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AUTHOR Ruminski, Henry; And Others
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ABSTRACT

The interests of all communication educators would best be served if those educators could agree on a single broad definition of critical thinking that incorporates a variety of perspectives. Toward this end, questionnaires were sent to a random sampling of 300 members of the Speech Communication Association; 88 were returned. The questionnaire asked for responses in four areas: (1) demographics, teaching experience and academic rank; (2) open-ended questions about critical thinking and the integration of critical thinking in teaching; (3) Likert Scale questions about critical thinking; (4) questions about how to evaluate critical thinking. Of the respondents, 90% said they offered instruction in critical thinking; 80% said they integrated it into the subject matter of communication courses. Respondents who teach critical thinking mentioned many things they do when they teach it, ranging from teaching general "analysis" and "evaluation" to instruction in reasoning and instruction on five specific thinking skills (inductive inference, deductive logic, assumption identification, interpretation of evidence, and judgment of strength of argument). The majority of respondents either strongly agreed (17%) or agreed (53%) with the statement that a college education improves critical thinking skills. Most respondents cited more than one method of evaluation, essays being the most common (75%). In general, the results show a lack of consensus as to whether communication educators understand what critical thinking is. (Contains 43 references.) (TB)

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CRITICAL THINKING IN SPEECH COMMUNICATION: SURVEY OF SPEECH COMMUNICATION EDUCATORS

Henry Ruminski--William Hanks--Karin Spicer

Recently, a retired speech communication professor, who had taught for 39 years, returned a survey questionnaire on critical thinking and communication. He wrote, "Your survey shocked me into realizing how far our profession has drifted away from a study of thinking to a study of relationships among people." Perhaps the professor was simply recalling that modern speech communication developed from a tradition of rhetoric (Wallace, 1954; Walter, 1963; Bryant, 1971; Fritz & Weaver, 1986; Makay, 1992). Or perhaps the professor simply did not believe subjects such as interpersonal communication entail critical thinking.

It seems likely that teachers in most subjects in communication want to promote critical thinking, but their implicit or explicit definitions of critical thinking may vary. For example, Shoemaker (1993) lists six definitions of critical thinking, noting that "Scholars across the disciplines variously defined critical thinking, but the definitions always involve analysis" (p. 100). Hay (1988) comments on the varied approaches to teaching critical thinking:

In addition to emphasizing the role of teaching students to reason effectively either through the use of formal or informal logic, some writers urge the teaching of certain skills in all courses. Others suggest each discipline has a unique "way of knowing" ... Some argue that ethical considerations must be integrated with reasoning skills to teach students valuing. The developmental psychologists using the work of theorists such as Piaget and Kohlberg suggest that thinking skills develop by growth through various levels or stages. The cognitive psychologists advocate that certain processes or factors which influence human thinking must be understood. Other critical thinking proponents focus upon problem solving techniques (p. 2)

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W. Hanks

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Because critical thinking can be broadly defined or narrowly defined, some communication educators probably define the term narrowly or broadly to fit the type of subject they teach. It would not be surprising, therefore, if debate coaches focused almost exclusively on analysis and construction of argument as central to critical thinking. Nor should it be surprising that teachers of group process make cooperation and understanding central to an implicit or explicit definition of critical thinking.

However, the interests of all communication educators might best be served if those educators could agree on a single broad definition of critical thinking that incorporates a variety of perspectives. There are three major reasons: (1) SCA has not comprehensively defined critical thinking; (2) SCA has established assessment as one of its major goals; and (3) speech communication educators are being asked to develop assessment plans in several states. Goulden (1992) has stressed this last point, saying "The field of speech communication, in common with education as a whole, finds itself in the position of urgently searching for appropriate practical responses from outside pressures for assessment" (p. 258).

As part of a state mandate, the Department of Communication at Wright State University in Dayton, Ohio must develop an assessment plan. One requirement for the plan is that each academic discipline try to abide by national standards for that discipline. We have sought to determine the standards among speech communication educators for assessing critical thinking, a long-standing objective of the discipline and of our department.

As one step in our assessment effort, the authors of this article surveyed a sample of communication educators to find out how they define critical thinking, how important they think critical thinking is, generally how they teach it and assess students' critical thinking abilities, i.e.,

what standards they apply. The details of that survey follow a brief review of literature and a sample of definitions of critical thinking.

