures employed to assess variables and the labels used to

describe these variables. Poorly labeled variables and limited measures of certain abilities are in evidence in all such studies considered here or in those considered in previously published reviews. Fourth, although this is beginning to change, these studies have paid scant attention to the instructional conditions that may alter the pattern of knowledge sharing between reading and writing. Fifth, these studies have usually not matched the reading and writing tasks themselves. Students have almost never been asked even to read and write on the same topics in this type of study. Finally, the selection of some measures instead of others reflects theoretical decisions, usually implicit, that shape the possible outcomes. The inclusion of different variables or different measures of even these same variables might lead to different conclusions.

Future research needs to provide more precise and complete descriptions of the specific knowledge sharing in reading and writing. The sharing that does occur appears to be related to the literacy issues that are the major focus of attention at particular levels of development. Early on, the sharing seems to be more word related, but it becomes more global and substantive with development. Whether this is the result of some natural prioritization of literacy development, or simply the outcome of instructional emphasis, is unknown. Finally, these studies have shown that reading and writing knowledge is shared in both directions, suggesting the potential benefits of combining reading and writing instructionally. Fuller and more accurate descriptions of this knowledge sharing could help in the design of more mutually effective curricula.

Correlational studies of this type have considered knowledge sharing on the basis of performance or achievement variables. So far, such studies have considered the relations between such aspects of knowledge as vocabulary (Maloney, 1967; Vairo, 1976), print awareness and phonics (Chomsky, 1979; Tovey, 1978), orthography (Shanahan, 1984), word recognition (Juel, Griffith, & Gough, 1986), spelling (Clarke, 1988; Shanahan, 1984), sentence comprehension (Shanahan & Lomax, 1986), syntax (Zeman, 1969; Perron, 1977; Evanechko, Ollila, & Armstrong, 1974), cohesion and cohesive harmony (Cox, Shanahan, & Sulzby, in press; King & Rentel, 1979), text structure (Hiebert, Englert, & Brennan, 1983; King & Rentel, 1979), creativity (Fishco, 1966), text format (Clay, 1967, 1976; Eckhoff, 1983), writing quality (Baden, 1981), and readability or prose complexity (Lazdowski, 1976). Future efforts need to continue to consider additional variables such as the role of content knowledge, expository text structure, use and interpretation of rhetorical devices and structures, and so on. On the one hand, future research would best add knowledge to the field through the estimation of relationships in a more comprehensive and theory-driven manner than has been typical up to now. Shanahan (1984) provided a more comprehensive analysis of several variables, but he failed to examine the relations within a well-established theoretical framework that would permit the fullest understanding of knowledge sharing. Other studies (Juel, Griffith, & Gough, 1986; Cox, Shanahan, & Sulzby, in press; Shanahan & Lomax, 1988) have worked from more substantial theoretical positions, although these studies were less comprehensive in variable selection or they used existing data, the collection of which was not determined by theory. Alternatively, studies are needed that pursue the relationship in a more open-ended fashion and that allow for theories to emerge.

### *Process-Based Correlational Studies*

With the advent of constructivist thinking in reading comprehension and planned-based analysis of writers' protocols, a number of researchers and theorists have considered the parallels between the cognitive *processes* underlying reading and writing. Unlike the studies previously considered, these do not usually examine reading or writing products

but instead collect information about cognitive processing through think-aloud protocols, interviews, and observations. The empirical efforts either have been formally correlational or have provided qualitative description of the corresponding similarities or differences in reading and writing.

Wittrock (1984) argues that reading and writing are generative cognitive processes in which readers and writers "create meanings by building relations between the text and what they know, believe, and experience" (p. 77). Likewise, Squire (1984) suggests that "both comprehending and composing seem basic reflections of the same cognitive processes" (p. 24). In a similar view, Tierney and Pearson (1983) have proposed a composing model of reading (see Figure 11.2) in which they suggest that reading and writing are acts of composing that share similar underlying processes: goal setting, knowledge mobilization, projection, perspective-taking, refinement, review, self-correction, and self-assessment.

Kucer (1985), from a slightly different perspective, suggests that readers and writers are involved in several strategies of "generating and integrating propositions through which the internal structure of meaning known as the text world is built" (p. 331). According to this view, to understand the relationship between reading and writing, each act should be recognized as an essentially separate instance of "text world production . . . drawing from a *common* pool of cognitive and linguistic operations." Kucer's model of text world production is depicted in Figure 11.3. It describes the role of context as well as strategies and procedures used by readers and writers in conjunction with accessing and transferring background knowledge.

Several recent research studies confirm and define the view of reading and writing advocated by these theorists: namely, that reading and writing can be defined in terms of the same general cognitive process (gathering ideas, questioning, hypothesizing, and so on). Where reading and writing appear to differ is in the extent to which these

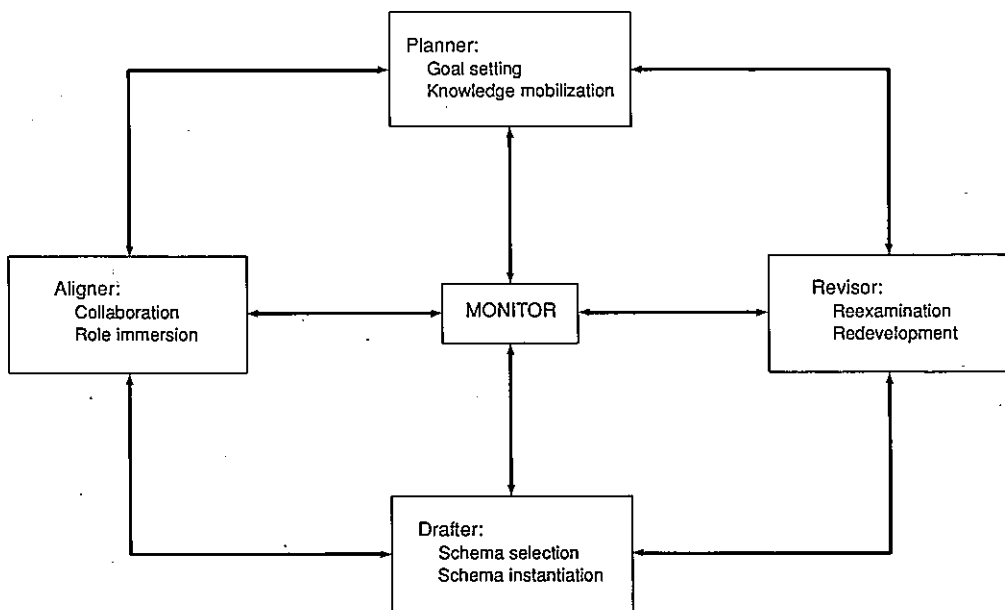


FIGURE 11.2 The Tierney and Pearson Composing Model of Reading Source: Toward a composing model of reading, by Robert J. Tierney and P. David Pearson. *Language Arts*, 60, May 1983.

