Canvas Five Year LMS Accreditation Reporting Using Rubrics and Assignments

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There is a surprisingly large gap between measuring inputs to a program and outputs from that program. Accreditation requirements have added an increasingly burdensome workload to degree-plan and course administration. The ease with which one can design assignments and their corresponding rubrics does not freely translate to assessing student response to those assignments. The challenge is to deploy assessment tools that are easy to understand, administer, deploy, and learn from. This paper focuses on the assessment of assignments evaluated by detailed rubrics. We describe tools and processes that enable us to examine years of data at a granularity not directly supported by our LMS.

Keywords: higher education, canvas, learning management system, accreditation, reporting, rubrics, assignments, student learning objective, student learning outcomes, performance enhancements, performance trajectory, documented improvements, pedagogical tracking, program learning outcomes, automated performance reporting, performance related measurements, consistent reporting, data accumulation, data analyzed, data extract, pivot data, assurance of learning, closed loop reporting, quality improvement, assignment objective evaluation, SACSCOC, AACSB, SACS

INTRODUCTION OF CONCEPT

Colleges and universities are required to document performance enhancements in the pedagogical arena to respond to the increasing scrutiny by state legislatures and accrediting organizations. Accreditation requirements include the systematic establishment of program and student learning outcomes and assessment of the attainment of these. The data collection and reporting effort at the individual instructor level has previously been a barrier to continuous improvement. Our process is an efficient method for any institution to create and measure the attainment of program objectives (POs) and student learning objectives (SLOs). By setting up assignments and selected rubric criteria within the learning management system (LMS) with a simple prefix tag, we can automatically report each of the reported accreditation-related measurements. This methodology has been consistent, measurable, and comparable for five years.
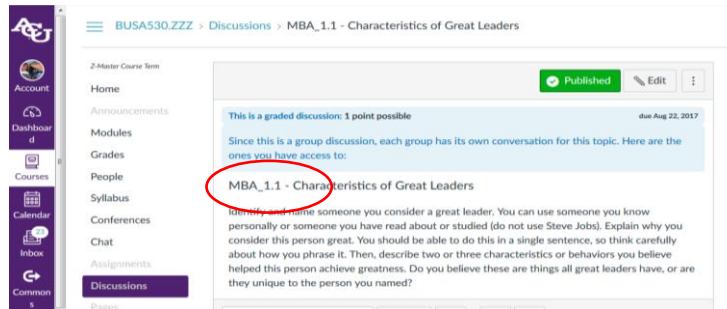
METHODOLOGY

By setting up assignments and rubrics within the Canvas LMS (hereafter referred to as Canvas), or any similar LMS, with a simple prefix, we can automatically create data tables, for accreditation purposes and instructor feedback, for each of the reported accreditation-related measurements. These results were previously calculated and reported manually. See Appendix 1 for a listing of the College of Business Administration graduate program labels used for accreditation reporting.

In our previous proof of concept paper, we identified the benefits of this process (Shepherd, et al, 2019). To review, these benefits were explained as:

1. Automated reporting removes the need for back-end analysis and manual data collection and calculations.
2. Reporting is comparable and consistent, thus removing personal assessment bias.
3. Accumulated data can be analyzed within or between semesters or years to gauge objective trajectory and make corrective actions.
4. Detail level in the analysis can be more profound than when manually reported.
5. Instructors can be as detailed or as simple as they feel necessary in the reporting process.

We explained that Canvas master courses were updated one time with either assignment or rubric criteria level prefix tags using the standardized reporting data codes for each degree program. Application at the assignment level, e.g., MBA_1.1 assignment name is illustrated in Figure 1 (Shepherd, et al, 2019) and rubric level assessment codes are shown in Figure 2 (Shepherd, et al, 2019).

FIGURE 1
ASSIGNMENT LEVEL NAMING CONVENTION

FIGURE 2
RUBRIC CRITERIA LEVEL NAMING CONVENTION

THE REPORTING SYSTEM

Having coded the assignments, we then extracted course data from Canvas (for example, all the MBA classes or single instructor classes) and created a comma-separated value (CSV) file. See Table 1 for the extended fields reported.

TABLE 1
FIELDS REPORTED

Fields	Output	Description
Course ID	967	This is the Canvas Course Number
Course Name	BUSA636	This is the Course Code Identifier
Course Key	1718SP1G_BUSA636-967	This is the Semester Year Course Code Identifier
Year 1	17	This is the Start Semester Year
Year 2	18	This is the Finish Semester Year
Semester	SP	This is the Semester Identifier
Semester Number	1	This is the Sub-Semester Identifier for 7 week courses
Graduate Designation	G	This is the Graduate / Undergraduate Identifier
Login		This is the Student Login
Student		This is the Student Name
Assignment Identification	16398	This is the Canvas Assignment Number
Account Type	MBA	This is the Account Level MBA or MSM
Account Number	4.2	This is the PO or SLO Identifier
Assignment Tag	MBA 4.2	This is the Assignment Tag
Assignment Name	Phoenix Decision Making	This is the Assignment Name
Due Date	2018-03-02T05:59:00Z	This is the Assignment Due Date
Possible Assignment Points	1	This is the Total Points for the Assignment
Rubric ID	_6132	This is the Rubric Identifier
Rubric Points	1.00	This is the Rubric Total Points
Rubric Points Awarded	0.00	This is the Points Awarded for this Rubric Level
Percent	0%	This is the Percent Awarded for this Rubric Level
Student Learning Objective Codes	MBA 4.2	This is the Student Learning Objective Full Code
Rubric Feedback Description		This is the Actual Instructor Feedback for this Rubric Line
SLO Code Description	Students will understand and apply their personal ethical framework to business decisions.	This is the SLO Code Description
PLO Code	MBA 4.0	This is the PLO level associated with this SLO
PLO Code Description	Students will make ethical decisions informed by values and goals that are consistent with relevant laws and Christian principles.	This is the PLO level associated with this Assignment

Note: This field set is an updated and expanded data set compared to our 2019 paper.

The output data tables appear as shown in Table 2 as an Excel importable formatted CSV file.

This output can be reported for a class level or any combination of classes. This allowed us to generate one report for all coded MBA courses. Since the extract criteria are definable, reports can be generated at the school or college level.