Fritz (1990) correctly notes a major problem in trying to assess critical thinking. He says the literature "cites a wonderful constellation of critical thinking definitions, operationalized skills, and assessment techniques" (p. 1). Whether critical thinking is a superordinate or subordinate subject probably depends on whether one views informal logic as a subset of critical thinking, critical thinking as a subset of informal logic (along with rhetoric and argumentation), or views both critical thinking and informal logic as subsets (along with rhetoric and argumentation) of philosophy. That is why various writers classify the subject of critical thinking in various ways. For example, Hanson's "An Informal Logic Bibliography" (1990) lists hundreds of entries under various headings as subsets of informal logic. "Current research in informal logic," says Hanson, is informed by work in argumentation, theory, rhetoric, speech communication, and critical thinking" (p. 1). Kurfiss (1988) views critical thinking from the same perspectives as does Hay (1988): (1) "Informal logic, or critical thinking as skills of analyzing and constructing arguments," (2) "Cognitive processes, or critical thinking as construction of meaning," and (3) "Intellectual development of critical thinking as the manifestation of a contextual theory of knowledge" (p. 5).

Several studies of critical thinking within the framework of informal logic have measured various dimensions of critical thinking (see Hanson, 1990, p. 184). Few empirical studies, however, have rigorously measured effectiveness of teaching critical thinking at the university level. Gibbs (1985) found only nine studies in which their authors studied effects and operationally defined critical thinking, in which there was some comparison, either across groups or pre-and-posttests, and in which inferential statistics were used (p. 136).

One of those studies assessed a course in mass communication and measured critical

thinking on pre-and-posttest versions of the Watson-Glaser Critical Thinking Appraisal (WGCTA, 1980). The WGCTA operationally defines critical thinking as ability to identify in a multiple-choice format inductive inferences that are true, probably true, for which there is insufficient information to say, probably false, or false. The test also measures ability to identify implicit assumptions, logically valid versus invalid deductive conclusions, interpretations of data as warranted or unwarranted, and arguments that are strong, i.e., relevant, versus weak, i.e., not relevant. The WGCTA was the most popular instrument in the studies that Gibbs reviewed, but two studies used essay instruments developed by Haas and Keeley (1978).

Research on effectiveness of instruction and practice in critical thinking within speech communication has been carried out in debate. The WGCTA was the instrument used in every major study of the relationship between debate and critical thinking. Studies linking improved critical thinking and debate training include Howell (1943); Brembeck (1947); Beckman (1955); Cross (1971); Huseman, Ware, and Gruner (1972); and Colbert (1987). It seems safe to conclude that the bulk of research on effectiveness of instruction in critical thinking in debate has used a definition of critical thinking that fits in the category of informal logic.

The perspective of cognitive processes seems not to have been applied to critical thinking in speech communication. A search of COMSERVE, COMINDEX, ERIC, AND CARL (Colorado Regional Libraries) databases, 1971 to the present, turned up no studies of effectiveness of instruction in critical thinking related to identifying why students make errors in reasoning and to finding strategies that improve their reasoning. Research in cognition, which is interdisciplinary and includes psychology, linguistics, artificial intelligence, and philosophy, has been reviewed related to improving college students' critical thinking abilities by Kurfiss (1988).

Kurfiss' review, which also includes literature from an intellectual maturity perspective,

offers a broad definition of critical thinking meant to cover informal logic, cognition, and development of intellectual maturity.

[Critical thinking] is defined here as an investigation whose purpose is to explore a situation, phenomenon, question, or problem to arrive at a hypothesis or conclusion about it that integrates all available information and that can therefore be convincingly justified (p.3).

Kurfiss offers several "broad implications" from research literature on cognition and effective instruction in critical thinking, including using problems to organize instruction, linking new information to a context in which it is to be used, using modeling, coaching, practice and feedback, demonstrating metacognition and using it in class, providing experiences to overcome students' naive ideas about a subject, and providing social motivation to intensify motivation to learn (pp. 48, 49).