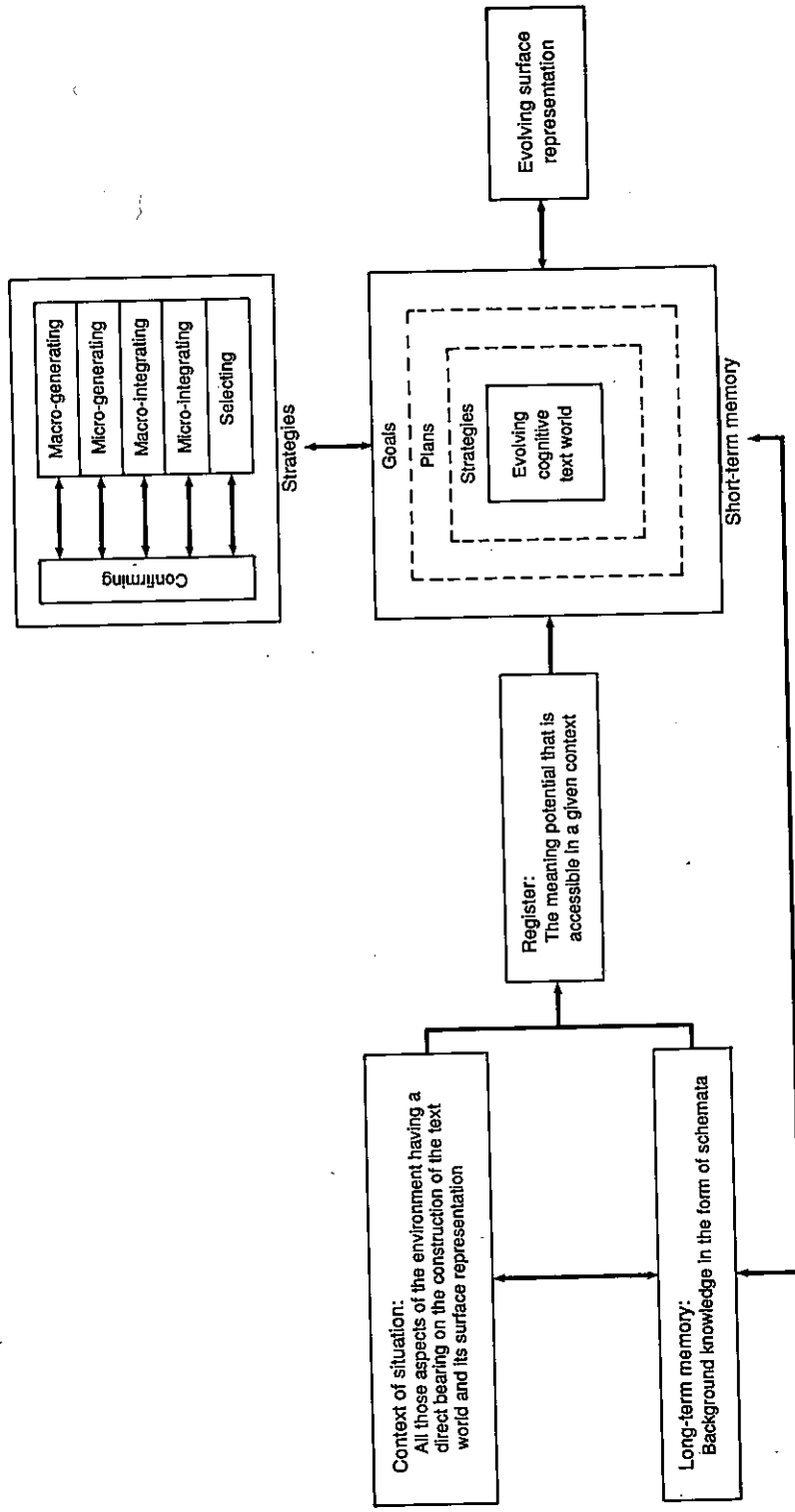


FIGURE 11.3 Kucer (1985) Model of text world production. Source: From Kucer, S. L., The making of meaning, Written Communication, 2(3). Copyright © 1985 by Sage Publications. Reprinted by permission of Sage Publications, Inc.

strategies are enlisted by students, or by what features of the reading or writing act lead them to instantiate a particular strategy. It should be noted that different students enlist different strategies in accordance with their idiosyncratic approach and overall abilities as readers or writers. For example, Ryan (1985) examined the verbal protocols of eight above-average readers/writers from a fifth-grade classroom as they read and wrote in both narrative and expository genres. She identified six thinking strategies common to reading and writing: reporting (reproducing and paraphrasing a message); conjecturing (hypothesizing, prediction of outcomes, and inferencing); contextualizing (relating to concepts and events through imagining, creating scenarios, and so on); structuring; monitoring; and revising. She also identified two response styles of readers and writers: reactive (or literally inclosed) and transactive (or more flexible). Ryan's findings with respect to genre revealed that although all strategies could be identified in response to both narrative and expository text, the balance of usage varied according to genre. "The strategies of reporting and structuring appeared to be more dominant in the expository protocols, while conjecturing, contextualizing, and monitoring appeared more frequently with narrative protocols" (p. 389).

Studies by Kirby (1986) and Martin (1987) yielded similar findings. For purposes of comparing student meaning-making strategies during reading and writing, Kirby (1986) videotaped five high-risk basic-level freshmen across four sessions involving reading and writing activities as well as retrospective interviews on the processes that were used. Subjects read realistic fiction and factual text and wrote and revised expressive and transactive text on topics paralleling those offered in the reading selections. Kirby found that subjects in her study "used more similar than different strategies in reading and writing" (p. 126). Across all of the tasks, regardless of whether or not they were involved in reading or writing, the students constantly related the texts (being read or written) to their personal experiences. Kirby also noted that shortcomings in strategy use during reading paralleled shortcomings in writing. Just as students did very little planning in writing, so they did little previewing or purpose-setting prior to reading. As Kirby suggested, limitations in the availability and implementation of strategies generalized across reading and writing.

Martin (1987) examined the think-aloud protocols, responses to interview questions, and the observable behaviors of seven senior high school seniors as they read abstract text and concrete text, and engaged in reflexive writing and extensive writing. Martin identified eight categories of meaning-making strategies: monitoring, phrasing content, using content prior knowledge, using text from knowledge, rereading, questioning, inferencing, and making connections to author/audience. (Table 11.1 includes a listing of the frequency of the different strategies by task.) While the extent to which certain strategies are enlisted varies with task and mode (reading or writing), the study shows that the same strategies emerge during reading and writing. In other words, the study supports the view that readers and writers enlist from the same pool of cognitive processes. These data also suggest that readers and writers might vary in the extent to which they employ certain strategies. In particular, during writing, students in Martin's study were more concerned about content knowledge; during reading, students were more concerned about paraphrasing content.

These findings are similar to those of Langer (1986a). Langer attempted to describe the knowledge sources, reasoning operations, specific strategies, and monitoring behaviors of 67 third-, sixth-, and ninth-grade children when they read and wrote stories and reports. The tasks that she used were similar in discourse type (stories or reports) and in terms of topic. Especially noteworthy were her analyses of the similarity between reasoning operations and strategies. Reasoning operations included questioning, hypothesizing, assuming, using schemata, making metacomments, citing



TABLE 11.1 Frequencies and Percentages of Strategies by Task

TASK	READING		WRITING	
	ABSTRACT (%)	CONCRETE (%)	REFLEXIVE (%)	EXTENSIVE (%)
Monitoring	400 (37.9)	226 (27.6)	399 (53.3)	353 (54.1)
Phrasing content	430 (40.8)	447 (54.6)	172 (23.0)	151 (23.1)
Content knowledge	48 (4.5)	39 (4.8)	106 (14.2)	88 (13.5)
Text form	55 (5.2)	89 (10.9)	119 (15.9)	126 (19.3)
Rereading	179 (16.9)	72 (8.8)	171 (22.8)	142 (21.7)
Questioning	33 (3.1)	20 (2.4)	52 (6.9)	65 (10.0)
Inferencing	114 (10.8)	51 (6.2)	18 (2.4)	21 (3.2)
Making connections	71 (6.7)	37 (4.5)	9 (1.2)	10 (1.5)

evidence, and validating. Strategies included generating ideas, formulating meaning, evaluating, and revising. In general, her findings suggest that while reading and writing appear to pull from the same collection of cognitive processes, similarities and differences do exist in the pattern. In terms of commonalities, both readers and writers focus on meaning when formulating and refining ideas. Moreover, their behaviors vary in similar ways across time. In both reading and writing, the children's comments would focus on global units of text, on questioning and hypothesizing, on generating ideas and goal setting. After reading and writing, the comments showed a move to validating schemata together with the formulation and refinement of meaning. In terms of differences, readers generated more ideas when they read and formulated more ideas when they wrote. Readers tended to have more generalized concerns while writers exhibited a broad array of concerns. In reading they focused on garnering support for ideas; in writing they were more interested in the strategies they used to create meanings. Langer writes:

The analysis of the varieties of behavior and approaches toward meaning lead me to conclude the following: (1) the behaviors are varied and complex, (2) they change with age and difficulty, and (3) they vary consistently between reading and writing.

Further, the findings confirm the belief that children of all ages are concerned primarily with their developing ideas and the text world or envisionments they create, in both reading and writing (Langer, 1986a, p. 259).

The tendency for these processes, and their relations across reading and writing, to change as a result of development is supported by analogous findings in performance-based comparisons (Shanahan, 1984) and in earlier process-oriented analyses (Birnbau, 1982; Tierney, 1983). The tendency of these processes to vary across reading and writing led Langer (1986b) to conclude that it may be, as she stated,

oversimplistic to assume that reading and writing are similar activities. Though reading and writing share common language routines and reasoning strategies, they involve quite

different patterns of cognitive behaviors and different approaches to meaning-making, even when tasks and topics are parallel. (p. 25)

McGinley and Tierney (1989) suggest that the similarities and differences, which Langer's study highlights, may account for the advantages afforded when reading and writing work together. Drawing upon the work of Wittgenstein and Spiro, they argue that reading and writing offer ways to criss-cross explorations of topics involving often subtle but significant shifts in perspective.

There is a temptation in reviewing these process-oriented examinations of reading and writing to adopt a view of reading and writing as an activity that is merely schema activation and instantiation. Few process-oriented studies have considered notions of the transactional nature of reading and writing, of intertextuality, of how interpersonal factors influence meaning-making, and even of basic psycholinguistic decision making (i.e., staging, coherence). These omissions have occurred despite the emerging views (as evidenced in the writings of Shanklin [1981], Kucer [1985], Murray [1982b], and Smith [1984]) that suggest that meaning-making is related to what and how readers and writers negotiate with their inner selves and with others. These communicative, interpersonal, or transactional aspects of the literacy process will be considered in detail later.

So what should be concluded from attempts to describe the processes of reading and writing? Obviously, our understanding of the nature of reading and writing has been extended by the combined examination. Using reading as a metaphor for writing and writing as a metaphor for reading has proven to be a powerful vehicle for extending our understanding of literacy. Above all, they suggest a common model of human understanding and confirm a thesis originally offered by Petrosky (1982):

One of the most interesting results of connecting reading, literary, and composition theory and pedagogy is that they yield similar explanations of human understanding as a process rooted in the individual's knowledge and feelings and characterized by the fundamental act of making meaning, whether it be through reading, responding, or writing. When we read, we comprehend by putting together impressions of the text with our personal, cultural, and contextual models of reality. When we write, we compose by making meaning from available information, our personal knowledge, and the cultural and contextual frames we happen to find ourselves in. Our theoretical understandings of these processes are convergent . . . around the central role of human understanding—be it of texts or the world—as a process of composing. (p. 34)

But how useful is such a model for actually understanding the specific nature of the cognitive sharing that takes place in reading and writing? Certainly these studies suffer from a number of limitations and flaws that temper specific conclusions that can be drawn. First, although in these studies variables were selected more on the basis of explicit theory than in performance-based studies, variable selection and description is still a problem. There seems to be little solid evidence that would differentiate the labels attributed to the behaviors and responses under analysis. Terms like inferencing, predicting, use of prior knowledge, conjecturing, and hypothesizing are used in similar, overlapping, and even different ways in various schemes. This, of course, limits the generalizability of the findings, and it is especially problematic in identifying processes *across* reading and writing. Is a behavior labeled as hypothesizing actually the same behavior in reading and writing?

