



## Research Digest: A Review of Instructional Writing Research Literature

Ellen Bunker, EdD  
Kurt Rowley, PhD

This report provides a brief survey of literature designed to uncover the depth of research into instructional writing. Although written instructional text forms a major component in most educational and training programs, little attention is traditionally given to the task of designing instructional text for effective and maximum learning. Written resources often form the basis of understanding key knowledge and skills for students, yet written forms of instruction are often difficult for students to read, interpret, and understand.

Text used for instructional purposes has existed for centuries, but few researchers have focused specifically on the role the text takes in the learning process or what forms, structures, and writing choices influence student learning. This report looks first at research into the response of readers to various organizing strategies for instructional text, and then briefly surveys literature on academic textbook writing and the role of expert writing processes in instructional writing. Finally, we will take a brief look at instructional writing guidelines from practitioners.

### Reader responses to organizing strategies in instructional text

Several researchers have produced reviews of the literature related to the response of readers and learners to differences in writing techniques. Klauer (1984) conducted a meta-analysis of the research on intended and incidental learning from texts. He included twenty-three research reports in the analysis. His main finding notes that overall learning is slightly improved by providing advanced organizers for instructional text, such as behavioral objectives, learning directions, or providing thought questions at the beginning of instructional text. These techniques lead to some improvement in student learning of the goal relevant material; however, these pre-instructional materials impede the learning of goal irrelevant material.

(1990) examined research and theory in text processing and text design for the design and development of self-instructional print materials for distance learning. She notes that current research in text focuses on comprehension and cognition, although earlier research from linguists focused primarily on the structure of the text. Davis then introduces principles and research related to lower-level component reading processes (vocabulary and syntax) and higher-level component processes (recognizing the relationships among ideas in the text, identifying important ideas in the text, organizing ideas from the text, and integrating text ideas with prior knowledge).

Sawyer (1991) conducted a review of literature related to readability, text structure (organizing text for maximum recall, use of structural signals, adjunct aids, and advance organizers), text interestingness, expert reviser strategies, and reader comprehension strategies. She finds that much of the research is limited by a “simplistic view of reading, the use of experimentally contrived texts and contexts, and a dependency on recall as the measure of comprehension” (p. 307).

Smith (1994) reviewed research on oral and written strategies, particularly those used in writing correspondence course study guides, to determine effective ways to write instructional text. He focused his review on what researchers have said about the role of transferring “oral” language of classroom teaching into the written form of text-based distance education materials.

In addition to the research included in the reviews above, other researchers have addressed issues related to development of instructional text. For example, Mayer (1979, 1989) discussed how advance organizers influence meaningful learning and how models embedded in scientific explanations effect transfer of learning.

Garner, Alexander, Kulikowich, and Brown (1991) investigated the placement of interesting detail in a text for physics undergraduate students. They found that the attention of students was diverted from important

generalizations in the text to interesting, but less important, details. Placement of the detail did not affect recall, but overall interestingness of the text did, particularly if students knew little about the topic of the text.

Burt (1977) studied the reaction of readers to instructional learning materials and suggested methods for incorporating feedback into the process of materials creation.

In a more recent study, Sulaiman (2000) looked at the effect of varied instructional text design strategies on the achievement of different educational objectives. He tested four instructional text design strategies: a text-only approach (the control), a behaviorist-based approach, a cognitively-based approach, and a constructivist-based approach. He found significant differences in student achievement among the different treatments, with the constructivist-based and the cognitively-based approaches facilitating more learning than the control, and the behaviorist-based approach significantly reducing achievement on some measures. Significant differences were also found in time-on-instruction required for the different text design strategies.

## **Academic textbook writing and writing for the professions**

A number of theoretical articles, some of which are research-focused, are available on the topic of academic textbook writing (see Bazerman 1981, 1984, 1991; Bruffee, 1986; Marius, 1990, Nelson, Megill, and McCloskey, 1987). As Robbins notes (1973) most textbooks are written based on academic texts (i.e., journal articles) produced by professionals in any field. Therefore, the design of these original academic texts tends to control both the content and the style of textbooks.

Additional research articles highlight academic writing. Myers (1985) looks at the process used in the writing proposals for funding in biology. Swales and Najjar (1987) compare introductions in research articles; and Bizzell (1982) looks at the process of initiating new university students into an academic discourse community.

## **The Role of Expert Writing Processes**

Bereiter and Scardamalia (1987) looked at the process of writing in their studies of how immature writers learn processes used by expert writers. They discovered two fundamental writing styles, with novice writers preferring a narrative 'knowledge-telling' writing process, and expert writers preferring a well-organized 'knowledge transforming' writing process. Those writers who develop the 'knowledge transforming' approach were judged to produce more readable and coherent writing. Thus, more advanced forms of writing are directly related to organized knowledge expression, leading to knowledge-transformational experiences for the writer, which are ultimately shared by readers. This is useful information for instructional writers given the role of knowledge-transformational experiences in instructional reading.