Kurfiss reviews a number of studies that support the view that there are several stages of intellectual development among college students, ranging from "either true or not true" to relativistic epistemology, i.e., sometimes we make decisions on incomplete and less than precise understanding (pp. 51-67). However, she cites no studies on the effectiveness of instruction in promoting intellectual maturity as a way to improve critical thinking. Referring to the function of textbooks in students' intellectual development, Kurfiss observes, "Textbooks that present subject matter as nonproblematic reinforce dualistic thinking" [i.e., dualistic thinkers do not realize that information in texts is selected and interpreted] (Kurfiss 1988, p. 52). Resnick (1989) also emphasizes the negative potential of textbooks' "common practice of 'covering' a great deal of material by treating it briefly with few connections among information" (p. 207).

Regardless of theoretical perspective for studying and teaching critical thinking in college, there is consensus among researchers that simply taking four years of college courses does not

necessarily improve the college student's ability to think critically (McMillan 1987; Glaser 1985; Brown and Keeley 1988; Kuhn 1991). There also is consensus that critical thinking instruction and practice should be integrated across the curriculum (Kurfiss 1988; Nickerson 1988-89).

If critical thinking were integrated into various courses in speech communication, and if a definition of critical thinking were adopted for assessment purposes, the definition of critical thinking should be broad enough to accommodate both the varying levels of intellectual maturity of students and the variety of thinking tasks required across the speech communication curriculum.

Although several authors have written useful definitions of critical thinking (D'Angelo 1971; Kurfiss 1988; Makau 1990), the most complete definition, and one that lends itself to assessment seems to be Paul and Nosich's definition in "A Proposal for the National Assessment of Higher-Order Thinking," commissioned by the U.S. Department of Education:

Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing or evaluating information gathered from, or generated by observation, experience, reflections, reasoning, or communication, as a guide to belief and action It is based on universal values . . . clarity, accuracy, precision, consistency, relevance, good reasons, depth, breadth and fairness It entails examination of purpose, questions at issue; assumptions; concepts; facts; inferences; implications and consequences; objections from alternative viewpoints, and frame of reference . . . It entails traits of mind . . . independence of thought . . . listening skills (pp.4,5).

Speech communication educators can benefit if they agree on some such broad definition of critical thinking, on some basic methods and evaluation-criteria for measuring effectiveness of the instruction in critical thinking. To find out whether speech communication educators generally agree on a definition of critical thinking, and on standards for assessing it, the authors conducted of a random sample survey of SCA members.

The survey instrument asked how long the respondents had been teaching, what subjects they teach, how important they think critical thinking is to those subjects, how they define critical thinking, what they do when they teach critical thinking, whether they think communication textbooks promote critical thinking, and how they assess students' critical thinking abilities.

METHOD

A random sample of 300 members of SCA was selected from the 1992-93 directory. All membership categories were represented. A questionnaire was mailed during October, 1992 to sample members at the addresses listed in the directory. No follow-up was attempted.

We developed a survey questionnaire that asked for responses in four areas. The first section asked for demographic data about subjects taught, number of years of teaching experience and academic rank.

The second section asked four questions about critical thinking. The first two asked whether respondents offered instruction on critical thinking and whether that instruction was integrated into the subject matter of communication courses. The other two questions were open-ended and asked respondents to describe what they taught when teaching critical thinking and to define critical thinking.

Respondents' definitions of the term critical thinking were analyzed to identify key words that fit under the categories of "processing information," "values," "attitudes," and "behavior" included in Paul and Nosich's (1992) definition "Proposal for the National Assessment of Higher-Order Thinking," which we quoted earlier.

Survey respondents frequently used the words "analyze" and "evaluate." Each survey sheet that contained at least one mention of the word "analyze" was counted under the heading, "processing," as one occurrence of "analyze." The following terms were included under

"processing": apply, analyze, conceptualize, evaluate and synthesize.

The category "attitudes" included terms such as: independence of thought, fairness, courage, intellectual curiosity, integrity, confidence in reasoning, willingness to see objections, sympathy with another's point-of-view, and recognizing one's own egocentricity and ethnocentricity.

Tallied under the heading of "values" were terms such as clarity, soundness of evidence, precision, consistency, relevance, good reasons, depth of thought, breadth, fairness and accuracy.

Under the category "behaviors", terms such as critical reading, speaking, and writing and listening were tallied.

This system of counting words under categories reveals the relative emphases given by respondents as a group to processing, values, attitudes, and to behaviors in the group's definitions of critical thinking.

In the third section of the questionnaire respondents were asked to respond to a Likert Scale of "Strongly Agree" to "Strongly Disagree" applied to a series of statements about critical thinking. The final section asked four questions about ways to evaluate critical thinking. Responses to these questions were tabulated. In addition, open-ended comments were reviewed and categorized.

