2008

Automating the Assessment of Learning Outcomes

Maliha Haddad
George Washington University, mhaddad@gwu.edu

Mary J Granger
George Washington University, granger@gwu.edu

Automating the Assessment of Learning Outcomes

Maliha Haddad
Information Systems and Technology Management
George Washington University
mhaddad@gwu.edu

Mary J. Granger
Information Systems and Technology Management
George Washington University

ABSTRACT

Under pressure from accrediting institutions such as AACSB and ABET, universities are developing better understanding of, and implementing learning outcomes assessment process. However, many universities and their faculty members are often novices in the process and are seeking to facilitate the process. This paper provides some insight into using a software application specifically designed for assessment. The application assists with establishing rubrics and collecting the data, and provides reports on assessment activities and outcomes. Additionally, these supporting features are all stored for future use and comparisons. Assessment of learning is being addressed and required at the university level across all disciplines. Automating the process will make it less laborious.

Automating the Assessment of Learning Outcomes

I. INTRODUCTION

Under pressure from accrediting institutions such as AACSB and ABET universities are developing better understanding of, and implementing learning outcomes assessment process. However, many universities and their faculty members are often novices in the process and are seeking to facilitate the process. Because there are multiple definitions of assessment, the task is very difficult and varies across university campuses [Banta, 2005]. There does not seem to be any debate about the need for measuring learning outcomes, but how to accomplish assessment remains a major uncertainty.

This paper describes a pilot study in the school of business using TaskStream software provided by Thompson Learning. There are ten required core courses in the undergraduate curriculum in the school, and at least one faculty member from each area participated in the pilot program. Faculty volunteered to participate in this pilot program. If the software provides the required assessment reports, and is easy to use, more faculty will be required to provide assessment for their courses. This paper describes the use of the software application in a required Information Systems course, Management of Information Systems (MIS). There are multiple sections of this course, but only one professor participated in the pilot for the software and the assessment process. The accrediting institutions require the assessment process to be carried out only on a sampling of the students: all students and all sections are not needed for evaluation.

II. BACKGROUND

This section provides definitions for assessment and rubrics. This is followed by an overview of the software product, TaskStream. Finally, the learning goals established by a curriculum task force are presented.

Assessment

Palomba and Banta [1999] state that "assessment is the systematic collection, review, and use of information about educational programs undertaken for the purpose of improving student learning and development." "It is a method for studying what we want students to learn, how much they have learned, and how to design programs to facilitate learning." [Jamoszko et al., 2003, p.1345]. Shepard [2000] believes that assessment should be used to enhance learning. Faculty in schools of education teach and practice assessment methods. However, faculty in other disciplines "still resist student assessment because they don't understand its value or simply don't know how to devise effective tests." [Banta 2005, p. 35] "They don't see the need for it, because they believe their students are already being tested; they fear it will affect their jobs; they don't know how to do it properly; or they don't understand what it is." [Banta 2005, p. 36]

Successful assessment requires faculty to change curriculum processes and to first define what students should be able to accomplish at the end of the course/curriculum, then review current standards, such as IS2002, a model curriculum for Information Systems developed by representatives from ACM, AIS and AITP. Criteria or rubrics for assessment must be developed, and feedback on the level of the fulfillment of these standards provides input for continuous improvement of the curriculum.

