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AUTHOR Suhor, Charles
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ABSTRACT

Intended for administrators and policy makers as well as teachers, this digest explores issues surrounding methods of teaching thinking skills and who should teach them. Following an introduction that acknowledges the need for teaching such skills but a lack of consensus on how to meet this need, the digest discusses theories of isolating specific cognitive skills for instruction, including generalizable and local or content specific skills, while noting little agreement on what constitutes thinking, and lack of a compelling taxonomy of thinking skills for use in educational programs. . then explores local skills, skills taught in specific subject areas. Next, the digest explores those thinking skills essential to English and the language arts, and the role English teachers play in teaching thinking skills. Based on the close ties of oral and written language to thinking and the pervasiveness of language in the teaching of all subjects, the digest concludes by discussing the role of language and thinking across the curriculum. (HTH)

ERIC Digest

Thinking Skills in English--And Across the Curriculum

Charles Suhor

Widespread concern has been expressed in recent years by educators, journalists, and the public at large concerning students' poor thinking skills. The National Assessment of Educational Progress has reported that students show weaknesses in the logical processes required for clear communication. In A Nation at Risk, The National Commission on Excellence in Education noted that students have a poor command of intellectual skills such as drawing inferences and solving problems. And the College Board's Project EQuality booklet, Academic Preparation for College, called for the teaching of reasoning as a basic academic competency, along with reading, writing, speaking, listening, and mathematics. Finally, employers frequently report that young people lack the ability to think through problems and offer alternative solutions.

In spite of acknowledgement of the need to help students develop intellectual skills, little consensus exists about how thinking skills should be taught and who should teach them. Should thinking be taught as a separate skill, as part of each subject area, or as both? Do English and language arts teachers have a special role in the teaching of thinking skills? How do concepts like language and writing across the curriculum relate to thinking skills instruction? These issues will be discussed in this digest.

Thinking Skills Taught in Isolation

Numerous researchers and teachers believe that thinking skills can and should be the focus of special exercises, texts, and programs. In Cognitive Process Instruction, Jack Lochhead (1972) speaks of the need "to isolate specific cognitive skills and to design instructional material appropriate for each skill." Edward DeBono, author of the CoRT thinking skills program, claims that "generalizable thinking skills" can and should be taught, in addition to "local skills" required in particular subject matter areas. Howard Citron of Innovative Sciences believes that we must "systematically develop students' thinking and reasoning abilities in a 'purer' sense and directly build...transfer of these abilities to academic learning and real behavior." The idea that certain generic thinking abilities underlie school learning is basic to thinking skills programs like Strategic Reasoning, Structure of Intellect, and others (Bossone 1983).

However, there is little agreement among psychologists on what constitutes thinking, and no one has developed a compelling taxonomy of thinking skills for use in educational programs. Different program developers cite Piaget, Bloom, Guilford, Feuerstein, Erikson, and others as credible sources for their work. Each argues persuasively for a particular theoretical approach and makes claims for the feasibility of classroom applications. Researchers' claims for the effectiveness of various approaches are advanced cautiously and disputed vigorously.

Thinking Skills Taught in Each Subject Area

Ideally, training and thinking processes would be woven into subject area study. Two decades ago, much attention was given to Jerome Bruner's idea that the concepts central to each discipline

can be taught through the discovery method (1960). In recent years, specialists in mathematics, visual arts, music, and other subjects have claimed that unique aspects of their disciplines involve distinctive mental skills, requiring specially tailored strategies for learning.

While some subject-specific thinking skills undoubtedly exist, it is also clear that numerous cognitive skills cut across several school subjects. In both history and literature, students must be able to infer motivation, understand sequences, and trace cause/effect relationships. Skill in estimation, measurement, and visual imagery are essential to woodworking and geometry alike. All subjects involve definitions that in turn include classification and specification, comparison and contrast. No discipline can claim exemption from many of the mental processes that the advocates of isolated instruction in thinking skills see as generic.

Thinking Skills in the English Language Arts

The English language arts, pre-K through college, inherently involve a wide range of essential thinking skills because of the close relationships between thinking and language as established by Piaget, Vygotsky, Luria, and others. Additionally, many aspects of reading and writing are pertinent to important thinking skills, as evidenced by the 1981 National Assessment of Educational Progress Report on Reading, Thinking, and Writing. Student writing samples were found to be lacking in the cognitive superstructures that inform clear writing--for example, organization of ideas, continuity, and cohesion.

Numerous theorists, researchers, and practitioners have linked generic thinking skills with subject matter traditionally associated with English and language arts instruction. Moffett and Wagner's (1983) K-13 program is perhaps the most expansive of

the cognitive-based language arts curricula. Hays and others (1983) have explored writing as a mode of thinking. Relationships between class discussion and thinking have been articulated by Stanford and Roark (1974) and Staton (1984). Pearson and Tierney (1984) are among those who see reading as an active mental process involving the construction of meaning. The NCTE "Essentials of English" statement holds that teaching of creative, logical, and critical thinking is close to the core of effective English instruction.

English teachers have a special role in the teaching of thinking skills, precisely because of what Ernest Boyer (1983) calls "the centrality of language" in the curriculum. But of course, this role does not imply that language and thinking are the exclusive domain of English teachers. A broader conceptualization is needed--one that places language in perspective with both the subject-specific and the generic thinking skills involved in other disciplines.