RESULTS

Eighty eight useable questionnaires were returned, for a response rate of 29 percent. The academic ranks reported were Instructor, 10 percent; assistant professor, 21 percent; associate professor, 25 percent; professor, 20 percent and other, 9 percent. Other included answers such as lecturer and graduate teaching assistant.

Seventy one respondents indicated the length of time taught with the majority having

taught longer than 10 years. Thirty one percent reported more than 20 years of teaching and an additional 42 percent had taught between ten and twenty years. Only six respondents had taught less than five years.

Most respondents, 75 percent, taught public speaking and some other courses. Public speaking and rhetoric (17 percent), and public speaking and interpersonal (14 percent), were the two most common teaching combinations. Nineteen respondents reported teaching only a single category of courses.

Responses by type of course taught

	Total teaching	Only Teaching
Interpersonal	35	4
Mass Media	16	7
Organizational	19	1
Public Speaking	66	4
Rhetoric	26	4
Other	35	

In the "other" category respondents listed courses such as persuasion, small group, gender, conflict, general semantics, leadership, intercultural and communication theory.

Ninety percent of respondents said they offered instruction to students on how to think critically. of those respondents 80 percent said they integrated the instruction into the subject matter of communication courses. Two respondents said they did not understand the survey question that asked whether they integrated instruction in thinking skills into course content. Most respondents defined critical thinking in terms of "processing" skills such as "analyzing" and "evaluating". Thirty percent used the word "analyzing" and 28 percent used the word

"evaluating," 7 percent referred to "synthesizing" and 5 percent mentioned "conceptualizing." Relatively few respondents mentioned values as part of their definitions. "Soundness of evidence" was mentioned by 10 percent of the respondents; "accuracy" by 4 percent; "good reasons" by one percent, and "clarity" by one percent. Only six respondents used the word "attitudes" as part of their definitions, and "independence of thought" was mentioned by only 3 percent of all respondents. "Sympathy with another's point of view" was mentioned by 5 percent. A few respondents named specific behaviors as part of their definitions: 6 percent named "speaking skills," 6 percent named "writing," 3 percent used the term "critical reading" and 3 percent used "critical listening."

Respondents who teach critical thinking mentioned many things they do when they teach it, ranging from teaching general "analysis" and "evaluation" (in the contexts of problem-solving, argumentation and criticism) to instruction in reasoning and instruction on five specific thinking skills (inductive inference, deductive logic, assumption identification, interpretation of evidence and judgment of strength of argument). Most often mentioned were general methods: 44 percent of all respondents named "evaluation of argument," and 21 percent mentioned "analysis of arguments and/or problems." Among the more specific references to classroom activities were "problem-solving" in small groups (32 percent), debates (23 percent), and specific instruction on models of argument, such as Toulmin's model, combined with tests and/or essays and critical analyses of readings (19 percent). Most respondents who said they offered instruction on specific thinking skills referred to "tests of evidence" and a combination of inductive and deductive logic rules and principles (30 percent). Two respondents said they simply equated critical thinking with argumentation. One said, "I don't think critical thinking is a skill." Another said, "Critical thinking is, to me, a fashionable term for argumentation." One wrote, "I don't [define critical

thinking]. Contrary to Plato, you can use words meaningfully without defining them."

None of the respondents named a specific thinking test, although one did refer to a specific thinking exercise in a small group communication textbook. One respondent mentioned role-playing as a specific technique used to teach critical thinking in the classroom.

The majority of respondents either strongly agreed (17 percent) or agree (53 percent with the statement: A four-year college education improves most college students' critical thinking skills. One person believed critical thinking is a "natural object of a college education." Twenty percent were uncertain about the statement, 7 percent disagreed and one respondent strongly disagreed.

Most respondents believe that instruction in a special course in critical thinking improves college students' critical thinking skills in other courses. Twenty three percent strongly agreed, 39 percent agreed, 32 percent were uncertain, two percent disagreed and one person strongly disagreed. One person noted that there "is not much transfer of learning" from a critical thinking course to other courses.

A strong majority said critical thinking is inherent in the study of communication. Forty-two percent strongly agreed, 37 percent agreed, 14 percent were uncertain, five percent disagreed and no one strongly disagreed. One person added, "If covered properly in instruction" critical thinking is inherent in the study of communication."