Pressure from accreditation institutions, such as AACSB, on universities to demonstrate that their students are learning what the schools are claiming to teach, has prompted many universities to develop assessment plans. A typical framework for an assessment plan is shown in Figure 1:
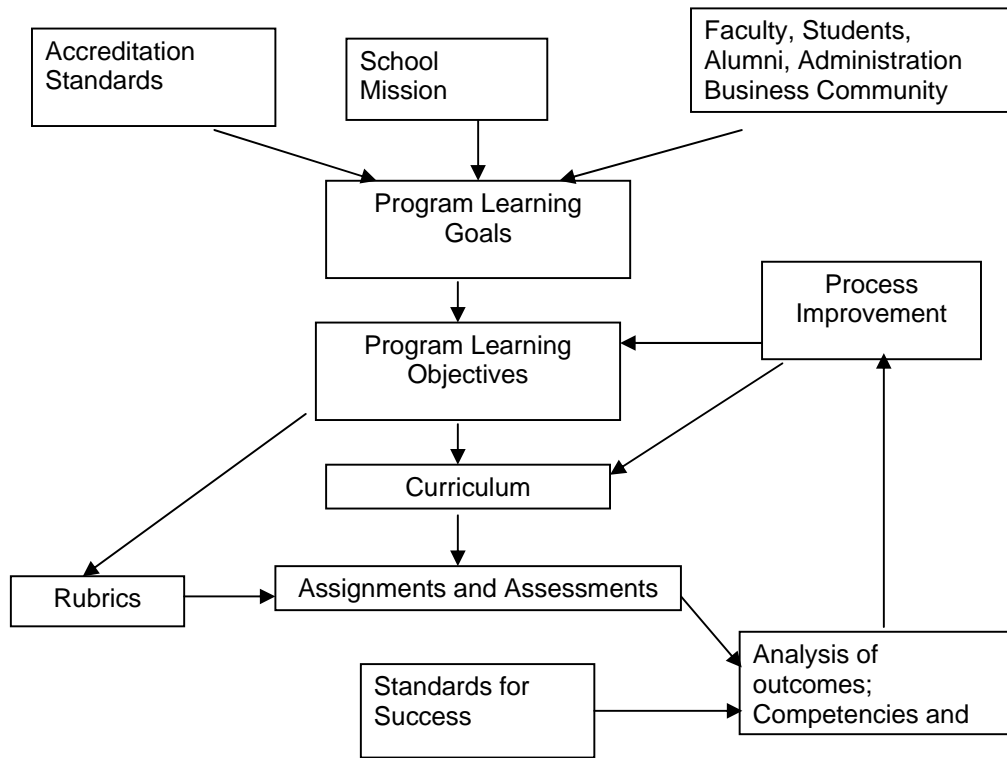
Figure 1 - The Assessment of Learning Plan
(adopted from TaskStream)

The plan starts with setting the school or program mission. Both the mission statement and the learning goals are formed with input from faculty, students, graduates and the business community. Program learning goals support and match the mission statement. They define the knowledge and competencies the student is expected to have acquired at graduation. Learning objectives are derived from the learning goals. Assignments, exams, presentations or other required activities for the course are selected for assessment of the learning goals. For consistent evaluation of selected course requirements, rubrics are developed. Learning outcomes are then evaluated based on an established success standard to determine whether there are deficiencies that need to be addressed. The analysis of outcomes determines if there is a need for curriculum modification. The analysis provides feedback in a continuous process improvement cycle. Figure 2 shows the fundamental elements needed for establishing an assessment plan or program.
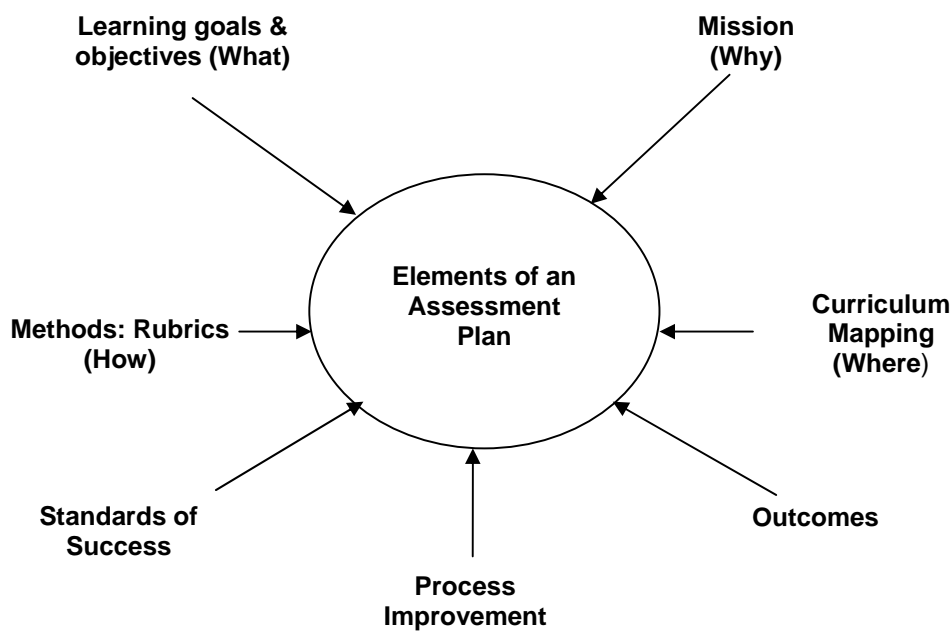
Figure 2 – Elements of an Assessment Plan

