

William Paterson University
College of Science and Health - Department of Computer Science

Fall 2013 – Spring 2015 Assessment Cycle
Analysis of the Program’s Student Outcome Assessment Data

Program’s Student Outcome: S1: Effectively communicate in written and oral forms.

ABET’s Related Student Outcomes (f)

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A. Analysis of the Assessment Data

For the assessment period Fall 2013 to Spring 2015, this student outcome was assessed in the following four courses: CS3410, CS3450, CS3500, and CS4800.

In CS3410, 16, 19, 22, and 23 students respectively took the course and all of them have at least an adequate ability. However, it is observed that some students have a tendency to write a very simple report. It is therefore suggested that students be given a detailed requirement specification and some typical examples of project reports.

In CS3450, 21, 21, 10, and 18 students respectively took the course and 11 of them (which represents 16%) did have less than adequate ability due in part to their poor writing abilities. However, it is observed that students who work in groups have a tendency to produce better reports. It is therefore suggested that students be encouraged to work in groups of two or three students.

In CS3500, 20, 13, 20, and 12 students respectively took the course and 11 of them (which represents 17%) did have less than adequate ability. However, it is observed that this is due in part by the fact that in the fall 2013, most students in the class were part-time students and did not put a lot of efforts in their projects. It is also observed in the spring 2015 that students did very well with their projects after they were given a sample of a project presentation. We therefore suggest that this practice be continued in the future.

In CS4800, 22, 14, and 11 students respectively took the course and only 4 of them (which represents 4.5%) did have less than adequate abilities. However, it is noted that at first, students did not feel very comfortable with scientific writing. Some students also have problems with time management during their presentation. It is also observed (Spring 2015) that students perform substantially better when they are instructed on how to make effective presentations and how to engage the audience using eye contact and asking questions to sustain interest throughout the talk. In this class, students were also taught how to write an abstract, and how to reference and display algorithms, tables, and figures using criteria from an academic conference.

B. Suggestions for Improvement

- In CS3410: give students a detailed requirement specification and some typical examples of project reports.
- In CS3450: encourage students to work in groups of two or three.
- In CS3450: give students some samples of project presentations.
- In CS4800:
 - Introduce students to scientific writing: how to write an abstract, make references to other sources, and reference and display algorithms, tables, and figures using criteria from an academic conference.
 - Also instruct students on how to make effective presentations and how to engage the audience using eye contact and asking questions to sustain interest throughout the talk.

C. Improvements Implemented:

The above suggestions have been implemented in Fall 2016.

D. List all the “performance level/frequency/percentage” tables and their sources.

- a. Faculty Course Assessment Report: CS 3410, Fall 2013

Data Collected: Each student’s level of performance on oral and written communication

Method of Collection: Each student is required to make an oral presentation and to produce a report on a digital logic design topic. He then receives a numerical grade on his/her presentation (from every student in the class and the instructor) and a numerical grade on his report from the instructor of the course.

Performance Levels	Frequency	Percentage
Some Ability	0	0 %
Adequate Ability	0	0 %
More than Adequate Ability	10	63 %
High Ability	6	38 %

Observations: Most students’ oral presentations and written reports are good.

- b. Faculty Course Assessment Report : CS3410, Spring 2014

Data Collected: Each student’s level of performance on oral and written communication

Method of Collection: Each student is required to make an oral presentation and to produce a report on a digital logic design topic. He then receives a numerical grade on his/her presentation (from every student in the class and the instructor) and a numerical grade on his report from the instructor of the course.

Performance Levels	Frequency	Percentage
Some Ability	0	0 %
Adequate Ability	2	11%
More than Adequate Ability	9	47 %
High Ability	8	42 %

Observations: Most students’ oral presentations are good; however some written reports are too simple.

c. Faculty Course Assessment Report: CS 3410, Fall 2014

Data Collected: Each student's level of performance on oral and written communication

Method of Collection: Each student is required to make an oral presentation and to produce a report on a digital logic design topic. He then receives a numerical grade on his/her presentation (from every student in the class and the instructor) and a numerical grade on his report from the instructor of the course.

