

12. Computer Science – The Quality of Software

Classroom Activity: Students are posed a question with no answer: "Should some form of certification be placed on some software products used by the unknowing general public to provide some level of protection against some forms of defects/failures/bugs?" The problem is large and requires extensive teamwork. Students are expected to think beyond the known world and extrapolate into areas about which they know very little.

Grade: 12

Course(s) and Strand(s): Computer Studies

Computer Science, Grade 12 University

D. Topics in Computer Science

Computer Programming, Grade 12 College

D. Computers and Society

Relevant computer studies expectations for this activity can be found in the supplementary Ontario curriculum alignment document: Ontario Curriculum Alignment for Engineer-in-Residence Secondary Classroom Activities: Science and Technological Education

Assessment Categories:

- Application

Type of Activity: Classroom or independent study

Preparation: varies

Time needed to complete the task: 240 minutes

Materials/Resources for teachers:

No additional resources

Materials/Resources for students:

Only specified resource is www.peo.on.ca, the web site for Professional Engineers Ontario. Students must find other resources as they need them

Activity Description:

This activity is a four-week process requiring a combination of class time and homework.

Session 1

Introduction to the question:

Explain:

What is P.Eng ?

What is PEO ?

As a class discuss:

- What are the regulations and why are they in place?
- What is software and why is it important? What happens when something goes wrong?
- Who is responsible for planting a bug? Who is responsible for removing it? Who pays?
- How is software significant? Can problems be life threatening?

Assignment: List six areas things where software is significant and why? (from personal experience, experiences of parents etc.)

Session 2

Discuss lists compiled by students. Try to classify software into levels of significance.

Assignment: What are the challenges involved in defining an answer to the question? What are the implications for industry? What about ISO 9000?

Session 3

Students break up into teams and select a topic (something that stems from the assignments) for research and presentation

Session 4

Each team presents their results and answer questions from the class, the teacher and engineer.

Tips:

Students proposed the idea of a scale. Discussion then focused on:

- Who should define the scale?
- Who should rate each application and assign the appropriate level of certification?

Class participation was key to this activity. For classes that had already done some programming, a session could be planned that looks at software they developed and the implications of their software for potential users.