Rubrics

The development of rubrics is a critical element in the assessment process. Rubrics "provide more meaningful and stable appraisals than traditional scoring methods." [Born and Jessup, 2003 p. 173]. Scoring rubrics have become a common method for evaluating student work in both K-12 and college classrooms [Moskal, 2000]. According to Heidi Goodrich [1197], a rubric is "a scoring tool that lists the criteria for a piece of work or 'what counts' in the grading of an assignment For example, a rubric for an essay might tell students that their work will be judged on purpose, organization, details, voice, and mechanics." A good rubric also describes levels of quality for each of the criteria, usually on a point scale i.e." gradations of quality, or descriptions of strong, middling and problematic work" [Goodrich 1997]. The criteria defined in the rubric must be observable and measurable. Therefore, the rubric states the criteria and a numerical value for each criterion, providing a tool for both faculty and students to evaluate students' learning outcome [Moskal, 2000].

Rubrics, in addition to being a valuable instrument for assessing students' work, help both students and teachers define quality, reduce the time teachers spend grading student work and make it easier for teachers to explain to students how the grade they received was computed, and what they can do to improve their performance [Goodrich, 1997]. However, the development of rubrics may not be intuitive to faculty without training, and it is a time-consuming process.   It should be noted that some rubrics may need to be revised or even discarded; this is an ongoing continuous feedback loop.

Software Capabilities and Usage

TaskStream is a software application that provides educational support services to educational institutions and it contains many capabilities to aid in assessment.   However, for the pilot project it was used mainly for the competency assessment capabilities. There is repository that is created to store the assignments, the rubrics and assessment outcomes that can be used to generate the numerous performance reports.

The software is a collection of tools designed for an organization to define, organize, evaluate, and report on a portfolio of work products such as student assignments.   Numerous preferences can be set to enroll

the participants as authors (i.e. students), reviewers, and/or evaluators to facilitate how work will be accomplished, scored, and distributed. Additionally, rubrics may be created and reports may be generated. The following are some of the capabilities created for the MIS course:

- Rubric Creation and Posting: The rubrics are required to be created in a specific format for assessing assignments. It facilitates the posting of existing rubrics and provides help in creating new ones.
- Assignment Posting by Students: Registered students are able to post assignments for grading or assessment.
- Evaluation of Assignments: The software provides several evaluation methods, some of which are rubrics,. The evaluations are done by the authorized evaluators, in this instance, the faculty teaching the course. Ideally, evaluators should not be faculty teaching the course. Participants, faculty and administrators are able to track the status of work submitted during the assessment process.
- Reports: The reporting capabilities manage, aggregate, and present assessment data to establish individual, programmatic, and institutional performance. The report-generating capability is one of the most significant and useful features of the software application. It provides many different types of performance reports on the class as a whole and on the individual student, as established in the rubric. Once students' work is evaluated, the assessment data is collected automatically by the software application and reports can be generated easily for analysis of the data. This feature facilitates the monitoring of the learning experience of the students by the faculty. The reports provide the assessment data to determine whether the learning goal has been met or not. Based on the results shown in the reports, improvements in the curriculum may be made if the learning goal has not been met, or perhaps the learning goal itself may need modification.

The Learning Goals
Before any assessment could be initiated, a task force developed a set of learning goals for the undergraduate business degree program. The learning goals were mapped to the school mission. After the learning goals were established, ways to demonstrate each goal were suggested.

Below is an initial attempt in developing learning goals. They may need to be refined and some need to be separated, but for the pilot, this is a good start. The demonstration examples are just that, examples, and not inclusive of the only ways to measure the goals.

