

SECTION A

ANALYZING STUDENT LEARNING OUTCOME ASSESSMENT IN HIGHER EDUCATION

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ABSTRACT

The status of higher education in the United States has been deemed below average as compared to other nations on an international level according to the 2006 Review on Education in the United States sponsored by the United States Department of Education. Several problem areas were identified and student course learning outcomes appear to be one of them. The Department of Education recommends more accountability throughout higher education for learning outcomes. How accountability for learning outcomes will be accomplished and set to a standard seems to be a point of major contention throughout higher education in the United States today. This paper will review two proposed ways to accomplish student learning outcomes assessment by analyzing an instructor-based learning outcomes assessment that was recently used by a university and comparing it to an experimental student-based learning outcomes assessment that was recently used by three Embry-Riddle professors at the end of the Spring 2007 term.

Introduction

What is a Learning Outcomes Assessment? Why implement a Learning Outcomes Assessment? What are its benefits? These are all excellent questions that many professors in higher education in the United States have asked themselves and perhaps many more will be asking themselves in the future. For most professors this will seem like much more work added onto their course loads and could become rather burdensome, while others will just add it on to their lists of things to do and do it just because they are simply told to do it. The positive side of this is that it is based on a good intention. Using student Learning Outcomes Assessment as an accountability tool from a school of higher education is supposed to show that the students are really learning what they are supposed to be learning in the classroom and its quality level of education is good. But at the same time the way they are sometimes designed and completed solely by the professor for an administrative-only purpose is something less than desirable. The purpose of this paper is to delineate the importance of Learning Outcomes Assessment from both the perspective of the United States Department of Education and The Southern Association of Colleges and Schools. Two types of Learning Outcomes Assessment will be analyzed by using Chickering and Gamson's (1987), *Seven Principles for Good Practice in Undergraduate Education*; an instructor-based type and a student-based type.

Why complete a Learning Outcomes Assessment?

United States Department of Education Policy

If faculty are not completing Learning Outcomes Assessments now, it will be just a matter of time before they start to do so in the future. Many of the questions about Learning Outcomes Assessment can be answered from reviewing the United States Department of Education sponsored bipartisan Commissions report on the Future of Higher of Education in the United States. The commission's 2006 report entitled, *A Test of Leadership: Charting the Future of Higher Education*, insists that Higher Education in the United States needs to improve in many ways and most of the improvement must come from changing from a system based on reputation to a system based on performance. The Secretary of Education, Margaret Spellings has in turn come up with an action plan for Higher Education in the United States

entitled, *Action Plan for Higher Education: Improving Accessibility, Affordability and Accountability*. A key goal of the Action Plan is to improve higher education's performance and the ability to measure that performance. Under the Action Plan's subtitle of Accountability Secretary Spellings (2006) insists that, "no current ranking system of colleges and universities directly measures the most critical point-student performance and learning" (p. 1). The Secretary also makes it clear that in today's information age that clear, comprehensive and comparative data about colleges and universities be collected and made available to all.

It is with the Commission's Report and the Secretary's Action Plan that we can see the course of higher education being charted for the future. To be more competitive with the rest of the world in the future, higher education must be more accountable in the area of what is being learned by students in their courses. Furthermore the accountability needs to take a form that is clear, comprehensive and comparative. The exact substance of that form is difficult at best to say at this point in time. This edict is by the Department of Education and the Secretary is why forms of Learning Outcomes Assessment are finding their way into many professors' course loads at many schools. At the same time many schools are not over-reacting to the Department of Education and simply are waiting for more specific guidance on how to go about collecting the data.

The Southern Association of Colleges and Schools Policy

While the United States Department of Education has assessed the current situation and come up with broad measures to get higher education back on track in the future, it is the accrediting agencies representing the individual schools throughout higher education that are tasked with ensuring that such Department of Education mandates are carried out. For Embry-Riddle Aeronautical University this means that its accrediting agency, the Southern Association of Colleges and Schools will eventually expect to see some type of Learning Outcome Assessment measuring process in place possibly for the next Accreditation. For accreditation, improving quality is very important. As quoted in the Southern Association's current guidelines, *Principles of Accreditation: Foundations For Quality Enhancement (2007)*,

At the heart of the Commission's philosophy of accreditation, the concept of quality enhancement presumes that each member institution to be engaged in an ongoing program of improvement and be able to demonstrate how well it fulfills its stated mission.