Second, the measures and descriptions are often of questionable, or at least untested, reliability. Generally, researchers have done a reasonable job of showing that

they were able to observe or examine the behaviors or protocols in a consistent fashion, but no study has yet demonstrated that the processing itself is reliable. Third, questions might be raised concerning the adequacy of introspective and retrospective think-alouds and interviews as a source of data. Certainly great care must be taken in drawing conclusions solely on the basis of such data.

Fourth, although these studies have provided a convincing demonstration that reading and writing employ similar, if not the same, cognitive processes, they have been less informative of the specific patterns of relationship. Although reading tasks will generally be more similar to each other than to analogous writing tasks, they themselves might be so different from each other that they would involve different patterns of behaviors. The same point can be made about writing tasks. The implications of the personal, motivational, informational, linguistic, pragmatic, and functional contexts of these tasks might prove to be so complex as to render the results, to date, limited in scope. Despite this possibility, the patterns, up to now, have been provocatively similar, suggesting a generalizability that might permit their use for instructional planning. Interestingly, in the late 1980s, curriculum developers in selected school districts proposed a set of objectives that include common goals for reading and writing. For example, curriculum developers in Fairfax County (Virginia) and Upper Arlington (Ohio) developed goals such as revising for meaning, organizing ideas, and planning for both reading and writing.

Fifth, sample sizes have been necessarily small because of the depth of analysis that has been required. Most of what we know in this area that has any generalizable or cumulative value has resulted from the amassing of data across studies. Analytical differences, however, render it especially important that researchers follow up such studies with replications and extensions.

Sixth, these studies, like the performance-based analyses, have usually neglected the instructional histories of the students examined. This makes it impossible to know whether the relations being described are natural psychological entities or whether they are learned features of written language behavior. Nevertheless, these studies have provided a good deal of insight and information about reading and writing in a very short span of time (less than a decade).

### *Experimental Efforts*

Another approach to the issue of whether there is sharing of information or processes across reading and writing has been the experimental, or instructional, study. Typically such studies provide some type of writing instruction, and then the potential reading outcomes of this instruction are examined; or vice versa. These studies have sometimes been quite general, with very little specification of the type of cognitive sharing that should be apparent. For example, the landmark United States Office of Education Cooperative First Grade Studies (Bond & Dykstra, 1967) reported that, in general, programs that offered a writing component did better at instilling reading achievement than did those that had no such component. Maat (1977) was able to demonstrate improvements in reading comprehension as a result of a nine-week writing program in the high school. It seems reasonable to conclude, on the basis of such evidence, that reading and writing share some common core of knowledge or process. However, such studies often have not adequately described instructional conditions, and the outcome measures were far too general to allow the identification of the nature of the sharing that took place.

It should not be concluded that writing instruction automatically leads to reading improvement either. Obenchain (1971) provided an expository writing program to high

school students, but no reading improvement resulted. Smith, Jensen, and Dillingofski (1971) found that writing activities led to no improvement on reading comprehension tests with elementary-grade students. It has even been shown that when reading is replaced with writing activity, reading achievement can improve, though not to the same degree that it would if additional reading instruction were provided (Heys, 1962). Such studies suggest that cognitive sharing can occur, at least under certain conditions, but they are less informative at specifying what types of sharing would result from reading or writing instruction.

Most often the experimental studies have focused on sharing from reading to writing than from writing to reading. This approach has usually been taken because researchers have generally assumed that the learning that took place in reading was fundamental to writing development (Smith, 1982), and that there would be no need for tests of such a self-evident hypothesis. There have been a few attempts to consider the influence of reading upon writing, nevertheless. One such study had students writing as a response to children's literature (Mills, 1974), and found improvements in standardized language achievement test scores. Bereiter and Scardamalia (1984) investigated the knowledge gained about genre features by students from exposure to single examples of literary types—suspense, fiction, restaurant review, and an invented fictional genre defined as "concrete fiction." Across all experiments, writing in conjunction with reading a single text proved to be a powerful vehicle for learning, even more powerful than direct instruction. Students who read demonstrated that they had gained a sense of genre features that was useful in writing.

Reading and writing instruction and activity can lead to the development of transferable knowledge or processes, though such sharing does not necessarily occur. But what kinds of sharing can take place as a result of integrated instruction? A number of recent studies have addressed this by using somewhat more specific types of training or outcome measures. For example, several investigations have examined the influence of writing on the word recognition ability of young children. In general, the results emerging from these studies are positive—especially for writing activities that allowed for invented spellings. For instance, Clarke (1988) demonstrated that a year-long writing program in which children were encouraged to use invented spelling was superior to a writing program that did not. These first-grade students not only wrote better when they had the freedom to spell without emphasis on standard forms, but their reading achievement and word recognition ability improved as a result of the activity. Similarly, in an investigation of IBM's "Write to Read" program (Educational Testing Service, 1984), it was found that computer composing using invented spelling had a positive impact on reading and writing. This study, however, did not control for the influence of time, and it provided the treatment groups with different types of phonics instruction, so it is impossible to attribute the reading gains specifically to the writing activities. In a third study, Mason, McDaniel, and Callaway (1974) randomly assigned 30 first-grade classes to treatment conditions and found that encouraging students to write, using words drawn from their basal curriculum, had a positive impact on their vocabulary knowledge and reading comprehension.

A number of studies have attempted to examine the influence of a highly constrained writing activity—sentence-combining—on reading comprehension. Although it has been found that such activities do enhance the complexity of sentence construction in writing, there is little convincing evidence that such increased complexity is implicated in qualitative improvements in writing performance (Hillocks, 1986). Nevertheless, sentence-combining activities have usually had a positive impact upon reading comprehension, but only when such measures emphasize sentence-level comprehension such as through the use of a cloze test (Straw & Schreiner, 1982).

Sentence-combining writing activities have not been found to improve reading comprehension when the measure has required the reading of relatively complete prose passages and the answering of questions.

The experimental manipulation of knowledge of text structure has also been examined in a number of studies. Taylor and Beach (1984) found that seventh graders' understanding of expository text structure was enhanced as a result of opportunities to write summaries, in contrast to merely responding to questions. Bean and Steenwyck (1984) had similar results with a summary-writing strategy taught to sixth graders. Even with narrative texts, writing instruction and activities designed to extend knowledge of story structure (Gordon & Braun, 1982) have been found to improve reading comprehension performance. In a different type of study, students were not asked to use reading to improve their writing or vice versa; instead, they were given direct instruction in the structural properties of expository text, and outcomes were measured in terms of both reading and writing. The expository text training was found to lead to significant improvements in both reading and writing achievement (Raphael, Englert, & Kirschner, 1986).

These studies have shown that writing led to improved reading achievement, reading led to better writing performance, and combined instruction led to improvements in both reading and writing. Such improvements are not always forthcoming. Overall group findings may overshadow individual achievements. Of note, Raphael, Kirschner, and Englert (1988) examined the success (or lack of success) associated with attempts to use writing as a means of enhancing students' understanding of the strategies used by authors of expository texts. She examined the processes of 15 students who made substantial gains in understanding and writing expository text with 15 students who were nongainers. Raphael et al. concluded that nongainers tended not to be able to relate new elements to an overall goal or framework in reading or writing. It seemed as if, according to Raphael et al., the students who accrued benefits from the procedure were those who tied together ideas.

Obviously, there is a need for more experimental studies of reading and writing relations. Like the correlational studies to which they are related, instructional studies need to examine a larger range of variables simultaneously. We still do not have a clear understanding of the shared knowledge development that might accrue from a comprehensive integrated reading and writing program. It is especially important that future studies examine process issues and not just product-based ones. Unlike most previous studies, future efforts should attempt to identify the specific conditions under which learning might be transferable. This can be done by providing much more detailed descriptions of instructional conditions than has usually been evident, or through the type of post-hoc analysis provided by Raphael and associates (1988). Studies have shown that instruction can have joint benefits for reading and writing achievement, but studies have generally lacked the detailed description necessary to allow such findings to be applied to instructional practice.

### HOW READERS AND WRITERS TRANSACT WITH ONE ANOTHER

In this article entitled "Learning to Read as a Writer," Frank Smith offered the following exultation:

To read like a writer we engage with the author in what the author is writing. We anticipate what the author will say, so that the author is in effect writing on our behalf, not showing how something is done, but doing it with us. . . . (Smith, 1984, pap. 52-53.)

