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Learning Outcomes Assessment Follow-up Report

Submitted to:	**Middle States Commission on Higher Education**
Institution:	**University of Puerto Rico at Aguadilla**
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Date:	**May 1, 2003**
Action preceding report:	**Reaffirmation of accreditation, 2001**
Coverage requested:	**A follow-up report "documenting progress in the implementation of a comprehensive outcomes assessment plan including student learning outcomes."**
Evaluation team's visit:	**October 2000**
Chair of the evaluation team:	**Dr. Eida Berrío**

INSTITUTIONAL OVERVIEW

The University of Puerto Rico is a public-supported higher education system serving around 70,000 students at eleven (11) academic units, of which the University of Puerto Rico at Aguadilla (UPR-Aguadilla) is one. This institution, now a 4-year university college, was established in 1972 as a two-year region college. It now serves over 3,000 Full-Time-Equivalent students, of which 58% seek a bachelor's degree, 24% seek transfer, 11% are associate degree students, and the remaining 7% are students registered for professional improvement. The institution also offers educational services to many non-degree students and organizations through the Division of Continuing Education and Professional Studies.

UPR-Aguadilla's most recent on-site evaluation for accreditation occurred on October, 2000. On March 2001 the Commission on Higher Education reaffirmed accreditation and commended the institution for its Self-Study Report. Also, the Commission requested a follow-up report "documenting progress in the implementation of a comprehensive outcomes assessment plan including student learning outcomes." This report is in response to that request.

LEARNING OUTCOMES ASSESSMENT AT UPR-AGUADILLA

During its evaluation visit report, the Middle States' Evaluation Team commended the Office of Planning and Institutional Research for its planning and institutional assessment. However, as the Team pointed out, at the departmental level assessment of learning objectives was not sufficiently developed. It recommended greater focus on learning outcomes assessment and suggested a faculty-led approach.

Following the Team's suggestion, the Dean of Academic Affairs called several meetings of the Department Chairs explaining the need of refocusing our assessment strategies and placing the measurement of learning objectives as the main concern. As a result, several faculty members initiated some assessment projects clearly focused on measuring the outcomes of the teaching-learning process. After the first year, however, it soon became evident that the number of assessment projects was hardly sufficient. To address this shortcoming the faculty would require more effective motivation and hands-on technical assistance.

To devise a strategy, an Outcomes Assessment Committee was constituted and charged with the responsibility of initiating faculty-led assessment projects. Training was not a main concern, as for many years our faculty had been receiving education and training in the area of assessment through multiple seminars, workshops, and conferences. And this continues. It was time for action rather than waiting for additional training. The chosen strategy was to ask interested faculty members to embed

assessment into one or more units of instruction in a given course. The idea was to initiate manageable projects around one principal course objective. The assessment component would be designed so that, although representing more faculty effort, it would not be viewed as overly burdensome. To test the idea, eighteen faculty members from different disciplines were invited to see if they could be motivated to prepare an assessment proposal. Ten members came to the reunion and another met individually with the Assessment Committee Chair.

This proved to be a successful approach. The Outcomes Assessment Committee prepared guidelines for the design of each project and the Committee Chair served as facilitator to help the interested professors define their teaching-learning goals and select the assessment methodology. By presenting concrete examples of projects that could be carried out in several disciplinary contexts, the faculty members were motivated. As a result, eleven recent projects were initiated and are in progress. They should produce the first results by August of 2003. We cannot yet foretell the results of these projects; but the fact that ten faculty members[1] accepted to try out an assessment strategy, points to a promising start. Each semester a similar meeting with a small group of professors will be held to motivate them to participate and to help them manage the technical matters involved in assessment.

[1] One professor is working on two projects.

Another approach to increase department-centered learning assessment has been to make it a required component of other academic initiatives of special interest to the faculty. At this moment, the UPR-Aguadilla is in the middle of an institution-wide effort to integrate educational technology into the teaching-learning process. With the aid of a federally funded Title V project, faculty members are offered several incentives to present proposals to design on-line multimedia modules to complement their instructional efforts. The first ten projects were recently approved. All of the projects have an embedded learning assessment component. Most will render their first reports, including assessment results, by January, 2004.

AN OVERVIEW OF PROJECTS

In the following pages, Table 1 summarizes the assessment projects completed or initiated in the past two years.

