Students Sharing Their Co-op Experiences

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Abstract
As a mechanism for providing students with a meaningful oral presentation experience, the Computer Engineering Technology program at RIT has instituted a new requirement for each student to meet. The requirement is related to their co-operative education assignment. Students returning from co-op are required to create a PowerPoint presentation and a poster describing their co-op experiences in order to receive a passing grade for their co-op assignment. These requirements are in addition to the employer's and student's co-op evaluations traditionally incorporated into the student assessment. These new activities provide upper class students with an opportunity to share with their classmates, underclassmen, and professors some of their co-op related experiences and provide them a formal setting in which to practice presentation and communications skills.

This paper includes details for all phases of the co-op poster and presentation assignment and delivery. Planning aspects are discussed along with details of the instructions provided to students. Photographs are included to illustrate typical posters, presentation arrangements and various other meeting activities.

Introduction
Computer Engineering Technology majors at the Rochester Institute of Technology (RIT) are required to complete five quarters of co-op work as part of BS program requirements. The first co-op block generally takes place at the start of the third year with the remaining co-op blocks occurring during the student's fourth and fifth years of study. Starting in March 2003, students are required to perform oral presentations and poster sessions describing their co-op experiences.

During the first week of each quarter, an evening is set aside for returning co-op students to participate in a formal oral presentation and/or a poster session. Attendance is mandatory for all returning students and faculty within the Computer Engineering Technology program. Students from certain courses such as First Year Enrichment and Career Orientation may also be required to attend. All students within the Computer Engineering Technology Program are encouraged to attend. The purpose of the event is to allow students, returning to campus from a co-op work block, to share their experiences. As a part of the total co-op assignment, returning students must create a PowerPoint presentation and a poster which focus not only on the technical aspects of the co-op assignment, but also include information about the job interview, the location of the job, housing, transportation and the student's interactions with engineers, technicians and managers within the co-op firm. The agenda includes a time for the display of posters, the formal presentations and question and answer periods. There are four very beneficial outcomes of the co-op presentation and poster assignment:

1. Upper Level students share their co-op knowledge and experience with freshman and sophomore students who have not yet been on a co-op assignment.

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2. The faculty gets first-hand exposure to what all levels of students are doing on co-op assignments.
3. The students get to interact with the faculty in a much different atmosphere than they normally do. Here students are the "expert" on what their experience was like, and what their technical challenges were.
4. Students get an opportunity to practice their communication skills in two separate environments; a relatively informal poster session, and a more formal public presentation.

This event enables students to present on a topic with which they are intimately familiar, and satisfies portions of ABET criterion 2, as well as incorporating oral communications into the program without using traditional classroom time. The faculty grades (pass – fail) each student's work and they select a best poster and a best presentation for which prizes are awarded. The presentation and poster evening culminates with pizza and soft-drinks for all.

Description of the Computer Engineering Technology program and its co-op elements

The Computer Engineering Technology Program at RIT provides undergraduate students with an outstanding blend of hardware and software design and development in order to prepare them for the world of computer engineering systems design. Students typically enter the work force as design engineers working on FPGA or ASIC development, firmware development, etc. Student coursework includes electronics, digital design, C and assembly programming, and hardware description languages. The focus of the program is on microprocessor-based embedded systems, and the students typically find they prefer either software or hardware, based upon their own personal desires. The course and laboratory work is rigorous, consisting of 192 quarter-credits over a 5 year period. Additionally the students are required to participate in a co-operative education experience that totals a minimum of 50 weeks over the last three years of the program. The co-operative education requirement normally consists of two 6-month blocks and one 3-month block, but the exact configuration may vary from student to student. While on co-op, students are not required to pay tuition, and often make reasonable salaries. Recent salary figures have been in the range of $7.50 – $23.00 per hour with an average of $13.34 per hour. Typically students with one or two co-op experience under their belts command a higher salary than those students seeking their first job in the industry.

Historically, the assessment portion of the co-operative education experience has been a written evaluation form submitted by the student's manager, with a similar form turned in by the student. Beyond that, nothing has been formally shared or required of the student. The change described in this paper is the result of a desire to educate faculty and younger students about the co-op experience, as well as to provide a forum for students to participate in meaningful presentations to the faculty and their peers.

