

SUSTAINED IMPROVEMENT IN STUDENT LEARNING: LEVERAGING SUBSCORE DATA FROM NATIONALLY NORMED ASSESSMENT INSTRUMENTS

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ABSTRACT

This case study describes an assessment initiative, initially rooted in accreditation reporting requirements, that focused on improving student mastery of core concepts taught in two statistics courses required for completion of a bachelor of science degree in business administration (BSBA). The initiative began in 2012 and continues to the present day. It involves students enrolled in online and evening courses at a private, not-for-profit institution of higher education in the United States. Nearly all of these students enroll on a part-time basis, taking accelerated courses offered in any of six 8-week terms taught throughout the academic year. Participating faculty included two full-time professors and five adjunct instructors of business.

This case study details discussions and planning that resulted in sustained improvements to student learning reflected in the nationally normed summative assessment data collected from Fall 2014 through Fall 2017. It concludes with an overview of primary lessons learned of probable interest to higher education faculty and administrative staff members involved in the early stages of accreditation or assessment initiatives at their respective schools.

Keywords: ACBSP, accelerated learning, accreditation, collaboration, evidence-based decisions, instruction, online coursework, programmatic assessment

INTRODUCTION

Approximately 30% of the 8,600 students enrolled at the faith-based, liberal arts institution under study pursue undergraduate degrees exclusively via online or evening coursework. The majority of these individuals are nontraditional students in business programs of direct relevance to their chosen professions. Nearly all are transfer students from other schools in Texas. The majority are female who, on average, are 34 years old. They are typically full-time employees who also have family obligations at home and, for this reason, take undergraduate coursework on a part-time basis. A little more than half of the students take courses primarily online.

At the close of the 2013-14 academic year, as a small group of full-time faculty and staff began to prepare for upcoming accreditation reporting requirements, summative assessment results for the school's BSBA program were gathered for analysis and discussion. The group was aware that merely presenting the data in the reports to the accrediting agencies would be far from sufficient: An interpretation of the data would also be required as would evidence that the analysis actually benefitted students, faculty, or the program more generally.

The small group of faculty and staff met on a nearly weekly basis for two months to discuss the existing data as well as its potential meaning and uses. The data itself came from a third-party vendor, approved by the Accreditation Council for Business Schools and Programs (ACBSP) who had been employed by the school since 2010. Students enrolled in the BSBA program were required to complete an online assessment of knowledge and skills midway through their enrollment in an entry-level economics course and then again just prior to degree completion when they enrolled in the BSBA capstone course. The two-hour assessment contained 120 questions selected randomly from a test bank of nearly 5,000 questions. Of the 120 questions, 10 to 15 pertained to each Common Professional Component (CPC) designated by ACBSP.

Given small sample sizes from earlier years, the group of faculty and staff members decided to focus their attention on the annualized data from the most recent 24 months (see Table 1).

Table 1: 2012-2014 Summary of BSBA Student Achievement Scores

Year	Level	Completed Assessments (n)	BSBA Average	ACBSP Average
2012-13	Entry	199	46%	45%
2012-13	Exit	152	53%	53%
2013-14	Entry	216	47%	45%
2013-14	Exit	202	54%	53%

