QUANTIFICATION OF STUDENT LEARNING OUTCOMES: STUDENT PERCEPTIONS OF LEARNING

Eric McLaughlin, California Institute of Advanced Management, 1000 S. Fremont Avenue, Alhambra, CA 91803, 626-350-1500, Eric.Mclaughlin@ciam.edu

Robert Kirkland, California Institute of Advanced Management, 1000 S. Fremont Avenue, Alhambra, CA 91803, 626-350-1500, Robert.Kirkland@ciam.edu

Harish Amar, California Institute of Advanced Management, 1000 S. Fremont Avenue, Alhambra, CA 91803, 626-350-1500, Harish.Amar@ciam.edu

James Dorsett, California Institute of Advanced Management, 1000 S. Fremont Avenue, Alhambra, CA 91803, 626-350-1500, James.Dorsett@ciam.edu

ABSTRACT

Student Learning Outcomes (SLO's) have become the *sin qua non* in academic as regulators and legislators desire quantification that academic institutions are delivering a quality education to their students. Each lesson that is delivered in an academic setting strives to link the coverage of material to that of a specific student learning outcome designed with an action verb allowing for quantification and measurement. There are numerous mechanisms for this measurement: rubrics, testing, and surveys.

In a graduate business program, each of the MBA course student learning outcomes is transformed into a "Pre/Post Knowledge Survey" instrument and administered to all registered students at the beginning and then the identical instrument is again administered at the end of the course. The results of this process are presented in this paper.

One method of quantifying student's understanding of material is to obtain their perception of learning in a particular course by surveying them at the beginning of the course and then again at the end of the course. The difference identified in the post survey minus the pre survey can provide faculty and administrators one measure of success (or failure!) of the delivery of material.

INTRODUCTION

The national push for education effectiveness is to require academic institutions provide evidence that they are delivering what they promise: a certificate for licensure in a professional career; technical training for a specific position requirement; clinical training for healthcare employment; and tools for managers in today's business global workforce [1] [2] [3].

Textbook companies are now providing faculty with a set of SLO's in each chapter that link directly to SLO's of the text. Activities, quizzes, and tests are identified with the SLO code that provides the linkage to the specific topics which provides an integrated set of learning material prepackaged for the instructor.

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TABLE 1 ASSESSMENT SUMMARY OF ONE COURSE

	DRU 502 - Student Learning Course Assessment Summary			
DATE = ?				
DRU 502 Entrepreneurship Cohort 6 Term 2 Instructor: Dr. Rick Johnson N = 5;6		Initial "Pre Test" Weighted Average	Final "Post Test" Weighted Average	Difference "Post - Pre"
	Question			
1	I can list the seven sources of innovation.	2.4	3.8	1.4
2	I can list the five principles of innovation	2.2	3.5	1.3
3	I can distinguish between an entrepreneur and someone who starts up a new, small business	3.0	3.7	0.7
4	I can explain how the concepts of systematic entrepreneurship and purposeful innovation apply to new or existing business models	1.6	3.3	1.7
5	I can explain how the seven sources of innovation and the five principles of innovation apply to any business, given enough data.	2.0	3.3	1.3
6	I can analyze and assess new or existing business models as to their viability, relative to Drucker's principles.	2.2	3.2	1
7	I can lead a creative process by using the dynamics of creativity I learned in this course.	2.0	3.5	1.5
8	I can appraise potential opportunities for innovation through everyday social and professional interactions.	2.0	3.5	1.5
9	I understand the complexity of the role of leadership in innovation and entrepreneurship, and have developed my own approach, based on this understanding.	2.2	3.5	1.3
10	I understand and can explain the role of naturally occurring "evolution" in the product design process.	2.8	3.2	0.4
11	I understand, and can provide examples of the dynamic tension between customer-driven and technology-driven innovation	2.0	3.2	1.2
12	I understand and can explain the complex relationship between competitive strategy and entrepreneurial success.	2.0	3.2	1.2
13	I can design ways to be an innovative entrepreneur.	2.0	3.3	1.3
	Total of differences			15.8
	Average of all course differences:			1.22

Below is the survey results of the "post" minus "pre" quantification for two cohorts of students who completed all twelve courses in the MBA program. The benchmark is that at least an increase of one point (on a five point scale of understanding) occurred between the post and the pre measurement.