Expectations and Guidelines Provided to Students

The Presentation

Several weeks before returning from their co-operative educational experience, students receive a "sample" PowerPoint template to assist them in developing a final presentation about their co-operative-education experience. The sample presentation is broken down into three main categories:

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1. Background (Who, What, Where)
2. Business and Interpersonal (Reporting Structure, friendships made, conflicts, diversity, etc.)
3. Technical Experience (What did you do? What did you learn?)

Within these categories, students are given encouragement to discuss the pros and cons of their jobs, how they were treated, and what types of activities they participated in outside of work. Students are expected to discuss what they did at work without discussing anything that would be considered to be proprietary or privileged information. Suggestions include describing at "typical" day at work, the level of responsibility the student was given, and what types of tasks they performed. Additionally students are encouraged to discuss those individuals they typically communicated with, and how that communication was carried out (face-to-face, telephone, email). Since many students travel great distances, they are encouraged to discuss what the lifestyle was like where they were, how they acquired housing, and who paid for travel expenses. It is also clearly explained that students are not to use any company-proprietary information in their presentation or poster. The template students are provided with also encourages them to think about topics such as diversity in the workplace, life long learning, ethical behavior and professional growth.

Students are told the presentation should be professional in nature, and include technical, geographical, and interpersonal information about the co-op experience. The students their audience consists of faculty, peers, and students that have not yet been on a co-op assignment. The presentation should be approximately 8-10 minutes in duration. Not all students perform a formal presentation each quarter, but all students are required to develop a presentation and submit it to the Computer Engineering Technology lead faculty. All students must be prepared to present formally as the notification of who will be presenting comes five minutes before the first presentation. All students are required to participate in the Poster Session.

The Poster Session

All students returning from a co-operative education assignment are required to participate in the Poster Session. For the initial event, students were given considerable freedom with their poster designs. Each student was instructed develop a poster approximately 2 feet x 3 feet (24" x 36") relating in some way to their co-op experience. It could be technical or non-technical, depending upon what portion of the experience the student wanted to highlight. The point of the poster was to be creative and eye-catching. They were instructed to use their creative abilities to make themselves the center of attention. Members of the faculty believed that the opportunity to win a prize would motivate the students to generate high quality posters. The end result of that initial session was a very wide range of poster quality. Some students did indeed strive to create an outstanding poster, while others performed at the bare minimum. Since that time, the faculty has created more stringent rules on the generation of posters. Students are now provided with a specific size of poster, and it is required that all text and images for the poster be computer-generated.

Students are expected to dress and behave in a professional manner for the presentation and poster night. As faculty, we anticipated that this would be a "pass-pass" exercise, but we wanted

to give the students enough incentive that they would perform at a high level. In some cases, students have not performed adequately at the presentation and poster night, and have received a failing grade for their co-op experience. This does not mean they are required to perform another co-op assignment, but they are required to participate in the next presentation and poster night in order to receive a passing grade.

Goals for the Student Activities (Intended Learning Outcomes)

The most common criticism the Computer Engineering Technology Program receives from the Industrial Advisory Board is that students need better communication skills. The conundrum is that they also do not want anything *removed* from the program. Though written communication is practiced extensively throughout the curriculum, oral communication in the form of student presentations occurs only modestly. One of the reasons is the time requirement for oral presentations means that valuable class time needs to be used. One of the most important aspects of our program has always been the strong co-operative education component. The Computer Engineering Technology curriculum committee created this opportunity for students to report on their co-op experience with a poster session and oral presentation in order to accomplish several goals:

- Provide returning co-op students with additional oral presentation experience requirement dealing with a topic in which they are the expert: Their own co-op employment experience.
- Get students thinking about the larger picture of their co-op experience: Life-Long Learning, diversity, successes and failures.
- Give students who have not yet participated in co-op an opportunity to learn about what types of co-op experiences are available.
- Let all students know how exciting and important co-operative education assignments are.
- Provide all Computer Engineering Technology Faculty with more insight into what individual students are doing on their co-op's.
- Create an atmosphere where students and faculty can share experiences and communicate outside of the classroom.