Although evaluation of an institutions educational quality and its effectiveness in achieving its mission is a difficult task requiring careful analysis and judgment, an institution is expected to document the quality and effectiveness of all its programs and services. (p. 1)

Therefore each institution is responsible to somehow document the quality and effectiveness of its programs and improve the quality of them as well. To accomplish such a task Learning Outcomes Assessments must be used as a measuring device and a feedback quality improvement tool for the professor. Furthermore, as written in *Principles of Accreditation: Foundations For Quality Enhancement (2007)*, an institution must have a Quality Enhancement Plan which, under part two of the plan, states, "focuses on learning outcomes and /or the environment supporting student learning and accomplishing the mission of the institution" (p. 9). Whether institutions agree with the Department of Education or not is irrelevant. What is relevant is that for accreditation the Southern Association of Schools and Colleges clearly is asking for some type of Learning Outcome Assessment that is accurate and can help improve quality in the institution's academic courses. It is no wonder that many institutions of higher learning are scrambling to figure out a way to effectively measure learning outcomes in their courses. It is inevitable that professors will have to deal with some form of Learning Outcomes Assessment in the future.

Instructor-Based Learning Outcomes Assessment

At the present time some institutions of higher learning are opting to use some form of instructor-based (inputs from professor only) Learning Outcomes Assessment. Although tedious and time consuming, some institutions feel that this is at least a temporary solution to keep the accrediting agencies satisfied. An example (Figure 1) of a recent instructor-based Learning Outcomes Assessment was made available by a university in Hawaii and was analyzed using Chickering and Gamson's(1987), *Seven Principles for Good Practice in Undergraduate Education*. These principles were selected for the analysis simply because they offer seven focused areas of

good teaching and learning that have been thoroughly researched to support them. When first looking at the instructor-based Learning Outcomes Assessment in Figure 1 (for an undergraduate human resources management course) its layout consists of four vertical columns of data. In the first column are the standardized Student Learning Outcomes for the course. The next column lists the Assessment Source. In the example the Assessment Sources listed for Student Learning Outcome 1 are: (1) Exam: All Questions, (2) Group Human Resources Case Presentations and (3) Class Discussion. The next column in the example is the Attainment Data. Every Student Learning Outcome has Assessment Sources that are followed by attainment data. In this section the professor completing the Learning Outcomes Assessment must determine how many of the students (in percentage) demonstrated an understanding of the Student Learning Outcome by using that particular Assessment. In the last column of the four the professor is allowed to make Findings and Recommendations. Eventually every Student Learning Outcome must be accounted for under Assessment Sources, Attainment Data, and Findings and Recommendations.

Analysis of the Instructor-Based Learning Outcomes Assessment

After reviewing the basic substance of the instructor-based Learning Outcomes Assessment, the important question still remains. How can this product that requires much effort to create an accurate report be used as a feedback tool by the professor to improve quality in the areas that educational research tells us are good practices in undergraduate education? The first principle is 'Encourages student-faculty contact'. From this principle it is easy to see that the instructor-based Learning Outcomes Assessment can merely be used by the professor to possibly determine if more student contact time might be necessary in the future to help the students attain a better Student Learning Outcome. This would be especially true if the class attainment percentage were very low. But this would also be based only on the instructor's opinion. With no student opinion integrated into it, this Learning Outcomes Assessment is very limited in helping the instructor improve student-faculty contact.

The second principle is 'encourages cooperation among students'. In the case of the Instructor-based example of Learning Outcomes Assessment, the professor could determine if

students cooperated through the Assessment Source where group work was required as one of the ways to get Attainment Data. In the example, the Group Human Resources Case Study Presentation is an excellent way to determine how much the students cooperated to learn that particular Learning Outcome through the means of the group project. In this case the professor can use this information to improve the cooperation on group projects in the future. The problem that could arise in this area is if a professor does not require a group assignment in helping the students attain a Student Learning Outcome in the course. The professor would have no feedback for encouraging student cooperation. The other problem with this particular assessment in relation to student cooperation is once again the professor is determining from his own opinion how much the students cooperated to help them learn. Some form of students input data would allow the professor to clearly know how much cooperation there was with the students to help them attain the Student Learning Outcome.

