



## SLO Assessment Cycle for PHIL 7

*Deductive Logic* SLO Modified: [10/07/2010]

### Antonio Ramirez's Team Members:

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#### Additional Notes:

### Outcomes:

#### Outcome 1: Statement Modified: []

Identify and understand the translation of linguistic statements into symbolic notation.

### Assessment Cycle Records:

#### Outcome 1: Assessment Planning Modified: [10/07/2010]

##### Assessment Strategy Used:

Quarter: Spring 2010

Assessors: Antonio Ramirez

Assessment Tools: Exams

Sections being assessed: 01

#### Outcome 1: Reflect & Enhance Modified: [10/07/2010]

**Number of people involved in Phase III: 5**

##### Changes:

##### Methods:

Unlike other philosophy courses, it seemed appropriate to rely heavily upon the quantitative data obtained through quiz and test results in this course. The quizzes and exams were designed to highlight specific capabilities relevant to deductive logic. In this case, I focused on two quizzes that contained several natural language sentences. Students were required to translate these into the languages of propositional and predicate logic. The scores on these quizzes were compared against the scores on the relevant sections of the midterm and final exams, in an effort to detect if improvement/learning took place.

##### Summary:

Students did very well with the translation of sentences into propositional logic. The initial quiz showed an average score of 89%, which improved slightly to 91% by the time of the midterm exam. I take this to indicate that the majority of students had a firm grasp on this aspect of translation.

It appears that students had much more difficulty with predicate logic. Initial quiz scores yielded an average of 53.3%, which improved to about 78% for the final exam. While this does indicate considerable improvement, the final exam average still strikes me as low enough to raise concerns.

##### Enhancement (Part I):

Discussions with my colleagues about this suggest that it may be a good idea to scale back the scope of student work in predicate translations. Because of the accelerated pace of the quarter system, it may be appropriate to focus exclusively on single-place predicate translations, as multi-place predicates seemed to cause most of the problems here. I plan to follow this recommendation in the next section of PHIL07 that I teach, and will introduce multi-place translations only in the event that students exhibit mastery over single-place predicates.

##### Enhancement (Part II):

None required.

**Outcome 2: Statement** Modified: []

Demonstrate an understanding of the proof differences between valid and invalid argument forms.

**Outcome 2: Assessment Planning** Modified: [10/07/2010]**Assessment Strategy Used:**

Quarter: Spring 2010

Assessors: Antonio Ramirez

Assessment Tools: Exams

Sections being assessed: 01

**Outcome 2: Reflect & Enhance** Modified: [10/07/2010]

**Number of people involved in Phase III:** 5

**Changes:**

**Methods:**

Unlike other philosophy courses, it seemed appropriate to rely heavily upon the quantitative data obtained through quiz and test results in this course. The quizzes and exams were designed to highlight specific capabilities relevant to deductive logic. In this case, I focused on a series of quizzes that focused on truth tables. Students used these to test sequents for validity. In the event that a particular sequent was identified as valid, students constructed a proof for the sequent. The scores on these quizzes were compared against the scores on the relevant sections of the midterm and final exams, in an effort to detect if improvement/learning took place.

**Summary:**

Students did well in this area. Quizzes yielded an average score of 80%, which improved to 85% on the relevant section of the final exam. While this does leave some room for further improvement, it suggests that the SLO is being effectively met in the current version of the course.

**Enhancement (Part I):**

I introduced truth tables after introducing the rules of formal proof, and believe that scores may further improve if I reverse this order. I plan to try introducing truth tables first, in an effort to see if students better understand both truth tables and formal proofs.

**Enhancement (Part II):**

None needed.

**Outcome 3: Statement** Modified: []

Exhibit analytical skills by demonstrating ability to perform multi-step deductive proofs.

**Outcome 3: Assessment Planning** Modified: [10/07/2010]**Assessment Strategy Used:**

Quarter: Spring 2010

Assessors: Antonio Ramirez

Assessment Tools: Exams

Sections being assessed: 01

**Outcome 3: Reflect & Enhance** Modified: [10/07/2010]

**Number of people involved in Phase III:** 5

**Changes:**

**Methods:**

Unlike other philosophy courses, it seemed appropriate to rely heavily upon the quantitative data obtained through quiz and test results in this course. The quizzes and exams were designed to highlight specific capabilities relevant to deductive logic. In this case, I focused on quizzes that required students to construct formal proofs for valid sequents. The scores on these quizzes were compared against the scores on the relevant sections of the midterm and final exams, in an effort to detect if improvement/learning took place.

**Summary:**

I was surprised to find that scores on predicate proofs were higher than those for propositional proofs, given the increased difficulty of the former. I attribute this to the fact that the propositional system was introduced first, and that by the time predicate proofs were introduced, students had better mastered fundamental rules for propositional operators. Initial quiz scores for propositional proofs yielded an average of 62%, which improved to 80% on the relevant section of the midterm exam. Initial quiz scores for predicate proofs yielded an average of 73.5%, which improved to 80.2% on the relevant section of the final

exam.

**Enhancement (Part I):**

I would like scores to be higher on the exams with respect to proofs. As indicated in my enhancement for SLO#2, I believe that by introducing truth tables before introducing the proof rules for the operators, understanding of the latter will improve the next time I teach the course.

**Enhancement (Part II):**

None

**Outcome 4: Statement** Modified: []

Demonstrate the ability to distinguish the deductive inferential function from the inductive inferential function in scientific methods.

**Outcome 4: Assessment Planning** Modified: [10/07/2010]

**Assessment Strategy Used:**

Quarter: Spring 2010

Assessors: Antonio Ramirez

Assessment Tools: Exams

Sections being assessed: 01

**Outcome 4: Reflect & Enhance** Modified: [10/07/2010]

**Number of people involved in Phase III: 5**

**Changes:**

**Methods:**

Unlike other philosophy courses, it seemed appropriate to rely heavily upon the quantitative data obtained through quiz and test results in this course. The quizzes and exams were designed to highlight specific capabilities relevant to deductive logic. In this case, I focused on a quiz that contained examples of both deductive and inductive arguments. Students were asked to distinguish them according to these two categories.. The scores on this quiz were compared against the scores on the relevant sections of the midterm exam, in an effort to detect if improvement/learning took place.

**Summary:**

Scores on the initial quiz yielded an average of 77.2%, which improved to 81% on the midterm exam. I believe that the distinction between inductive and deductive reasoning can (and should) be better understood by students who complete the course than is suggested by these scores.

**Enhancement (Part I):**

I believe that I spent less time addressing this SLO than the others because of a belief that it would be more readily achieved. My results indicate that this is not the case, and that it will be a good idea to spend a few extra days reviewing examples of inductive arguments. I suspect that this will improve student performance considerably.

**Enhancement (Part II):**

None

[ Number of Outcomes for PHIL 7: 4 ]