Performance Levels	Frequency	Percentage
Some Ability	0	0 %
Adequate Ability	8	36%
More than Adequate Ability	6	27 %
High Ability	8	36%

Observations: Most students' oral presentations are good, however many written reports are too simple.

d. Faculty Course Assessment Report: CS 3410, Spring 2015

Data Collected: Each student's level of performance on oral and written communication

Method of Collection: Each student is required to make an oral presentation and to produce a report on a digital logic design topic. He then receives a numerical grade on his/her presentation (from every student in the class and the instructor) and a numerical grade on his report from the instructor of the course.

Performance Levels	Frequency	Percentage
Some Ability	0	0%
Adequate Ability	4	17%
More than Adequate Ability	13	57%
High Ability	6	26%

Observations: Most students' oral presentations are good, however most written reports are too simple. Next semester will give them a detail requirement and typical examples.

e. Faculty Course Assessment Report: CS 3450, Fall 2013

Data Collected: Each student's level of performance on oral and written communication

Method of Collection: Each student is required to make an oral presentation and to produce a report on an OS topic. He/she then receives a letter grade on his/her presentation (from every student in the class) and a letter grade on his/her report from the instructor of the course.

Performance Levels	Frequency	Percentage
Some Ability	2	10%
Adequate Ability	10	48%
More than Adequate Ability	5	23%
High Ability	4	19%

Observations: All came in well prepared; some even rehearsed before their presentations such that they could complete their presentation in the given time frame. One student was particularly eloquent with a natural style and his presentation on OS security was interesting and engaging. Yet one foreign student's English ability was rather limited although satisfactorily completed his presentation.

f. Faculty Course Assessment Report : CS3450, Spring 2014

Data Collected: Each student's level of performance on oral and written communication.

Method of Collection: Each student is given a score on the tests, the final exam, and homework.

There were 5 exams (4 tests and 1 final) and 16 assignments. These exams are long answer and have essays requiring student writing. However, the first exam is the most descriptive and hence isolates student writing abilities more so than later exams, which are more subject-specific analyses with more programming, numerics, and domain-specific reasoning. Also the homework had many writing assignments, so they are included as a good metric for S1. The distribution below is on the weighted sum of Exam 1 and all homework. The sum is equi-weighted between exam 1 and homework, 50% weight on each. There were 21 students in the class.

Performance Levels	Frequency	Percentage
Some Ability	6	29%
Adequate Ability	6	29%
More than Adequate Ability	6	29%
High Ability	3	14%

Observations: The students did almost uniformly in this category on this aspect except in High Ability. Students expressed themselves well in writing generally but not at the highest level. For oral communications, I may need to add some form of presentation where students can present aspects of the operating systems that they can conduct some exposition or create an exhibit. I generally prefer the written approach as it is more objectively graded and not dependent on past event memories or perceptions at the moment. However, oral presentation is a more active model of learning, so venturing in that direction may prove fruitful. Also that would improve their scores since students prefer short presentation to lengthy writing assignments.

g. Faculty Course Assessment Report: CS 3450, Fall 2014

Data Collected: Each student's level of performance on oral and written communication.

Method of Collection: Each student is required to make an oral presentation and to produce a report on one of the following OS topics: Virtualization and the Cloud, Multiple Processor Systems, Security, UNIX, LINUX, and Android, Windows 8, and Operating System Design. He/she then receives a numerical grade on his/her presentation (from every student in the class) and a numerical grade on his/her report from the instructor of the course.

Performance Levels	Frequency	Percentage
Some Ability	1	10.0 %
Adequate Ability	1	10.0 %
More than Adequate Ability	6	60.0 %
High Ability	2	20.0 %

Observations: Students produced their project reports, but due to time constraint, they did not have the chance to present it. There were four groups of two students and two of one student. Students who worked in groups did very well with their reports.

h. Faculty Course Assessment Report: CS 3450, Spring 2015

Data Collected: Each student's level of performance on oral and written communication.

Method of Collection: Each student is given a score on the tests, the final exam, and homework. There were 4 exams (3 tests and 1 final) and 15 assignments. These exams are long answer and have essays requiring student writing. However, the first exam is the most descriptive and hence isolates student writing abilities more so than later exams, which are more subject-specific analyses with more programming, numerics, and domain-specific reasoning. Also the homework had many writing assignments, so they are included as a good metric for S1. The distribution below is on the weighted sum of Exam 1 and all homework. The sum is equi-weighted between exam 1 and homework, 50% weight on each. There were 18 students in the class.