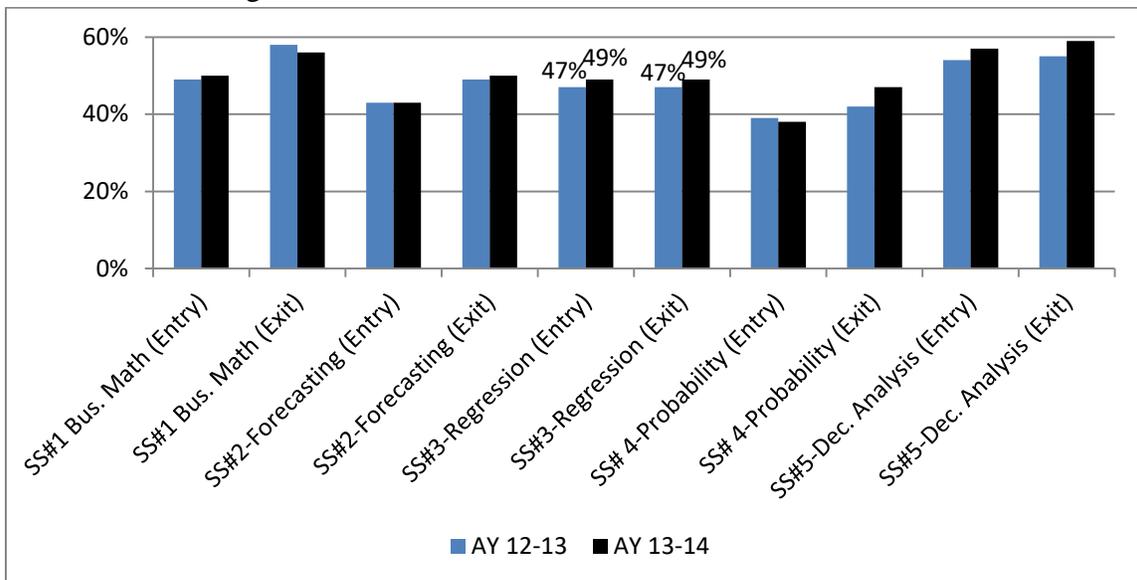
As the group reviewed this summary data and then drilled into the subscore data for each CPC, they noted that BSBA students, whether on entry or exit, were scoring at or above the ACBSP norms in each area. Further, students who were nearing degree completion were scoring better than their peers who were relatively new to the BSBA program. A consensus quickly emerged that the scores were both representative and stable in a way that allowed all to accept them as reasonably useful and accurate benchmarks of the underlying student aptitudes.

There was no consensus, however, regarding specific areas of concern or related actions that might be taken to improve associated learning outcomes for BSBA students. With their minds

rooted primarily on what would be expected by the university’s program review board as well as the two accrediting agencies that might have access to their report, the members realized that they were at a crossroads that might require further reflection if not also additional data analysis.

One member, himself an adjunct instructor of statistics and director of accreditation, suggested a deeper dive into the subscore data provided each year by the vendor. He was curious about what might be found and knew that it would not take long to distribute it to the other members. He did so the next day and, with a heavy heart, suggested that others look carefully at the statistics CPC subscore data pertaining to simple linear regression (see Figure 1). Not only were the percentages somewhat lower than expected but, far more worrisome, the scores for entering and exiting students were identical in both years. It was the only example where students nearing degree completion were not scoring better than their recently admitted BSBA peers.

Figure 1: BSBA Statistics Subscore Data from 2012-14



The BSBA Program has six well-established student learning outcomes (SLO). The third of these SLO’s states that students who complete the program will be able to, “...demonstrate competencies in qualitative and quantitative analysis in business decision making.” Senior administrators as well as business program faculty members strongly support this SLO. Furthermore, the working adults who most often enroll in the BSBA program recognize the critically important nature of the skill set which is the focus of this SLO. Thus their decision to enroll in a program with two 3-credit statistics courses in addition to nearly 30 other credits of core business coursework with qualitative or quantitative analytical components.

So it was not long after receiving the data that each group member began to think less of accreditation requirements and more of the general welfare of the students they were hired to teach. Their individual and collective curiosities took over and, within 48 hours, they shared the data with a few other BSBA instructors of statistics.

These additional members welcomed the opportunity to participate. They thought simple linear regression was an important topic for all business students to understand. None thought the topic especially difficult to teach. Most notably, given existing levels and frequency of instruction on the topic *already present within the statistics curriculum*, none had a reasonable explanation for why entering student scores would be identical to those who were nearing degree completion.

PROBLEM STATEMENT & RESEARCH OBJECTIVE

The purpose of this initiative was to identify potential root causes of the lower than anticipated student achievement scores from 2012-14 so as to improve student mastery of simple linear regression taught in two statistics courses required for BSBA program completion.

IMPORTANCE AND BENEFITS OF THE STUDY

This study will be of interest to two distinct stakeholders: Higher education administrators and faculty members, especially those who work with part-time, non-traditional students pursuing coursework at a multitude of locations if not also via different delivery modalities.

LITERATURE REVIEW

A review of the literature revealed a wealth of study related to the efficacy of a wide range of assessment practices. Key researchers are identified in Table 2 along with their primary findings and quotes of direct relevance to this case study.