Table 1 – Assessment Projects: 2001-02 – 2002-03

Professor	**Department**	**Assessment Activity**	**Status**	
			Completed	In progress
Damaris Hernández	Business Administration	**Objective** Detect differences in quality of oral presentations, if any, from two distinct groups taking the same course. **Context** In the *Marketing Principles* course taken by traditional and non-traditional students, registered in separate sections, differences in quality of oral presentations between the two groups will be measured and analyzed. A research project will be assigned and students are to present an oral report on the researched theme. **Measures** A rubric based assessment will be carried out and an average score for each group will be computed. The average results will be compared and if possible, explained. If available information is insufficient to explain differences, the study will be followed-up with another study to determine the causes of disparities. **Completion** Report expected by August, 2003		x

Professor	Department	Assessment Activity	Status	
			Completed	In progress
William Muñiz	Business Administration	**Objective** Detect learning differences, if any, between two distinct groups taking the same course. **Context** In the *Introduction to Computer Programming and Algorithms* course taken by traditional and non-traditional students, registered in separate sections, detect learning differences by comparing average test results in a final practical examination. **Measures** A test item analysis will be undertaken for each group. For each item, average results will be computed and compared. If differences show up, the study will be followed-up with another study to determine the causes of disparities. **Completion** Report expected by August, 2003		x
Myriam I. Vélez	Education	**Objective** Demonstrate the ability to effectively integrate basic computer skills in educational contexts in K to 6 levels, through appropriate use of the following software: Word, Excel, Internet Explorer, and PowerPoint. **Context** In the course *Introduction to Computer Use in Education*, students will be asked to effectively integrate the computer literacy skills they possess by combining features of production software to the preparation of several Lesson Plans. **Measures** Test-based assessment and rubric-based assessment of several Lesson Plans prepared by students. **Completion** Report expected by August, 2003		x

Professor	Department	Assessment Activity	Status	
			Completed	In progress
Sigrid Sánchez	Education	**Objective** Demonstrate critical thinking skills in the context of Education themes. **Context** In the *Philosophy of Education* course, students will be asked to write a monograph related to a current problem in education where they will be expected to critically apply principles of Philosophy of Education. Critical reasoning must be applied following pre-established criteria. **Measures** Rubric based assessment. **Completion** Report expected by August, 2003		x

Professor	Department	Assessment Activity	Status	
			Completed	In progress
Irving Balaguer	Electronic Engineering Technology	**Objective** Increase general understanding of concepts and improve problem solving skills in the area of basic DC electricity. **Context** Principles and techniques of collaborative education were applied to one section –the treated group-- of the *Introduction to DC Circuits* course. Two other sections of the same course were offered as usual, with no collaborative education activities. The treated group was expected to perform better –in terms of grades-- in the course. As it turned out, no significant difference occurred at the A and B grade levels. However, a large difference was observed at the C level (42% vs. 14% in favor of the treated group). The overall passing rate with a C or higher, in the treated course, turned out to be 72%. (The standing average for the previous five years had been 64%). **Measures** The effectiveness of the teaching techniques was assessed by comparing grades of students that were and were not involved in collaborative-based activities. **Completion** Results were reported in January, 2001.	x	

Professor	Department	Assessment Activity	Status	
			Completed	In progress
Irving Balaguer	Electronic Engineering Technology	**Objective** Increase general understanding of concepts and improve problem solving skills in the area of basic AC electricity. **Context** Principles and techniques of collaborative education were applied to one section –the treated group-- of the *Introduction to AC Circuits* course. Three other sections of the same course were offered as usual, with no collaborative education activities. The treated group was expected to perform better –in terms of grades-- in the course. As it turned out, significant differences occurred at the A and B grade levels, resulting much higher for the treated group. The overall passing rate with a C or higher, in the treated course, turned out to be 86%, whereas in the combined other sections it was 70%. **Measures** The effectiveness of the teaching techniques was assessed by comparing grades of students that were and were not involved in collaborative-based activities. **Completion** Results were reported in August, 2001.	x	