TABLE 2
OUTPUT DATA TABLE

Course ID	Course Name	Course Key	Year 1	Year 2	Semester	Semester Number	Graduate Designation	Login	Student	Assignment Identification	Account Type	Account Number	Assignment Tag	Assignment Name	Due Date	Possible Assignment Points	Rubric ID	Rubric Points	Rubric Points Awarded	Percent	Student Learning Objective Codes	Rubric Feedback Description	SLO Code Description	PLO Code	PLO Code Description
967	BUSA636	1718SP1G_BUSA636-967	17	18	SP	1	G		Hidden	16398	MBA	4.2	MBA 4.2	Phoenix Decision Making	2018-03-02T05:59:00Z	1	_6132	1.00	0.00	0%	MBA 4.2		Students will understand and apply their personal ethical frameworkto business decisions.	MBA 4.0	Students will make ethical decisions informed by values and goals that are consistent with relevant laws and Christian principles.
967	BUSA636	1718SP1G_BUSA636-967	17	18	SP	1	G	928	Hidden	16390	MBA	1.2	MBA 1.2	Phoenix Stress	2018-01-26T05:59:00Z	1	_607	0.10	0.10	100%	MBA 1.2		Students will recognize and work within elements of organizational culture.	MBA 1.0	Students will practice effective leadership of themselves, their teams, their organizations, and their external constituents.
967	BUSA636	1718SP1G_BUSA636-967	17	18	SP	1	G	928	Hidden	16390	MBA	1.2	MBA 1.2	Phoenix Stress	2018-01-26T05:59:00Z	1	_6180	0.10	0.10	100%	MBA 1.2		Students will recognize and work within elements of organizational culture.	MBA 1.0	Students will practice effective leadership of themselves, their teams, their organizations, and their external constituents.
967	BUSA636	1718SP1G_BUSA636-967	17	18	SP	1	G	928	Hidden	16390	MBA	1.2	MBA 1.2	Phoenix Stress	2018-01-26T05:59:00Z	1	_8266	0.20	0.20	100%	MBA 1.2		Students will recognize and work within elements of organizational culture.	MBA 1.0	Students will practice effective leadership of themselves, their teams, their organizations, and their external constituents.
967	BUSA636	1718SP1G_BUSA636-967	17	18	SP	1	G	928	Hidden	16390	MBA	1.2	MBA 1.2	Phoenix Stress	2018-01-26T05:59:00Z	1	_9256	0.20	0.20	100%	MBA 1.2		Students will recognize and work within elements of organizational culture.	MBA 1.0	Students will practice effective leadership of themselves, their teams, their organizations, and their external constituents.
967	BUSA636	1718SP1G_BUSA636-967	17	18	SP	1	G	1047	Hidden	16390	MBA	1.2	MBA 1.2	Phoenix Stress	2018-01-26T05:59:00Z	1	_4502	0.20	0.18	90%	MBA 1.2		Students will recognize and work within elements of organizational culture.	MBA 1.0	Students will practice effective leadership of themselves, their teams, their organizations, and their external constituents.

Once the five years of data was in Excel, simple pivot tables were created. See Table 3 – Pivot Data Output For All Classes as an example. Data collection started in the second seven-week fall semester of 2017 and ran through the current year and semester.

TABLE 3
PIVOT DATA OUTPUT FOR ALL CLASSES

Course Name	(All)											
Login	(Multiple Items)	average percent score for all courses, all assignments by time and by SLO. The one anomaly for MBA 3.3 had very low record count so is not a big deal										
Assignment Name	(All)											
Average of Percent	**Column Labels**											
Row Labels	**MBA 1.1**	**MBA 1.2**	**MBA 1.3**	**MBA 2.1**	**MBA 2.2**	**MBA 3.1**	**MBA 3.2**	**MBA 3.3**	**MBA 4.2**	**MBA 4.3**	**Grand Total**
⊟17	**90%**	**94%**	**93%**	**85%**	**93%**				**89%**		**92%**
⊟FA	**92%**	**93%**	**93%**	**90%**	**93%**				**89%**		**93%**
2	92%	93%	93%	90%	93%				89%		93%
⊟SP	**89%**	**94%**	**93%**	**84%**	**93%**				**90%**		**91%**
1	88%	95%	93%	83%	93%				90%		92%
2	91%	92%	92%	87%	91%				86%		91%
⊟18	**96%**	**94%**	**94%**	**95%**	**94%**	**93%**	**89%**		**93%**	**96%**	**92%**
⊟FA	**98%**	**96%**	**95%**	**93%**	**92%**	**92%**	**90%**		**90%**	**98%**	**93%**
2	98%	96%	95%	93%	92%	92%	90%		90%	98%	93%
⊟SP	**95%**	**93%**	**94%**	**94%**	**93%**	**93%**	**90%**		**93%**	**94%**	**92%**
1	94%	92%	94%	93%	93%	92%	90%		93%	91%	92%
2	98%	97%	90%	98%	95%	98%	85%		92%	98%	91%
⊟SU	**97%**	**97%**	**96%**	**96%**	**95%**	**94%**	**86%**		**91%**	**98%**	**92%**

APPLICATION

The level of granularity, consistency, and accuracy of this methodology improved the quality of our reporting for accreditation purposes for the Association to Advance Collegiate Schools of Business (AACSB), and the Commission on Colleges of the Southern Association of Colleges and Schools (SACSCOC) at the university level.

DATA ANALYSIS AND FINDINGS

We ran the data extraction program covering five years. The output was then imported into Excel pivot tables. These pivot tables have allowed us to examine the results and generate the following findings.

Table 4 shows the POs and SLOs for the Master of Business Administration (MBA) and Master of Science in Management (MSM) programs at ACU. Table 4 also is a curriculum map in that it shows the core required courses in which assessments are performed for the various SLOs.