Language and Thinking Across the Curriculum

The pervasiveness of language in the teaching of all subjects and the close ties of oral and written language to thinking suggest that language across the curriculum is a primary concept in developing all thinking skills. John Carroll (1974) stated that "the various forms of pictorial expression are almost always accompanied by language and often require language to make them intelligible." Piaget (1971) has written that "language is but one among... many aspects of the semiotic function, even though it is in most instances the most important." Umberto Eco (1972) agrees that language is "the most powerful semiotic device that man has invented." Certainly language is used by musicians and visual artists in articulating their intentions and describing their techniques. And critical analysis of the elements in any nonlinguistic work involves language, as does description of the

responses that the work invokes in us. Even highly abstract visualization processes in mathematics and intuitive psychomotor activities in athletics are, to some extent, mediated by language in school settings.

The student who is articulate in oral and written language has an indispensable tool for all school learning, because the ability to give shape to thought through language is a necessary (though not of course sufficient) skill in every subject. Christopher Thaiss (1984) points to "the inseparableness of language, thinking, and learning. If we do not apply the full range of language resources to our learning of any subject, then we stifle thought, conscious and unconscious, and so deprive ourselves of more than the most superficial understanding."

Note that Thaiss is not calling for teachers of other subjects to assume the English teacher's responsibility for teaching sentence structure, standard English usage, or compositional form and style. Rather, language across the curriculum means verbalization as the fulfillment of understanding within each subject area. A close look at good "writing across the curriculum" materials (e.g., LiveWire; Tchudi and others, 1983) supports this notion. The writing assignments call for exercise of students' generic thinking processes and those pertinent to the subject area. Oral and written "prewriting" activities serve as mental organizers, leading towards a coherent writing product that demonstrates deep understanding of the subject.

Finally, simple introspection provides a common-sense verification of the idea that skill in language is closely related to significant learning. In dealing with new and difficult content, from intricacies of grammar to computer programming, each of us tends to go through an initial "grasping" in which we understand key concepts but cannot converse fluently,

much less write cogently, about them. As our exposure to the material increases, we are able to shape our comprehension through question, tentative verbalizations, informal talk with others, reorganization of notes, and so forth. Through language, then, we gradually mold nascent insights into more cohesive forms. We not only recognize the structure of the subject (as one does in merely taking an objective test) but also verbally manipulate its ideas, expressing its orderliness in personalized and unique ways.

Language as a way of thinking and learning, then, is not merely a pedagogical catchphrase. It is an essential element in every classroom and the most persuasive way of insuring that thinking skills are, in fact, being taught effectively in every subject area.

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References

Bossone, Richard. The Fourth R: Reasoning. New York: City University of New York, 1983.

Boyer, Ernest. High School. New York: Harper & Row, 1983.

Bruner, Jerome. The Process of Education. New York: Vintage Books, 1960.

Carroll, John. "Potentialities and Limitations of Print as a Medium of Instruction." In D. R. Olson (Ed.), Media and Symobls: The Forms of Expression, Communication, in Education. Chicago: University of Chicago Press, 1974.

College Board, Academic Preparation for College. New York: College Board, 1983.

Eco, Umberto, A Theory of Semiotics. Bloomington, Ind.: Indiana University Press, 1976.

Hays, Janice, et al. The Writer's Mind. Urbana, Ill.: National Council of Teachers of English, 1983.

Lochhead, Jack, and John Clements (Eds.). Cognitive Process Instruction. Philadelphia: Franklin Institute Press, 1972.

Livewire. Periodical for elementary teachers, Urbana, Ill.: National Council of Teachrs of English.

Moffett, James, and B. J. Wagner. Student Centered Language Arts and Reading: A Handbook for Teachers. Third edition. Boston: Houghton Mifflin, 1983.

National Assessment of Educational Progress. Reading, Thinking, and Writing. Denver, Colo.: NAEP, 1981.

National Commission on Excellence in Education. A Nation at Risk. Washington, D.C.: U.S. Department of Education, 1983.

National Council of Teachers of English. "Essentials of English." Urbana, Ill.: NCTE, 1982.

Pearson, P. David, and Robert Tierney. "On Becoming a Thoughtful Reader: Learning to Read Like a Writer." In A. Purves and O. Niles (Eds.), Becoming Readers in a Complex Society. Part I, Yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press, 1984.

Piaget, Jean. Genetic Epistemology. Trans. E. Duckworth. New York: Norton, 1971.

Stanford, Gene, and Albert Roark. Human Interaction in Education. Boston: Allyn and Bacon, 1974.

Staton, Jana. "Thinking Together: Language Interaction in Children's Reasoning." In C. Thaiss and C. Suhor (Eds.), Speaking and Writing, K-12. Urbana, Ill.: National Council of Teachers of English, 1984.

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Tchudi, Stephen, et al. Teaching Writing in the Content Areas. 3 vols. Washington, D.C.: National Education Association, 1983.

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College Board. *Academic Preparation for College.* New York. College Board, 1983.

Eco, Umberto. *A Theory of Semiotics.* Bloomington, Ind.: Indiana University Press, 1976.

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LiveWire. Periodical for elementary teachers. Urbana, Ill.: National Council of Teachers of English.

Moffett, James, and B. J. Wagner. *Student Centered Language Arts and Reading: A Handbook for Teachers.* 3d ed. Boston: Houghton Mifflin, 1983.

National Assessment of Educational Progress. *Reading, Thinking, and Writing.* Denver, Colo.: NAEP, 1981.

National Commission on Excellence in Education. *A Nation at Risk.* Washington, D.C.: U.S. Department of Education, 1983.

National Council of Teachers of English. "Essentials of English." Urbana, Ill.: NCTE, 1982.

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Piaget, Jean. *Genetic Epistemology.* Trans. E. Duckworth. New York: Norton, 1971.

Stanford, Gene, and Albert Roark. *Human Interaction in Education.* Boston: Allyn and Bacon, 1974.

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