

Mathematics and Critical Thinking, Part I

Once upon a time, at the first meeting of what was supposed to be a high school geometry course, the teacher surprised the students with the announcement: "There is no great hurry about beginning our regular work in geometry and since the problem of awards is one which is soon to be considered by the entire school body I suggest we give some preliminary consideration to the proposition that 'awards should be granted for outstanding achievement in the school.'" In the ensuing discussion, students talked of the value of the award system, whether a teacher's salary was an award, how "school" was defined, and so on. They were offered an exercise, "Accepting the definition of 'school' as 'Any experience from which one learns'; indicate your agreement or disagreement with the proposition: 'Abraham Lincoln spent very little time in school.'" An unorthodox beginning for a geometry course, isn't it? What followed was no less unusual. During the school year, only about half of the time was allotted to the geometric content, the other half was devoted to the general purpose discussions, like the above. In the spring, students in this and the control classes were offered a test in plane geometry, on which the students in "our" class performed as well if not better than students in other classes. Even more remarkably, "our" students exuded confidence that, given more time, they would have been able to solve more problems and improve their test scores. This is despite the fact that they were unfamiliar with much of the material covered by the test. A remarkable achievement indeed. But there is more to the story. When interviewed decades later, the former students, now retired, not only all fondly remembered the course and the teacher, but claimed that taking the course was the single most important and influential event in their academic careers. Could there be a more potent argument? The course was an indisputable success. For those who have not heard or read of the story before, the teacher was Harold F. Fawcett, mathematics professor at the Ohio State University and future NCTM President (1958-60), whose report of the experiment was published as the NCTM Thirteenth Yearbook in 1938 (a 1995 reprint is currently available.) The story has been presented in a talk by Frederick Flener of Northeastern Illinois University at the Annual NCTM Conference in Orlando, Florida on April 6, 2001. Copies of the presentation's write-up have been making rounds on the Web until one of them ended up in my inbox. Flener's account tells us about the course, about meeting, interviewing and corresponding with the surviving students, Fawcett's children and friends, and adds a few strokes about Fawcett himself, his thoughtful and caring character. One of the correspondents remarked that "One cannot separate the person and character of the man from his message. However, the course has been taught by Eugene Smith from about 1945 to 1956. (It's to be regretted that later day students were not queried for their impressions.) Was Fawcett's success rooted in his personality or his approach? Would not one like to repeat his success story? Well, according to Flener, most of his colleagues have other ideas: better use of technology, more investigations, less emphasis on proof. In Part II of the article we shall take a closer look at Fawcett's philosophy, his reasons for developing the course and the documented outcome of the experiment.

About the Author

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