Table 2: Expert Views on Effective Assessment

Author(s)	Year	Publication & Primary Findings/Quotes
Banta, T.W. and Palomba, C.A.	2015	<i>Assessment Essentials: Planning, Implementing, and Improving Assessment in Higher Education (2nd ed.)</i> <u>Key Findings</u> —Drs. Banta and Palomba present 12 chapters, each of which focus on a separate set of assessment best practices. Chapter 3 on Engaging Faculty and Students in Assessment, Chapter 5 on Using Direct Measures, and Chapter 10 on Analyzing, Reporting, and Using Assessment Results were especially relevant. <u>Key Quotes</u> —Page 39, Effective assessment of student learning cannot occur without <i>faculty</i> in setting goals and objectives for learning, selecting or developing assessment methods, collecting evidence of student learning, determining the meaning of the findings, and taking warranted improvement. Page 54, Assessment is an activity in which students must be active partners.
Banta, T.W., Suskie, L. & Walvoord, B.E.	2015	<i>Three Assessment Tenors Look Back and to the Future</i> <u>Key Findings</u> —Assessments primary challenge remains “Closing the Loop.” <u>Key Quote</u> —Page 14, While more and better assessment is taking place, with colleges “sitting on piles of data,” as Suskie puts it, making good use of data to improve practice remains a challenge.
Garfolo, B.T. and L’Huillier, B.	2015	<i>Demystifying Assessment: The Road To Accreditation</i> <u>Key Findings</u> —Assessment is a cyclical process. <u>Key Quote</u> —Page 151, Assessment involves...gathering, analyzing, and reflecting on the evidence in a systematic way to determine if student learning has occurred to the depth and breadth stated.
Kuh, G.D., Ikenberry, S.O., Jankowski, N.A., Cain, T.R., Ewell,	2015	<i>Using Evidence of Student Learning to Improve Higher Education</i> <u>Key Findings</u> --Dr. Kuh and his colleagues present 11 chapters, each of which focuses on a separate set of assessment themes. Chapter 5-Faculty and Students: Assessment at the Intersection of Teaching and Learning was especially relevant to

P.T., Hutchings, P., & Kinzie, J.		this case study. <u>Key Quote</u> —Page 96, Of course, faculty compose only one group at the intersection of teaching and learning. If assessment is, as we argue, about improving learning outcomes rather than meeting reporting requirements, students are necessarily central as well.
Chan, P.E., Konrad, M., Gonzalez, V., Peters, M.T., & Ressa, V.A.	2014	<i>The Critical Role of Feedback in Formative Instructional Practices</i> <u>Key Finding</u> —Not all feedback is equally effective. Feedback is effective only when it produces the desired outcome, allowing students to move their learning forward. <u>Key Quote</u> —Page 97, To enhance the effectiveness of feedback and, in turn, the effectiveness of instruction, feedback should focus on success and be immediate, specific, and actionable.
Gibson, J.W., Greenwood, R.A., Mujtaba, B.G., Robbins, S.R., Teahen, J.A., & Tesone, D.	2013	<i>Meeting the Challenge of Assurance of Learning: Perspectives from Four Business Schools</i> <u>Key Finding</u> —Multiple measures, direct and indirect, formative and summative, are especially important in an online learning environment. <u>Key Quote</u> —Page 86, It takes a group of dedicated team members to effectively, efficiently and continuously assess learning outcomes and make improvements, thereby starting the assessment process, analyzing the data and well as the results, and ending the process through actual improvements.
VanDerHeyden, A. and Harvey, M.	2012	<i>Using Data to Advance Learning Outcomes in Schools</i> <u>Key Finding</u> —Implementation is the most probable cause of intervention failure. <u>Key Quote</u> —Page 208, Screening data can be used to ask many important questions about the effectiveness of the systems...Are students attaining expected levels of proficiency?
Walvoord, B.E.	2010	<i>Assessment Clear and Simple: A Practical Guide for Institutions, Departments, and General Education (2nd ed.)</i> <u>Key Findings</u> —Dr. Walvoord delineates a wide-range of assessment best practices of potential value to faculty members and administrators alike. These include those pertaining to communication and collaboration between key stakeholders, use of self-reflective analysis, reliance on existing assignments or assessment systems, and timely “loop” closure. <u>Key Quote</u> —Page 27, The aim of assessment is not compliance with accreditors—its goal is <i>informed action</i> that enhances student learning.