For purposes of this paper, we used a subset of the core required courses taught by the authors:

- BUSA 084 Economics Boot Camp - The focus of this course is the economics of the firm and industry. Topics include supply and demand, revenue and costs, profits, consumer behavior, markets, the price system, the role of government, poverty, comparative economic systems, and selected concepts of business ethics.
- BUSA 530 Leadership -The focus of this course is an overview of how individuals manage and lead themselves and others in business. Topics include theoretical and practical models of leadership, ethical issues of leadership, and forms of influence within groups and corporations. Students will develop and apply a personal leadership framework. This is the first course taken when entering the MBA and MSM programs.
- BUSA 636 Organizational Behavior – The focus of this course is to address individual, group, and organizational variables that inhibit or facilitate effective organizational functioning. Topics may include rewards, motivation, leadership, culture, decision-making, and ethics. This is a required course for all MBA students.

Those cells shaded light blue in Table 4 show which of the SLOs are assessed in each of the program's courses. Cells shaded dark grey on levels PO# 1, PO# 2, PO# 3, and PO# 4 show which POs are assessed in each course. White cells are excluded from assessment in each course. Data was collected from the Canvas database for a period of 20, 7-week terms beginning with the Fall 2, 2017 term. The purpose of this analysis was to explore the trends in various assessments used (assignments or rubric line items of assignments mapped to specific SLOs using tags as previously described) in these selected courses.

TABLE 4
CURRICULUM MAP OF POs AND SLOs VERSUS CORE REQUIRED COURSES

MBA / MSM Curriculum Map	BUSA 530 Leadership	BUSA 550 Foundations of Analytics	BUSA 554 Accounting and Finance for Managers	BUSA 636 Organizational Behavior	BUSA 652 Operations and IT Management	BUSA 656 Strategic Marketing	BUSA 670 Managerial Decision Making (*)	BUSA 678 Business Law and Ethics	BUSA 674 Innovation (*)
PO #1: Leadership: *Graduates will practice effective leadership of themselves, their teams, their organizations, and their external constituents.*	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey
1.1 Students will understand leadership processes and develop a personal leadership approach.	Blue			Blue					Blue
1.2 Students will recognize and work within elements of organizational culture.	Blue								
1.3 Students will employ teams and cooperative efforts inside and outside organizations to achieve desired outcomes.	Blue			Blue	Blue	Blue			
PO #2: Organizational Innovation: *Graduates will lead organizational innovation efforts through effective integration of strategy with appropriate organizational processes and technologies.*					Grey	Grey	Grey		Grey
2.1 Students will apply strategic tools to position their organizations for a changing marketplace.					Blue	Blue	Blue		Blue
2.2 Students will design and deploy organizational processes and technologies to improve organizational performance.					Blue	Blue	Blue		Blue
PO #3: Data Informed Decision-Making: *Graduates will engage in data informed decision making.*		Grey					Grey		
3.1 Students will utilize organizational practices and tools to collect, analyze, and use data to make decisions across a wide array of topics.		Blue		Blue			Blue		
3.2 Students will report findings clearly and with appropriate recognition of the findings' limitations.		Blue					Blue		
PO #4: Faith and Ethics: *Graduates will make ethical decisions informed by values and goals that are consistent with relevant laws and Christian principles.*	Grey							Grey	
4.1 Students will understand fundamental principles of business law in the United States.								Blue	
4.2 Students will understand and apply their personal ethical framework to business decisions.					Blue	Blue		Blue	
4.3 Students will reflect on their vocation in the context of their personal values and goals.	Blue							Blue	
Note (*) BUSA 670 Managerial Decision Making and BUSA 674 Innovation are not required core courses for the MSM									

Grey = Assessed at PO Level, Blue = Assessed at SLO level

Table 5 provides a summary of the average student scores for each of the 20 terms for each SLO assessed in these courses. One immediate reaction to the data in Table 5 was to explore the low scores for the MBA 3.3 SLO in the Spring 1, 2020 term. An examination of the student assignment record counts shown in Table 6 showed a very small sample size for the average score for this SLO in this term, so no concern seemed warranted. Another observation from Table 5 is that the average of all the applicable SLO scores was rather constant across this 20-term time frame. A final observation from Table 6 is the large number (over 130,000) assessments of individual student scores related to various SLOs over this time frame, all of which were done with no recurring effort from the course instructor once the initial effort in tagging the various assignment and rubric line-item descriptions is done in the master Canvas course.

TABLE 5
SUMMARY OF AVERAGE SCORES BY TIME AND SLOs FOR SELECTED COURSES

Average of Percent Row Labels	MBA 1.1	MBA 1.2	MBA 1.3	MBA 2.1	MBA 2.2	MBA 3.1	MBA 3.2	MBA 3.3	MBA 4.2	MBA 4.3	Grand Total
17	90%	94%	93%	85%	93%				89%		92%
FA	92%	93%	93%	90%	93%				89%		93%
2	92%	93%	93%	90%	93%				89%		93%
SP	89%	94%	93%	84%	93%				90%		91%
1	88%	95%	93%	83%	93%				90%		92%
2	91%	92%	92%	87%	91%				86%		91%
18	96%	94%	94%	95%	94%	93%	89%		93%	96%	92%
FA	98%	96%	95%	93%	92%	92%	90%		90%	98%	93%
2	98%	96%	95%	93%	92%	92%	90%		90%	98%	93%
SP	95%	93%	94%	94%	93%	93%	90%		93%	94%	92%
1	94%	92%	94%	93%	93%	92%	90%		93%	91%	92%
2	98%	97%	90%	98%	95%	98%	85%		92%	98%	91%
SU	97%	97%	96%	96%	95%	94%	86%		91%	98%	92%
1	97%	96%	95%	94%	92%	91%	85%		88%	99%	91%
2	98%	98%	97%	97%	96%	96%	87%		93%	98%	92%
19	95%	92%	91%	93%	93%	93%	89%	100%	92%	96%	91%
FA	91%	95%	90%	94%	91%	91%	87%		90%	93%	90%
1	85%	94%	90%	93%	89%	91%	91%		89%	88%	90%
2	99%	97%	90%	96%	94%	92%	84%		91%	97%	90%
SP	96%	90%	92%	96%	93%	93%	89%		92%	98%	91%
1	95%	90%	92%	96%	93%	93%	89%		92%	98%	91%
2	99%	96%	79%	97%	90%	96%	89%		90%	98%	92%
SU	98%	91%	90%	88%	93%	92%	91%	100%	92%	99%	92%
1	100%	96%	91%	86%	95%	94%	92%	100%	97%	99%	95%
2	97%	90%	90%	89%	93%	91%	91%	100%	91%	99%	92%
20	93%	91%	91%	91%	92%	91%	90%	99%	89%	92%	91%
FA	92%	93%	90%	94%	92%	92%	91%	100%	90%	92%	91%
1	87%	93%	89%	94%	90%	88%	93%		88%	86%	90%
2	99%	93%	92%	94%	94%	96%	88%	100%	93%	99%	93%
SP	92%	91%	92%	89%	92%	91%	89%	94%	86%	88%	90%
1	91%	90%	92%	88%	92%	90%	→	50%	87%	86%	90%
2	97%	93%	89%	90%	92%	92%	83%	100%	85%	95%	89%
SU	95%	91%	91%	92%	92%	92%	90%	100%	91%	99%	92%
1	99%	95%	92%	90%	93%	98%	88%	100%	92%	99%	93%
2	94%	90%	91%	93%	92%	91%	91%	100%	91%	98%	92%
Grand Total	93%	92%	92%	91%	93%	92%	89%	99%	91%	94%	91%