Professor	Department	Assessment Activity	Status	
			Completed	In progress
Aníbal Romney, Edgardo Desarden, Irving Balaguer	Electronic Engineering Technology	**Objective** Increase general understanding of basic concepts and improve problem solving skills in the area of electronics technology. **Context** With the funding of the National Science Foundation, several computer-based modules in selected areas (technical design, Logical Circuits, Electric Sensors) were developed to complement traditional classroom instruction. A sample of students had the opportunity to use the modules. As a result of using the modules they were expected to perform much better –in terms of grades-- in the related electronics courses. This hypothesis was confirmed by the results. **Measures** The effectiveness of the modules was assessed by comparing grades of students that used and did not use the modules (indirect measure technique). **Completion** Results were reported in September, 2002.	x	

Professor	Department	Assessment Activity	Status	
			Completed	In progress
Hiramys Santiago	English	**Objective** Demonstrate effectiveness of online instructional units. **Context** Traditionally, the students taking *English Lab I* are exposed to a series of instructional exercises designed to increase their ability to apply English grammar rules. In the current semester several of these exercises are being completed through online instruction, using BlackBoard. An improvement in overall results is expected. **Measures** The scores obtained on a group of exercises will be compared to the corresponding results on equivalent exercises offered the previous semester, when the course was also offered. Average score differences will be compared to see if any significant variations are evident. Also, students' satisfaction with the methodology will be surveyed. **Completion** Report expected by August, 2003.		x
Hiramys Santiago	English	**Objective** Increase oral presentation skills in English. **Context** The students taking *Commercial English I* are trained to improve on their verbal presentation skills. They are given multiple opportunities for practice, following oral presentation guidelines. Several presentations will be videotaped as a means to allow self-evaluation. **Measures** Rubric-based assessment. **Completion** Report expected by August, 2003.		x

Professor	Department	Assessment Activity	Status	
			Completed	In progress
Mary Moore	English	**Objective** To examine the effects of computer-based class administration on self-directed learning. **Context** The students taking *Basic English I* with this professor will be given certain assignments posted on *BlackBoard* (a computer course manager). These same tasks were given last semester, by the same professor, in the classroom. They were orally assigned and explained, taking up a considerable percent of total class time. By providing instructions through the computer it is expected that students will learn to take better control of their learning, respond in a timely manner, and improve the quality of their work. In the process, they should acquire basic computer literacy skills and reinforce their reading comprehension abilities. **Measures** The scores obtained on a group of pre-selected assignments will be compared to the corresponding results on equivalent assignments offered the previous semester, when the course was also offered. Average score differences will be compared to see if any significant variations are evident. Also, students' satisfaction with the methodology will be surveyed. **Completion** Report expected by August, 2003.		x

Professor	Department	Assessment Activity	Status	
			Completed	In progress
Luis R. Rivera	Humanities	**Objective** Demonstrate comprehension of the basic principles espoused in the Bill of Rights of the Constitution of Puerto Rico (Estado Libre Asociado). **Context** The students taking *A Compendium of the History of Puerto Rico* will be expected to show their knowledge and understanding of the civil rights that all Puertorricans have under the Constitution of Puerto Rico. **Measures** Measure value added per student through pre and post tests. Determine average of value added for the group. **Completion** Report expected by August, 2003.		x

Professor	Department	Assessment Activity	Status	
			Completed	In progress
Aida L. Méndez	Natural Sciences	**Objective** To strengthen science monograph writing skills. **Context** In the General Microbiology course, students were asked to complete a monograph in a theme related to microbiology. They received proper instruction as to how to prepare such a document and the criteria for their assessment was reviewed. Emphasis was placed on structure and science writing skills. Two tries were allowed. The first evaluation was graded and came with feedback. Students interested in improving their grade were allowed to rewrite their monograph, addressing the weaknesses identified in their first try. As it turned out, most students did good work on their first try, little was gained by rewriting. The professor learned that she did not have to emphasize so much on writing structure and skills and go through a second evaluation to fulfill her instructional objective. Her emphasis could be better placed on content and critical reasoning expressed through the monographs. **Measures** Rubric based assessment. **Completion** Results were reported in October, 2002.	x	