In an edited volume of research papers, Hynd (1998) attempted to synthesize what researchers have learned about students "reading to learn" during middle and high school years. Chapters are included on the nature of knowledge and learning, how students learn content knowledge, and learning disciplinary knowledge.

## **Guidelines for producing effective instructional text**

Many sources are available from practitioners who give guidelines for producing and revising effective instructional text. In addition, a few of these practitioners have also conducted research on the process.

Since for most of its history distance education has been carried primarily by instructional text, the distance education literature contains many guidelines for producing instructional text, including some rather early pieces (Erdos, 1967; MacKenzie, Christensen, and Rigby 1968, Riley 1979; Mason and Goodenough 1981; Meed 1988; Race 1989) and well as some produced more recently (Rowntree 1990, 1994, 1997; Holmberg 1999; and Simonson, Smaldino, Albright, and Zvacek 2003). These guidelines include strategies for writing, and suggestions for tone and style.

Rowntree (1994) includes chapters on planning materials, preparing for writing, and writing and rewriting. A few practitioners in other fields have also produced guidelines for instructional text (Harrison 1980; Hartley 1994a and 1994b; Forsyth 1996). Also, many distance education or continuing education departments produce style guides for those writing distance education courses for their institutions.

Smith (1994), based on a review of literature on research and guidelines for producing study guides for distance education, concludes that writers should note the differences between oral and written language and between academic textbook prose and study guide prose. He also stresses the need for stylistic devices such as direct address, 'personalness,' and clarity. Likewise, (1990), following her review of the literature, also includes

guidelines for writing instructional text. In a series of articles published in the *British Journal of Educational Technology*, Riley (1984a, 1984b, 1984c) researched the process of drafting and revision instructional text at the Open University in the . Hashim (1999) looked at the use of instructional design elements in the production of modules at the Universiti Sains . The researcher found that most modules were weak in the number and type of instructional design elements used and only those contained in the house style guide were consistently found in the modules. Most commonly missing elements included lack of a stated writing purpose (learner analysis, needs analysis), the lack of evaluations, and a lack of pre- and post-testing to ensure favorable learning outcomes for the writing.

At times, instructional text is created from already existing materials or from materials that must be revised to make them suitable for the distance learning. While revision of materials may resemble the processes used to write the original instructional text, these authors stress that the process should be viewed separately and the development of instructional text should include the process of revision and evaluation (see Riley 1984c; Melton 1990; Dhanarajan and Timmers 1992; Hartley 1994; Le Maistre and Weston 1996; and Hayes 2001).

## Conclusion

Although instructional writing is not a distinctly recognizable field of research, a respectable group of studies relevant to the issues inherent in instructional writing can be readily compiled. These include formal studies, academic reviews and practitioner views. Taken together, this survey has shown that a set of useful guidelines for instructional writing can be extracted from this literature body. Once a respectable set of guidelines has been identified, future tasks for this area of research should include some correlation of the guidelines with learning theory and text processing research, as well as correlation with general research into instructional design and writing effectiveness. Eventually, an experimental test of the emerging guidelines could be conducted to contribute to instructional writing practice, to help establish instructional writing as a useful and important area for future research, and to begin building a knowledge base dedicated to the improvement of instructional writing.

## References

- Bazerman, C. (1981). What written knowledge does: Three examples of academic discourse. *Philosophy of Social Science*, 11, pp. 361-387.
- Bazerman, C. (1984). The writing of scientific non-fiction: Contexts, choices, constraints. *PRE/TEXT*, 5:1, 39-67.
- Bazerman, C. and J. Paradis (1991). Introduction. In C. Bazerman and J. Paradis (Eds.) *Textual Dynamics of the Professions: Historical and Contemporary Studies of Writing in Professional Communities*. : The Press.
- Bereiter, C. and M. Scardamalia (1987). *The psychology of written composition*. : Erlbaum Associates, Publishers.
- Bizzell, P. 1982. College composition: Initiation into the Academic Discourse Community. *College Composition. Ontario Institute for Studies in Education*. : John Wiley @ Sons, Inc.
- Bruffee, Kenneth A. (1986). Social construction, language, and the authority of knowledge: A bibliographical essay. *College English*, 48:8, pp. 773-790.
- Burt, G. (1997). How do readers comment on the structure of teaching materials? *Teaching at a distance*, 10, 67-76.
- Davis, D. J. (1990). Text comprehension: Implications for the design of self-instructional materials. In Moore, M. G. (Ed.), *Contemporary issues in American distance education*. : Pergamon Press.
- Dhanarajan, G. and Timmers, S. (1992). Transfer and adaptation of self-instructional materials. *Open learning*, 7(1), 3-11.
- Erdos, R. (1967). Teaching by correspondence—the writing of a correspondence course. In *Teaching by Correspondence*, 13-24. : Longman and UNESCO.
- Forsyth, (1996) *Teaching and learning materials and the Internet*. : Kogan Page.
- Garner, R., Alexander, P. A., , M. G., Kulikowich, J. M., and Brown, R. (1991). Interest and learning from text. *American educational research journal*, 28(3), 643-659.
- Harrison, C. (1980). The use of readability data in writing texts (Chapter 6). In *Readability in the classroom*. : Press Syndicate of the .
- Hartley, J. (1994a). Writing instructional text (Chapter 6). In *Designing instructional text*. : Kogan Page.
- Hartley, J. (1994b). Evaluating instructional text (Chapter 14). In *Designing instructional text*. : Kogan Page.

