ENHANCING COLLEGE STUDENTS' CRITICAL THINKING: A Review of Studies

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Twenty-seven studies are reviewed that investigate the effect of instructional methods, courses, programs, and general college experiences on changes in college students' critical thinking. Only two studies used true experimental designs; most were nonequivalent pretest-posttest control group designs. The results failed to support the use of specific instructional or course conditions to enhance critical thinking, but did support the conclusion that college attendance improves critical thinking. What is lacking in the research is a common definition of critical thinking, good instrumentation to provide specific measurement, and a clear theoretical description of the nature of an experience that should enhance critical thinking.

It has been recognized for many years that one of the primary aims of education, especially at the college level, is to foster students' ability to think critically, to reason, and to use judgment effectively in decision making. Two recent, significant national reports highlight a renewed interest in college students' critical thinking skills and thus emphasize that an essential component of undergraduate education is the development of these skills. *Involvement in Learning: Realizing the Potential of American Higher Education* (National Institute of Education, 1984), an NIE report directed toward the improvement of undergraduate education, recommends that the curriculum ensure "the development of capacities of analysis, problem solving, communication, and synthesis" (p. 43). The report concludes that a college education should enable students to adapt to a changing world and that successful adaptation requires "the ability to think critically, to synthesize large quantities of new information" (p. 43). In addition, this document strongly recommends that

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"faculty and academic deans . . . design and implement a systematic program to assess the knowledge, capacities, and skills developed by students . . . [and] . . . it is especially important that these assessments allow for judgments of the impact . . . on analytic reasoning, and the ability to synthesize." (p. 55)

In February 1985, the Association of American Colleges issued Integrity in the College Curriculum: A Report to the Academic Community. The report proposes as part of a minimum program that all students learn "to reason well, to recognize when reason and evidence are not enough, to discover the legitimacy of intuition, to subject data to the probing analysis of the mind" (Association of American Colleges, 1985, p. 15). Further emphasis is placed on inquiry skills, abstract logical thinking, and critical analysis.

In addition to these two reports there are other indications suggesting that increased emphasis will be put on critical thinking. In California, a graduation requirement in critical thinking has been established at the nineteen campuses of the state university system. Within the last year, three issues of Education Leadership and one issue of the National Forum have been devoted to thinking skills, and several major associations have developed workshops and networks of individuals to share ideas about this subject.

One of the primary means used to enhance critical thinking is classroom instruction. It has been assumed that if teachers use appropriate instructional methods and curriculum materials, students will improve their critical thinking skills (Young, 1980). Indeed, this view was formalized more than thirty years ago by Dressel and Mayhew (1954), who identified five critical thinking skills and conducted research to show how a college curriculum and teaching strategies could be developed to enhance critical thinking. Yet in the seminal volume The Impact of College on Students, Feldman and Newcomb (1969) did not summarize any studies that investigated the effect of curriculum or teaching strategies on critical thinking. The term "critical thinking" does not even appear in the index of this book.

Despite both the long-standing and more recent interest in developing college students' critical thinking ability, few published studies document the development of critical thinking or demonstrate how to improve it with specific curriculum materials or instructional methods (Terenzini, Theophilosides, and Lorang, 1984). Moreover, what has been published discusses critical thinking along with other forms of higher level thinking (Pascarella, 1985). Based on a comprehensive review of research on college teaching from 1924 to 1970, McKeachie (1970) concludes that "in general, large classes are simply not as effective as small classes for critical thinking" (p. 2). That this conclusion appears to be based on three studies in marketing and economics, only one of which demonstrated statistically significant differences, is indicative of the paucity of studies on critical thinking.