Asynchronous Learning Environment for Integrating Technical Communication into Engineering Courses

Patricia A. Carlson  
*Humanities and Social Sciences*  
*Rose-Hulman Institute of Technology*  
Terre Haute, Indiana 47803  
Patricia.Carlson@Rose-Hulman.edu

Frederick C. Berry  
*Department of Electrical & Computer Engineering*  
*Rose-Hulman Institute of Technology*  
Frederick.Berry@Rose-Hulman.edu

This work-in-progress describes a collaborative effort between two faculty members at Rose-Hulman Institute of Technology to build a web-supported integration of technical communication into a sophomore-level course in engineering practices. The collaboration was begun in the summer of 1998. While the integrated delivery environment is still in its formative stages, we believe this presentation is appropriate for ED-MEDIA because it covers two timely issues for engineering education: (1) the efficacy of asynchronous modules for course delivery, and (2) the meaningful integration of technical communication at early levels in the engineering curriculum.

EC 260 -- "Engineering Practice" -- is a two-credit experience designed to prepare Electrical Engineering students both for the senior design sequence and for the world of work. Course goals include:

1. To begin the integration of knowledge through the solution of an industry-sponsored engineering problem.

2. To improve oral and written communication skills.

3. To gain experience in working as a team.

4. To become proficient in using both traditional and information-age resources, enacting a need-to-learn approach.

During the Fall Quarter of 1998, portions of the course were delivered via a web-site, containing assignments, course maintenance materials, resource and supplemental documents, as well as such facilitating features as a chatroom, electronic file transfer, and the potential for online commentary on student-submitted work.

Much of the student's success in this course is highly dependent upon abilities to use sophisticated communication skills. However, at this point in the students' education, most will not have taken a course in Technical Communication (which is offered as a junior-level course at Rose-Hulman). Thus, having access to basic instruction in the oral and written forms of communication required in the course is vitally important.

A series of five web-delivered modules were constructed -- each having interactive/transactional capabilities - - so that students can have on-demand instruction in the verbal aspects of the course. The five modules are listed below. Each highlights a set of "information processing skills" (represented on the left), as instantiated in a specific communication form (represented below on the right).

1. Document Design / Formal Program Report
While our assessment of the Fall Quarter experience is currently (4/1499) in progress, we believe that the basic premises of the cross-disciplinary collaboration were satisfied and that the web-based learning environment meet the following objectives:

- **Enhanced active learning** -- students had an active role in problem-solving and in discovery learning. Scaffolding and interactive feedback helped students to adjust and consolidate gains in learning.

- **Provided opportunities for collaboration** -- opportunities to share information artifacts and to enhance abilities to work/communicate with peers by providing commentary and accepting constructive criticism.

- **Accommodated transfer of learning** -- course skills and concepts generalized in that the pedagogy encouraged the learner to make connections and extrapolations.

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