TABLE 6
RECORD COUNT OF INDIVIDUAL STUDENT PERFORMANCE SCORES ON ASSIGNMENTS MAPPED TO SLOs IN SELECTED COURSES

Count of Percent Row Labels	MBA 1.1	MBA 1.2	MBA 1.3	MBA 2.1	MBA 2.2	MBA 3.1	MBA 3.2	MBA 3.3	MBA 4.2	MBA 4.3	Grand Total
17	3,906	1,468	4,741	398	3,539				1,628		15,680
FA	863	77	1,076	70	962				126		3,174
2	863	77	1,076	70	962				126		3,174
BUSA530	518	77	196	70	187				126		1,174
BUSA636	345		880		775						2,000
SP	3,043	1,391	3,665	328	2,577				1,502		12,506
1	2,340	1,281	3,225	240	2,312				1,322		10,720
BUSA530	1,928	257	1,032	240	710				434		4,601
BUSA636	412	1,024	2,193		1,602				888		6,119
2	703	110	440	88	265				180		1,786
BUSA530	703	110	440	88	265				180		1,786
18	2,959	3,356	4,137	494	2,497	2,730	15,577		2,348	1,150	35,248
FA	308	210	200	73	94	202	1,030		143	197	2,457
2	308	210	200	73	94	202	1,030		143	197	2,457
BUSA084	69			29		86	146			45	375
BUSA530	308	210	200		94	116	884		143	152	2,082
SP	1,757	2,466	3,105	280	1,918	1,962	11,313		1,679	522	24,801
1	1,372	2,239	2,873	209	1,780	1,746	9,904		1,499	293	21,915
BUSA084	64			24		72	128			240	328
BUSA530	500	281	309	72	182	192	1,131		238	253	3,108
BUSA636	872	1,944	2,564	113	1,598	1,482	8,645		1,261		18,479
2	385	227	232	71	138	216	1,208		180	229	2,886
BUSA084	56			19		62	110			35	282
BUSA530	385	171	232	52	138	154	1,098		180	194	2,604
SU	894	680	832	141	485	566	3,435		526	431	7,990
1	362	209	221	63	126	183	1,160		173	212	2,709
BUSA084	40			15		45	80			25	205
BUSA530	362	169	221	48	126	138	1,080		173	187	2,504
2	532	471	611	78	359	383	2,275		353	219	5,281
BUSA084	24			9		23	46			15	117
BUSA530	415	188	262	53	144	157	1,166		183	204	2,772
BUSA636	117	259	349	16	215	203	1,063		170		2,392
19	3,078	2,810	3,451	497	2,177	2,338	13,501	30	2,215	1,236	29,313
FA	1,031	531	612	163	356	467	2,721		470	567	6,918
1	541	283	321	90	192	251	1,282		248	295	3,503
BUSA084		40		15		45	20			220	198
BUSA530	541	243	321	75	192	206	1,204		248	275	3,305
2	490	248	291	73	164	216	1,439		222	272	3,415
BUSA084		30		11		36	62			20	159
BUSA530	490	218	291	62	164	180	1,377		222	252	3,256
SP	1,262	1,547	2,111	207	1,306	1,285	6,039		1,198	410	15,365
1	1,019	1,402	2,032	162	1,239	1,154	5,944		1,095	265	13,712
BUSA084		24		9		27	46			10	116
BUSA530	491	223	289	70	144	182	1,388		233	255	3,275
BUSA636	528	1,155	1,743	83	1,095	945	3,910		862		10,321
2	243	145	79	45	67	131	695		103	145	1,653
BUSA084		32		12		36	64			20	164
BUSA530	243	113	79	33	67	95	631		103	125	1,489
SU	785	732	728	127	515	566	2,741	30	547	259	7,030
1	265	161	49	40	64	83	618	2	150	10	1,544
BUSA084		22		8		23	42			10	105
BUSA530	265	139	49	32	64	60	596	2	150	92	1,449
2	520	571	679	87	451	483	2,103	28	397	157	5,476
BUSA084		32		10		37	34			20	101
BUSA530	358	176	111	55	140	157	826	28	159	137	2,147
BUSA636	162	395	568	22	311	289	1,243		238		3,228
20	5,724	5,228	6,514	942	3,354	4,034	18,564	150	3,094	2,674	50,278
FA	1,842	1,038	1,094	328	654	930	4,602	50	848	1,032	12,418
1	1,114	592	660	186	396	526	2,654		520	610	7,258
BUSA084		80		30		90	160			50	410
BUSA530	1,114	512	660	156	396	436	2,494		520	560	6,848
2	728	446	434	142	258	404	1,948	50	328	422	5,160
BUSA084		112		42		126	224			70	574
BUSA530	728	334	434	100	258	278	1,724	50	328	352	4,586
SP	2,584	2,858	3,512	398	1,630	1,924	8,639	32	1,238	1,300	23,904
1	2,184	2,578	3,276	308	1,490	1,662	7,→	4	1,052	824	20,850
BUSA084		30				66	140			40	350
BUSA530	1,340	634	782	210	406	512	3,148	4	680	784	8,500
BUSA636	844	1,870	2,494	68	1,084	1,084	4,184		372		12,000
2	400	280	236	90	140	262	2,156	28	186	276	3,054
BUSA084		100		38		108	200			70	516
BUSA530	400	180	236	52	140	154	956	28	186	206	2,538
SU	1,298	1,332	1,908	216	1,070	1,180	5,334	68	1,008	542	13,956
1	348	208	140	72	120	206	934	24	130	224	2,406
BUSA084		58		24		72	120			40	314
BUSA530	348	150	140	48	120	134	814	24	130	184	2,092
2	950	1,124	1,768	144	950	974	4,400	44	878	318	11,550
BUSA084		16		6		18	32			10	82
BUSA530	550	264	352	88	176	242	1,404	44	264	308	3,692
BUSA636	400	844	1,416	50	774	714	2,964		614		7,776
Grand Total	15,667	12,862	18,843	2,331	11,567	9,082	45,642	180	9,285	5,060	130,519

