De Anza College

SLO Assessment Cycle for CIS 15AG
Introduction to Computer Programming Using C

Assessment Initiated by: Cynthia Lee-Klawender (8609) in CIS

Outcomes:

Outcome 1: Statement

Design solutions for introductory level problems using appropriate design methodology incorporating elementary programming constructs.

Outcome 2: Statement

Create algorithms, code, document, debug, and test introductory level C programs.

Assessment Cycle Records:

Outcome 1: Reflect & Enhance Modified: [09/18/2011]

Number of people involved in Reflection and Enhancement: 4

Changes:

Methods:
The assessment used for SLO #1 was the scores for the design portion of Programming Assignment #5 (next to last project of the quarter which includes program design, documentation, coding in C, debugging and testing), for which points were given based on the completeness of the design. The design portion of the assignment was given a range of points (0 to 10) based on the completeness including a structure chart, pseudocode for main and module specs for each function. The students were informed of the scoring of this portion on the syllabus.

Summary:
The averages for SLO #1 (design) indicated that 90.91% of the students were able to adequately design solutions for the beginning level problem. These results indicate that by near the end of the quarter, a large majority of the students were able to design solutions. Why students did NOT meet SLO#1 may be many reasons, including the resistance to designing at all or not understanding the design tools required or having insufficient problem-solving skills needed to produce a program design.

Enhancement (Part I):
For SLO #1 (design), give more examples and provide more exercises to practice program design. If he/she still has difficulty with design, recommend one-on-one tutoring with someone who has very good knowledge of the design process required.

Enhancement (Part II):
Expand the CIS Volunteer Tutoring currently offered. Have more volunteer tutors help in the classroom.

When problem-solving skills are found to be lacking (in many of the 20%), providing a co-requisite problem-solving course would help. Due to budget restrictions and the inability to add this as a requirement for the CIS certificates/degrees and/or transfer would most likely result in too low of enrollment.

Outcome 2: Reflect & Enhance Modified: [09/18/2011]

Number of people involved in Reflection and Enhancement: 4

Changes:

Methods:
The assessment used for SLO #2 was the scores for the documentation and C code of Programming Assignment #5 (next to last project of the quarter which includes program design, documentation, coding in C, debugging and testing), for which points were given based on the rubric (see below). The documentation and C code portions of the assignment were given a range of points from 0 to 32 based on its completeness and correctness. The students were informed of the scoring of this portion on the syllabus (same on each programming assignment).

Summary:
The data for SLO #2 reveals that a majority (71%) of the students adequately demonstrated this SLO by submitting C programs that adequately solved the problem with beginning-level requirements. However, this does not match the SLO#1 assessment results which had a much higher success rate (see SLO #1 assessment). This is probably due to the difficulty of achieving SLO #1 for the more advanced-beginning problems.My analysis of why 29% did not would include the fact that this assignment is very difficult, and on the "harder side" of the beginning level, and therefore, took more hours of work than many students were able to commit to it. Also, this course requires a lot of problem solving, as well as understanding the C Programming language, which will be very difficult for students who have weak logical abilities.

Enhancement (Part I):
For SLO #2 (programs), the student will be given more practice writing algorithms and programs in C, first in small parts based on a design, then on a larger, beginning-level problem. Give students more opportunities to do this in the lab classroom, in particular, in small groups (as they have been) so more discussion would ensue to enhance learning. I, along with several other CIS 15AG instructors, have been using an online resource called CodeLab. I need to make sure the struggling student works more on CodeLab with and without a tutor. This may be done by devoting some time in class for this.

Enhancement (Part II):
When problem-solving skills are found to be lacking (in many of the 20%), providing a co-requisite problem-solving course would help. Due to budget restrictions and the inability to add this as a requirement for the CIS certificates/degrees and/or transfer would most likely result in too low of enrollment.

Outcome 3: Statement

Read, analyze and explain introductory level C programs.

Outcome 3: Reflect & Enhance Modified: [09/18/2011]

Number of people involved in Reflection and Enhancement: 4

Changes:

Methods:
To assess SLO #3, the Final Exam, problem #1 was used, for which each student must read a beginning level C program, and desk check it properly, indicating what happens at each step, showing the changes in "memory" and the output (on paper) as each step is "executed" by hand. The students were shown how to do this in class with several examples, and were able to practice this during class and on previous tests throughout the quarter.

Summary:
• The average for SLO #3 is 82.6% (average score was 8.26). Over 81.48% of the students received the adequate score of at least 7 out of 10. This indicated that a large majority of the students were understanding C programs pretty well, and learned adequately how to desk check a program, which is a useful tool when debugging or determining what someone else's code is doing. The results were as I expected. However, some students have difficulty analyzing programs, or have not learned yet (after 2/3 of a quarter) how to analyze programs effectively, probably due to different "learning styles" or poor logical skills.

Enhancement (Part I):
Provide one-on-one tutoring and/or study groups, giving exercises to practice desk-checking.

Enhancement (Part II):
Expand the CIS Volunteer Tutoring currently offered. Have more volunteer tutors help in the classroom.

[Number of Outcomes for CIS 15AG: **3**]