Issues of authorship and readership have prompted many theorists to conceive of reading and writing in terms similar to the relationship between speaker and listener in conversation, seeing the products of reading and writing as "situated accomplishments" (Cook, 1973). In accordance with this view, discourse is only meaningful in its context of situation; rather than simply a chain of utterances, discourse is understood according to who is speaking and why (Ohmann, 1971; Searle, 1969; Van Dijk, 1976). "To understand," Green (1980) explains, requires forming "a model of the speaker's plan in saying what he said such that this plan is the most plausible one consistent with the speaker's acts and the addressee's assumptions (or knowledge) about the speaker and the rest of the world" (p. 14). To read and write, as Augustine and Winterowd (1986); Beach and Liebman-Kleine (1986); Bruce (1980); Tierney, LaZansky, Raphael, and Cohen (1987); Pratt (1977); Pearson and Tierney (1984); and Shanklin (1981) have suggested, requires authors who expect meaning-making on the part of readers *and* readers who do the meaning-making. Writers, as they produce text, consider their readers—or at least the transactions in which readers are likely to engage. In other words, this view presupposes that writers try to address and satisfy what they project as the response of the reader to that speech act that underlies the surface structure of the communication. This activity occurs notwithstanding the fact that a writer might be his or her own reader. Readers, as they read text, respond to what they perceive writers are trying to get them to think of, as well as what readers themselves perceive they need to do. As Fillmore (1979) stated,

A text induces the interpreter to construct an image or maybe a set of alternative images. The image the interpreter creates early in the text guides his interpretation of successive portions of the text and these in turn induce him to enrich or modify that image. While the image construction and image revision is going on, the interpreter is also trying to figure out what the creator of the text is doing—what the nature of the communication situation is. And that, too, may have an influence on the image-creating process." (p.4)

Or, as the Russian semiotician Bakhtin (1973) has argued, all text (spoken or written) needs to be viewed as "the product of the reciprocal relationship between speaker and listener, addresser and addressee . . ." (pp. 85–86). Or as he stated more fully,

[T]he word is always oriented toward an addressee, toward who that addressee might be . . . each person's inner world, and thought has its stabilized *social audience* that comprises the environments in which reasons, motives, values, and so on are fashioned . . . the word is a two-sided act. It is determined equally by whose word it is and for whom it is meant. . . . Each and every word expresses the one relation to the other. I give myself verbal shape from another's point of view, ultimately from the point of view of the community to which I belong. A word is territory *shared* by both addresser and addressee, by the speaker and his interlocutor. (pp. 85–86)

In an effort to pull together these considerations, Nystrand (1986) argues that reading and writing should be viewed as a transaction between readers and writers; this involves a mutual awareness as well as shared expectations. Nystrand refers to these expectations as a reciprocal agreement. As he stated:

This key assumption is the *Reciprocity Principle*, which is the foundation of all social acts, including discourse: *In any collaborative activity the participants orient their actions on certain standards which are taken for granted as rules of conduct by the social group to which they belong.* . . . The expectation for reciprocity in discourse is important because it means that the shape and conduct of discourse is determined not only by what the speaker or writer has to say (speaker/writer *meaning*) or accomplish (speaker/writer/*purpose*) but

also by the joining expectations of the conversants that they should understand one another (producer-receiver *contract*). Of these three forces that shape discourse, moreover, the contract is most fundamental: Without a contract between writer and reader, both meaning and purpose are unfathomable at best and untenable at worst. (p. 48)

How do these notions apply to the reality of classrooms? Several obvious questions emerge from the consideration of these accounts: To what extent do readers consider authorship? To what extent do writers consider audience? What happens to reading and writing when a sense of authorship or audience is enhanced?

### To What Extent Do Readers Consider Authors?

Findings from several studies suggest (1) students at all ages have a sense of authorship, but younger and less proficient readers do not consider authorship either to the same degree or with as much breadth as older and more proficient readers; (2) oftentimes author intentionality is used by readers to resolve difficulties that they encounter as they pursue interpretations of text; and (3) similarly, the difficulties readers encounter are oftentimes due to a failure to appropriate an author's intentions in that text.

In the previously cited study by Martin (1987), making connections to authors was one of the eight categories that emerged from her study of high school seniors' self-reports during reading. Making connections to authors accounted for 6.7 percent of the comments offered in response to the abstract passage and 4.5 percent to the concrete. When probed further, most students revealed a rather vague sense of authorship. In a study by Flower (1987), a sense of authorship appeared to be both prevalent and important to meaning-making. Inferences she labelled as serving "to identify the rhetorical structure of the text . . . as a speech act or social transaction between Gould [the author] and his readers" were used 60 percent of the time as a means of resolving difficulties of interpretation.

In studies with younger children as well as adults, similar findings have emerged. For example, McGee (1983) conducted an extensive study with 108 subjects (36 second graders, 36 fifth graders, and 36 adults) in which individuals were interviewed after reading and summarizing two stories. Interview questions addressed why they thought the authors wrote the stories. Results indicated that adults compared with children did the following: (1) they gave more reasons why authors wrote, especially reasons related to communicating and interacting with readers; (2) they displayed a greater awareness of the author's intent to convey social information; and (3) they produced more information about the social nature of the discourse in their summaries than did second graders or fifth graders. Likewise, fifth graders displayed a greater awareness of the author's intent than did second graders and included more information dealing with social interactions. Second graders displayed little awareness that authors write to communicate, and their summaries contained very little social information.

### *What Happens When a Reader's Sense of Author Is Enhanced?*

A study by Tierney, LaZansky, Raphael, and Cohen (1987) suggested that a lack of sense of authorship may result in a failure to identify inconsistencies presented in certain text situations. By studying the responses of readers to inconsistent ideas inserted in nonfamiliar versus familiar text, as well as texts with and without dialogue, Tierney and associates found that better readers relied upon a consideration of an author's intent to unravel meanings, whereas poorer readers were not apt to consider authorial intent or negotiate their own meaning, especially in less-familiar text and text without dialogue.

The findings by Tierney and associates concur with Bruce's (1980) position: "Failure to understand the author's intention can cause problems for all levels of comprehension, from 'getting the idea' to subtle insights expected of skilled readers" (p. 380).

A number of educators suggest that enhancing a sense of authorship contributes to more critical thinking. With elementary-age students, Graves and Hansen (1983), as well as Calkins (1983) have claimed that students who write fluently and conference with others approach text with an awareness of authorship, a critical eye to an author's craft, and more flexibility in terms of the use of strategies. With college-level basic writers, Salvatori (1985) has demonstrated that a carefully developed sequence of writing experiences develops what might be termed a more transactional, "dialogical" attitude to reading. That is, after experiencing opportunities to write, Salvatori claims that students approach text written by others with a sense of their own purposes and a view to negotiating meaning that goes beyond acquiescing to text.

In ethnographically oriented studies of collaborative learning situations (Short, 1986a, 1986b; Rowe, 1986, 1987) findings that concur with these claims have surfaced; in classrooms where students were exposed to reading, writing, and conferencing opportunities, readers adopted more transactional stances and learning. As Short (1986b) comments:

Children continually built off each other's texts but they always transformed the idea into their own construction. The idea never looked the same because it was intertextualized with their own ideas and because they always pulled their intertextual ties from such a variety of texts. Because of the collaborative learning environment established in the room, children collaborated with the texts of other authors, whether professional or classroom, rather than feeling that they had to try to transfer those authors' texts into their texts. (p. 345)

In more traditional studies of the effects of training students to consider an author's purpose (LaZansky & Tierney, 1985; Mosenthal, 1983), such effects were also apparent, but especially when students were dealing with more difficult text. Specifically, students who were directed to read with a sense of the author's purpose recalled more ideas from the more difficult text than did those who had not been so trained. Finally, text-based attempts to heighten author awareness have also yielded interesting results. In those situations when text seemed more personalized, students tended to recall more information and read it more critically. In one study (Tierney et al., 1987), college students who were asked to respond to the text most closely aligned with their experience recalled more and read more critically. In a second study (Crismore, 1985), metadiscourse inserted in hopes of personalizing text enhanced students' reading recall of these texts.

Gadamer (1986) once claimed that

The understanding of a text has not begun at all as long as the text remains mute. But a text can begin to speak. . . . When it does begin to speak, however, it does not simply speak its word, always the same, in lifeless rigidity, but gives ever-new answers to the person who questions it and poses ever-new questions to him who answers it. To understand a text is to come to understand oneself in a kind of dialogue. This contention is confirmed by the fact that the concrete dealing with a text yields understanding only when what is said in the text begins to find expression in the interpreter's own language. Interpretation belongs to the essential unity of understanding. One must take up into himself what is said to him in such fashion that it speaks and finds an answer in the words of his own language. (p. 57)

Taken together, these findings suggest that a sense of authorship can be heightened; and once heightened, students tend to read more critically, more flexibly, and



with a view to negotiating meanings for themselves. However, of all the areas of research examined in this chapter, this is probably the weakest. It has generated only a small set of research studies. Unlike other approaches to the relationship, no methods, measures, or paradigms have gained widespread use, and none has been explored in-depth across studies. This makes it very difficult to draw broad, educationally relevant conclusions from the findings.

Despite the claims of many experts, there are as yet no careful studies of the impact of extensive reading or writing programs on sense of authorship. It is certainly possible that a peer-conferencing-style program could exert an important influence on this aspect of literacy development, but findings up to this point are more provocative than substantive. Given the important differences that have been described in students' conferencing behaviors (DiPardo & Freedman, 1988), it is doubtful that all such approaches and interactions would lead to equivalent increases in authorship awareness.