1. Oral and written communication skills
   Students will demonstrate the ability to present ideas clearly and logically in writing and orally to stakeholders.
   Demonstration:
   - Prepare a written business report that is clear, logical, concise and free of writing errors
   - Present an oral argument that is thoughtful, logical, compelling, to the point, and clear to the target audience
2. Problem solving/analysis/decision making
   Students will be able to analyze a business decision using relevant data and other information and make logical recommendations.
   Demonstration:
   - Identify a problem, identify and analyze alternative solutions, and make an appropriate recommendation
   - Apply analytical skills (e.g. quantitative) to solve a business problem
3. Ethics/integrity
   Students will have an understanding of ethical issues and have an ethical framework for making decisions.
   Demonstration:
   - Identify the ethical challenges/problems found in a case study.
   - Apply an ethical framework to the analysis of a case study
4. Global awareness/mindset/orientation

Students will be knowledgeable about the cultural, economic, geopolitical, and other challenges that must be addressed to do business outside the U.S.
- Demonstrate an awareness of the challenges of operating in a global marketplace, including how cultural differences impact decisions
- Exhibit knowledge of the major cultural, economic, social, and legal trends faced by multinational organizations by addressing global issues in a case study.

III. THE PILOT STUDY

This section describes our experience in participating in the pilot project in the School of Business. Included is information on different aspects of the experience, observations, thoughts, concerns and lessons learned.

The following are some of the guidelines for the project that were provided to the participants:
- Participate in the pilot project, and specify which section of a course (if teaching multiple sections) will be used. Also, indicate how many students will be in that section.
- Assess two of the learning goals that were developed, using two different demonstrations for each learning goal (one assessment can measure both learning goals—e.g. a written report can assess both written communication and problem solving/analysis/decision making; one would simply use two different rubrics for the same assignment— cannot measure the same goal twice with one assignment)
- Use assignments that are already planned as part of the regular graded work for the course.
- Assist in the development of the grading rubric for the learning goals that will be assessed and the determination of what constitutes an acceptable demonstration of mastery by the student (e.g. Grade of 70 or better; passing).
- Input information throughout the semester into the database provided, including having students upload their assignments. The students will access the program through a link on the course web site, in this case using Blackboard.
- Provide feedback about the experience at the end of the semester.

Selected Course

A class section of an MIS course (Management Information Systems Technology) was selected for the pilot project. It is a foundation course in Information Systems, focusing on the strategic value and contribution of information systems to organizations, and how business organizations can exploit information and technology for competitive advantage and growth. Topics include the nature of information, data, systems development methodologies and computing infrastructures.

Delivered through a mix of case studies, theory and hands-on exercises, this course synchronizes a classroom lecture and a hands-on laboratory. The following are the objectives of the course:
- Understand how information systems support business
- Be familiar with technology concepts and language
- Be familiar with common business technology solutions
- Identify how technology can be a competitive business advantage
- Gain experiences and skills that can be used in the workplace
- Be able to work with technical staff to design business information systems.

The following two learning goals were targeted:
1. Oral and written communication skills
2. Problem solving/analysis/decision making

Selected Assignments

The following two assignments were chosen to assess the above goals:
1- A case study was used to assess goal # 1 which is the oral and written communication skills. Please refer to the syllabus in Appendix B for a description of the assignment requirements.

2- An Access quiz (#2) was used to assess goal #2 which is the Problem solving/analysis/decision making goal. A copy of the quiz is included with the syllabus in Appendix A. The quiz was administered on Blackboard and answers were posted on TaskStream by participating students. Using the software application rubrics, Table 1 was developed for communication skills, and a\similar tables were developed for other competencies.

Students
The 24 students enrolled in the class were provided with the instructions to register with TaskStream and were asked to upload their first assignments on the web site. Initially only four students uploaded their assignment on the due date of the assignment. This might be due to the fact that complete instructions describing the process for uploading were not available. Students initially tried to participate but the instructions were not adequate. Some figured out the process on their own, while others could not and were discouraged. Finally, the instructor registered in the role of a student to learn how to upload assignments as a student and then was able to provide detailed instruction to the students which improved participation. During a conference call with the representatives of TaskStream, it was learned that a quick reference guide was available; however it was too late to be of use. Only 14 out of 24 students initially uploaded the first assignment by the due date.

For the second assignment, the participation was higher as students became more familiar with the software. They were also helped with uploading the second assignment during a computer lab session. For the second assignment, 21 students out of 24 posted their assignment

The Evaluation Process
Once assignments were posted, they were accessed by the faculty members and evaluated based on the rubrics created. Again, some training from the TaskStream mentoring services was needed as there are several evaluation methods and options. It was felt that selecting the appropriate method requires some training.