The respondents, however, did not agree that most college level communication texts explicitly instruct students on ways to think critically. Three percent strongly agreed, 21 percent agreed, 31 percent were uncertain, 35 percent disagreed and seven percent strongly disagreed. One respondent said most communication texts "present one perspective with 'authority'." another claimed that "critical thinking skills are addressed implicitly in most communication

texts."

Respondents overwhelmingly agreed that students in communication classes should be encouraged to challenge the validity of statements made by the authors of communication textbooks. Fifty-seven percent strongly agreed, 37 percent agreed, two percent were uncertain, one person disagreed and one person strongly disagreed. The overwhelming agreement may be a function of the relatively low response rate. Perhaps the 29 percent of the sample who returned the questionnaire found the topic more salient than the non-respondents.

There was no consensus on whether students generally perceive critical thinking as an important skill they can take into the "real world". Five percent strongly agreed, 31 percent agreed, 30 percent were uncertain, 30 percent disagreed and one person strongly disagreed. Several respondents indicated that some students resented instruction in thinking. One said, "At first. . . they complain and say they wish they could just memorize. . . because evaluation of . . . ideas is too hard."

Respondents were divided on whether most communication educators understand what critical thinking is. Four percent strongly agreed that communication educators do understand, 43 percent agreed, 30 percent were uncertain, 20 percent disagreed and one person strongly disagreed.

Respondents were almost unanimous in agreeing that critical thinking is important in the teaching of communication. Seventy-one percent strongly agreed, 25 percent agreed and the others were uncertain. no one disagreed. One person noted: "Critical thinking has always been a part of quality education -- read Plato, Aristotle, Socrates, etc."

Most respondents cited more than one method of evaluating the critical thinking of their students. Essays were the most commonly used device, noted by 75 percent, and class

discussions were the next most frequently cited method, by 71 percent of the respondents. The most often cited terms both for evaluating essays and for discussions were: depth of analysis and application of principles, 32 percent; reasoning and evidence, 29 percent; and evaluation of arguments and evidence, 19 percent. The least mentioned criteria were "correct answers" and "creativity." Thirty-four percent of the respondents said they used one-to-one discussions with students to evaluate critical thinking. Eleven percent of the respondents reported using a standardized test to measure critical thinking, but no respondent listed a commercially available standardized test of critical thinking. One asked, "Is this possible?" regarding the use of standardized tests. Three respondents said they evaluated critical thinking by listening to students' speeches, but they did not say what criteria they used.

CONCLUSIONS AND DISCUSSION

The survey results lead to several points we believe speech communication educators should consider. First, most responses came from associate and full professors who had taught for well over 10 years. Most teach public speaking in addition to courses such as interpersonal communication and organizational communication. That fact may explain why the definitions of critical thinking and the activities and evaluation criteria given by respondents fall mainly into the "processing" of information, or cognitive domain. Many speech communication teachers who have considerable experience in teaching public speaking have themselves been educated in a rhetorical tradition that has stressed invention, reasoning and evidence, as opposed to factors that are more difficult to assess, such as attitudes and values. Of course it can be argued that attitudes and values are processing skills manifested in behaviors such as public speaking and debate.

Since most respondents agreed that critical thinking was inherent in the study of communication it is not surprising that they offered explicit instruction in critical thinking and that

they integrated instruction into specific courses. Nor is it surprising that most referred to the general categories of "analysis," "evaluation," and "problem solving" in describing what they teach by way of critical thinking. It also seems consistent that in-class debates, small-group problem-solving, and explicit discussions of tests of evidence and reasoning were frequently noted as critical thinking topics explicitly taught. What does seem surprising, though, is the relatively infrequent mention of specific communication behaviors --speaking, writing, reading and listening especially given the availability of the CCAI and speech communication's long-standing interest in listening.

Our small sample reflects a disparity between the beliefs that a college education improves students' critical thinking abilities and that special courses in critical thinking enable students to think critically in other courses (Gibbs, 1985; Perkins, 1985; Nickerson, 1988-89; Kuhn, 1991).

The survey also indicates a disparity between the belief that communication studies entail critical thinking and the belief that most communication textbooks lack specific textbooks lack instruction in thinking. Respondents in our survey generally agree that students should be encouraged to challenge validity of claims by authors of communication textbooks.