Studies of authorship awareness have also been rather vague with regard to the theoretical dimensions of this construct. Issues such as reader's purposes, interactions of reader's and author's intentions, functions, and comprehension type have not been explored as of yet. Personalization is still weakly defined. No theory of reading provides an adequate description of the conditions under which a sense of authorship would be necessary, useful, or relevant; not surprisingly, these few studies have not yet adequately considered such issues.

Future work needs to consider sense of authorship as a basic outcome in a variety of reading and writing studies. Especially useful would be investigations that consider the writing, as well as the reading, outcomes of the authorship instruction. Research needs to consider the stability and generalizability of efforts to improve sense of authorship. It is one thing to find specific, short-term gains on experimenter-designed instruments; it is quite another to find generalizable outcomes that have long-lasting consequences. It is also important that researchers begin to consider alternative theoretical explanations for their findings. Does better alignment with the author lead to better comprehension because it causes a communications-oriented stance (an issue of transactional theory), or because of a simple knowledge-information alignment (a schema-theory issue)? How does alignment with the author interface with a reader's stance, including identification with story characters or perspective-taking? How does alignment with authors interface with a reader's consideration of a narrator? How does a sense of authorship relate to a sense of one's self as a reader?

### To What Extent Do Writers Consider Their Audience?

Unlike sense of authorship, sense of audience has generated a substantial body of research. In conjunction with this extensive corpus of research dealing with writers' sensitivity to audience, there is substantial debate concerning the extent to which a concern for audience is pervasive.

The topic of audience yields a twofold problem: First, one question is whether, as Rubin (1984) argues, "writers are under all circumstances actively engaged in constructing representations of their readers" (p. 238); or, as Burleson and Rowan (1985, p. 41) contend, audience considerations underlie only those forms of discourse in which "audience knowledge" is centrally involved—that is, in writings such as persuasive, regulative, or communicative. The second problem is that it is difficult to know how or in what ways a sensitivity to audience manifests itself, assuming it does. As Kroll (1985) suggests, sensitivity to audience is apt to manifest itself in various and different ways for difficult discourses and their registers. Indeed, his research examining changes in the

relationships between social cognitive complexity and holistic measures of written communication suggests that variation from one text to another should be expected, especially when one examines audience sensitivity for different texts in the same way. For example, in his study the correlation between holistic assessment of writing and social cognitive complexity varied from .25 to .04. Again, the problem remains, how does an awareness of audience manifest itself? The problem is to delineate the various dimensions along which a sensitivity to audience might manifest itself for different texts written for different audiences and different purposes.

Some inroads have been made as methodologies have emerged and measures have been explored. In particular, three methodologies have come to the forefront: one in which existing texts are analyzed for features that might reflect an awareness of audience, another in which writers are asked to develop a text for two or more audiences, and another in which individuals are required to redevelop a text for different audiences. In terms of measures, studies using these methodologies have tended to look at slightly different variables. Studies involving the first two methodologies have looked at syntactic complexity and sometimes rhetorical structuring or the extent to which writers have used reader-based prose such as elaborating, orienting information, and other stylistic features. Studies involving the third methodology have tended to consider rhetorical structuring as well as meaning changes, but not syntactic complexity.

A number of studies have asked writers to develop explanations for a game for an undetermined audience. For example, Kroll (1986) asked 24 students in grade five, 26 students in grade seven, 19 students in grade eleven, and 27 college freshman to generate written explanations following a videotaped introduction to the game. He found that fifth graders and seventh graders produced explanations that were less informative, leaving out such elements as general statements of the object of the game and orienting information, and they were less formal than college-level students.

Flower and Hayes (1981) had four proficient writers and four less proficient writers compose aloud as they wrote. Analyses of the transcripts revealed that the proficient writers generated new ideas in response to the rhetorical problem of communicating with others, while less proficient writers focused on just the ideas. A study by Crowhurst and Piché (1979) examined the effects of writing for different audiences upon the complexity of the writing of grade-six and grade-ten students, who wrote essays to audiences deemed different in age, intimacy, and authority. The audiences were teacher and best friend. Analyses revealed that the essays by the tenth graders were more complex when written for the teacher audience; in grade six there were no significant differences.

Rubin and Piché (1979) analyzed the persuasive essays produced by fourth, eighth, and twelfth graders and adults in response to a topic for gifted audiences of high, intermediate, and low intimacy. The results found correlations between age, audience, and syntactic complexity, which was consistent with previous research. The results of an analysis of the use of persuasive strategies suggested that older students tended to establish a broader context for the topic and adapted these strategies for different audiences. By examining the texts rewritten for different/younger audiences, Kroll (1985) explored the audience-adapted writing skills of students in grades five, seven, nine, and eleven. Analyses of student revisions to these texts suggested that younger students tended to focus on word-level vocabulary changes, whereas older students focused on more major changes that included retelling of stories, revamping of structure, addition of stylistic features, and redevelopment of the moral.

Roen and Willey (1988) assigned subjects to three experimental writing conditions. In one, audience was not discussed; in the second, audience was focused upon before and during drafting; and in the third, audience was discussed before and during

revising. Both audience awareness conditions improved the quality of writing, but providing focus during drafting was not nearly as effective as it was during revision. Sense of audience operated differently across the writing process.

Taken together, the findings from these studies suggest that, at least for selected writing assignments, all students are sensitive to audience, but older and more proficient writers tend to adapt their texts differently to meet audience demands. Older students are apt to adapt for audiences by varying the syntax and structures, implementing other meaning-level changes (elaboration and structuring ideas rather than focusing upon word choice), and adopting a tenor to fit the intended purpose of the text and its audience. The influence of writing awareness varies across different parts of the writing process, and it probably varies with regard to many other aspects of writing situations. It is hoped that future studies will explore these issues in more detail and adopt a more open-ended orientation to how different writers might be cuing different readers. This may lead to a very different set of indices to those included in studies to date.

### Can Sensitivity to Audience Be Enhanced and What Are the Effects of This Enhancement?

Audience awareness, at least insofar as it manifests itself in written products, seems quite susceptible to different contexts and instructional experiences. Several researchers, including Graves and Hansen (1983); Newkirk (1982); and Tierney, Leys, and Rogers (1986), have demonstrated the impact of collaborative learning experiences upon students' sense of audience. Students in classrooms that are collaborative and involve students in sharing their writing with others appear to be able to read their own writing with a great deal more objectivity, as well as an understanding of possible improvements, than are students in less-collaborative settings (Graves & Hansen, 1983; Newkirk, 1982; Tierney, Leys, & Rogers, 1986). In one study, Tierney, Leys, and Rogers (1986) compared sensitivity to audience of third graders who had been involved in a variety of collaborative experiences with third graders who were involved in more teacher-centered, teacher-directed activities. Students in the former setting identified the ability to affect audiences (what they saw, felt, and thought) as one of their goals, and they elaborated and staged their texts accordingly. Students in the teacher-centered setting offered comments about their audience that were vague and not manifest in their writing.

As Raforth (1985) and Scardamalia, Bereiter, and McDonald (1977) have demonstrated, a writer's sensitivity to audience can be enhanced if the writer is provided with information on the reader's viewpoint on a topic and related background of experience. Shriver (1986) and Swaney, Janik, Bond, and Hayes (1981) have been able to demonstrate that writers could become more sensitive to readers' problems if they were exposed to the types of problems readers encounter. Beach and Anson (1988), Loewenthal and Krostrevski (1973), and Wagner (1987) have demonstrated that role-playing situations (i.e., as the context for writing or as a follow-up activity) increase a writer's sensitivity to audience and lead to rhetorical restructuring and to writers' making substantial additions to the text. One particularly noteworthy study by Redd-Boyd and Slater (1989) comparing imaginary assigned reader with real assigned reader or no assigned reader found that whether or not a writer was assigned an audience had little impact upon scores of essays, but did affect the writer's interest, effort, and use of audience-based strategies. Furthermore, regardless of whether or not they were assigned an audience, students who said they wrote with someone in mind as an audience were twice as likely to persuade the reader.

While these studies indicate that a writer's sensitivity to audience can be en-

hanced, a number of issues remain unresolved. First, the research to date has not dealt with the issue of *transfer*. So far, very few studies have examined whether increased sensitivity to audience awareness transfers to tasks or contexts beyond those studied. Second, several issues pertaining to development have been slighted. One critical issue is how audience awareness changes over time. Does audience awareness develop in a linear fashion? In what ways might audience awareness be subsumed by a writer's interpretative community, which may or may not be the "intended" audience? Indeed, a number of theorists have argued that being overly concerned about audience may be problematic. Elbow (1981) suggests that perhaps the role an audience serves is to give writers that initial nudge. As he stated,

A child cannot learn to speak unless he has other people around him (and it seems to work best if they are loving people). Yet after he has learned language he can speak and write in total solitude. There is a profound principle of learning here: we can learn to do alone what at first we could only do with others. (p. 190)

Third is an issue of definition. Audience awareness may manifest itself in ways that research to date has not addressed and in ways that are more subtle than analyses of written products or even think-alouds might uncover.

To close this section, what do we know about how authors and readers transact? There seems to be an imbalance between what has been suggested about what readers and writers do and what has been accounted for. Undoubtedly, readers read with a view to authorship, no matter what their own role as authors. Likewise, writers write with a view to readership in which they are their own audience, at least initially. In other words, successful writers not only consider the transactions their readers are likely to be engaged in, but they are also their own readers. What is lacking is a clear definition of the factors that intrude upon, or are part of, these transactions over time, and their contribution.