Performance Levels	Frequency	Percentage
Some Ability	2	11%
Adequate Ability	3	17%
More than Adequate Ability	4	22%
High Ability	9	50%

Observations: The students did well in this category on this aspect, most notably in the High Ability. Students expressed themselves well in writing generally. For oral communications, I may need to add some form of presentation where students can present aspects of the operating systems that they can conduct some exposition or create an exhibit. I generally prefer the written approach as it is more objectively graded and not dependent on past event memories or perceptions at the moment. However, oral presentation is a more active model of learning, so venturing in that direction may prove fruitful. Also that would improve their scores since students prefer short presentation to lengthy writing assignments.

i. Faculty Course Assessment Report: CS 3500, Fall 2013

Data Collected: Each project team's level of performance on oral and written communication (in fall 2013, there were 6 project teams – 4 teams had 3 students each and 2 team with 4 students each).

Method of Collection: Each project team (all team members must participate) needed to do a 15 minute presentation (10 minutes presentation plus 5 minutes for questions and answers). They were graded on the following four categories: Organization of Materials, Contents of Presentation, Presenter's Knowledge, and Overall Rating of the Presentation. Each team needed to hand in the presentation slides which consist of the Use Case Model, Use Case Descriptions / Narratives, Class Diagrams and relationships, and the Communication Diagrams. The ability levels listed below took individual performance into consideration.

Performance Levels	Frequency	Percentage
Some Ability (D)	7	35%
Adequate Ability (C)	13	65%
More than Adequate Ability (B)	0	0%
High Ability (A)	0	0%

Observations: Overall, the teams in this class did not do very well in their presentation and in their presentation slides. This was an evening class with many part-time students.

j. Faculty Course Assessment Report : CS3500, Spring 2014

Data Collected: Each project team's level of performance on oral and written communication (in spring 2014, there were 4 project teams – 3 teams had 3 students each and 1 team with 4 students).

Method of Collection:

Each project team (all team members must participate) needed to do a 15 minute presentation (10 minutes presentation plus 5 minutes for questions and answers). They were graded on the following four categories: Organization of Materials, Contents of Presentation, Presenter's Knowledge, and Overall Rating of the Presentation. Each team needed to hand in the presentation slides which consist of the Use Case Model, Use Case Descriptions / Narratives, Class Diagrams and relationships, and the Communication Diagrams. The ability levels listed below took individual performance into consideration.

Performance Levels	Frequency	Percentage
Some Ability (D)	4	30.77%
Adequate Ability (C)	0	0%
More than Adequate Ability (B)	6	46.15%
High Ability (A)	3	23.08%

Observations: One team's presentation did not involve all the team members. Except that one team, all the other teams did a good presentation and handed-in a good report (presentation slides).

k. Faculty Course Assessment Report: CS 3500, Fall 2014

Data Collected: Each project team's level of performance on oral and written communication (in fall 2014, there were 7 project teams – 6 teams had 3 students each and 1 team with only 2 students. The team with 2 students initially had 3 students but 1 student had no contribution and eventually left the team).

Method of Collection: Each project team (all team members must participate) needed to do a 15 minute presentation (10 minutes presentation plus 5 minutes for questions and answers). They were graded on the following four categories: Organization of Materials, Contents of Presentation, Presenter's Knowledge, and Overall Rating of the Presentation. Each team needed to hand in the presentation slides which consist of the Use Case Model, Use Case Descriptions / Narratives, Class Diagrams and relationships, and the Communication Diagrams. The ability levels listed below took individual performance into consideration.

Performance Levels	Frequency	Percentage
Some Ability (D)	0	0%
Adequate Ability (C)	0	0%
More than Adequate Ability (B)	11	55%
High Ability (A)	9	45%

Observations: All the teams did a very good job in presenting their project. The presentation slides were well-organized.

l. Faculty Course Assessment Report: CS 3500, Spring 2015

Data Collected: Each project team's level of performance on oral and written communication (in spring 2015, there were 4 project teams – each team had 3 students).