- Hashim, Y. (1999). Are instructional design elements being used in module writing? *British journal of educational technology*, 30:4, pp. 341-358.
- Hayes, J. R. (2001) What riggers revision? Unpublished manuscript.
- Holmberg, B. 1999. The conversational approach to distance education. *Open learning*, 14:3, pp. 58-60.
- Hynd, C. (Ed.) (1998.). *Learning from text across conceptual domains*. Mahwah, JN: Erlbaum Associates, Publishers.
- Klauer, K. (1984). Intentional and incidental learning with instructional texts: A meta-analysis for 1970-1980. *American educational research journal*, 21(2) 323-339.
- Le Maistre, K. and C. Weston (1996). The priorities established among data sources when instructional designers revise written materials. *Educational training research and development*, 44:1, pp. 61-70.
- MacKenzie, O., Christensen, E. L. and Rigby, P. H. (1968). An analysis of the correspondence method of instruction. In *Correspondence Instruction in the : A study of what it is, how it functions, and what its potential may be*, 127-149.: McGraw-Hill Book Company.
- Marius, R. (1990, Fall). On academic discourse. *ADE Bulletin*, 96, pp. 4-7.
- Mason, J. and Goodenough, S. (1981). Course creation. In Kaye, A and Rumble, G. (Eds.) *Distance teaching for higher and adult education*, 100-120. : Croon Helm.
- Mayer, R. E. (1979). Can advance organizers influence meaningful learning? *Review of Education Research*, Summer, 49: 2, pp. 371-383.
- Mayer, R. E. (1989). Models for Understanding. *Review of Education Research*, Spring, 59: 1, pp. 43-64.
- Meed, J. (1988). The development of open-learning materials. In Paine, N. (Ed.) *Open learning in transition: An agenda for action*, 399-405. : .
- Melton, R. F. (1990). Transforming text for distance learning. *British journal of educational technology*, 21(3), 183-195.
- Myers, G. (1985). The social construction of two biologists' proposals. *Written Communication*, 2:3, pp. 219-245.
- Nelson, J. S., A. Megill, and D. N. McCloskey. (1987). Rhetoric of inquiry. In J. S. Nelson, A. Megill, and D. N. McCloskey (Eds.) *The Rhetoric of the Human Sciences*. : The Press.
- Race, P. (1989). *The open learning handbook: Selecting, designing and supporting open learning materials*. : Kogan Page. (Chapter 4: Strategies for Writing)
- Riley, J. (1979). I wonder what it's like to write a unit? *Teaching at a distance*, 14, 1-8.
- Riley, J. (1984a). The problems of drafting distance education materials. *British Journal of Educational Technology*, , pp. 192-204.
- Riley, J. (1984b). The problems of revising drafts distance education materials. *British Journal of Educational Technology*, , pp. 205-226.
- Riley, J. (1984c). An explanation of drafting behaviours in the production of distance education materials. *British Journal of Educational Technology*, , pp. 226-238.
- Robbins, Jan C. (1973). Social functions of scientific communication. *IEEE Transactions on Professional Communication*, 16:3, pp. 131-181.
- Rowntree, D. (1990). *Teaching through self-instruction: How to develop open learning materials*. : Kogan Page.
- Rowntree, D. (1994). *Preparing Materials for open, distance and flexible learning: An action guide for teachers and trainers*. : Kogan Page in association with the , Open University.
- Rowntree, D. (1997). *Making materials-based learning work*. : Kogan Page.
- Sawyer, M. H. (1991). A review of research in revising instructional text. *Journal of reading behavior*, 23(3), 307-333.
- Simonson, M., S. Smaldino, M. Albright, and S. Zvacek. Handouts, study guides, and visuals (Chapter 9) in *Teaching and learning at a distance: Foundations of distance education* (2<sup>nd</sup> Edition). : Pearson Education, Inc.
- Smith, E. S. (1994). From lecture to print: study guide writing style. *Continuing higher education review*, 58(3), 158-172.
- Sulaiman, J. (2000). The effect of varied instructional text design strategies on the achievement of different educational objectives. Unpublished doctoral dissertation. The , .
- Swales, J. and H. Najjar. (1987). The writing of research article introductions. *Written Communication*, 4:2, pp. 175-191.