More important, however, is the lack of consensus as to whether communication educators generally understand what critical thinking is. This lack seems to underscore a basic problem in communication -- the field needs a coherent and comprehensive definition of critical thinking. Respondents to our survey generally agree that critical thinking has real-world value, yet several say their students do not see this value. Perhaps, if a relatively uniform definition of critical thinking were given to students in all of their courses in communication and the relevance of thinking as applied to each subject were emphasized throughout the curriculum, more students would appreciate the relevance of thinking.

No doubt many speech communication educators object to standardization of definitions and measures because such standardization appears restrictive. However, standard definitions and measurements based on those definitions can be viewed merely as one element of assessment. Surely, there is room for common terms and definitions and individual differences in assessment. For example, Rubin and Martin (1994) propose a standardized measure of interpersonal communication competence that can be used in assessment. But they also advise that such a standardized questionnaire not be the only measure of competence. Similarly, on the basis of the survey reported here we believe speech communication educators should develop or adopt a definition of critical thinking that will facilitate some standardization within the field.

Most of our respondents recognize that no single test would measure all the abilities, attitudes and values that fit under the name "critical thinking." They refer to a variety of evaluation techniques, which is consistent with current practice among national organizations devoted to assessment of thinking (Mullis 1993).

However, we were surprised to learn that none of our respondents named or used any one of the more than 17 commercially available critical thinking tests designed for college students and adults (Arter & Salmon, 1987). Most experts on thinking suggest that standardized tests are useful in combination with essays (Swartz & Nosich, 1988).

Based on our survey of the literature and our survey of speech communication educators, our department's assessment committee has recommended, as one outcome measure of critical thinking, the California Critical Thinking Skills Test (1992). That test, which is based on the 1990 Delphi Report, Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction (1990), measures analytical skill, ability to evaluate evidence, and skill in deductive and deductive inferences. These are the thinking skills noted most frequently across

a variety of speech communication subjects. Also, in keeping with prevailing practices in speech communication and assessment literature, we will employ essay writing as an outcome measure of critical thinking ability.

Our assessment committee believes that predispositions toward critical thinking should also be a part of assessment, since such predispositions can measure students' intellectual maturity. We intend to adopt some standardized instrument to measure critical thinking predispositions in the future.

Our rather extensive literature review and survey has lead us to offer several suggestions for the field of speech communication: (1) the development of a broad definition of critical thinking that includes predispositions as well as knowledge and skills; (2) the use of such a definition and instruction in critical thinking based on the definition; and (3) the development of standardized critical thinking tests specifically geared to the field of speech communication.

REFERENCES

- Aitken, J. E. & Neer, M. (1992) A national survey of assessment trends in communication. Communication Education, 41, 247-257.
- Arter, J. A. & Salmon, J. R. (1987). Assessing higher order thinking skills: A consumer's guide, Portland, OR: Northwest Regional Educational Laboratory, Evaluation and Assessment.
- Assessment: Resolution #1 (1989). In P.J. Cooper & K.M. Galvin (Eds.), The future of speech communication (p. 80). Annandale, VA: Speech Communication Association.
- Baron, J. (1985). What kind of intelligence components are fundamental? In Thinking and learning skills, Vol 2: research and open questions. eds. Susan F. Chipman, Judith W. Segal, and Robert Glaser. Hillsdale, N.J.: Lawrence Erlbaum Associates, Inc.
- Beckman, V. (1955). An investigation of the contributions to critical thinking made by courses in argumentation and discussion in selected colleges. Ph.D. dissertation, University of Minnesota.
- Brembeck, W. (1947). The effects of a course on argumentation on critical thinking ability. Ph.D. dissertation, University of Minnesota.
- Browne, M. N., Haas, P. & Keeley, S. (1978). Measuring critical thinking skills in college. The Educational Forum (January, 219-226).
- Browne, M. N., & Keeley, S. (1988). Do college students know how to 'think critically' when they graduate? Center for Teaching and Learning. 1, No. 9, 1, 2.
- Bryant, D. (1971). Opening remarks to the conference. In Prospects for rhetoric. Englewood Cliffs, N.J., 189-193.
- California Critical Thinking Skills Test (1993), Millbrae, CA: The California Academic Press.
- Colbert, K. R. (1987). The effects of CEDA and NDT training on critical thinking ability. Journal of the American Forensic Association, 80, 194-201.
- Cross, G. (1971). The effects belief systems and the amount of debate experience on the acquisition of critical thinking, Ph.D. dissertation, University of Utah.
- D'Angelo, Edward. (1971). The Teaching of Critical Thinking. Amsterdam: B.R. Gruner, N.V.
- Ennis, R. H. (1962). A concept of critical thinking. Harvard Educational Review, 32, 81-111.
- Foss, S.K., Foss, K.A. & Trapp, R. (1985). Contemporary Perspectives on Rhetoric, Prospect Heights, IL: Waveland Press.