The authors listed in Table 2 represent a small fraction of those who have recently published books or peer-reviewed articles on topics of direct relevance to this case study. The list does, however, include many of the most widely cited and nationally recognized pioneers (i.e., Banta, Kuh, Suskie, and Walvoord) in the field. It also highlights themes or best practices (i.e., the need for timely loop closure, faculty *and* student involvement, deliberative and reflective assessment design processes, etc....) that would be found in many publications on the topic.

In the preface of his 2015 book entitled *Using Evidence of Student Learning to Improve Higher Education*, Dr. George Kuh provided his reader with the following reflection.

What is required, we believe, is a fundamental reframing of the conversation around assessment and a clearer focus on the use of evidence of student learning in more productive and targeted ways.... It is the use of evidence of student learning—its utility and impact on the lives of students and the prospects of campuses—that is the focus of this book.... Knowing how to harness evidence of student learning to improve teaching and learning and propel students to greater accomplishment is ultimately what matters.

Dr. Barbara Walvoord expressed a very similar thought in her earlier text entitled *Assessment Clear and Simple: A Practical Guide for Institutions, Departments, and General Education*. Therein, she wrote, “The aim of assessment is not compliance with accreditors—its goal is *informed action* that enhances student learning” (p. 27).

These are ideals contained within so many of the other peer-reviewed publications authored by caring and qualified teachers on this topic. They are also central to this case study, prompting the assessment endeavor itself as well as the decision to share the story with others who might benefit from its targeted, evidenced-based application of the key findings.

RESEARCH: FOR ANSWERS & IMPROVED LEARNING

Membership

To meet the primary objective outlined earlier, the members of the newly enlarged group of faculty and staff continued to meet with one another with a renewed sense of purpose. The group now included two full-time business professors, one of whom was the BSBA program director, as well as four part-time BSBA instructors of statistics. One of these instructors of statistics was also serving full-time as the divisional director of assessment. Each member of the group was an experienced educator with more than 10 years of related teaching experience.

Methodology

The group met once per week for the next two months. Occasionally the “meetings” took place via e-mail or phone. Their discussions were primarily qualitative in nature, involving a collegial exchange of ideas about lessons, pedagogic approaches, and supplemental teaching materials. Though some taught in completely online environments and others taught in the evenings or via a blended modality, their courses relied on standardized syllabi and texts.

Purpose

The main purpose of the research was to identify potential root causes of the lower than anticipated student achievement subscores from 2012-2014 to be followed by the design and implementation of specific actions that would facilitate improved learning in the years to follow. The key research questions were as follows:

- a. *What were the potential root causes of the lack of change noted from entry to exit in the regression subscore data collected from 2012-2014?*
- b. *What specific actions might be taken to improve student mastery of simple linear regression concepts in future years?*

RESEARCH FINDINGS

Over the course of the next eight weeks, the instructors continued to trade ideas, materials, and suggestions for potential changes that would be of direct benefit to the BSBA students. A consensus slowly emerged around the following ideas:

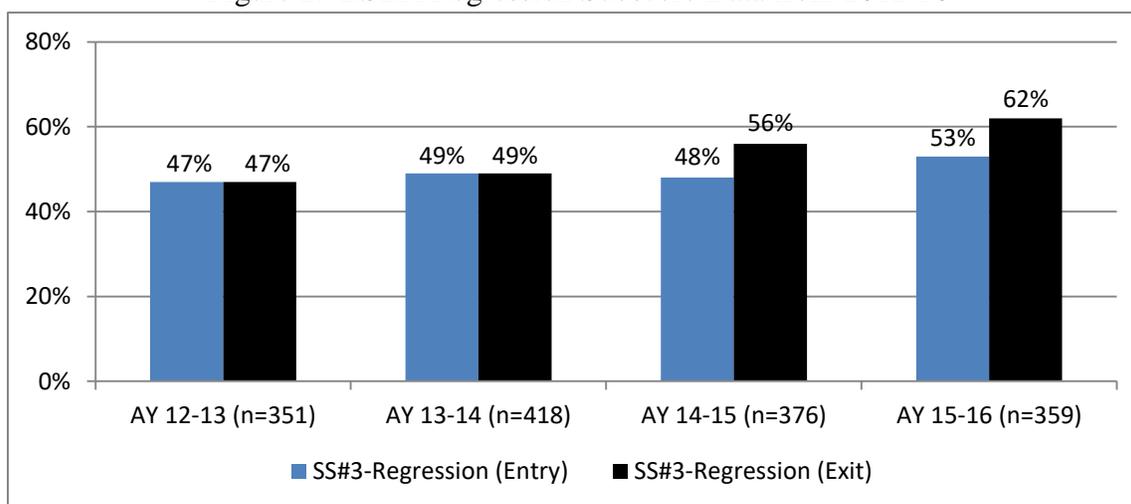
- No changes were needed to the primary text or the standardized syllabi that were in place. Regression was already explicitly listed as the sole topic of study in one week of the first stats class and was also covered in another week of the second stats class.

- Instructors who taught the first stats class noted that school holidays or other closures related to, for example, inclement weather, prevented them from covering regression in the final week of the term. They developed strategies to work around such challenges.
- To ensure that the focus on improvement was sustainable irrespective of the term or instructor of record, they recommended five standardized questions on regression that could be woven into the fabric of existing assignments or quizzes.
- Once each instructor adopted the five questions, they agreed to share their aggregate results with one another in subsequent terms so as learn what percentage of students in each section were answering each of the five questions correctly.

ENSUING RESULTS: AY 2014-15 TO AY 2016-17

In each of the ensuing two academic years, the summative assessment subscores on regression showed marked improvement. These are summarized in Figure 2.

Figure 2: BSBA Regression Subscore Data from 2012-16



During this same time frame, there were no other obvious changes to exogenous variables such as admission standards, course pre-requisites, instructional faculty qualifications, or the primary materials being used in either of the two statistics courses. General assessment protocols and the approximate number of test takers also remained the same in the latter two years.

In the 2016-17 academic year, the division made the decision to change to a different ACBSP-approved vendor of standardized assessment services. This decision was an administrative one that came with slightly higher financial costs per test but improved levels of customer service to faculty, staff, and students alike. The new vendor's instrument and testing protocols were nearly identical to those of the first vendor. The two-hour test continued to include 120 multiple choice questions taken from a large test bank of prompts relating to the same CPCs.

Though the new vendor's annual report did not include subscore data for simple linear regression, it did provide analogous data that suggested the gains from 2014-16 reflected in Figure 2 were sustained into the 2016-17 academic year (see Figures 3 and 4).

Figure 3: Summative Entry vs. Exit BSBA Data (AY2016-17)