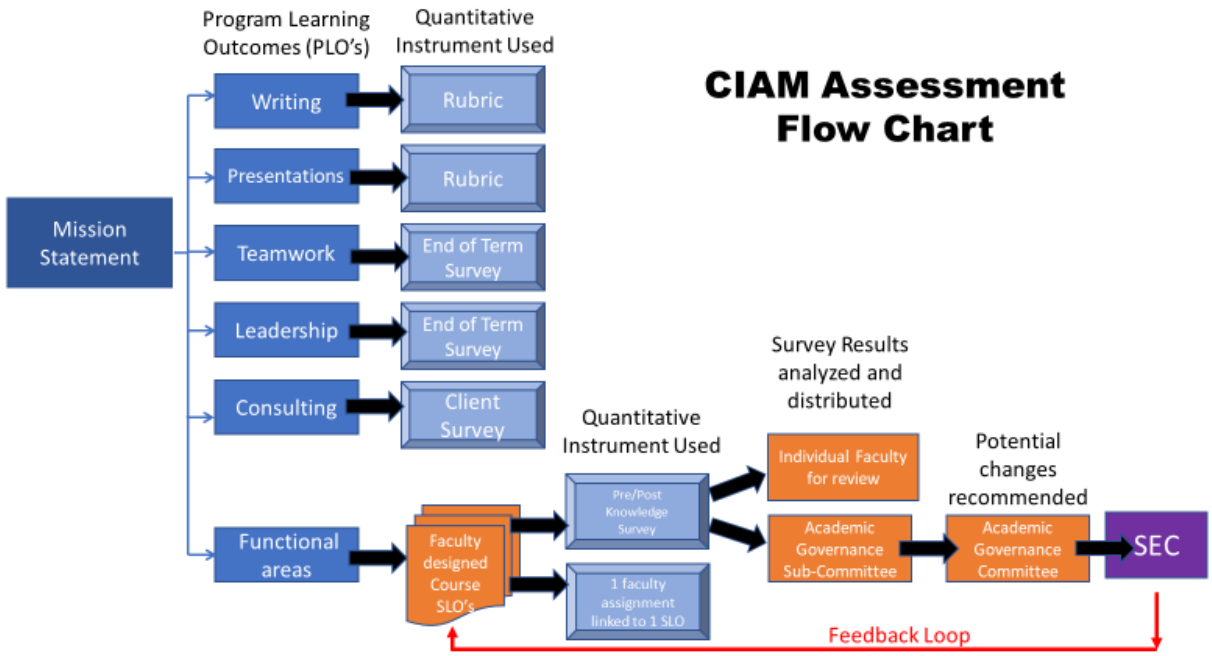
TABLE 2 MBA STUDENT PERCEPTION OF LEARNING

Pre/Post Knowledge Survey Comparative Analysis Summary				
Course	**Cohort 5**	**Achieve Goal? (Yes/No)**	**Cohort 6**	**Achieve Goal? (Yes/No)**
MGT 501 Management & Org. Behavior	**1.6**	**Yes**	**1.51**	**Yes**
IB 501 International Bus. Concepts	**1.4**	**Yes**	**2.13**	**Yes**
ETH 501 Bus. Ethics	**1.4**	**Yes**	**1.56**	**Yes**
DRU 502 Innovation & Entrepreneurship	**1.8**	**Yes**	**1.22**	**Yes**
FIN 501 Corporate Finance	**0.6**	**No***	**1.20**	**Yes**
MGT 511 Strategic Management	**1.6**	**Yes**	**1.04**	**Yes**
DRU 501 Leadership	**1.3**	**Yes**	**1.43**	**Yes**
IS 501 Management of Info. Systems	**1.5**	**Yes**	**1.79**	**Yes**
ACC 501 Accounting	**1.1**	**Yes**	**1.19**	**Yes**
BUS 501 Quantitative Analysis	**1.2**	**Yes**	**1.71**	**Yes**
MKT 501 Marketing Management	**1.3**	**Yes**	**1.30**	**Yes**
OPS 501** Operations Management	**1.4**	**Yes**	**1.68**	**Yes**
The Pre/Post Knowledge weighted average difference has a goal of > 1.0				
*The Finance course had only three students and one was skilled in the finance topic which skewed the results dramatically. The identical survey was analyzed with the removal of the one "knowledgeable" student and the weighted average difference was 1.09 versus 0.6.				

While student perception is not the only quantitative metric to identify student learning, if structured in a survey instrument, the results can provide faculty with an understanding of their effectiveness down to the micro level of an individual lecture. Further, committees of faculty who teach the identical course can share pedagogical techniques that might assist those faculty who could use alternative "tools" to their toolbox of instruction. In the process of program review, poorly performing SLO's can be assessed to consider modifications or replacements for communicating the outcome desired.

The flow chart of this process of the evaluation of the functional areas of a graduate business degree program might look as follows:

CHART 1 ASSESSMENT FLOW CHART



CONCLUSIONS

With numerous techniques and tools available to quantify student learning, going straight to the source – the students – can provide one significant and powerful measure of the perception of learning. Graduate students of business are often focused on obtaining the skills and tools relevant to their future careers and as such, are more discriminating and demanding of instruction that is relevant and applicable to their job settings. Direct feedback from students is an excellent mechanism to provide both students (in a reflective mode) and faculty (in a feedback loop) information regarding effective lesson plans and lecture topic delivery by the faculty [12] [13] [14] [15].

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