A major advantage of using the application software is the repository where all rubrics, assignments and assessments are stored. From this repository various reports can be generated to analyze learning outcomes such as competencies and gaps in learning. The information in the reports can be used as a feedback mechanism to improve the curriculum.

The Reports
The software has powerful and easy-to-use reporting capabilities. During the pilot project, online status reports as well as activity reports were available. Options are available to monitor progress by each student or for the whole class in a graphical or table format for a specific assignment or all assignments. Status information such as work not started, work in progress, work sent for revision, evaluation complete may be displayed for monitoring purposes. A sample program activity status report is shown in Appendix C.

Once students' work is evaluated and the results entered by the instructor, the performance/outcome data is collected in the repository, and reports can be generated easily for analysis. Again, the performance reports can be generated for the individual student or the whole group, for an individual assignment or all assignments and by rubric criteria. A sample of group performance report and individual performance report organized by rubric criteria are shown in Appendix D and Appendix E, respectively.

The performance reports by rubric criteria are very helpful in determining whether students met the competencies required and in identifying gaps in learning. Based on the results shown on the reports, improvements in the curriculum may be made. The aggregation and drill down reporting capabilities of the performance data in the software application were particularly useful.

Table 1 – Rubrics for First Goal- Oral and Written Communication Skills			
	Below Expectations	Meets Expectations	Exceeds expectations
1.Case Objectives/key points (2 points)	Written report demonstrates rudimentary : -Clarity in the identification and explanation of the business problem/s -Clarity and completeness in the identification of the who, what, where and when of the Case	Written report demonstrates an adequate: -Clarity in the identification and explanation of the business problem/s -Clarity and completeness in the identification of the who, what, where and when of the Case	Written report demonstrates an advanced:: -Clarity in the identification and explanation of the business problem/s -Clarity and completeness in the identification of the who, what, where and when of the Case.
Report Organization (1 point)	Ideas are not clear or well organized. Lack of focus, there is no logical progression or clarity of purpose.	Exhibits clarity of purpose and logical progression of ideas	Exhibits careful and relevant organization of ideas, clarity of purpose, logical progression of ideas and transition from identification of the business to issues addressed to the significance of the Case
Comprehensive-ness and clarity of Problem Analysis (2points)	Analysis of the problem demonstrates rudimentary: -Clarity and completeness of analysis of the how and why -Supportability of facts in the case for the analysis. -Use of logical arguments -Clarity in identifying solutions and strategies -Use of external material (references) to support analysis.	Analysis of the problem demonstrates adequate : -Clarity and completeness of analysis of the how and why -Supportability of facts in the case for the analysis. -Use of logical arguments -Clarity in identifying solutions and strategies -Use of external material (references) to support analysis.	Analysis of the problem demonstrates advanced: -Clarity and completeness of analysis of the how and why -Supportability of facts in the case for the analysis. -Use of logical arguments -Clarity in identifying solutions and strategies -Use of external material (references) to support analysis.
Significance of the case is explained (2 points)	Demonstrates a rudimentary: -Clarity in explaining the Significance of the Case Study -Identification of Lessons Learned Tie to content learned	Demonstrates an adequate: -Clarity in explaining the Significance of the Case Study -Identification of Lessons Learned Tie to content learned	Demonstrates an advanced: -Clarity in explaining the Significance of the Case Study -Identification of Lessons Learned Tie to content learned
Spelling, Grammar and punctuation (1 point)	Multiple errors in: -Spelling -Appropriate use of grammar -Appropriate use of punctuation -Simplistic and /or unclear language	Few errors in : -Spelling -Appropriate use of grammar -Appropriate use of punctuation -Effective Language	Meets all the following criteria: -No spelling mistakes -Appropriate use of grammar -Appropriate use of punctuation -Rich and precise Language
Use of MLA style citation rules (1 point)	Does not use MLA standards in: -The citation of references in the works cited section -The citation within text	Uses MLA standards but may substitute other standards in : - The citation of some types of references in the works cited section - In the Citation within text	Proper use of the MLA standards for all types of references in the works cited section Proper Citation within text
Length and Formatting standards (1 point)	Does not follow at least one of the standards established for : -Formatting Template: (1" margins, MS Word, 12pt TNR font, single space) -Report length. More than 20% too long or too short	Follows template required (1" margins, MS Word, 12pt TNR font, single space) Exceeded page length by no more than one 10% too long	Followed all standards: -Followed template required (1" margins, MS Word, 12pt TNR font, single space) -Met the one page requirement