From a qualitative standpoint, all of the goals listed above have been accomplished through the creation of the presentation and poster night event. The program has started on a very small scale, and is limited to only the Computer Engineering Technology students from a department that includes both Electrical Engineering Technology and Telecommunications Engineering Technology programs. Several things are under consideration including initiating a more formal assessment of these outcomes that would help provide more quantitative feedback, especially from students, and expanding this activity to both of the other programs within the department.

Presentation and Poster Night

As shown in the following photographs, the entire presentation and poster event provides a fun and friendly learning experience for participants, faculty and attendees.

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A typical Poster

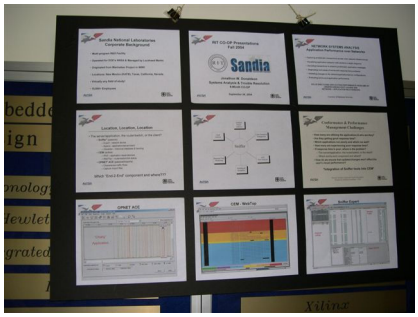
Preparing to present

The Curriculum Committee

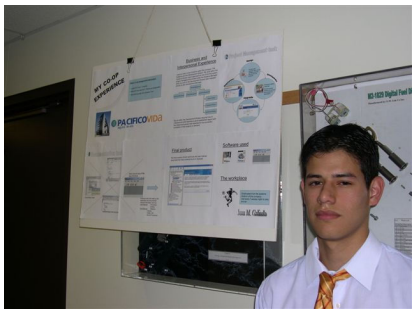
Sherman presents

Abe presents

Good Pizza!



Jonathon's Co-op Poster



Juan discusses his poster

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Conclusion

The co-op poster and presentation activities are a positive learning experience for participants, attending students and faculty. The presentations have been well received, and students clearly enjoy the opportunity to discuss their co-op experience with other students and faculty. Students have even suggested that the poster session be given as part of a special employer recruiting day on campus. Additionally, these activities assist the program to meet its' ABET criteria. Specifically, the students focus on the following Program Outcomes in potions of their presentations:

- PO-4 Communicate in a clear and concise manner using written and oral communications.
- PO-5 Uphold the highest standard of integrity and ethical conduct.
- PO-6 Develop life long learning skills that ensure technical competency and professional growth.
- PO-7 Recognize contemporary professional, social, and global issues and demonstrate a respect for diversity.

These program outcomes correspond to items g, i, h, and j of ABET Criterion 2.

Author Information

MIKE EASTMAN is an Associate Professor in Computer Engineering Technology at the Rochester Institute of Technology (RIT). Prior to joining the faculty in 1996, Mike was a Senior Systems Engineer in Hardware Design at Intel Corporation. Mike's interests are in the areas of Computer Architecture, FPGA Development, and Embedded Systems Design. Mike has an AAS from Vermont Technical College, a BSET and a MSCS both from RIT.

ANTHONY TRIPPE is an Assistant Professor at Rochester Institute of Technology teaching in the Computer Engineering Technology program. His courses include technical programming, project management, operating systems and other computer technology courses presented in the classroom and over the Internet.

WALTER BANKES is a Professor at Rochester Institute of Technology and is responsible for teaching the micro-computers and micro-controllers courses in the Computer Engineering Technology program. Walt is currently in the transition to retirement program, and his long term interest lay in the area of world travel and visiting grandchildren.

JEFF LILLIE is a design engineer with a BSEE (1988) from Rochester Institute of Technology, and a MSEE (1993) from the University of Rochester in Image Processing. He is an IC Design engineer at National Semiconductor (**http://www.national.com/appinfo/displays/**) in the small format displays division. In addition he is an assistant professor at the Rochester Institute of Technology Computer Engineering Technology Department.

GEORGE ZION, Professor and Program Chair of the Computer Engineering Technology program at RIT. In addition to his administrative responsibilities, George's teaching interests lay in the areas of embedded C++ programming and digital systems design. Additionally, he is an Affiliate Professor with Project Lead the Way, the national pre-engineering high school curriculum. George has a BSET and a MSCS, both from RIT.

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