IMPACT OF INDUSTRY AND TEACHING EXPERIENCE, COURSE LEVEL, AND DEPARTMENT ON STUDENT EVALUATIONS

Vance Johnson Lewis, University of Central Arkansas

Kaye McKinzie, University of Central Arkansas

ABSTRACT

While it can be argued that having industry experience seems a logical requirement for a college professor, the actual impact of having industry experience in the classroom has rarely been explored. Faculty are evaluated on teaching, research, and service. One of the primary feedback measures we have in academia to measure our success in the classroom are the student evaluations. The purpose of this study is to identify the impact of having industry experience on one's student evaluations of teaching in relation to the level of course and the department of the course. Often new faculty are assigned the lower level "service" courses in a department. However, these courses often get lower ratings for many reasons we address in this paper. In addition, it can be argued that the more experience one has in industry might make these faculty better at relating to students and they should have higher student evaluations. But, are we setting them up for success or failure? Does it depend on what they are teaching? Using 355 sets of student evaluations of teaching (SET) along with demographic information of the instructors, this study seeks to determine if either years of industry experience or years of teaching experience significantly impact the SET in relation to the level of the course or the subject area of the course across five dimensions of evaluation: objectives, preparedness, communication, encouragement, and availability.

Keywords: evaluation, business college, experience, faculty qualification, course level

INTRODUCTION

"We learn from failure, not from success." ∽ Bram Stoker in *Dracula*

Just as today's marketplace has undergone a transformation, so too has the manner in which students are educated and trained to enter that marketplace. While once students of business found themselves learning the principles of economics from faculty waring over "practical" verses "classical" approaches (Van Fleet & Wren, 2005), today's students find themselves in state of the art classrooms being led by some of the bastions of industry…or at least someone who left industry to teach. While requiring years of industry experience has quickly become a staple of the faculty hiring process, the actual impact of that industry experience on teaching ability has gone unexplored. Using student evaluations of teaching, this study investigates the impact of one's ability to teach in the business college classroom in relation to their years of industry or teaching experience. Specifically, this study looks to confirm the impact of industry or teaching experience as it relates to the level of the course and the department of the course.

REVIEW OF LITERATURE

Evolution

While attempts to formalize colleges of business, and the faculty who should teach in them, date as far back to 1881 at The University of Pennsylvania (Van Fleet & Wren, 2005), the modern debate over who is best suited for the business classroom can be found in the formation of the American Assembly of Collegiate Schools of Business (today known as The Association to Advance Collegiate Schools of Business or AACSB) in 1916. During this time, and even to today, it was questioned if business school was even necessary for one seeking to run a business (Clark, 2005). At the same time the newly formed Association of University Professors (AAUP) was extoling the need to keep higher education away from becoming a business venture by employing individuals of the:

> highest ability, of sound learning, and of strong and independent character. This is the more essential because the pecuniary emoluments of the profession are not, and doubtless never will be, equal to those open to the more successful members of other professions. (AAUP, 1915, p. 21)

The AACSB set forth that academics should be those who make scientific contributions to their field (Geiger, 1992). It was not until some 70 years later that the first definitive qualifications for business faculty were established, which included a doctorate or substantial coursework in their field with little mention of professional qualifications (Gitlow, 1995), a sentiment echoed 20 years later when AACSB stated that there was no need for those interested in becoming professors to have business work experience (AACSB, 2007).

Practice vs. Theory

Despite the apparent lack of a direct call for business academics to have industry experience, the debate between practice and theory continues. Some feel that having this "real-world" experience allows the professor to help the students solve real-world problems (Gootzeit, 2014) and to bring the theories of business to life in the classroom (Sull, 2016). Although some evidence does suggest that industry experience does enhance one's teaching ability (Burns, 2012), most research on the topic lends itself to the idea that those with an industry background are not likely to know what it is that students actually need to know (Patrick, 1969), and that a one-sided focus may be present due to the experiences in industry (Bledlow, Carette, Kuhnel, & Blister, 2017; Collinson & Tourish, 2015). As the experiences of the professional are now clearly in the past, the relevance of those experiences is also questionable (Lipinksi & Kosicek, 2016).

Along with the lack of proven support for industry experience, accreditation standards do not lend themselves to the hiring of faculty with industry experience. Though some would say accreditation standards have caused the industry experience trend with a call for both academic and professional preparation, actual standards for faculty do not call for significant industry experience in either the preparation for nor maintenance of academic qualifications (AACSB, 2017). Though differing models are used, accreditation standards do call for the hiring of individuals who will maintain Scholarly Academic status (AACSB categorization) which would place greater emphasis on

preparation for continuing a scholarly research agenda. Still, some 38% of all job postings in the area of business have been found to have some requirement for industry level experience (Finch, Deephouse, O'Reilly, Massie, & Hillenbrand, 2016).