IV. LESSONS LEARNED

The Pilot process provided a great deal of information that will be used to streamline the actual assessment process. Below are some of the lessons learned and how the process might be enhanced.

Learning Goals and the Assignments

One of the challenges was choosing the assignments that can be used to assess the learning goals after the syllabus was made available to the students. Although the course included several assignments, many did not address directly the demonstration of the learning goals. Had the learning goals been known before the assignments were defined, it would have been easier to make changes to the requirements of the assignments in order to meet the goals. One example is meeting the ethics objective. There was an assignment where students review and summarize an article related to the ethical use of technology. It would have been easier to include specific guidelines on what to address in the article to address the ethics goals

The lesson learned is that all faculty members need to be aware of the learning goals and how they can be demonstrated before finalizing assignments so that they can be incorporated into the evaluation criteria in the rubrics. Another constraint is that group projects cannot be used for the assessment of goals according to some accreditation guidelines. There is heavy usage of group projects which involve a project presentation. Faculty participating in the pilot were under the impression that the presentation would meet goal #1 which relates to the oral communication goal. There is also a group project in which students have to select a business problem, analyze alternative solutions, select the best solution, and make a presentation. It was assumed by the instructor that it would meet goal #2 which is the problem solving goal, however, according to the accreditation guidelines group projects cannot be used for assessments. Assessment focuses on the individual and what he/she has learned.

Rubrics

Creating the first rubrics was time consuming. Before using the software application, a simple one-column grading matrix for evaluating assignments was sufficient. For the pilot, it was necessary to become familiar with developing rubrics according to the format required by the software. Samples provided by the The software representatives were helpful. There were also several sample rubrics provided on the web site. Another challenge was to fit the assignment requirements to the rubric format and goals of the assignment, that is, the grading matrix usually employed for grading, had to fit the new rubric. The software also provides different evaluation methods, such as rubric items scores, write-in scores, Meets/Does Not Meet Requirement, Pass/Fail, weighted scores and others. The mentoring services were very helpful and provided guidance and suggestions on which evaluation method to use. However, there is a need for additional training on which format to use, so that one can be more familiar with the different methods for assigning points to assignments in order to be able to select the most appropriate method to better assess the various evaluation criteria in the rubric.

Student Participation

The software application requires a two-step process to create an account. The first step requires following instructions to enter a provided key code, the second step involves following instructions to enroll in the program, which is the course area. The instructions are somewhat lengthy. It took several attempts for students to login, enroll and post, even with help provided in the lab by the ~~TA~~ teaching assistant. Students were often working after class, attempting to post the assignment. In spite of the additional tutoring and time, the participation was low.

Since our students use Blackboard to post assignments, submitting their work in TaskStream was additional work for them. Perhaps this was the reason for the initial low participation.

V. SUMMARY

Overall, participation in the pilot project was a good learning experience for the faculty members. It enabled them to become more aware of the assessment process and the steps involved.   Many reported that they were going to modify their curriculum to meet the new learning goals and objectives.

As for the use of TaskStream, it provides adequate capabilities for competency assessment. The reporting feature on student performance was found to be very useful. However, implementing the formal process of creating rubrics for the evaluation of students' work in the format required by the software was time consuming. There is also a learning curve for students and faculty members..   In order to be able to use the software application effectively, teachers need initial training and mentoring on the use of the various features..   However, if the assessment process is not automated, all data must be collected manually, and in order to generate summary reports, programs must be written. Often this involves using spreadsheets. Another option is using a course management system such as Blackboard or WebCT (Motiwalla, et. al. 2006) to collect the data, and use its reporting capabilities.