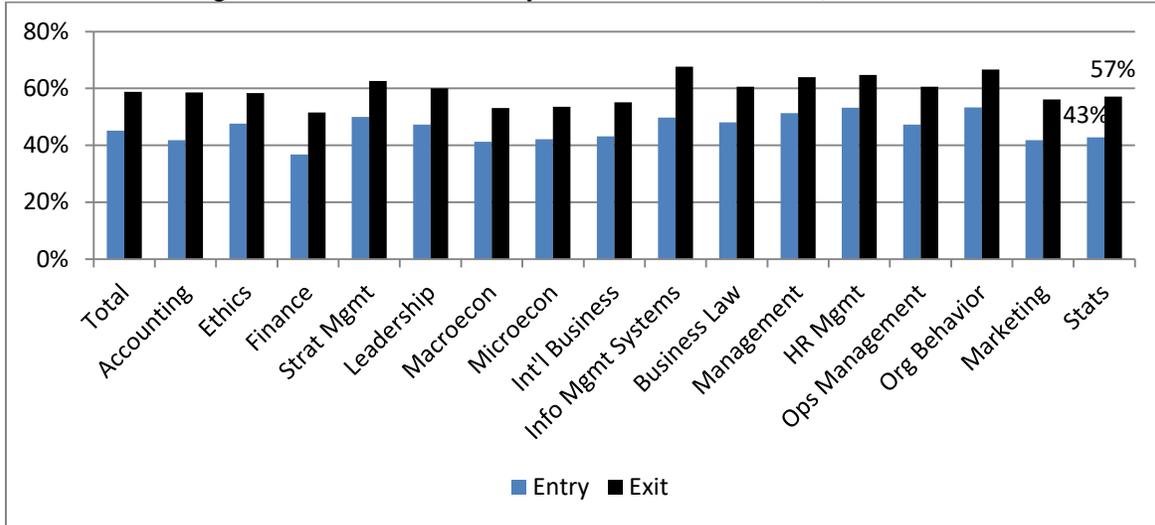
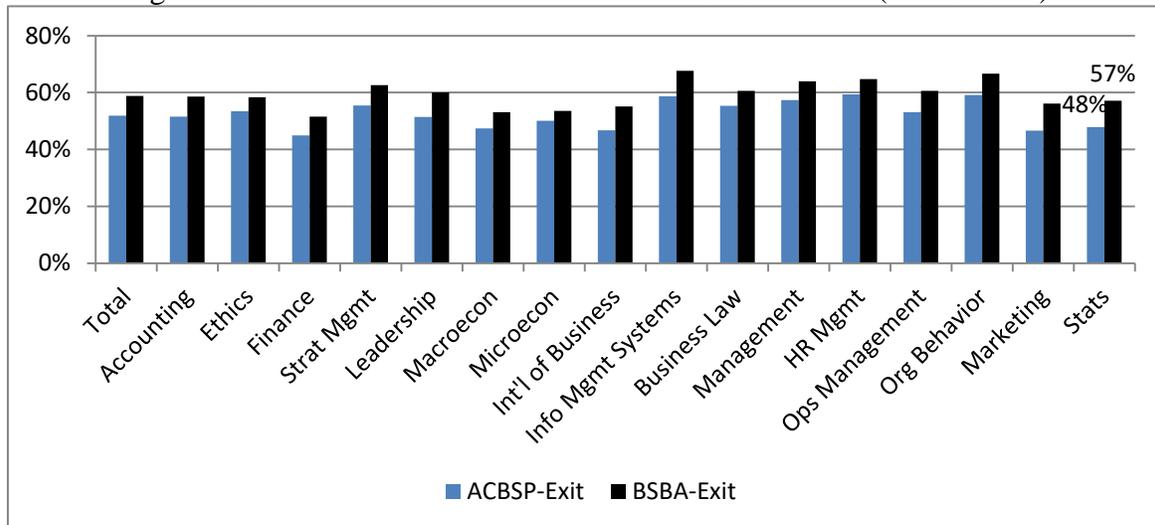


Figure 4: Summative BSBA Exit Data vs. ACBSP Norms (AY2016-17)



CONCLUSIONS

The graphs presented above provide strong evidence that student learning improved as the result of careful evidence-based reflection initiated by the instructional staff. The gains were most evident in the exit scores of the students but also present to a lesser degree among the more recently admitted students who took part in the programmatic assessment initiative. The gains themselves were substantial and sustained long-after formal group discussions ended in Spring 2015. They were achieved in the absence of changes to hiring policies, admission standards, course pre-requisites, standardized texts or syllabi, or assessment protocols.

The instructors involved would argue forcefully that no significant or burdensome changes were made to overall pedagogy or coursework. They would add that the primary motivation for the

collaborative efforts was rooted far more deeply in their passion for providing effective instructional services than the admitted need for such narrative in accreditation reports.

LESSONS LEARNED & RECOMMENDATIONS

These conclusions have prompted continued discussion and reflection on related practices, all of which are in keeping with those outlined in the literature review provided earlier within this case study. For the benefit of our programs and the students who choose to enroll in them, we will endeavor to adhere to the common sense ideals within the following recommendations.

- Keep assessment clear and simple – leveraging systems, personnel, and class assignments already in place to help inform action of direct benefit to the students.
- Rely on multiple measures, direct and indirect, formative and summative, in our search for evidence of student learning.
- Educate key stakeholders, including faculty members as well as students, being sure to close the proverbial loop with them soon after data have been collected.

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