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ABSTRACT

One of the goals of higher education is to develop the students' ability to think critically. However, little research has been done to indicate the impact of college on students' critical thinking skills. A study conducted at a midwestern university measured the critical thinking capability of college seniors. Subjects, 37 volunteers derived from a previous study, had their critical thinking ability measured by an original essay question designed to force the students to indicate what cognitive processes they go through, and what questions they ask when engaged in critical evaluation. The analysis of their responses was divided into two scoring categories: specific criticisms and general criticisms. The results indicated (1) that 40% of the sample identified at least one appropriate general criticism and 17% identified more than one; (2) the students' specific criticisms showed a general failure to focus on definitional issues; (3) that many seniors lack fundamental critical thinking skills; and (4) that while most students were able to identify some flaws in statistical reasoning, they generally failed to recognize ambiguities, questionable assumptions, and value preferences--important components of critical evaluation. (MS)

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Do College Students Know How To "Think Critically" When They Graduate

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One of the goals of higher education is to develop the students' ability to think critically. Remarkably, little research has been done to indicate the impact of college on students' critical thinking skills. A study (Keeley and Browne, 1986) conducted at a midwestern university measured the critical thinking capability of college seniors. While the study indicated that most students are able to identify some flaws in statistical reasoning, they generally failed to recognize ambiguities, questionable assumptions, and value preferences, important components of critical evaluation.

The sample of thirty-seven volunteers was derived from a previous study (Keeley, Browne, and Kreutzer, 1982); they had a mean ACT score of 24.9 and represented the Colleges of Education, Arts and Sciences, Business Administration, and Health and Community Service.

Students' critical thinking ability was measured by an original essay question designed to force the student to indicate what cognitive processes the student goes through, and what questions he asks when he engages in critical evaluation. The rationale for such an approach was inspired by a concern for generalizability. The real world seldom poses multiple choice questions to the graduate; rather, he must critically evaluate using his own set of standards.

During the spring semester, students were presented with a 550 word essay that argued college attendance was both a waste of time and money. The essay was selected because it is replete with errors in the use of evidence, ambiguities, questionable assumptions, and important omitted information. It has also been used in numerous other investigations, and its level of difficulty is comparable to other undergraduate materials. The participants were instructed to: "Critically evaluate the following article. Evaluation entails judgements about the value of material and methods for a given purpose. It involves the use of appraisal. In this experiment, your purpose should be to determine how well the author has supported his conclusion by applying criteria you feel are appropriate for making such a judgement."

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The analysis of their responses was divided into two scoring categories-specific criticisms such as, "a sample of 300 is too small," and general criticisms, for example, "the author persistently overgeneralizes." Responses were analyzed "paragraph by paragraph," and "critical question by critical question," to determine whether the students were sensitive to the essay's reasoning problems. The following critical questions were used:

1. What words or phrases are ambiguous?
2. What are the value conflicts and assumptions?
3. What are the definitional and descriptive assumptions?
4. How good is the evidence: Are the samples representative and measurements valid?
5. How good is the evidence: Are there flaws in the statistical reasoning?

The results indicated that 40% of the sample identified at least one appropriate general criticism; 17% identified more than one. Most general criticisms fit one of two categories, the questioning of the basic value assumption of the purpose of college (to achieve financial or academic enrichment), and concerns about omitted information, (e.g., "article is one sided," "article lacks enough facts.") Overall, more than half of the students failed to apply critical thinking to comment on the article's loose use of the term "college," a definition central to the conclusion of the article, or question any other ambiguous terminology.

The results of the specific criticisms scores indicated a general failure of students to focus on definitional issues. Students demonstrated minimal awareness of assumptions not related to statistical arguments. Sixty-five percent indirectly recognized assumptions; 65% were similarly able to locate at least one flaw in statistical reasoning. Validity of measurement was questioned by only 19% of the sample, despite the fact that multiple measures cited in the essay were of very questionable validity. This failure to question the validity of measurement is especially important because empirical support in behavioral science literature is often based on questionable measurements.

It seems that students looking for reasoning errors pay closer attention to numbers than words. They do not concentrate on ambiguity and vagueness. They are also unable to explicitly pinpoint assumptions. Assumption identification has been stressed in both critical thinking tests and texts, but the seniors' test results demonstrate a deficiency in this important critical thinking skill. While the students were capable of identifying some statistical flaws, they missed several others, particularly the problem of sample bias. Only 25% recognized the author's underlying values and their subsequent impact on the article.

While this study's sample was limited in size and breadth, the results are striking enough to serve as a data base for further investigation. The findings clearly indicate that many seniors lack fundamental critical thinking skills. To improve the thinking skills of students, professors should be aware that the traditional curricula does not guarantee the internalization of critical thinking skills. Direct training combined with practice and reinforcement is needed to facilitate the development of critical thinking skills.

References

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