Assessment is an ongoing process and will not be abandoned once accreditation is achieved. Additionally, assessment should not be done just to receive accreditation, but for continuous improvement of the learning process. Since it may be difficult to engage faculty in the assessment process, all the tools needed for success should be provided. If the level of effort is absorbed by the software application, it is more likely that faculty will participate in assessment. Using a software application that assists the process by providing different tools and creates a repository that is reusable helps streamline the process. It is also easier to collect data, compare data and revise learning goals or objectives, or make course modifications. Therefore, when approaching the assessment practice, the evaluation of a software application to facilitate the process should be undertaken.

VI. REFERENCES

AACSB   http://www.aacsb.edu/ (current August 18, 2008).

Banta, Trudy W. (2005) "How Much Have We Learned?" BizEd, Summer/October, pp. 35-38.

Born, A.D. and Jessup, C.M. (2003) "Performance Assessment: A Case for Rubrics in the Virtual Classroom" in Virtual Education: Cases in Learning & Teaching Technologies, Fawzi Albalooshi (ed.), IGI, Publisher, Harrisburg, PA.

Goodrich, H. (1997) "Understanding Rubrics." Educational Leadership, Vol. 54, No.4, 14-17. http://learnweb.harvard.edu/alps/thinking/docs/rubricar.htm (current August 18, 2008).

Jamoszko, A.T., Petkova, O. and Gendron, M. (2003) "Toward Assessment of Information Systems Programs: Evaluating Learning Outcomes in Systems Analysis and Design Courses" InSite, June, pp. 1345-1351.

Moskal, Barbara M. (2000) "Scoring Rubrics: What, When and How? Practical Assessment." Research & Evaluation, Vol. 7 No. 3, http://PAREonline.net/getvn.asp?v=7&n=3 (current August 18, 2008).

Motiwalla, L., Tello, S. and Carter, K. (2006) "Outcome Assessment of Learning Objectives: A Case for Using e-Learning Software" Proceedings of the Twelfth Americas Conference on Information Systems, Acapulco, Mexico, August 14-16, pp. 2068-2074.

Palomba, C. A. and Banta, T. W. (1999) Assessment Essentials, Jossey-Bass Publishers: San Francisco, CA

Shepard, L. A. (2000) "The Role of Assessment in a Learning Culture" Educational Researcher, Vol. 29, No. 7, pp. 4-14.

Task Stream   https://www.taskstream.com/pub/ (current August 18, 2008).

Appendix A - Case Study Guidelines

Case StudyGuidelines

This activity is intended to analyze the use of IT by organizations. In preparation for case discussion, students are to bring a hard copy of their case response, which will be turned in at the end of class. Referring to chapter contents and other (more recent) material related to the organization and/or case at issue in the written response and during classroom discussion is very valuable. Often, questions which accompany case studies serve to provoke student thoughts and guides one to issues raised in the case. Merely answering questions posed at the end of the text case vignette does not constitute a satisfactory response.

Each written case response must be:
- No longer than one page,
- May be submitted prior to class start to the Blackboard Digital Dropbox. Use Case number, Last Name, First Name, as a naming standard for both the Word document and the file name used in Blackboard. For example: Case1SmithMike.

Late submissions will not be accepted. In addition, a student must be present during case discussion to receive credit for the case.

Please refer to the notes on the case method that follow. Ensure that you read the guide prior to writing your case responses.

Grading of Articles and Case Studies

Each assignment is graded out of 10 points. You will receive 3 points for a thorough article summary/case introduction, 4 points for a clear and concise analysis, 1 point for proper formatting, 1 point for proper use of grammar and correct spelling, and 1 point for using the MLA citation standard. You will lose points if you do not follow directions, your analysis is not thorough, or you do not turn in a write-up on time without discussing the lateness issue with the instructor first.

Appendix B - Assignment 2 - Access Quiz

Quiz #2: Microsoft Access

Please refer to the file named "nwind for Quiz2.mdb," to answer the questions in this quiz.

In this quiz, you are expected to find the appropriate data, process the data using MS-Access, and answer the following questions correctly.

You are expected to apply the techniques taught in your lab sessions.

