

Judith A. Langer and Arthur N. Appleby. *How Writing Shapes Thinking: A Study of Teaching and Learning* (Urbana, IL: National Council of Teachers of English, 1987) 171 pp.

Reviewed by Christopher C. Burnham

As writing program administrators, we are frequently asked to explain why the institution and our colleagues should invest so much time and energy on writing. Understandably, administrators seek the bottomline and want some proof of value returned for resources spent. Professional colleges want arguments they can offer their certifying bodies explaining the trade of three or four hours of discipline studies for a writing requirement. Colleagues interested in Writing Across the Curriculum want hard data to justify their considerable expense of energy designing and evaluating writing assignments. Students march into our offices complaining about writing requirements, wondering how writing-intensive courses will contribute to their careers as accountants.

Our responses vary according to our audience and purpose. We make appeals to the "great tradition," to the basic skills crisis, to surveys of employers concerning the importance of communication skills in the information society. We talk, obliquely, of altruism and discipline: writing is good for them, for you; like taking vitamins.

In fact, only recently have we begun to examine the role of writing in learning from an informed research base. In *How Writing Shapes Thinking: A Study of Teaching and Learning*, Langer and Appleby make a significant contribution. They articulate a theory to explain the specific relation between writing and learning and develop a research-based method for testing that theory.

This brief but readable research report, addressed to both teachers and researchers in language and learning, and certainly relevant to writing program administrators, reviews the literature on writing and learning; reports case studies of high school teachers using writing in their teaching; uses current cognitive theory to examine specific relations between writing and learning, investigating several different kinds of writing and the thinking students do to complete that writing; and speculates on both individual and institutional changes required to take the best advantage

of the positive relation they discovered. It provides an extensive list of references as well as technical descriptions of the analytic methodology developed to measure the relation between writing and learning.

In the "Overview," Langer and Appleby review the existing rationale for using writing when teaching: 1) writing creates a permanent record and allows rethinking and revising over an extended period of time; 2) writing requires explicit expression so that meaning is clear in various contexts; 3) writing requires organizing ideas and developing relationships between ideas; and 4) writing requires active, engaged thinking that explores implications and challenges unexamined assumptions.

Reviewing the literature, they draw our attention to the contradictions between competing methods of teaching writing. Current writing instruction employs inquiry-based learning, stressing process, revision, rhetorical purpose, and audience. The process approach involves writers in discovering meaning as well as communicating information. Standardized multiple-choice error recognition and editing tests and brief impromptu writing samples, the most common means of evaluating writing, teaching, and program success, are holdovers from the old tradition. They ignore process, devalue discovery and individual expression, and emphasize the transmission of received knowledge in conventional forms. Values, teaching methods, and evaluation tools contradict each other, partially explaining low teacher morale and minimal student success. That the traditional way of teaching writing continues to predominate is demonstrated by the books that form the core of the curriculum. The handbook tradition continues to hold sway: "In secondary school instruction, Warriner's *Handbook of English Composition and Grammar* (1951) is the archetypal example of this approach, and in its many editions it is the most widely used high school composition text today" (6).

"Studies of Teaching" reports the case studies. Langer and Appleby analyze the classroom practices of seven high school teachers from a variety of disciplines at two suburban high schools with heterogeneous populations. The teachers had either participated in faculty development programs such as the National Writing Project, or they had reputations as teachers who stressed writing in their teaching. Langer and Appleby find that the teacher's purpose and discipline shape the assigning, interpreting, and evaluating of writing. For example, social science teachers use writing to help students evaluate and apply key concepts, English teachers use writing to have students report received interpretations of literature in

academic forms, science teachers use writing to help students recall basic scientific information, and home economics teachers use writing to help students develop a positive self-image in order to solve problems in the future. Whatever the theoretical purpose of the writing may be, teachers subvert it to their classroom purposes.

Because teachers subvert writing to their own intentions, Langer and Appleby recommend that teachers work hard to articulate their own purposes so they can employ writing assignments to reinforce those purposes. For writing program administrators and English faculty, the implications of this recommendation are two-fold. First, we must understand that writing is not a monolithic activity. Rather, writing has specific functions within various disciplines, reflected not only in the formal genres of a discipline, i.e., research reports in scientific journals, but also in the pedagogical forms, i.e., study questions at the end of a chapter in a science textbook. Further, we must learn to help our colleagues in other disciplines understand and articulate both the value they attach to writing and the function they wish it to serve in their teaching. We can then use our knowledge of the connection between writing and learning to help our colleagues accomplish their purposes more effectively.

