INTRODUCTION

Until spring 2007, student focus groups have been used to assess the ability of engineering programs to prepare graduating seniors for careers in the field. More objective and accurate data is needed to assess how well students are actually prepared to meet professional challenges. To assess these skills in practice, WSU's College of Engineering & Architecture (CEA) collaborated with WSU's Center for Teaching, Learning, and Technology (CTLT) to develop an innovative and effective method of measuring ABET professional skills. These skills include ABET criteria 3f through 3j:

3f: understanding of professional and ethical responsibility
3g: ability to communicate effectively
3h: ability to understand the impact of engineering solutions in global, economic, environmental, and societal contexts
3i: ability to engage in life-long learning
3j: knowledge of contemporary issues.

Responding to a National Call

“As evidence of student learning, indirect measures are not as strong as direct measures because assumptions must be made about what exactly the self-report means…. [The] use of multiple assessment methods provides converging evidence of student learning.”

Gloria Rogers
ABET's Associate Executive Director of Professional Services

Assessing Skills through Collaboration

Are WSU engineering seniors adequately prepared for their careers? Can they collaborate on teams to address real-world issues, considering not only design, but ethical, global, societal, economic, and environmental implications? This study seeks to answer these questions.

This college-wide, program-specific project has increased faculty involvement in assessment and collaboration between departments.

Faculty in 8 engineering programs and assessment experts collaboratively assess student professional skills and apply results to program improvements.

METHODS

CEA and CTLT designed “curricular debrief” sessions for teams of discipline-specific seniors. During the spring semester of 2007, CTLT is facilitating and analyzing 8 curricular debrief sessions across specific engineering disciplines at WSU. Students work together to address a real-world engineering scenario developed from current news stories, and then discuss what aspects of the WSU engineering program or other experiences contributed to their skills exhibited on the scenario. Analysis of results will allow the CEA to more directly assess the professional skills of graduating seniors, and to further improve the WSU engineering program’s attention to ABET skills in the classroom. This project also provides fertile ground for dissemination and further research, and may act as a model for engineering assessment across the nation.

PRELIMINARY RESULTS

In an interdisciplinary pilot, 8 students from 5 WSU Pullman engineering programs discussed the Hanford nuclear waste site, which involves complex ethical, environmental, economic, societal, and global issues as well as engineering design issues.

- A score of 4 represents competency for WSU engineering seniors
- Students received an average score of 3.5 on a 6 point scale
- Students performed best (an average of 4) on life-long learning
- Students needed the most improvement on knowledge of contemporary issues
- Students neared competency, with scores of 3.5, on all other ABET skills.

Results from each of the 8 engineering programs at WSU Pullman will be analyzed in Summer 2007 and used to design a longitudinal assessment program.

In later years, assessment teams may include professionals in the field, undergraduates and graduate students, as well as advisory board members.