Executives in Residence

One caveat to this theory vs. practice discussion is the role of the Executive in Residence. While the exact origins of this role in the college of business are not known, the idea of having one member of the college be an experienced person of business to guide the students through specific problems has been held as an important role (*Industrial Management Review*, 1965). Though the significance of this individual is important to the business college (Johnston, 2014), the individual still needs to hold the appropriate academic credentials and teaching skills to fit well within the college (Achenreiner & Hein, 2010). Though important, Executives in Residence are usually only employed by the college for no more than five years and are not included in the tenure system (AACSB, 1995).

Student Evaulations of Teaching

Though this research does aim to contribute to the literature and ongoing debate over student evaluation of teaching (SET), as the data for the independent variables are drawn from such evaluations, some discussion is warranted. In general, research on SET has been pursued from either the viewpoint of problems with SET or outcomes of SET. SET were first used at Purdue University during the mid-1920's as a way to scientifically quantify the qualities of a good teacher (Calkins & Micari, 2010). Though there are a plethora of methods by which these evaluations are carried out (Marzano, Frontier, & Livingston, 2011), the basic motivation for SET is to determine the effectiveness of professors with some categorical variables. Issues with revenger, disinterest, bias, and discrimination have been found to riddle SET thus causing more of an evaluation of the professor/student relationship rather than actual teaching effectiveness (Stark & Freishtat, 2014).

When considering SET, the question arises of what SET actually measures. While it is argued that SET are intended to measure teacher effectiveness, a clear definition of what effectiveness actually is has not been found (eg: Adams, 1997; Kulik, 2001). A strong argument can be made that it is the student/teacher relationship which is actually being measured rather than the actual teaching. While it is has been proven that developing relationships (in a mentoring type fashion) with students can be highly beneficial to learning (Anderson, Dey, Gray, & Thomas, 1995; Wallace, Abel, & Ropers-Huilman, 2000), the potential for a negative impact is high when relationships are either not formed or go awry (Komarraju, Musulkin, & Bhattacharaya, 2010; Pearson, 2012; Wolf-Wendel, Ward & Kinzie 2009). Furthermore, as colleges view students more as consumers, lecturers are more motivated to provide a pleasing product and therefore motivated to seek popularity rather than effectiveness (Emery, Kramer, & Tian, 2003). As colleges expect faculty to be more and more involved in student retention efforts, graduation rates, and funding, the potential for impact on SET also grows.

Focusing on the outcomes of SET, research has shown that SET are significantly affected by the years of teaching experience of the professor (Feldman, 1983; McPherson, 2006); however, much of that significance is reflected in lower teaching evaluations the longer a professor teaches

(Zabaleta, 2007) although being tenure-track offsets this lower rating for a time (Isely & Singh, 2007). Even though the "credibility" of the professor has been found a significant factor in SET (Fandt & Stevens, 1991), the prior experiences of the professor has only been found to significantly impact lower division or service courses and to not have importance for upper diversion or major related courses (McPherson, 2006).

While a plethora of literature has been offered regarding SET, very little has been investigated in regard to the business college. One of the earliest found studies investigated pre-vocational business teachers in which it was found that neither years of teaching experience nor years of work experience had an effect on SET (Brown, 1971). In a longitudinal study of students who reevaluated their professors one year after entering the work force, it was found that the industry experiences of the students as well had little impact on their views of the teaching ability of the professors (Firth, 1979). Research by Barth (2008) revealed that the main factors within SET were quality of instruction, with features such as course objectives, relevance of material, preparation, and clarity of instruction, and that the enthusiasm shown by the professor can offset the perceived difficulty of the professor. When viewed in relationship to the various colleges across campus, business courses tend to receive the lowest evaluations along with Math, Engineering, Economics, Computer Science, and Physical Science (Cashin, 1990).

