PHIL07: Assessment that is driving change in curriculum

Please see the enhancement for the most recent cycle of assessment, SLO4

Dept - (SSH) Philosophy

PHIL 7:Deductive Logic

Student Learning Outcomes (SLOs)	Assessment Methods	Assessment Data Summaries	Enhancements
PHIL7_SLO_1 - Identify and understand the translation of linguistic statements into symbolic notation. **SLO Status:** Active **Planned Assessment Quarters:** 2010-11 2-Fall, 2011-12 2-Fall **Outcome Creation Date:** 06/01/2010	**Exam - Course Test/Quiz -** 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. **Target for Success:** Average score of 75% on relevant quizzes/exams.	**Program Review Reporting Year:** 2016-2017 **Target :** Target Met Translation is first assessed in the third quiz of the quarter, when students are asked to translate English-language sentences into the language of propositional logic. In this section, 59.4% of students earned a passing score on this quiz. Their facility with propositional translation seemed to improve by the time of the midterm exam, when 78% of students earned passing scores on the corresponding exam section. Translation is revisited later in the quarter when we look at predicate logic--a decidedly more complex language. Students seemed to do well on this quiz, with 81% earning a passing score. But on the corresponding section of the final exam, only 56% passed. (05/23/2017) **Reflection (CLICK ON ? FOR INSTRUCTIONS):** The data seem to show that students improved their understanding of translation over the course of the quarter, but then exhibited a decline on the final exam. This could be due to the additional stress many students feel when taking finals, or to the fact that the material was 'fresher' in their minds at the time of the second quiz. I'll continue to track scores on these assessments for the next quarter, and see if	**Enhancement:** Scores will tracked for another cycle or two in the coming year, to see if this is indicative of a broader pattern in the course. If so, we will discuss possible explanations for the apparent difficulty students face on the final exam. (05/23/2017)

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there's any evidence of a trend here.
Related Documents:
quiz 1.3.doc
Quiz 3.1-2.doc

Program Review Reporting Year: 2009-2010
Target : Target Met
Propositional logic: The initial quiz showed an average score of 89%, which improved slightly to 91% by the time of the midterm exam.

Predicate logic: Initial quiz scores yielded an average of 53.3%, which improved to about 78% for the final exam. (10/05/2012)
Reflection (CLICK ON ? FOR INSTRUCTIONS): 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.

Related Documents:
quiz 1.3.doc
Quiz 3.2 w answers.doc

Enhancement: 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. (03/09/2012)

Program Review Reporting Year: 2011-2012
Target : Target Met
Quiz results for predicate translation yielded an average score of 85%--a significant improvement from the previous assessment cycle. (06/01/2012)
Reflection (CLICK ON ? FOR INSTRUCTIONS): It appears that scaling back the scope of coverage on predicate translation is appropriate for this course, and seems to result in better student learning with respect to this SLO.

Enhancement: We will keep this model of predicate-translation instruction for now, and use the time that it 'frees up' in the quarter to focus on more rigorous deductive proofs. (06/01/2012)