The third principle is 'encourages active learning'. In active learning the student is participating in the learning environment and is not just merely passive. In this example it can be seen that types of active learning such as the Group Case Study work, the Presentations and the Classroom Discussions can allow the professor to see how much the students are attaining of the Student Learning Outcome from those active learning strategies and make adjustments if they are not working as well. Unfortunately, with active learning techniques the students certainly know what is working best for them and little of their voice is heard on this form of instructor based Learning Outcomes Assessment.

The fourth principle is 'gives prompt feedback'. In this particular kind of Learning Outcomes Assessment there is really no way for the instructor to determine whether or not the students received prompt feedback and how it possibly affected the Student Learning Outcomes. For this particular principle it is critical that the students voice be heard for the instructor to improve prompt feedback.

The fifth principle is 'emphasizes time on task'. Perhaps this type of instructor based Learning Outcomes Assessment can be best used as a tool in making adjustments for this principle. The professor can clearly see the Student Learning Outcome, its different types of

Assessment Sources and a percentage of the students that attained the outcome. If the percentage is low than the professor should go back and reevaluate how much time was time on task was given to that objective and plan on increasing the time for that particular Student Learning Outcome to be attained. Also, if the student Attainment Data is high in one Student Learning Outcome as compared to another than the professor might adjust the time on task and put more time on the Student Learning Outcome with the lower attainment percentage. It would be also nice to know what the students truly thought about the amount of time spent on certain Student Learning Outcomes as well.

The sixth principle is 'communicates high expectations'. In the particular case of the example of the professor-based Learning Outcomes Assessment the professor will be able to tell if the amount of learning for the course was attained as related to the Student Learning Outcomes Attainment Data. If the Attainment Data shows high percentages, obviously the professor would think that high expectations were communicated properly throughout the course. If the Attainment Data is low on the other hand, then the professor might want to reevaluate how the expectations were communicated for the course. Student feedback on the expectations communicated as related to Student Learning Outcomes would be a valuable piece of the data for the professor that is missing in this type of Learning Outcomes Assessment.

The last and seventh principle is 'respects diverse talents and ways of learning'. In reference to the example of the Human Resources Management course, the professor used several different Assessment Sources throughout for different Student Learning Outcomes. Some of those were also teaching strategies such as group work and class discussion. From analyzing the attainment data the professor can get a good idea of how well the different Assessment Sources/teaching strategies worked and draw strong conclusions as to how they helped the different learning styles of the students. The problem with this is if the professor chooses only one methodology as a measurement for Attainment Data. In such a case little information could be extracted toward this principle for the improvement of the course. Also, the lack of student feedback in relation to respected diverse talents and ways of learning is critical and is missing to the complete picture and allow the professor to draw better conclusions.

Conclusions on Instructor-Based Learning Outcomes Assessment

After careful analysis of the instructor based Learning Outcomes Assessment it becomes apparent that the device takes much work to complete to serve as a report and is not necessarily a great tool for the professor to use to reflect upon and improve practices of teaching. However, if the professor realizes it could be used as a reflective tool of course improvement as well, then the instructor-based Learning Outcomes Assessment can help the professor see how much the cooperation amongst students is helping the students attain the Learning Outcomes (especially where group work is assigned). It can help the professor see how effective the active learning was in the course for attaining the Learning Outcomes. It can also give the professor a good indication if the right amount of time on task is being spent to attain the Learning Outcomes. If many different teaching strategies are used by the professor, the Learning Outcomes Assessment can give the professor a better idea of what ways of learning are helping the students attain the Learning Outcomes. If the professor uses the Learning Outcomes Assessment in both summative (as a report) and formative(as feedback) roles it has the potential to help the professor improve in a couple of key areas of good teaching. Although the extra work to complete an instructor based Learning Outcomes Assessment is obvious by those who have used it, its biggest fault is that it only represents the opinion of the instructor. Some form of student input might shed more light into what might have really happened in the course in relation to the Student Learning Outcomes. A summary rating on the analysis of the Instructor-Based Learning Outcomes Assessment is given in Table 1.