Professor	Department	Assessment Activity	Status	
			Completed	In progress
René A. Rivera	Natural Sciences	**Objective** To increase higher order cognitive skills (using Bloom's taxonomy scheme) during the learning of basic chemistry. **Context** In the *General Chemistry I* course, students from one section had the benefit of using a group of modules designed to help develop higher order cognitive skills (apply, analyze, synthesize, evaluate). These modules applied situated or context-based learning techniques. The students were introduced to basic chemistry concepts and principles through situations that related to their everyday life experiences. These students were assessed frequently by using check lists, conceptual mapping and criterion-based tests. They also received corresponding feedback. Learning results from this group was compared to those of a control group which did not use the modules nor were they frequently assessed. **Measures** A pre and post test was administered to the two groups. For both, the value added was determined (average difference between pre and post tests) and compared. The results were statistically analyzed and showed that the treated group did in fact surpass the untreated group: value added of 53% vs. 30%. **Completion** Results were reported in June, 2001. (Note: this assessment was the doctoral dissertation research project of the professor that conducted the study.)	x	

Professor	Department	Assessment Activity	Status	
			Completed	In progress
José M. Planas	Natural Sciences	**Objective** To increase critical thinking skills. **Context** Students in the *Biomedical Sciences* course are asked to participate in electronic forum discussions, following guidelines provided by the professor. During the course, discussions will gradually increase in content complexity and students will be expected to augment the breadth and depth of their contributions. Examples for the type of critical thinking expected will be presented. The professor will provide feedback to the students as the discussions progress. **Measures** Rubric-based assessments **Completion** Report expected by August, 2003		x
Mildred Maisonave	Office Systems	**Objective** Demonstrate production skills in letter writing with proper structure and annotations. **Context** In the *Document Production I* course, students will be expected to show knowledge of proper letter writing as well as demonstrate computer technical skills to produce them. **Measures** Pre and post tests will be administered. Assessment will follow quality production criteria covered in several course units. Differences between pre and post tests will show student gains and allow for teaching improvement in next teaching cycle. **Completion** Report expected by August, 2003		x

Professor	Department	Assessment Activity	Status	
			Completed	In progress
Olga Pérez	Social Sciences	**Objective** Demonstrate ability to adequately construct and properly interpret graphs. **Context** In the *Introduction to Economy* course students are trained to construct and interpret graphs as a means to analyze problems in economics. This unit of study includes opportunities for guided practice with proper feedback. **Measures** Following instruction, a special assignment will be required where graph construction and analysis are central to the task. Results will be examined against pre-established criteria for judging graph quality and proper interpretation. **Completion** Report expected by August, 2003		x

Professor	Department	Assessment Activity	Status	
			Completed	In progress
Cramen Cazurro, Leticia Ruíz, and others	Spanish	**Objective** Demonstrate good writing skills in Spanish prose. **Context** In the *Basic Spanish I* course several writing activities are in place to help students improve on their writing skills. The effectiveness of these learning activities is assessed against criteria to measure writing effectiveness. This assessment was completed in two consecutive years: 2001 and 2002. As a result of 2001 testing, some activities were eliminated in favor of others. In the second year a few areas of the post-test showed perplexing results. The students seemed to do somewhat worse than in the pre-test. As a result, the faculty is reviewing the test and the testing process itself. That notwithstanding, a proposal by the teaching faculty is pending to overhaul or refocus the teaching methodologies used in the course. **Measures** A Pre-test to measure existing skills is administered at the beginning of the course. An equivalent post-test is administered at the end of the course. An item analysis is completed for both tests and results compared. **Completion** Results were reported in August 2001 and 2002.	x	

Table 2 indicates the multimedia projects –recently initiated, with a duration of one or two semesters-- all of which incorporate a learning assessment component.

Table 2 - Multimedia Projects with a Learning Outcomes Assessment Component

Professor	Department	Project Description
Sonia Rivera	Natural Sciences	Create and develop an online component for the General Chemistry II course.
Antonio Santiago	Physics and Electronics	Develop computerized modules for the Physics Laboratory.
Aida Méndez	Natural Sciences	Develop an online component for General Microbiology and Microbiology of Food.
Carmen Cazurro	Spanish	Technology Integration (computer laboratory) in Spanish Honor Course and in Composition in the Business World.
José Morales	Business Administration	Develop an online component for the Basic Data Processing course.
Cande Gómez	Library	Develop an online Instructional Bibliographic module.
José Neville Díaz	Mathematics	Integrate the MINITAB program to develop statistics skills using the computer.
Jesús Lee Borges	Natural Sciences	Develop an online component for the General Genetics Laboratory.
José M. Planas	Natural Sciences	Develop an online component for the General Genetics course.
Sylvia Castillo	Office Systems	Develop an online component for the Information Processing course.