Student Learning Outcomes (SLOs)	Assessment Methods	Assessment Data Summaries	Enhancements
		Related Documents: Quiz 3.1-3.2.secondversion.doc	
PHIL7_SLO_2 - Demonstrate an understanding of the proof differences between valid and invalid argument forms. **SLO Status:** Active	**Exam - Course Test/Quiz -** 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. **Target for Success:** Average scores of 80% on the relevant quiz/exam	**Program Review Reporting Year:** 2016-2017 **Target :** Target Met The average score for the initial truth table quiz was 79.5%. The average score for the relevant section of the midterm exam was 81.7% (05/31/2017) **Reflection (CLICK ON ? FOR INSTRUCTIONS):** Since the last assessment cycle, I've restructured the syllabus to focus on truth tables prior to introducing the natural deduction system. I had thought this might raise overall scores, but this seems not to have happened. While the target was met again this time around, scores did not improve. I have, however, offered a re-take opportunity for students who do poorly on the midterm exam. The offer, which allows students to retake specific sections of the exam (different problems, same concepts) during office hours after meeting to review and enhance their understanding, was not widely exploited by students. The few who did take the offer, however, uniformly demonstrated an improvement in their learning. I'll continue this practice moving forward.	
		Program Review Reporting Year: 2009-2010 **Target :** Target Met Quizzes yielded an average score of 80%, which improved to 85% on the relevant section of the final exam. (10/07/2010) **Reflection (CLICK ON ? FOR INSTRUCTIONS):** Students did well in this area. 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:** 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. (03/09/2012)
PHIL7_SLO_3 - Exhibit analytical skills by demonstrating ability to perform multi-step deductive proofs. **SLO Status:** Active	**Exam - Course Test/Quiz -** Unlike other philosophy courses, it seemed appropriate to rely heavily upon the quantitative data obtained through quiz and test results in this course.	**Program Review Reporting Year:** 2016-2017 **Target :** Target Met The average score for the first (propositional proofs) quiz was 72.5%. The average score for the second (predicate proofs) quiz was 79.3%. The average score for the proofs	**Enhancement:** We will employ in-class proof quizzes rather than take-home quizzes for the next assessment cycle, and see if this yields any change in results.

Student Learning Outcomes (SLOs)	Assessment Methods	Assessment Data Summaries	Enhancements
	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. **Target for Success:** Average scores of 80% on relevant quiz/exams	section of the final exam was 85%. (05/31/2017) **Reflection (CLICK ON ? FOR INSTRUCTIONS):** Since the last assessment cycle, I've restructured the syllabus to focus on truth tables prior to introducing the natural deduction system. I had thought this might raise overall scores, but this seems not to have happened. While the target was met again this time around, scores did not improve. I also plan to move away from the 'take-home' format of the proofs quizzes that I've been using up to this point. I suspect that many students who have not learned the system earn artificially high scores because of group work. By switching to an in-class quiz format, I hope to identify students who are struggling earlier on, which may help to increase understanding (and final exam scores) by the end of the quarter.	(05/31/2017)
		Program Review Reporting Year: 2009-2010 **Target :** Target Met 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. (10/07/2010) **Reflection (CLICK ON ? FOR INSTRUCTIONS):** 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.	**Enhancement:** 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. (03/09/2012)
PHIL7_SLO_4 - Demonstrate the ability to distinguish the deductive inferential function from the inductive inferential function in scientific methods. **SLO Status:** Active	**Exam - Course Test/Quiz -** 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	**Program Review Reporting Year:** 2016-2017 **Target :** Target Met 43 students took the initial quiz, with an average score of 81.7%. Scores on the relevant section of the midterm exam yielded similar result, with an average score of 83.2% (05/31/2017) **Reflection (CLICK ON ? FOR INSTRUCTIONS):** The data	**Enhancement:** After further reflection, the department has concluded that this SLO points to a flaw in the current Course Outline of Record. Given that this is exclusively designed as a course in Deductive Logic, it seems

	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. **Target for Success:** Average scores of 75% on relevant exams/quizzes	seem to indicate that the majority of students are proficient in distinguishing deductive and inductive forms of reasoning. After some deliberation, however, it seems appropriate to remove this SLO. The inductive/deductive distinction, while relevant to the course, is not one of its primary learning objectives. This SLO will be retired/archived, and may be replaced by another in the future.	unnecessary to focus on the 'Inductive inferential function in scientific methods'. A revised course outline will be submitted to the curriculum committee in the coming year, which (among other things) will remove this SLO--along with its corresponding objectives and methods of assessment. (05/15/2017)
		Program Review Reporting Year: 2009-2010 **Target :** Target Met Scores on the initial quiz yielded an average of 77.2%, which improved to 81% on the midterm exam. (10/07/2010) **Reflection (CLICK ON ? FOR INSTRUCTIONS):** 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:** 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. (03/09/2012)