EXPLORATION OF COURSE-LEVEL DETAILS

The following table was used to explore differences in SLO assessment results for BUSA 636 Organizational Behavior as our primary example. Table 7 summarizes the trends in scores for the BUSA 636 Organizational Behavior course.

Using this class as a drill-down example we see the average percent score for just BUSA 636 Organizational Behavior, all assignments by time and by SLO. Two of the lines on the chart suggest the need to investigate MBA 1.2 to see why the decline, and MBA 3.2 to explore the increase over time.

TABLE 7
AVERAGE SCORES BY TIME AND BY SLOs FOR BUSA 636

Average of Percent Row Labels	Column Labels MBA 1.1	MBA 1.2	MBA 1.3	MBA 2.1	MBA 2.2	MBA 3.1	MBA 3.2	MBA 4.2	Grand Total
⊟17	93%	95%	94%		94%			94%	94%
⊟FA	92%		94%		94%				93%
2	92%		94%		94%				93%
⊟SP	93%	95%	93%		94%			94%	94%
1	93%	95%	93%		94%			94%	94%
⊟18	97%	93%	95%	95%	94%	93%	89%	94%	92%
⊟SP	97%	93%	94%	94%	94%	92%	90%	94%	92%
1	97%	93%	94%	94%	94%	92%	90%	94%	92%
⊟SU	100%	98%	99%	100%	96%	99%	85%	98%	92%
2	100%	98%	99%	100%	96%	99%	85%	98%	92%
⊟19	91%	88%	92%	94%	93%	92%	90%	93%	91%
⊟SP	91%	88%	92%	94%	93%	93%	89%	94%	91%
1	91%	88%	92%	94%	93%	93%	89%	94%	91%
⊟SU	90%	87%	91%	90%	92%	90%	91%	91%	91%
2	90%	87%	91%	90%	92%	90%	91%	91%	91%
⊟20	91%	90%	92%	92%	93%	89%	92%	90%	91%
⊟SP	93%	91%	93%	91%	94%	90%	91%	89%	92%
1	93%	91%	93%	91%	94%	90%	91%	89%	92%
⊟SU	88%	88%	91%	92%	92%	88%	93%	90%	91%
2	88%	88%	91%	92%	92%	88%	93%	90%	91%
Grand Total	**93%**	**91%**	**93%**	**93%**	**93%**	**91%**	**90%**	**93%**	**92%**

Remembering that MBA 1.2 is "Working within an organization's culture" and MBA 3.2 is "Students will report findings clearly and with appropriate recognition of the finding's limitation", we can begin to determine why there may be these data trends. The MBA and MSM programs have one unique situation that occurs within the BUSA 636 Organizational Behavior class. Other university graduate programs can offer the BUSA 636 class as an elective. This means that other graduate programs can enroll students in the business class each 7-week semester. This is true for BUSA 636 where Organizational Human Resource Development students can take this class. Knowing this, we can acknowledge that students outside of the College of Business and having some traditionally different backgrounds are participating in classes at different times resulting in variation in the data throughout the semesters. Their course requirements and performance regimens may exhibit a learning curve on certain performance-based SLOs (MBA 1.2 as an example). The MBA 3.2 increase results are understandable as the MBA and MSM programs have focused on improved business writing and communication techniques over these last few years. Writing and communication requirements are inherently consistent across all graduate programs at ACU. The data, along with the instructor's experience and knowledge of each class allows us to interpret the results to be reported.

Now, we demonstrate the process for identifying assessments (specific assignments mapped to specific SLOs) that might constitute worthwhile assignments but, from an assessment perspective, yield little valuable information and might inflate the performance scores. TABLE 8 summarizes the average scores by assignment and by SLO, and TABLE 9 summarizes the standard deviations in these same scores. Tables 8 and 9 are heat maps. The lower the Average Score / Standard Deviation, the hotter a cell will appear. The

higher the Average Score / Standard Deviation, the cooler a cell will appear. Cell color ranges are Red for hot to Green for cold.

It is suggested that any assignment SLO mappings with very high average scores and low standard deviations are candidates to omit from future assessments because they don't provide much useful information.

TABLE 8
AVERAGE SCORES BY ASSIGNMENT AND SLO FOR SELECTED COURSES

Average of Percent	Column Labels										Grand Total
Row Labels	MBA 1.1	MBA 1.2	MBA 1.3	MBA 2.1	MBA 2.2	MBA 3.1	MBA 3.2	MBA 3.3	MBA 4.2	MBA 4.3	
Consider MSM Program Objectives			100%								100%
Course Project Step 1: Character Selection		99%									99%
Finding Your Leadership Style	96%	97%					91%				94%
Followers: Passive Sheep or Vital Team Members?	95%	98%	96%				91%				95%
Homework: Fight!	96%	85%	92%				87%				91%
In-Depth: Exploring Personality					96%		90%				95%
Maximizing Utility						98%	89%				95%
MBA 3.2 - Synchronous Session: Week #1							100%				100%
Meet Your MBA Classmates and Faculty			100%								100%
Meet Your MSM Classmates and Faculty			100%								100%
Nice Guys Finish.First?	95%						88%		99%	96%	93%
Operating With Limited Resources						97%	81%				92%
Synchronous Session: Week #2							100%				100%
Synchronous Session: Week #5							100%				100%
Synchronous Session: Week #6								100%			100%
Who You Hire Tells Me Who You Are					95%		91%		97%		94%
Grand Total	93%	92%	92%	91%	93%	92%	89%	99%	91%	94%	91%