### WHAT IS THE RESULT OF USING READING AND WRITING TOGETHER?

The studies discussed up to this point have treated reading and writing in terms of their shared cognitive features, or as a social act between people. However, another interesting approach to reading-writing relationships considers how reading and writing can be used together, and how using reading and writing in combination leads to different learning and thinking outcomes than would their separate uses. The basic research questions here are: How can reading and writing be used together? What do readers and writers learn and think when reading and writing are used together? The findings from several studies suggest that combined reading and writing engenders a more inquisitive attitude to learning, and that it facilitates the expansion and refinement of knowledge. In terms of reasoning, reading and writing support a complex and coordinated constellation of reasoning operations that varies in accordance with a learner's purposes, style, and uses of different reading and writing activities. For example, as a learner pulls together an analysis, he or she pursues various reading and writing activities (note taking, drafting, reviewing, reading, note taking again, and so on), driven by selected purposes (e.g., to pull together ideas), and accompanied by certain coordinated patterns or constellations of reasoning operations (generating ideas together with evaluating and so on).

There are a number of ways that reading and writing could be used together,

probably as many ways as there are literacy functions (Goodman & Goodman, 1984; Halliday, 1973; Heath, 1980; Schmandt-Besserat, 1978; Scribner & Cole, 1981; Smith, 1982; Tierney, 1985). Reading and writing might be combined to accomplish some social interaction, or to enhance or engender some aesthetic appreciation. They might be combined toward the achievement of more powerful memory operations or to assist in reflection. However, no function has received more research attention than has academic learning, and none probably requires the use of as many of the reasoning operations inherently available in reading and writing. This section will focus on how reading and writing activities together influence learning and thinking.

### How Reading and Writing Contribute to Learning New Ideas

A thesis, well-accepted among psychologists, is that the more content is manipulated, the more likely it is understood and remembered. In accordance with this thesis, a number of researchers have hypothesized that writing will have an impact upon what is learned because it prompts learners to elaborate and manipulate ideas. In a study exploring this hypothesis directly, Hayes (1987) presented high school students with three different writing tasks (paraphrasing, formulating questions, developing a compare-and-contrast statement) to accompany the reading of selected passages on machines. Since the formulation of questions and compare-contrast statements appeared to involve more manipulation of ideas, he expected that students involved in those conditions would learn more from other passages on the same topic. As he had hypothesized, writing questions and compare-contrast statements resulted in greater amounts of new information in recalls from transfer passages. Also, writing questions resulted in the recall of proportionally more superordinate information. Hayes argued that the results reflected greater learner engagement and, in turn, greater learner orientation to significant information and the integration of text information with learner knowledge.

In a similar vein, Copeland (1987, in press) examined the effects of writing upon the ability of 120 sixth graders to learn from informational texts. Students were randomly assigned to a control group or one of three postreading treatment conditions directed at synthesizing major contexts (a writing activity, a multiple-choice question activity, or a directed reading activity); the control group was involved in vocabulary puzzles. Students' ability to learn from informational texts was assessed by having them apply the knowledge they had acquired during reading to interpreting a related text, as well as to answering multiple-choice questions directed at factual information. As was hypothesized, students who wrote more performed better on the transfer passage than did the other students. Copeland (in press) suggested that the writing groups seemed more able to apply what they had learned to new situations and attributed these differences to the writing activities that, unlike other activities, "required students to form relationships among ideas through the development of a unified response" (p. 25). It was not just that writing added to thinking time, but that the type of writing actually led students to treat the content in a qualitatively different, and more useful, manner.

The findings from the studies by Hayes (1987) and Copeland (1987, in press) suggest that writing may have an advantage over other learning adjuncts in terms of the extent to which learners integrate their ideas with those presented in the text and the extent to which learners will key on significant ideas. The results also suggest that the

effects of reading together with writing for overall recall may vary. Hayes (1987) found no difference in overall recall; Copeland (1987, in press) did. Subsequent studies suggest that writing may contribute to better long-term recall, but offer little in the way of differences in immediate recall. Obviously, the nature of the writing task itself has an influence, and all the studies point to the need to examine outcomes in terms of the precise nature of the requirements of any particular writing assignment. For example, the differences in outcomes from the Hayes and Copeland studies may be due to the nature of the writing assignments.

A study by Penrose parallels the aforementioned investigations. Penrose (1988) was interested in the effects of writing upon reading from a 1,200-word academic text. To this end, 40 college freshman were assigned to a counterbalanced presentation of writing and studying activities. Her findings point to the limitations of measures of comprehension, the importance of protocol data to support interpretations of outcome measures, and the need to examine effects across time and across individuals. She found, for example, that studying appeared to have an advantage of immediate recall, but that this advantage was not sustained on delayed measures. On the other hand, protocol analyses suggested that the recalls may not have reflected the quality of thinking engaged in as a result of writing. As later studies support, writing prompted some students to think more critically and elaboratively. The disparities that emerged among individuals are noteworthy. Penrose indicated that writing had significant effects when writers took advantage of what writing had to offer. But, as she noted,

not all writers recognize writing as an opportunity to engage in higher level learning and not all are able to take advantage of this opportunity. (p. 16)

As Penrose suggested, the effects of writing may be tied to the quality of thinking associated with learning, rather than to the number of ideas recalled.

A study by Newell (1984) has been quite influential in terms of directing researchers to incorporate measures of on-line thinking with outcome measures. In Newell's study, the effects of rotating eight eleventh graders through the use of note taking, study-guide questions, and essays for different topics were examined. Two major advantages emerged for essay writing. First, students involved in essay writing, especially those who had a limited knowledge of the topic, acquired more knowledge of key concepts than did students involved in note taking or responding to study-guide questions. Second, based on an analysis of students' think-aloud protocols when they were involved in these activities, essay writing prompted students to engage in a greater overall number of cognitive operations and proportionately more reasoning that went beyond the mere translation of ideas. In his conclusions from these findings, Newell argued that writing essays prompted more extensive and integrated thinking than more fragmentary written responses were apt to engender. As he stated,

Essay writing . . . requires the writers, in the course of examining evidence and marshalling ideas, to integrate elements of the prose passage into their knowledge of the topic rather than leaving the information in isolated bits. (p. 282)

What emerges from these four studies is affirmation for the integrating effects that writing has upon long-term learning, especially of key issues related to a topic. What may be more important, however, are the provocative effects that writing has upon thinking. It is to those studies whose primary focus has been the impact of writing upon thinking that we now turn.

### How Reading and Writing Contribute to a More Thoughtful Consideration of Ideas

Using procedures to assess thought processes (e.g., think-aloud protocols, retrospective accounts), a number of researchers have directed their attention to the reasoning operations that learners pursue as they read and write. What has emerged from this research is a consistent finding: Writing prompts readers to engage in the thoughtful exploration of issues, whether it be in the context of studying science, social studies, or literature.

The effects that writing about literature has upon thinking and learning are explored in the work of Marshall (1987) and Salvatori (1985). Marshall (1987), for example, found that when students involved in personal and formal writing approached stories from a more diverse set of literary perspectives, they engaged in significantly more examination and deliberation of stories than did students who simply responded to study-guide questions. Salvatori (1985) demonstrated that writing prompted readers to be less passive and more reflective, evaluative, and enthused.

In a study with similar goals, Colvin-Murphy (1986) studied the effects of having 85 eighth graders complete one of the following: read poems followed by extended writing; read poems followed by worksheet activities; or just read. The extended writing activity was done in response to Bleich's (1975) heuristic: What did you see? What thoughts and associations come to mind? What other things does it lead you to think about? As with Marshall's and Salvatori's studies, writing prompted Colvin-Murphy's students to be deeply involved cognitively. Students engaged in writing not only remembered more content and were more sensitive to the author's craft, but Colvin-Murphy found that they were also more engaged in thinking about what they were reading.

Similar findings have been forthcoming in studying the effects of writing upon reading in science and social science. In the previously reported study by Newell, it was noted that writing essays prompted students to do more extensive thinking about a topic, including the examination of evidence, as well as marshalling ideas and reconstructing them. In a similar vein, the previously cited study by Penrose (1988) reported that writing was associated with greater engagement. As she stated, "The writing task seems to have provided some students an opportunity for critical reflection and elaboration" (p. 15).

A study by Tierney, Soter, O'Flahavan, and McGinley (1989) addressed the question of whether thoughtful engagement would be attributed to writing alone, reading alone, or the effects of reading and writing in conjunction. To this end, they examined the nature of thinking that over 120 students were engaged in as they either wrote a first draft, answered questions and then wrote a second draft, or wrote drafts but did not read, or just read, and so on. In addition, writing was compared to the effects of a background knowledge activation activity, and simply providing students with a brief introduction to the story. Analyses of the subjects' retrospective accounts of their thinking, together with detailed analyses of their revisions and other responses, suggested two major findings.

First, students who wrote prior to reading tended to read more critically than did students who were either involved in the background-knowledge activation task or were given simply an introduction to the story. Those students assigned to the latter groups tended to read to remember ideas. Second, writing, together with reading, prompted more thoughtful consideration of ideas than did writing alone, reading alone, or either writing or reading in combination with questions. This was apparent in terms of students' retrospective accounts of thought processes and in the types of revisions pursued by those students who wrote. Those students who wrote and read made

substantial changes to their drafts (additions, deletions, point of view); those students who just wrote did not make substantial changes. In sum, the findings by Tierney and associates suggest that if cognitive engagement in a task is reflected in more comments about thinking, more evaluative thinking, or a greater willingness to revise one's position, then reading and writing in combination are more likely to induce learners to be more engaged.

