

Chapter X

CareerQuesting Revisited: A Protocol for Increasing Girls' Interest in STEM Careers

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ABSTRACT

This chapter develops an educational strategy to foster the interest and persistence of middle school girls in science, technology, engineering, and mathematics (STEM) careers, using existing Web sites. Criteria are specified that enable middle school teachers to evaluate Web sites as supplemental learning activities within prescribed curricula. In particular, the evaluative criteria help evaluate sites that provide materials appealing to boys and girls, allowing teachers to adopt them without concern that they are providing an unfair advantage to girls.

INTRODUCTION

In September, 2001, the Council on Competitiveness, a group of industrial, university, and labor leaders whose mission is elevating national competitiveness to the forefront of national con-

sciousness, launched the building engineering and science talent (BEST) initiative. It is described on the Council Web site as a public-private partnership “to identify the most effective strategies for building a more diverse science, engineering, and technical workforce and to bring best practices to

communities nationwide” (Council on Competitiveness, 2004). One of the first reports to emerge from the BEST program begins:

There is a quiet crisis building in the United States—a crisis that could jeopardize the nation’s pre-eminence and well-being. The crisis has been mounting gradually, but inexorably, over several decades. If permitted to continue unmitigated, it could reverse the global leadership Americans currently enjoy. (Jackson, 2004)

This report goes on to cite “the gap between the nation’s growing need for scientists, engineers, and other technically skilled workers, and its production of them.”

The literature refers to a “leaky” pipeline of female talent, leading to “under-representation” of women in the STEM (science, technology, engineering, and math) professions. Much research documents this problem, tracing attitudes and behaviors of girls from elementary school through graduate studies and employment. The studies reflect a clear gender distinction at all ages, (Freeman, 2004; Jones, Howe, & Rua, 2000) showing that as girls grow older, there is steady decline in the number expressing interest in STEM subjects, and a corresponding decline in the numbers of women entering higher levels of study. Numerous programs proposed, and implemented over the past decade to improve gender equity in STEM education and workforce. These programs aim to provide information and other support for women and girls, allowing them to make better informed decisions with respect to their educational activities and career planning (AAUW, 2004; National Science Foundation, 2003). Given the proliferation of such efforts, some measurable effect on “entry and persistence” of women into these professions should be expected. However, data do not indicate substantial gains (Freeman, 2004; Huang, Tadese, & Walter, 2000).

The apparent failure of these programs may be due to a failure to implement or adopt them

broadly. In light of recent political pressure to improve standardized testing scores, teachers must devote most of their time to the specific curriculum requirements. They may lack the time to locate and evaluate additional resources to address such gender equity issues, or may lack the budget to adopt commercially available resources. Even when appropriate materials are available for little or no cost, such as those on Web sites for many gender-equity programs, teachers may not understand how or when to use them (Furuta et al., 1999; March, 1997).

Web site-based resources are often developed as part of informal experience to be used as a supplement to regular classroom activities. However, it is unlikely that students will seek out these resources on their own. Additionally, research suggests that only a small percentage of teachers believe it is appropriate to address gender-equity concerns in the typical classroom (Bullock, 1997). Those who do may not have support of the school administration to adopt programs perceived to benefit only girls (Posnick-Goodwin, 2005).

The goal of this paper is to identify a set of criteria for use by teachers in evaluating existing Web sites with the potential for increasing interest and persistence of middle school girls in STEM fields. In particular, the criteria emphasize materials that might appeal to both boys and girls, allowing teachers to adopt them without concern that they are providing an unfair advantage to girls.

REVIEW OF THE LITERATURE

There are many alternative explanations for why women continue to avoid STEM professions. Early studies cited difficulties in mathematics and science, or avoidance of these subjects by girls as the main concern. Girls entered college level studies without adequate preparation for STEM fields, and so avoided them. Programs designed to stimulate interest in mathematics and science,

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