TABLE 9
STANDARD DEVIATION (<.1) OF SCORES BY ASSIGNMENT AND BY SLO FOR SELECTED COURSES

StdDev of Percent	Column Labels										Grand Total
Row Labels	MBA 1.1	MBA 1.2	MBA 1.3	MBA 2.1	MBA 2.2	MBA 3.1	MBA 3.2	MBA 3.3	MBA 4.2	MBA 4.3	
Consider MSM Program Objectives			0.00								0.00
Course Project Step 1: Character Selection		0.10									0.10
Finding Your Leadership Style	0.14	0.09					0.21				0.16
Followers: Passive Sheep or Vital Team Members?	0.16	0.08	0.16				0.20				0.16
Homework: Fight!	0.10	0.17	0.18				0.20				0.17
In-Depth: Exploring Personality					0.08		0.18				0.12
Maximizing Utility						0.09	0.24				0.16
MBA 3.2 - Synchronous Session: Week #1							0.00				0.00
Meet Your MBA Classmates and Faculty			0.00								0.00
Meet Your MSM Classmates and Faculty			0.00								0.00
Nice Guys Finish.First?	0.16						0.22		0.08	0.15	0.18
Operating With Limited Resources						0.08	0.30				0.20
Synchronous Session: Week #2							0.00				0.00
Synchronous Session: Week #5							0.00				0.00
Synchronous Session: Week #6								0.00			0.00
Who You Hire Tells Me Who You Are					0.14		0.16		0.10		0.14
Grand Total	0.18	0.18	0.18	0.19	0.16	0.18	0.23	0.11	0.23	0.17	0.20

Possible Academic Instructional Interventions

TABLE 10 highlights those specific assessments (an assignment or rubric line item mapped to a particular SLO) that, because of a very high average score (>.95) and low variation (standard deviation < .1), are not value-added with respect to assessment and the high average scores tend to inflate the overall average scores for the SLOs. In an upcoming course redesign, the instructor should consider omitting these highlighted assessments. This is easily accomplished by simply removing the tag in the assignment or rubric line-item description in the Canvas master course or by removing the assignment completely from the course.

TABLE 10
SUGGESTED ASSESSMENTS TO DROP BECAUSE OF HIGH AVERAGE SCORES AND LOW STANDARD DEVIATIONS

Average of Percent	Column Labels									
Row Labels	MBA 1.1	MBA 1.2	MBA 1.3	MBA 2.1	MBA 2.2	MBA 3.1	MBA 3.2	MBA 3.3	MBA 4.2	MBA 4.3
Consider MSM Program Objectives	-	-	Omit?	-	-	-	-	-	-	-
Course Project Step 1: Character Selection	-	Omit?	-	-	-	-	-	-	-	-
Finding Your Leadership Style	-	Omit?	-	-	-	-	-	-	-	-
Followers: Passive Sheep or Vital Team Members?	-	Omit?	-	-	-	-	-	-	-	-
Homework: Fight!	Omit?	-	-	-	-	-	-	-	-	-
In-Depth: Exploring Personality	-	-	-	-	Omit?	-	-	-	-	-
Maximizing Utility	-	-	-	-	-	Omit?	-	-	-	-
MBA 3.2 - Synchronous Session: Week #1	-	-	-	-	-	-	Omit?	-	-	-
Meet Your MBA Classmates and Faculty	-	-	Omit?	-	-	-	-	-	-	-
Meet Your MSM Classmates and Faculty	-	-	Omit?	-	-	-	-	-	-	-
Nice Guys Finish.First?	-	-	-	-	-	-	-	-	Omit?	-
Operating With Limited Resources	-	-	-	-	-	Omit?	-	-	-	-
Synchronous Session: Week #2	-	-	-	-	-	-	Omit?	-	-	-
Synchronous Session: Week #5	-	-	-	-	-	-	Omit?	-	-	-
Synchronous Session: Week #6	-	-	-	-	-	-	-	Omit?	-	-
Who You Hire Tells Me Who You Are	-	-	-	-	-	-	-	-	Omit?	-

TABLE 11 highlights those specific assessments that because of lower average scores (in this example, average scores < .85) that might merit investigation by the instructor to determine why the scores are lower than for other assessments. The reasons could vary, including inadequate instruction or a poorly designed assignment.

TABLE 11
ASSESSMENTS WITH THE LOWEST AVERAGE SCORE (< .85, >.85 HIDDEN)

Average of Percent	Column Labels									
Row Labels	MBA 1.1	MBA 1.2	MBA 1.3	MBA 2.1	MBA 2.2	MBA 3.1	MBA 3.2	MBA 3.3	MBA 4.2	MBA 4.3
Characteristics of Great Leaders	-	-	-	-	-	-	0.79	-	-	-
Course Reflection	-	-	-	-	-	-	0.85	-	-	-
Does Doing Right Equate to Doing Well?	-	-	-	-	-	-	-	-	0.84	-
Group Assignment: Managing Managers and Leading Leaders	-	-	0.70	-	-	-	-	-	-	-
Homework: Fight!	-	0.85	-	-	-	-	-	-	-	-
Homework: Leadership Theories	-	-	-	-	-	-	0.82	-	-	-
In-Depth: The Challenge of Cultural Change	-	-	-	-	-	-	0.85	-	-	-
Job, Career, and Vocation	-	-	-	-	-	-	0.83	-	-	-
Operating With Limited Resources	-	-	-	-	-	-	0.81	-	-	-
Phoenix Ethics and Values: Water	-	-	-	-	-	-	0.83	-	-	-
Portfolio: Personal Leadership Philosophy	-						0.83	-	-	-
Steve Jobs: After Steve	-	-	-	-	0.81	-	-	-	-	-
The Challenge of Global Poverty	-	-	-	-	-	-	0.84	-	-	-
The Learning Organization	-	-	0.84	-	-	-	-	-	-	-
Week 4 Meeting: Ask Me Anything (AMA)	0.83	-	-	-	-	-	-	-	-	-
Women and Men As Leaders	0.76	-	-	-	-	-	-	-	0.78	-

As an example, we will select the assignment "Portfolio: Personal Leadership Philosophy" from TABLE 11 where we see a low average score of 83%, and drill down into possible reasons why this outcome may be significant. One important step in BUSA 530 Leadership is the development of a personal leadership philosophy. This outcome, in combination with SLO 3.2 "Student will report findings clearly and with appropriate recognition of the finding's limitations," may indicate that the student is having difficulty in clearly expressing in words their philosophy. The instructor could decide to focus on resolving this deficiency by modification of the content delivery or by aiding in ways to express the student's philosophy clearly.