Table 1

Analysis of Instructor-Based Learning Outcomes Assessment

Seven Principles	(Feedback Rating 0-10)										
	0	1	2	3	4	5	6	7	8	9	10
Encourages student Faculty contact				X							
Encourages cooperation amongst students						X					
Encourages active learning				X							
Gives prompt feedback		X									
Emphasizes time on task									X		
Communicates high expectations							X				
Respects diverse talents and ways of learning									X		

Note. Analysis is based on Chickering and Gamson's (1991) Seven Principles for Good Practice in Undergraduate Education and how well the Instructor-Based Learning Outcomes Assessment gives feedback in those seven areas on a scale from 0-10. 0 represents the lowest value of least feedback and 10 represents optimal feedback.

Student-Based Learning Outcomes Assessment

To show the importance of the lack of student feedback in the instructor based Learning Outcomes Assessment, a student-based Learning Outcomes Assessment was created (Figure 2) and tested in paper format in three courses on the Hawaii Embry-Riddle campus for the Spring 2007 term. The format was similar to the instructor-based Learning Outcomes Assessment in that four total Columns were used. The difference in the student-based Learning Outcomes Assessment is that after the first column (which includes the Student Learning Outcomes) the second column includes Instructor Teaching Techniques. The third column includes a Student Assessment on each of the techniques and how effective they were in helping the student attain the Learning Outcome. This Student Assessment was accomplished by using a scale ranging from 5(strongly agree), 4(agree), 3(neutral), 2(disagree) and 1(strongly disagree). The

fourth column allowed for the students to make comments and recommendations in relation to the Student Learning Outcomes and the Instructor Teaching Techniques. For the purposes of the analysis only one course (undergraduate transportation) critiques were used. All seven students that participated had their Student Assessment scores averaged out on one data sheet. All comments by students along with their recommendations were listed on the same data sheet. The Seven Principles for Good Practice in Undergraduate Education, were once again used to evaluate the student based Learning Outcomes Assessment.

Student-Based Learning Outcomes Assessment Analysis

The first principle used to analyze the student-based Learning Outcomes Assessment was 'encourages student-faculty contact'. Although none of the students mentioned anything about the encouragement of student-faculty contact during the Learning Outcomes Assessment, it is of note that one student did mention in the comments and recommendations section to, "introduce speakers who may work with all modes of transportation to get more information". This student was recommending that a few guest speakers would have been nice to help attain that learning outcome. In this form of assessment the student had the opportunity to give the professor some important data to improve upon the student-faculty contact.

The second principle was 'encourages cooperation amongst students'. In this particular case there was no group or team projects listed on the Learning Outcomes Assessment by the professor, so it is impossible to say that this particular Learning Outcomes Assessment supports cooperation amongst the students or not. However, if there was a team/group assignment listed as an Instructor Teaching Technique to attain Student Learning Outcomes, the students would be able to voice their comments and recommendations as to the cooperation levels and the value of such a group assignment in obtaining the Student Learning Outcomes.

The third principle was 'encourages active learning'. In this particular case the professor integrated an active learning component in the case studies for each Student Learning Outcome. The professor received beneficial feedback in the fact that most students agreed or strongly agreed that the case studies with the participative learning helped them attain the Learning Outcomes throughout the course. This supports that the case studies with active learning

component are working.

The fourth principle was 'gives prompt feedback'. In this particular case there were no student comments to challenge that the professor is giving anything but prompt feedback. Especially for the homework and weekly case studies for each Student Learning Outcome. However, as with student evaluations, if the professor was remiss with prompt feedback, the students would have ample places in the comments section to let the professor know of this problem.

The fifth principle was 'emphasizes time on task'. Although no students made comments directly about the amount of time spent on Instructor Teaching Techniques, this student-based Learning Outcomes Assessment allows the instructor to see that the text reading and the homework are beneficial, but not as much as the Case Studies, Lectures and Power point presentations. The professor should therefore ensure that adequate quality time is spent doing what is working and finding out how to improve the time reading the text and doing homework.