Taken together, the aforementioned research provides substantial support for the thesis that writing in conjunction with reading prompts learners to be more thoughtfully engaged in learning. These studies, however, are not without limitations. All of these studies focused on the combination of reading and writing with proficient readers and writers; the increased thoughtfulness that was apparent might be less likely under other circumstances. Another important issue concerns the generalizability of these findings to different kinds of writing assignments and to various topics.

In an attempt to pin down some of these concerns, a study of Langer and Applebee (1986, 1987) addressed the effects of different kinds of writing across a range of topics. They conducted a three-year study that investigated the effects of different kinds of writing assignments upon thinking in high school science and social science classrooms. The study had two overriding goals: to provide support for the contribution that writing makes to learning by examining the thought processes and learning that results from various writing tasks; and to redirect teachers' assignments of student writing in various classroom settings toward tasks that required more application, analysis, and interpretation. In particular, Langer and Applebee explored the nature of the thinking and learning that result from various types of writing activities. Across three separate experiments, over 400 students from ninth to eleventh grade participated in a wide range of reading and/or writing tasks: read and study without writing, take notes after reading, answer study-guide questions, engage in supplemental reading, write a summary, or write an analytic essay.

These studies had three major outcomes. First, each of the writing activities contributed to better learning—especially of less familiar material—than when reading was done without some form of writing. If the content is familiar and relationships are straightforward, writing does not seem to make as much difference. Second, different kinds of writing tasks prompt different kinds of cognitive engagement. As they stated,

different kinds of writing activities lead students to focus on different kinds of information, to think about that information in different ways, and in turn to take quantitatively and qualitatively different kinds of knowledge away from their writing experiences. (Langer & Applebee, 1987, p. 174)

In conjunction with examining the think-aloud protocols and those portions of the text to which learners attended, Applebee and Langer concluded that note taking, comprehension questions, and summarizing tasks focused the learners' attention rather loosely on a text; whereas essay writing prompted the learner to focus more deeply on specific sections. In terms of reasoning operations, essay writing prompted more comments, and these comments represented a greater variety of reasoning operations than either note taking or study guide questions.

A study of McGinley (1988) represents a noteworthy follow-up and extension to the work of Langer and Applebee (1986, 1987) and Tierney et al. (1989). McGinley pursued detailed analyses of the thinking and learning of seven university students involved in self-directed engagements in reading and writing. One of the characteristics of previous studies was that researchers prescribed the sequence of process by which students read, wrote, took notes, and so on. While McGinley specified the topic of the study and overall task, he did not prescribe the order of activities or process by which



read, wrote, took notes, outlined, formulated questions, reread, revised drafts, and so on. Students could pursue these activities at different points in time as frequently as they desired. Think-aloud protocols and debriefing interviews were used as a major source of evidence in analyzing how students' thought processes and knowledge of the topic changed across time. The protocols and debriefing interviews were a source of information concerning the functions that different forms of reading and writing served; they also described the reasoning operations and basis for strategic decisions regarding shifting from one mode to another.

Two major findings emerged from this study. First, analyses of his think-alouds suggested that the reasoning associated with different writing activities was not as focused as Langer and Applebee's findings implied. In particular, McGinley found that reading and writing served complementary as well as unique ways to think about the topics. That is, McGinley found that the thinking associated with any task varied in accordance with the other activities with which it was immediately associated. For example, note taking during reading was associated with evaluating ideas, whereas note taking apart from reading was used primarily to generate new ideas. Using analyses of sequential dependencies, McGinley demonstrated the importance of studying patterns of thinking across time. Regardless of the mode, for example, students' reasoning typically involved self-questioning in the early stages of their work, whereas validating ideas dominated in the latter states.

A second aspect of McGinley's work involved a consideration of individual differences. Just as Penrose found that some students were not adept at using writing as a tool for learning, so McGinley found different levels of adeptness in shifting from one mode of discourse to another. More able learners seemed more aware of the reason for shifting from reading to writing to note taking, and so on, and seemed more aware of the type of thinking made possible by different forms of reading and writing. Less able students seemed to move from one mode to another for more arbitrary reasons. Individual learning styles or approaches to text that stemmed from a learner's past history and established goals.

Studying individual styles of using discourse modes was also the subject of work in the area of discourse syntheses by Spivey (1984), Spivey and King (1989) and in work on writing from sources (Ackerman, 1989; Greene, 1989; Kennedy, 1985; Nelson & Hayes, 1988). In her first study, Spivey (1984), examined the processes and products of young adults (able and less able comprehenders) who were given two texts to read on a single topic (armadillos) en route to writing a single essay. Based upon a detailed examination of each student's notes and final products, she found that less able and more able comprehenders varied in their ability to achieve effective syntheses. In particular, more able comprehenders incorporated more information, were better able to key on important ideas, and were more able to chunk ideas together in a more elaborated fashion. In a second study, Spivey and King (1989) examined the processes and products of accomplished and less accomplished readers in the sixth, eighth, and tenth grades who were given three source texts (encyclopedia articles on the rodeo) and asked to write a report. Spivey and King (1989) found that older students included more content, seemed more able to glean important ideas, and produced reports that were better connected. More accomplished readers were more likely to include information representing a range of levels of importance, they tended to produce more coherent reports, they appeared to expend more effort at the same time as they were more sensitive

In a similar vein, Kennedy (1985) compared the behaviors of three college students who were fluent readers with three college students who were not so fluent; the students were given three articles to read and were asked to write an objective essay.

Based upon an analysis of think-aloud protocols and observations over time, Kennedy discerned a number of differences between the fluent and not-so-fluent readers. Fluent readers did considerably more planning before starting their essays than not-so-fluent readers. Furthermore, they did considerably more rereading of sources and redevelopment of notes during what Kennedy labelled the prewriting-postreading phase.

In hopes of examining issues of task representation, Nelson and Hayes (1988) conducted two studies intent on examining the strategies various college-age students enlist as they pursue writing assignments involving the use of various sources. In the first study, Nelson and Hayes compared the strategies (via think-alouds) of eight freshmen and eight advanced students as they planned and searched sources in conjunction with developing an essay on the relationship between Latin America and the United States. A key difference between the sophisticated and less sophisticated students was their representation of the task and subsequent method for selecting and developing from sources. More sophisticated students appeared to be issue driven and were more focused and evaluative in the search for sources. Less sophisticated students appeared fact driven and tended to be less purposeful in their assembling of ideas. In the second study, they examined logs that college students kept as they pursued an extended assignment. Their examination over time revealed differences among the students, which they described as akin to high-investment and low-investment. Whereas high-investment students used elaborate combinations of reading and writing, low-investment students were minimally engaged, and, subsequently, little transformation in ideas or critical thinking occurred.

Along similar lines, Greene (1989) examined the impact of problem-based and content-based tasks upon the process and products of college students enrolled in an advanced course in history who were using six source texts to develop an essay on the European recovery after World War II. Students given the problem-based frame versus content-based frame tended to develop texts consistent with the assigned task (problem-solution versus collection). In addition, students given the problem-solution developed texts that were more integrated, incorporating into their arguments ideas from their resources together with ideas from their own ideas.

Finally, in an attempt to glean the impact of background knowledge, Ackerman (1989) pursued an examination of the processes and products of students' writing from different disciplines (business and psychology—topics related and unrelated to their academic areas). Ackerman found that background knowledge appeared to have an impact on what information from source texts was included, how the information was presented, and the writer's stance toward the topic and the audience. When students were writing in their academic discipline, they tended to adopt a more active orientation to their topic and seemed more conscious of the pragmatics of their situation.

Central to the pursuit of discourse synthesis studies and studies dealing with writing from multiple sources are notions of intertextuality or the relationships that are developed between texts (multiple source texts, interactions with others, and so on). It should not be surprising, therefore, that these aforementioned studies have much in common with those descriptions of classrooms found in studies detailing the early literacy experiences and reading and writing across the grades—all deal with issues of intertextuality (e.g., Allen, 1976; Atwell, 1987; Baghban, 1984; Bissex, 1980; Boutwell, 1983; Burton, 1985; Calkins, 1983; Clay, 1976; Durkin, 1966; Ferreiro, 1984; Ferreiro & Teberosky, 1982; Fulwiler & Young, 1982; Giacobe, 1982; Goodman, 1986; Goodman & Altwerger, 1981; Graves & Hansen, 1983; Harste, Woodward, & Burke, 1984; Hiebert, 1981; Janiuk & Shanahan, 1988; Martin, 1975; Snow, 1983; Sulzby, 1981, 1982, 1983a, 1983b, 1985a, 1985b, 1985c, 1986a, 1986b; Teale, 1986; Teale & Sulzby, in

press; Tierney & Leys, 1986; Tierney, Leys, & Rogers, 1986; Tierney & O'Flahavan, 1989). For example, in conjunction with exploring the nature of literacy learning in a day-care environment for 3- and 4-year-olds, Rowe (1987) concluded that there are two general types of "intertextual" connections that are important. The first type is the *formation of shared meanings* through conversations and demonstrations so that these young literacy learners are members of a community that affords communication with others. The second type involves linking current literacy experiences to past experiences. As Rowe stated,

. . . as children formed new communication goals, they flexibly combined various aspects of their existing knowledge . . . to construct situation-based hypotheses which met their communication goals. (p. 110)

Based upon her observations of first graders, Short (1986b) argues that the potential for learning and thinking are changed when the classroom environment facilitates intertextuality. A collaborative and meaning-centered learning environment engages learners more fully and actively in learning and encourages higher levels of thinking. Figure 11.4 is a diagram of the learning process that Short believed represented how learners pursue the construction of text, based upon their own experiences, interaction with others, and connections with other texts.