In the case studies, Langer and Appleby discover three basic purposes for classroom activities: 1) to prepare students for new information by allowing them to draw on their current relevant information; 2) to consolidate and review new information; and 3) to reformulate and extend knowledge (41-42). Further, they use sophisticated empirical measures to demonstrate that certain kinds of writing foster certain kinds of learning. Non-threatening, non-evaluative freewriting assignments, asking students to review their existing knowledge in unorthodox ways (such as writing a poem about crayfish, or asking a question about crayfish), effectively prepare students for new information. Allowing students to demonstrate what they already know about a subject or to determine what they want to know allows them to assimilate new information by expanding and reinforcing existing cognitive schema. Note-taking and end-of-chapter study questions help students to consolidate and review information, explaining how structured learning logs aid learning. When we require students to make a systematic record of class activities, we are helping them consolidate and review information, thereby establishing an ongoing context for their learning. In addition, these logs help students discover concerns and formulate questions that can become part of the class agenda at the next meeting. This kind of writing involves all students in reflective activity and allows teachers to evaluate students' understanding. Through

protocol analysis, Langer and Appleby uncover the specific types of thinking students do to complete writing assignments. Protocol analysis, a standard research methodology in cognitive psychology, was originally introduced to composition studies when Flower and Hayes were building their cognitive theory of writing. Students think aloud as they work through an assignment; the commentary is tape-recorded and then analyzed. Langer and Appleby find that, when students write, four cognitive activities predominate: hypothesizing, during which students make predictions about the task, revealing their understanding of the structure of the whole and the relations between the parts; questioning, during which students develop a close focus on specific content elements; making metacomments, during which students reflect on the whole process of completing the assignment or solving the problem; and using schemata, during which students make connections between the subject-area content and their own experience. Reformulating knowledge, Appleby and Langer find, requires the most hypothesizing and, according to their empirical analysis, the most thinking. Assignments designed to prepare students for new information or to consolidate and review information result in the most questioning (63-64). Again, understanding that certain kinds of writing require certain kinds of thinking should determine what kinds of assignments teachers should use to accomplish their purposes.

In "Studies of Learning," Langer and Appleby investigate how writing contributes to learning. They focus on three general kinds of writing: study questions, note-taking, and essay writing. They discovered that study questions provoke further questioning as students shift focus from one question to the next. However, students focus only on ideas provided by the textbook writer; they do not connect the content with their own knowledge or experience. Using schemata occurs most frequently when students are note-taking; they take specific content from the book and restate ideas in their own words. Students focus on large concepts and integrate ideas across sentence boundaries, but they treat the larger chunks of meaning superficially, relying on the organization provided by the text, failing to reorganize it for their own purposes or according to their own cognitive schemata. Essay writing involves students in hypothesizing, using schemata, making metacomments, and in two more cognitive activities, citing evidence and validating interpretations. Because it requires students to reconceptualize content, focus on larger issues or topics, integrate information, and, generally, to engage in more complex thought, essay writing involves students in the greatest variety of reasoning operations and provides students the best opportunity to reflect and

develop their ideas (96-102). This finding confirms what we who administer writing programs and provide leadership for WAC activities have maintained for so long. How gratifying it is when our professional values and common sense find empirical validation.

Investigating how writing during studying affects learning, specifically in recalling, abstracting and summarizing, and gathering topic knowledge, Langer and Appleby conclude that the positive effects of writing on learning vary according to the difficulty of the material. Writing helps students learn more difficult content and learn it more thoroughly than any of the other study techniques examined.

Summarizing their findings, Langer and Appleby make four generalizations about the relation between writing and learning. First, the more content is manipulated, the more likely it is to be remembered and understood. Writing requires extensive content manipulation and thus leads to improved learning. Second, the positive effects of writing on learning are specific and limited to the information and ideas expressed in the process of writing. Rather than a generalized positive effect on learning, writing can, in fact, limit learning by causing students to focus on certain aspects of content at the expense of others. Thus, whether writing is the most appropriate learning tool in a particular pedagogical context depends upon the teacher's specific objectives. Broad, relatively superficial contact with a great deal of content may be best achieved by means other than analytic writing, such as note-taking and summarizing. Third, writing tasks differ in both depth and breadth of information processing. Thus, teachers must match writing assignments with their goals, using study questions to cover a broad range of content, note-taking to encourage some generalizing, and essay writing to develop close focus on specific material (130-131).

In "Conclusions," Langer and Appleby offer the concept of "instructional scaffolding." By simplifying situations, clarifying structures, helping students succeed at difficult tasks, and providing a framework and procedures that can be internalized so instructional support is no longer needed, teachers provide the "scaffold" upon which students can build their own learning processes. Thus, Langer and Appleby make a case that writing should have a predominant place in the teaching of all disciplines. Through writing, teachers can help students learn how to learn so they can become independent learners in various contexts (140).

Finally, Langer and Appleby remark that, even though they can demonstrate writing's powerful positive effect on student learning, current institutional values, as reflected in curricula, textbooks, testing programs, and school policy concerning teacher evaluation, impel teachers to continue traditional practices and repeat the failures of the past.

On the bright side, the positive influence of writing on learning allows us to better explain the importance of writing in the university. Langer and Appleby provide solid evidence that justifies our own commitment to writing and that will help us help others use writing more effectively. Further, they provide substantial arguments legitimizing our claim that all faculty should use writing to support their instructional goals, and that the institution should support us in this endeavor.