The sixth principle was 'communicates high expectations'. The Student Assessment data is a great place to see if the professor's expectations for attaining the Student Learning Outcomes were high enough and whether or not the different methods of teaching met those expectations. In the example the average data under the Student Assignment showed that most of the students agree that the teaching methodologies used by the professor were helping the students attain the Learning Outcomes. If the professor were to see that the students disagreed or were neutral toward the different teaching methodologies to help them attain the Student Learning Outcomes, then the professor should question whether or not the expectations were high enough.

The seventh principle was 'respects diverse talents and ways of learning'. From the data in the example it is easy to see how the student-based assessment can help the professor know that the different teaching methodologies for the course were working to attain the Student Learning Outcomes. The different Instructor Teaching Techniques respected the students diverse talents and ways of learning. The important thing to note is that if the students overall

were not having success with one of the Instructor Teaching Techniques and assessed it as such, then the professor would be able to either modify that technique or come up with a new one that would respect the diverse talents and ways of learning of the students.

Conclusions on Student-Based Learning Outcomes Assessment

Overall the student-based Learning Outcomes Assessment is one that can be used as a summative report and at the same time be used by the professor formatively to make adjustments in all seven of the principles for good practice for education. It gives the professor a key piece of data that might never be brought to the professors attention. It is not difficult or burdensome for the professor, because the professor can have all the Instructor Teaching Technique data already inputted onto the Learning Outcome Assessment sheet. The professor could also apply this student-based Learning Outcome Assessment anytime during the course to get feedback from the students. In making quality improvements to a course, the student-based Learning Outcomes Assessment appears to have more potential than an instructor-based Learning Outcomes Assessment. A summary rating on the analysis of the Student-Based Learning Outcomes Assessment is given in Table 2.

Table 2

Analysis of Student-Based Learning Outcomes Assessment

Seven Principles	(Feedback Rating 0-10)										
	0	1	2	3	4	5	6	7	8	9	10
Encourages student Faculty contact								X			
Encourages cooperation amongst students								X			
Encourages active learning								X			
Gives prompt feedback								X			
Emphasizes time on task								X			
Communicates high expectations									X		
Respects diverse talents and ways of learning											X

Note. Analysis is based on Chickering and Gamson's (1991) Seven Principles for Good Practice in Undergraduate Education and how well the Student-Based Learning Outcomes Assessment gives feedback in those seven areas on a scale from 0-10. 0 represents the lowest value of least feedback and 10 represents optimal feedback.

Conclusions on Learning Outcomes Assessment

Learning Outcomes Assessments are meant to be quality-driven tools of accountability for higher education in the United States to remain competitive in a growing world of competitive higher education. The United States Department of Education has been recently pushing some form of Learning Outcomes Assessment for higher education and the accreditation bodies like the Southern Association of Colleges and Schools are setting higher expectations for schools to come up with some form of Learning Outcomes Assessment that accurately reports and gives quality improvement feedback. Therefore schools like Embry-Riddle Aeronautical University are tasked with a serious burden of coming up with some form of meaningful Learning Outcomes Assessment that improves the quality of the education of the students. At this juncture it might

be easy to use a product like the instructor-based Learning Outcomes Assessment presented as an example in this paper, but although it might work as a reporting tool, its value as a formative assessment tool to get solid information to improve the quality of the course is limited. The student-based Learning Outcomes Assessment used in the example is easier to apply and can serve as a report just as student evaluations currently do. The student-based Learning Outcomes Assessment also provides the instructor with much more information to potentially improve the quality of the course. The correct type of Learning Outcomes Assessment for higher education should therefore integrate components that are instructor-based and student-based to give an accurate picture of attainment of the learning outcomes in the course. It should be designed to be an accurate report for accountability purposes and at the same time be a quality improvement tool that the professor can easily use to improve the learning outcomes of the students.