Along similar lines, Dyson (1983, 1985, 1986, 1988) has explored dimensions of literacy learning of preschool children in which she focused upon the interrelationships between texts (children's writings, drawings, talk, and so on). She argues that,

children's major developmental challenge is not simply to create a unified text world but to move among multiple worlds, carrying out multiple roles and coordinating multiple space/time structures. That is, to grow as writers of imaginary worlds and, by inference, other sorts of text worlds as well, children must differentiate, and work to resolve the tensions among, the varied symbolic and social worlds within which they write—worlds with differing dimensions of time and space. And it is our own differentiation of these competing worlds that will allow us as adults to understand the seemingly unstable worlds, the shifts of time frames and points of view, that children create. (1988, p. 356)

Also, Wells (1986) has argued from his longitudinal study of children from 15 months to elementary school, that it is the encouragement to be active meaning-makers, involved in meaningful and sustained interactions around texts that is crucial. As he stated, schools should try to provide environments for meaning-making—that is, "to try to make sense, to construct stories, to share them with others in speech and in writing" (p. 222).

Taken together, the studies dealing with discourse synthesis and how reading and writing might work together in classrooms, as well as in homes, reflect interesting tendencies. Discourse synthesis studies tend to examine reading and writing processes in detail and gloss over issues of context; descriptions of classrooms tend to describe larger issues including context dynamically, but gloss over details of reading and writing processes. Despite these limitations, both sets of studies do converge on similar findings—in particular, the importance of active meaning-making and the potency of an environment that facilitates transactions and tensions among texts.

To summarize the findings in this section: the previous research studies provide consistent support for viewing writing as a powerful tool for the enhancement of thinking and learning. Writing and reading together engage learners in a greater variety of reasoning operations than when writing or reading are apart or when students are given a variety of other tasks to go along with their reading. The nature of thinking

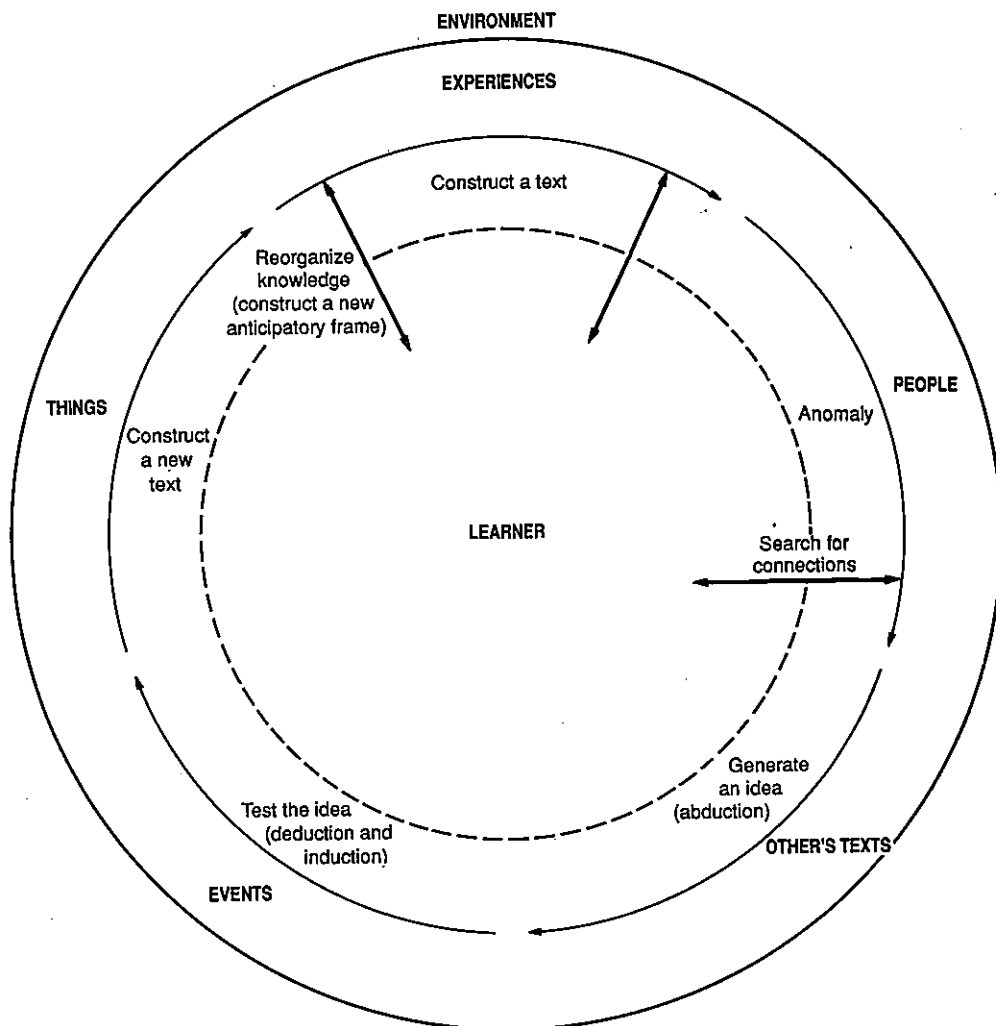


FIGURE 11.4 The learning process. Source: From *Literacy as a Collaborative Experience* (dissertation) by Kathy Short, Indiana University, 1984. Reprinted by permission.

associated with different types of writing tasks will vary, however, depending upon the nature of the writing task, the topic or problem being pursued, the purpose for which a writing task is enlisted at a particular time, and the individual approach of the learner. Writing extended essays seems apt to prompt a wider variety of reasoning operations than do writing tasks that require less integration and manipulation of ideas. But the nature of the reasoning operations associated with any writing tasks will vary across time. For example, whereas note taking may appear to be consumed with restating ideas at one point in time, it may involve hypothesizing and validating ideas at another. The finding that individuals may differ in their adeptness at negotiating meaning suggests a view of literacy learning as much concerned with the literacy journey as with the outcomes that are derived. As Mackie (1982) stated,

to be literate is not to have arrived at some predetermined destination, but to utilize reading, writing, and speaking skills so that our world is progressively enlarged. (p. 1)

Or as McGinley and Tierney (1988, 1989) argued,

literacy should be understood as the ability to enlist a repertoire of discourse forms to explore and extend thinking and learning. (McGinley & Tierney, 1988, p. 13)

The research data substantiates this view, while suggesting an instructional agenda—especially an instructional research agenda—that has yet to be realized. Future studies will need to focus on the combination of reading and writing toward different goals, and individual differences in combining reading and writing must be explored. Most important will be studies that consider the possibility that students can be taught to use reading and writing together in an intentional strategic fashion, based upon the thinking operations required by learners' goals.

### CLOSING REMARKS

Research on reading-writing relationships has made enormous strides both topically and methodologically. Topically, key assumptions about readers and writers and the role of reading and writing in learning have been subjected to careful examination. In terms of methodology, research on reading and writing has moved beyond comparing global measures of reading with global measures of writing to consider their underlying constructs and the ongoing thinking that readers and writers pursue. The researchers in the area of reading-writing relationships seem to have been willing to explore a variety of methodologies and measures in hopes of finding better windows for exploring emerging issues.

Despite such advances, the research on reading-writing relationships should be viewed as still in its infancy. Very few studies to date have examined the processes underlying reading and writing in those situations when reading and writing are used together. A number of developmental studies have been pursued with children during their first five years; beyond the age of 5 there exist very few longitudinal studies or studies exploring either individual differences or developmental issues. The research exploring instructional practice tends to highlight the benefits associated with selected practices, but these are more affidavits of the general effects rather than thick descriptions, comparisons, or explanations of effects. Those instructional studies that have pursued systematic examples of the effects of reading and writing upon learning have tended to adopt a regimented and somewhat prescriptive view of how reading and writing might work together. For example, most studies have involved assigning students to a predetermined sequence of activities, rather than affording them the opportunity to move back and forth between reading and writing in accordance with their own needs, self-determined purposes, and idiosyncratic, evolving understandings.

What is needed is research on literacy that explores reading and writing together with all the attendant complexity and does not retreat to exploring reading and writing simplistically or separately. What is needed most is a profound change of perspective in the field of literacy. Researchers should no longer be willing to choose between a reading or writing agenda. The Irish poet Seamus Heaney once wrote in another context,

It was not a choice/Between, but of.

Likewise, for researchers in the field of literacy the focus of research should not be *between* reading and writing, but *of* reading and writing together. Historical and cross-cultural evidence suggests that literacy in a society might entail reading and writing as

separate or related entities (Clifford, 1989). We believe strongly that in our society, at this point in history, reading and writing, to be understood and appreciated fully, should be viewed together, learned together, and used together.

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