- Fritz, P. A. & Weaver, R. L. (1986). Critical thinking skills in the public speaking course: a liberal arts perspective. Communication Education, 35, 174-182.
- Gibbs, L. (1985). Teaching critical thinking at the university level. Informal Logic, 7, 137-149.
- Goulden, N. R. (1992). Theory and vocabulary for communication assessments. Communication Education, 41, 258-269.
- Hanson, H. V. (1990). An informal logic bibliography. Informal Logic, 12, 155-184.
- Hay, E. (1987). The critical thinking movement and its implications for the teaching of speech communication. ERIC, ED290196, 1-11.
- Hay, E. A. (1992). A national survey of assessment trends in communication departments. Communication Education, 41, 247-257.
- Howell, W. (1943). The effects of high school debating on critical thinking. Speech Monographs, 10, 99-103.
- Huseman, R., Ware, G., & Gruner, C. (1972). Critical thinking, reflective thinking, and the ability to organize ideas: A multi-variate approach. Journal of the American Forensic Association, 9, 261-265.
- Kuhn, D. (1991). The skills of argument. New York: Cambridge University Press.
- Lucas, S. (1989). The Art of Public Speaking, New York: Random House.
- Makay, J. (1992). Public speaking: theory into practice, Forth Worth, TX: Harcourt Brace Javanovich College Publishers.
- Makau, J.M. (1990). Reasoning and communication: thinking critically about arguments. Belmont, CA: Wadsworth.
- McMillan, J.H. (1967). Enhancing college students' critical thinking: a review of studies. Research in Higher Education, 26, 3-18.
- Mullis, I. (1993). Setting the standards for good thinking nationwide: the 1992 National Assessment of Education Progress (NAEP), conference presentation, Boston, Mass., July 21.
- Nickerson, R. (1988-89). On improving thinking through instruction, in Rothkopf (ed), Review of Research in Higher Education, 15, 3-57.
- Nickerson, R., Perkins, D. & Smith, E. (1985). The teaching of thinking, Hillsdale, N.J.: Lawrence Erlbaum Associates, Inc.

- Paul, R. W. & Nosich, B. M. (1991). A proposal for the national assessment of higher-order thinking, Washington, D.C.: U.S. Department of Education, Office of Educational Research and Improvement, National Center for Educational Statistics.
- Perkins, D. N. (1985). Postprimary education has little impact on informal reasoning, Journal of Educational Psychology, 77, 562-571.
- Resnick, L. B. & Klopfer, Eds. (1989). Toward the thinking curriculum: current cognitive research, Arlington, VA: Association for Supervision and Curriculum Development.
- Rubin, R. B. & Martin, M. M. (1994). Development of a measure of interpersonal communication competence. Communication Research Reports, 11, No. 1, 33-44.
- Spicer, K. L. & Hanks, W. (1992). Integrating critical thinking into the speech communication class. The Carolines Speech Communication Annual, 8, 41-48.
- Sproule, J. M. (1987). Ideology and critical thinking: the historical connection. The Journal of the American Forensic Association, 24, 4-15.
- Shoemaker, P. (1993). Critical thinking for mass communication students. Critical Studies in Mass Communication, 10, 98-111.
- Sternberg, R. (1988). The triarchic mind: a new theory of human intelligence, New York: Viking.
- Swartz, R. & Perkins, D. N. (1989). Teaching thinking: issues and approaches, Pacific Grove, CA: Midwest Publications.
- Wallace, K. (1954). History of speech education in America, New York: Appleton-Century-Crofts.
- Walter, O. M. (1963). On views of rhetoric, whether conservative or progressive. Quarterly journal of Speech, 12, 367-382.
- Williams, D. (1951). The effects of training in college debating on critical thinking ability. Master's thesis, Purdue University.