References

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Analysis of Student Learning Outcomes –MGMT3400/2006

STUDENT LEARNING OUTCOMES	ASSESSMENT SOURCE	ATTAINMENT DATA	FINDINGS & RECOMMENDATIONS
1. To provide an understanding of the realities of organizational life.	Exam : All Questions	As a class, students demonstrated an 80% understanding from questions from the exams.	The exams worked well to help the student learn this outcome. The group presentations along with class discussion were also helpful in attaining this learning outcome.
	Group Human Resources Case Study Presentations	Students demonstrated a 95% understanding from the group case study presentations.	
	Classroom discussion	Students demonstrated a high understanding.	
2. To explore and develop greater understanding of management theories and their applications.	Exam : All Questions	As a class, students demonstrated an 90% understanding from questions from the exams.	The students showed they understood this learning outcome from the exams and the group human resources case study presentations.
	Group Human Resources Case Study Presentations	Students demonstrated a 95% understanding of these concepts.	
3. To provide opportunities to test and integrate concepts through expanded individual and group problem solving abilities and communication skills.	Group Human Resources Case Study Presentations	Students demonstrated a 95% understanding of these concepts.	Overall the class had a good understanding of this particular topic from the group assignments.
4. Comprehend that human resources should be managed with the same care and logic as the organization's financial, material and information resources.	Exam : All Questions	Students demonstrated this on the exams at 90%.	Overall the class demonstrated with a high success percentage that they had mastered this objective.
	Group Human Resources Case Study Presentations	Students demonstrated a 95% understanding for this objective.	
5. Comprehend that human resource decisions affect fairness and equity of employment relationships, the attitudes and behaviors of employees, and the ultimate efficiency and effectiveness of the organization.	Exam: Question #1	Students demonstrated a 80% understanding of these concepts.	The students seemed to do well understanding this objective from the exam question and group work.
	Group Human Resources Case Study Presentations	Students demonstrated a 90% understanding of these concepts.	
6. Evaluate the current theoretical and research developments related to human resources management	Exam: Question #2	Students demonstrated a 95% understanding of these concepts.	Students proved they understood this learning outcome with no problems in both the essay exam question and in their individual projects.
	Individual Human Resources related topics.	Students demonstrated a 90% understanding of these concepts.	

Figure 1. Instructor-based Learning Outcomes Assessment

MGMT331 Transportation Principles Spring Term 2007

STUDENT LEARNING OUTCOMES	INSTRUCTOR LEARNING TECHNIQUES	STUDENT ASSESSMENT		STUDENT COMMENTS & RECOMMENDATIONS
		Average For	Students	
1. Recognize the role and importance of freight and passenger transportation to the nation, businesses, and individual well being and evaluate the importance of the five modes of transportation.	CASE STUDIES	5	4	Introduce speakers who may work with all modes of transportation. The book study questions were very vague and all opinion.
	LECTURES	5	4	
	PP presentation	5	4	
	TEXT READING	5	4	
2. Discuss the nature and role of transportation economic regulation and deregulation, historical development and the regulatory laws.	CASE STUDIES	5	4	
	LECTURES	5	4	
	PP presentation	5	4	
	TEXT READING	5	4	
	HOMEWORK	5	4	
3. Recognize the nature and characteristics of the demand for passenger and freight transportation.	CASE STUDIES	5	4	Analyze how we use Transportation pricing in a case study.
	LECTURES	5	4	
	PP presentation	5	4	
4. Discuss the nature, historical development, characteristics, and issues relating to the rail, motor, water, pipeline and air transportation modes, intermodal, multimodal and third party transportation and compare and contrast the five modes of transportation.	CASE STUDIES	5	4	
	LECTURES	5	4	
	PP presentation	5	4	
	Text reading	5	4	
	Homework	5	4	
5. Explain the factors and	CASE STUDIES	5	4	
	LECTURES	5	4	
processes involved in transportation ratemaking and rate determination and determine the charges for freight shipment.	PP presentation	5	4	
	Text Reading	5	4	
	Homework	5	4	
6. Explain the role, nature and characteristics of business logistics and traffic management.	CASE STUDIES	5	4	
	LECTURES	5	4	
	PP presentation	5	4	
	Text reading	5	4	
7. Explain the operational issues and characteristics of carrier management in private and public sectors.	Homework	5	4	
	CASE STUDIES	5	4	
	Text reading	5	4	
	Homework	5	4	
	LECTURES	5	4	
8. Recognize the role and operational characteristics of international water, air and motor transportation.	PP presentation	5	4	
	CASE STUDIES	5	4	
	LECTURES	5	4	
	Text reading	5	4	
	Homework	5	4	
9. Analyze different modes of transportation through original case studies.	CASE STUDIES	5	4	
	TERM PAPER	5	4	

SECTION B