TABLE 12 highlights those specific assessments that because of higher variation in the score (in this example, standard deviations > .3) that might merit investigation by the instructor to determine why the scores exhibit more variation than other assessments. The variation could either come from trend variation

over time from semester to semester or else come from variation in student performance within given terms. In either case, the instructor should attempt to ascertain the reasons for the variation.

TABLE 12
ASSESSMENTS WITH THE HIGHEST VARIATION IN SCORES
(STANDARD DEVIATION > .3, <.3 HIDDEN)

Average of Percent Row Labels	MBA 1.1	MBA 1.2	MBA 1.3	MBA 2.1	MBA 2.2	MBA 3.1	MBA 3.2	MBA 3.3	MBA 4.2	MBA 4.3
Characteristics of Great Leaders	-	-	-	-	-	-	0.34	-	-	-
Course Reflection	-	-	-	-	-	-	0.35	-	-	-
Does Doing Right Equate to Doing Well?	-	-	-	-	-	0.32	-	-	0.34	-
Operating With Limited Resources	-	-	-	-	-	-	0.30	-	-	-
Phoenix Ethics and Values: Water	-	-	-	-	-	-	0.35	-	-	-
Phoenix Motivation	-	-	-	-	-	-	0.30	-	-	-
Phoenix Teamwork	-	0.31	-	-	-	-	-	-	-	-
The Challenge of Global Poverty	-	-	-	-	-	-	0.30	-	-	-
The Learning Organization	-	-	0.34	-	-	-	-	-	-	-
Week 1 Meeting Participation	-	-	0.32	-	-	-	-	-	-	-
Week 2 Meeting Participation	-	-	0.30	-	-	-	-	-	-	-
Week 4 Meeting: Ask Me Anything (AMA)	0.38	-	-	-	-	-	-	-	-	-
Week 6 Meeting Participation	-	-	0.35	-	-	-	-	-	-	-
Women and Men As Leaders	0.42	-	-	-	-	-	-	-	0.41	-

An examination of the results in TABLE 12 shows the instructor those assignments where he or she may determine if student performance needs to be improved. The variation may also be due to the type of assignment and the grading method assigned to that assignment. A good example is those assignments where the results were recorded for Weekly Meeting Participation. This is either an "On or Off" grade of one or zero. The outcome is based more on attendance "Yes" rather than a measure of mastery of a topic.

We have two assignments in the MBA 1.0 Effective Leadership area, seven assignments in the 3.0 Data Informed decision-making area (Writing, APA formatting, and Data Analysis), and two assignments in the 4.0 Faith and Ethics area that need addressing. From an instructor perspective, the authors see that students have typically had difficulty in expressing clearly (in a required format) the content requested in answer to certain prompts. Classroom pedagogy can and should be modified with regards to these assignments to focus on improved performance.

In a future iteration of analysis development, the authors plan to attempt to automate this process. Using an Access Database rather than CSV Excel files, queries will be developed to allow users to enter analysis parameters to narrow down the course analysis.

ACCREDITATION REQUIREMENTS

The AACSB accreditation process requires a review every five years. As part of this process, standard 8 (AACSB, 2018) specifies that there needs to be an assurance of learning in place to gauge the impact of the program in place. This process must be systematic and measurable. We believe our process goes above and beyond and fulfills the requirements of standard 8.

Standard 8 reads as follows:

> *"The assurance of learning process is designed to ensure systematic, continuous improvement of curriculum. Peer review teams will seek evidence that shows learning goals for each degree program are in place. Generally, some commonly observed best practices of mature assurance of learning programs include four to eight learning goals for each degree program and assessment of the objectives related to each learning goal twice, and closing the loop once during the review cycle.*

> *Closing the loop is defined as making appropriate changes in the curriculum based on assessment results. Results of the assessment should be documented and available for peer*

review teams upon request. The assessment processes and results should lead to documented continuous improvement in curriculum." (AACSB, 2018)

Because our process is systematic and continuous, we can take these measurements at any time during the school year or semester and adjust as needed.

Identification of stakeholder requirements, implementation of processes to meet those requirements, assessment, and appropriate corrective action (also known as "closing the loop") is fundamental to any effective quality management system in any context.

An effective assurance of learning system must provide a systematic approach for course instructors to collect data and report evaluations (rubric-based skill level evaluations, applicable grades, etc.) for assignments or exams, which directly relate to each learning outcome. Besides numerical feedback, instructors should also provide comments on any issues observed. The college must then evaluate the assessment results and formulate improvement plans as needed, either at the course level or at a higher programmatic level. This process allows these requirements to be carried out.

LITERATURE SEARCH

Common denominators in all of the literature are the need to ease and systematize data collection to ensure the sustainability of the assessment process. Our methodology addresses these requirements as follows:

a. It is programmatically organized to ensure the comparability of output and process.
b. The software application can be run on a scheduled or ad-hoc basis.
c. The software application uses standardized "tags" linking learning objectives at the university, school, department, class, student, assignment, and rubric criteria levels.
d. The software application should be executed at least once during each semester, usually during the final grading period. If the cycle is run each semester within a five-year measurement cycle, there are at least ten data points for objective measurement and analysis. Summer sessions or non-traditional semester cycles are handled through the same reporting methods. Proactive instructors can use this process to measure within each semester how the class or students measure on the performance objectives scale.
e. By using comparable tag codes, each coded objective can be compared across or within measurement cycles.
f. Data storage and archives allow outputs to be stored across measurement cycles. With LMS classes being archived each year, the system also provides for data cycles to be re-examined should there be a need to re-measure or re-code objectives for proof of improvement. Accumulation of data thus allows for a single measurement of any number of years of data for each learning objective.