Description of Northwind Traders:
        Northwind Traders is a company that sells and distributes food products to various businesses throughout the world. The database called "Northwind.mdb" contains the following tables of data:

        Customers – contains information about business customers, contact representatives, etc.
        Employees – contains information about Northwind Traders' sales employees
        Orders – contains info about each order including the freight cost, the employee who made the sale, the customer that ordered, when the order was made, etc.
        Order Details – contains the line-by-line items sold in each order made
        Products – contains all products in the inventory
        Categories – contains all the category names of products
        Shippers – contains all the companies used for shipping all orders
        Suppliers – contains all the companies that supply all products in the inventory

Appendix C - Program Activity Report
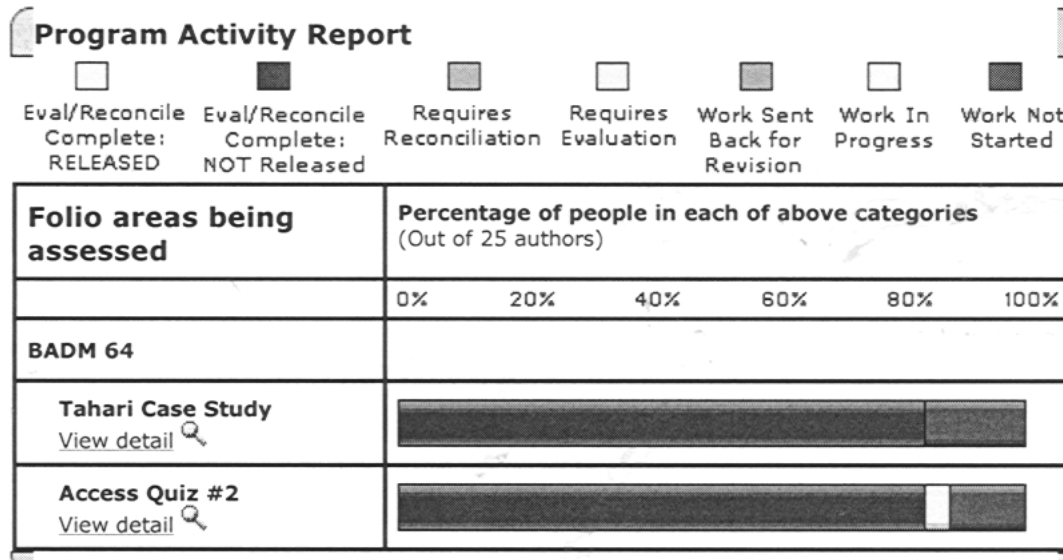
Appendix D - Summary Report

Competency Assessment and Reporting
Performance Report (Raw Scores)
25 author(s) included in report
DRF reported on: BADM64 - Information Systems Technology Management
Used in conjunction with program(s): BADM64

BADM 64					
Folio areas Assessed	Authors evaluated	Results for Group	Median for Group	Std Dev. for Group	Average for Group
Tahari Case Study	21	Avg.=9.50/10	10	1.08	95.05%
Access Quiz #2	21	Avg.=88.52/100	93	14.02	88.52%

Appendix E – Detailed Report

Performance Report (Detail for "Access Quiz #2")
21 author(s) included in report
Used in conjunction with program(s): BADM64

Author/ StudentName	Final Score	Rubric: Access Lab Quiz#2					Average Score
		Q1-3 (11pts)	Q4-7 (20 pts)	Q8-10 (21 pts)	Q11-14 (32 pts)	Q15-16 (16 pts)	
	Max. score=100	4	4	2	2	2	
1	61	4	4	4	4	4	2.8
2	100	3	4	4	4	4	4
3	85	4	4	4	4	4	3.8
4	100	4	4	4	1	3	4
5	60	3	4	3	4	4	3.2
6	93	4	4	4	4	4	3.6
7	100	4	4	4	4	1	4
8	84	4	4	4	4	4	3.4
9	100	4	4	4	4	4	4
10	100	4	4	3	1	4	4
11	69	4	4	4	3	3	3.2
12	84	4	4	3	1	4	3.6
13	75	4	4	2	4	4	3.2
14	86	4	4	4	4	4	3.6
15	100	4	4	4	4	4	4
16	100	4	4	4	1	4	4
17	69	4	4	4	4	4	3.4
18	100	4	4	4	4	4	4
19	100	4	4	4	3	4	4
21	93	4	4	4	4	4	3.8
22	100	9	4	3.67	3.24	3.67	4
Average for group	88.52						3.7