Use of Sample Items to Measure Student Ability to Apply Computing Knowledge and Mathematics

Computer Science BS - College of Engineering and Computer Science

Step 1: Student Learning Outcome

Students will have the ability to apply knowledge of computing and mathematics appropriate to their discipline. Performance indicators for this SLO are based on 2 factors: demonstrating knowledge of the material and the ability to apply it.

1. Students are considered to have satisfactory *knowledge* if they can show:
    a. an understanding of computing principles, methods, and techniques related to the discipline
    b. an understanding of the related mathematics to the problem

2. Students are considered to be able to have met the *application* by:
    a. apply principles, methods, and techniques related to the field to solve a problem
    b. apply or use the required mathematical approaches to solving the problem

Step 2: Methods and Measures

Using sample items designed to reflect SLO criteria, data was collected by the instructor in Spring 2012 from 67 students enrolled in the course CPSC 335 Problem Solving Strategies, and in Fall 2011 from 31 students enrolled in the course CPSC 481 Artificial Intelligence. Questions were designed to measure knowledge and application.

Step 3: Criteria for Success

This learning outcome is considered met if the weighted mean ratings of sample items indicate at least 80% of students receive a rating of "C."

Step 4: Results

Responses were rated on a 4-point scale (A. Excellent, B. Satisfactory, C. Developing, D. Unsatisfactory,). Using the weighted mean of all samples collected, it was revealed that 89% of Computer Science students enrolled in CPSC 335 and CPSC 481 received a rating of "C" or higher on sample items. These results indicate the criteria for success was met.

Breakdown of scores;

- A – Excellent, 35%
- B –Satisfactory, 41%
- C – Developing, 13%
- D – Unsatisfactory, 11%

Step 5: Improvement Actions

Since the assessment process is tied to specific courses in the Department of Computer Science, it was recommended that an exit survey or examination be developed to provide a more objective assessment of student learning.