FINALLY, "THERE'S THE RUBRIC RUB"

A major benefit of a detailed rubric is that it helps quickly identify areas where the student is deficient in their response to the question. By identifying each rubric item, the student has little if any argument with the assigned grade as they are focused on where the deficiency lies. The rubric line item points lost also inform the student of how egregious their response was compared to full expectations for the response. This reduces the number of student complaints and the need for a grader to go back and reconstruct their reasoning for assigning a lower grade, should the student complain.

As a primary teacher in the MBA and MSM programs, this author has found that "the detail" of rubrics can help the grader carefully identify the detail levels of given assignments. These rubrics help the grader to focus on first, whether the student attempted each detail of the rubric, and second, whether that attempt to answer met a content requirement sufficient to warrant a full apportioning of the assigned grade.

A problem with this kind of assessment is that assignment point values must break down into weighted portions for each rubric level. Figure 3 below shows an example of a rubric for a discussion question in BUSA 636 – Organizational Behavior.

FIGURE 3
RUBRIC-LEVEL POINT ASSIGNMENTS

MBA_1.2 - The Learning Organization		
You've already rated students with this rubric. Any major changes could affect their assessment results.		
Criteria	**Ratings**	**Pts**
MBA_1.2 - Social learning theory (Bandura) describes how a person decides whether he or she can successfully perform a specific task. Use this theory to explain how one man (Rady) convinced another man (Jeremy) not to walk into the desert. Specifically, which of the four major elements of Bandura's theory did Rady attack to convince the second man not to leave?	This area will be used by the assessor to leave comments related to this criterion.	0.4 pts
MBA_2.2 - Which two of elements of Bandura's theory led Jeremy to wrongly assess his chances of success? What personality traits might have led him to these wrong conclusions?	This area will be used by the assessor to leave comments related to this criterion.	0.3 pts
MBA_1.3 - Post responses to your group members' answers, and participate in the ensuing discussion.	This area will be used by the assessor to leave comments related to this criterion.	0.1 pts
MBA_3.2 - The post is single-spaced, formatted based on APA guidelines, and includes in-text citations and a reference page when cited?	This area will be used by the assessor to leave comments related to this criterion.	0.1 pts
MBA_3.2 - The post meets basic writing standards, including grammar, usage, spelling, punctuation, and organization.	This area will be used by the assessor to leave comments related to this criterion.	0.1 pts
		Total Points: 1

When grading this assignment, the grader is faced with several problems. First, the volume of students in the total number of sections being graded, the detail of the rubric itself requires focus on many levels and gauges as to the level of completeness, and finally, the number of other assignments due from this and other classes all requiring this detailed level of focus.

So how might the grader cope? The grading process can easily turn into a "Did they complete this requirement – Yes / No," rather than a quality of content where you are assigning values of 0.1 of 1 point. As each week and semester passes, there is a focus on different aspects of the rubric. In Figure 3 above MBA 1.3 Post responses to your group (at least two) quickly can become a Yes / No it was completed, rather than a quality of content in the two group interactions.

Ensuring that you focus on the content when all around you is piling up is the rub! It should be up to the institution to gauge the level of detail at the assignment level and the number of assignments that are measured. This methodology handles any of these levels of detail.

CONCLUSION

Our data collection and reporting system has been running for 5 years or approximately 20, 7-week short semesters. The pilot implementation of the process has been limited to three MBA classes. The system has been used primarily to report on semester-end PLOs and SLOs for reporting purposes. Some inter-semester reporting has been done to gauge student and assignment performance.

A combination of events has limited the implementation of the process. The pandemic starting in March of 2020 forced all instructors out of the office. This could have been a crucial time for full implementation allowing the COBA PLO and SLO prefix codes to be placed into offered Canvas classes, but the time

crunch (2 weeks) for all classes to be moved completely online ensured that no additional prefix coding was done.

Another compounding factor is an instructor's preference for using rubrics. An instructor may have had limited experience with the methodology for using rubrics, thus avoiding their use. Coding at the assignment level would have been a step in the right direction but did not occur due to time constraints.

The system itself has been beneficial for the authors. Its continued use has proven the process. Our experiment with attaching codes to course objects has been limited to rubrics. But since codes are "attached" to a course object merely by renaming it, one could do this for any kind of assignment. We believe that rubrics lend themselves well to assessments. We now consider the "detailed rubric fatigue" described above, a price worth paying for the power of this assessment method.

Example coding for Canvas extract is available from the authors by request. Analysis of extracted data is by Excel data pivot table. The authors are transitioning the pivot table analysis from Excel to Microsoft Access over the coming months. When we have completed the move to an Access database, we will create standard queries that automate the analysis reports.

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APPENDIX

**SAMPLE LISTING OF COLLEGE OF BUSINESS ADMINISTRATION GRADUATE
PROGRAM LABELS FOR ACCREDITATION REPORTING**

Code	Description
MBA 1.0	*Students will practice effective leadership of themselves, their teams, their organizations, and their external constituents.*
MBA 1.1	Students will understand leadership processes and develop a personal leadership approach.
MBA 1.2	Students will recognize and work within elements of organizational culture.
MBA 1.3	Students will employ teams and cooperative efforts inside and outside organizationsto achieve desired outcomes.
MBA 2.0	*Students will lead organizational innovation efforts through effective integration of strategy with appropriate organizational processes and technologies.*
MBA 2.1	Students will apply strategic toolsto position their organizations for a changing marketplace.
MBA 2.2	Students will design and deploy organizational processes and technologiesto improve organizational performance.
MBA 3.0	*Students will engage in data informed decision making.*
MBA 3.1	Students will utilize organizational practices and toolsto collect, analyze, and use datato make decisions across a wide array of topics.
MBA 3.2	Students will report findings clearly and with appropriate recognition of the findings' limitations.
MBA 4.0	*Students will make ethical decisions informed by values and goals that are consistent with relevant laws and Christian principles.*
MBA 4.1	Students will understand fundamental principles of business law in the United States.
MBA 4.2	Students will understand and apply their personal ethical frameworkto business decisions.
MBA 4.3	Students will reflect on their vocation in the context of their personal values and goals.