Method of Collection: Each project team (all team members must participate) needed to do a 20 minute presentation (15 minutes presentation plus 5 minutes for questions and answers). They were graded on the following four categories: Organization of Materials, Contents of Presentation, Presenter's Knowledge, and Overall Rating of the Presentation. Each team needed to hand in the presentation slides which consist of the Use Case Model, Use Case Descriptions / Narratives, Class Diagrams and relationships, and the Communication Diagrams. The ability levels listed below took individual performance into consideration.

Performance Levels	Frequency	Percentage
Some Ability (D)	0	0%
Adequate Ability (C)	0	0%
More than Adequate Ability (B)	0	0%
High Ability (A)	12	100%

Observations: This semester, I gave them an example of what the presentation consists of. All the teams followed the advice and did very good presentations. The presentation slides they handed-in were well-written. Normally for this class, each team has 15 minutes for the presentation but this was a small class, I let the team to have 20 minute presentation.

Data Collected: Each student's level of performance on oral and written communication.

Method of Collection: Each student is required to discuss or debate on ethics in and legal aspects of Computer Science on assigned topics like security or intellectual property. They are also had to present a 20-30 minute talk on a research topic of his/her own choosing, coupled with a written 5 to 10 page term paper on his research topic \ project. The talks were graded on effective oral communication, preparedness, structure, delivery, grammar, subject depth, comprehensiveness of references, knowledge of literature and web resources, amount of effort required to do the project, status of software or hardware produced (as demonstrated in class, where applicable), and several other criteria. The papers were graded on similar criteria, such as content, style, knowledge of the topic, and organization of the material

Performance Levels	Frequency	Percentage
Some Ability	1	5 %
Adequate Ability	2	9 %
More than Adequate Ability	13	59 %
High Ability	6	27 %

Observations: Students did well coordinated presentations. While a few were slightly bashful at first, they encouraged each other and felt some comradery of confidence as a group and in themselves. The oral parts of the presentation were well timed and choreographed, so that every student was expected to talk in each team. When they were talking about topics they put their hearts into it and were enthusiastic about their work and experiences together. Some went over their time limits. Students often went ahead of slides and were describing their contributions and activities rather than reading from slides, so they did not passively mimic the slides. Students felt comfortable expressing what they enjoyed doing and felt valuable studying. Only one student refused to talk publicly, unexpectedly at the last minute, because he was unprepared, despite the fact that he was amiable, liked to talk in general, but would talk only privately. Sadly, that was the only F in the class for multiple reasons.

n. Faculty Course Assessment Report : CS4800, Fall 2014

Data Collected: Each student's level of performance on oral and written communication

Method of Collection: Each student is required to give two presentations on their research topic. They are also required to write 5 essays (each is around 5-10 pages long) on the latest technologies in Computer Science. Finally, they submit the report on their research topic (around 20-25 pages long)

Performance Levels	Frequency	Percentage
Some Ability	3	21.5 %
Adequate Ability	3	21.5 %
More than Adequate Ability	4	28.5 %
High Ability	4	28.5%

Observations: The students have enjoyed the lectures on the latest technologies. They actively participated in the discussions. It is found that they are not very much comfortable with scientific writing initially. However, various feedbacks provided by the instructor improved their writing significantly towards the end of the course. They were also introduced Latex and some of them used that for their writing. The students didn't have much about how to cite research works before this course. They were introduced to different citations techniques.

o. Faculty Course Assessment Report: CS 4800, Spring 2015

Data Collected: Each student's level of performance on oral and written communication.

Method of Collection: Each student was required to give a 15 minute presentation on ethics in computer science to get them used to speaking in front of a group. Specific academic papers related to security or privacy were assigned by the professor. The talks were graded by the students and the professor. The papers were graded by the professor. They were graded on content, style, knowledge of the topic, and organization of the material

Performance Levels	Frequency	Percentage
Some Ability	0	0 %
Adequate Ability	3	27 %
More than Adequate Ability	5	46%
High Ability	3	27 %

Observations: Some students were quite comfortable presenting in front of a group. All students were instructed on how to make effective presentations and on how to engage the audience using eye contact and asking questions to sustain interest throughout the talk. Students who read from slides received critiques from their fellow students and the professor. Students were taught how to write an abstract, and how to reference and display algorithms, tables, and figures using criteria from an academic conference.