Course Level

Within the study of SET, the level of the course has historically been found to be correlated to the evaluations by the students. Generally speaking, the higher the course level (ie: 1000, 4000 level) the more likely the instructor is to receive higher SET (Cashin, & Downey, 1992; Johnson, Narayanan, & Sawaya, 2013; Neumann, 2000; Seldin, 1993). Graduate courses tend to receive the highest SETs (Tracy, Shane & Jenkins, 2007; Whitworth, Price & Randall, 2002;) while Freshman courses received the lowest scores (Stewart, Goodson, Miertschin, & Faulkenberry, 2007). Freshman and Junior level courses have been found to receive lower levels of SETs than Sophomore and Senior level courses (Badri, Abdulla, Kamali, & Dodeen, 2006), although some research indicates that students tend to provide their lowest evaluations during their Freshman year and rate progressively higher as they progress through their education (Aleamoni, 1989). Ironically, the level of the student (ie: Freshman, Senior) has historically not been found to impact evaluations (McKeachie, 1979) and that the longer a student is in college, the less likely they are to even complete SETs (Macfadyen, Dawson, Prest, & Gašević, 2016).

Department

Much less has been researched as to the effect of the course department on SET, partly due to the challenges of comparing vastly different subject matters across the campus. None the less, the idea of course subject affecting SET is of concern within the research (Stapleton & Murkinson, 2001). A study by Hippensteel and Martin (2005) did find biases against geoscience instructors when evaluated by non-science major students. Incidentally, this same study found that placing junior faculty in introductory level courses may place these untenured faculty at risk for receiving career damaging evaluations. Faculty teaching quantitively based courses face increased risk of lower teaching evaluations when standardized evaluation questions are used (Uttl & Smibert, 2017).

Evidence also exists which shows that elective courses are evaluated more favorably than are required courses (Miles & House, 2015; Ronald, Chathapuram, & Rosegrant, 1998).

Within the college of business, research indicates that Finance professors tend to receive the lowest levels of evaluations regardless of the major or the student (Constand & Pace, 2014). When considering the specific major of the student, Accounting majors tend to offer the highest rating of courses while Business Administration students offer the lowest (Badri, Abdulla, Kamali, & Dodeen, 2006) also being more likely to recommend their instructors to other students than in the areas of Economics and Statistics (Diette & Kester, 2015). Course topic has also been shown to greatly affect overall perceptions of learning within business students SETs (Whitworth, Price, & Randall, 2002).

METHODOLOGY

Data Collection

This study utilized student evaluation data taken from three universities in the Southwest United States. The data is representative of business courses in AACSB accredited programs, with an R1, R2, and R3 institution represented, and was publicly available through their respective offices of the provost or institutional research. The available data included quantitative summaries of each course (means, weighted means, student response rates) but did not include individual student responses nor qualitative data. This did restrict our research into individual courses; however, due to the relatively large sample of courses taught, we were able to analyze data using our primary focus of length of industry experience, length of teaching, course level, and course department. Although all three institutions are part of the same university system, all operate as independent institutions. The data utilized in this study was taken from student evaluations of business courses during the Spring and Fall of 2014 and all courses listed as being in the business college were used.

Student Evaluation of Teachers (SET) data

Within the current data set, as each institution utilized slightly varied evaluations, only the five questions which were common to all three intuitions were utilized (Table 1). The first three of these SET questions were mentioned by Barth (2008) as main factors than can offset a professor's perceived difficulty. Being that universities use these evaluations as a reflection of faculty in the faculty's review and promotion purposes, we also chose to use them to help uncover potential differences based on our variables as differences based on these variables may need to be considered in many administrative aspects of the university process, not limited to annual evaluations and promotions. This study does not intend to support or defend the idea that these evaluations accurately report on one's ability to teach.

Table 1. SET Questions Utilized

| Q1	The instructor clearly defined and explained the course objectives and expectations.
Q2	The instructor was prepared for each instructional activity.
Q3	The instructor communicated information effectively.
Q4	The instructor encouraged me to take an active role in my own learning.
Q5	The instructor was available to students either electronically or in person.

The evaluations all utilized a Likert scale which ranged from 1 (strongly disagree) to 5 (strongly agree). All evaluations were administered electronically at the end of the semester with the means (actual student responses were not available) for each of the five SET questions and the number of respondents collected for each course section. While 355 evaluations were collected representing 355 different course sections, the data represents 107 unique instructors. The five SET questions are not the entire SET instrument each university administered, but are just the five questions they had in common. In as such, we do not purport to state that these can be combined for a single score in assessing teaching effectiveness or abilities; we chose to analyze these five questions individually. If one wanted to replicate Barth's (2008) study, the first three could be combined. However, we chose to treat each independently to look at the impact into the different topics for each SET question. Subsequently, these five questions became five different dependent variables.

Independent variables. For information on the respective faculty members who were evaluated, we quantified information from the instructor's CV's as made public on their respective institution's websites. We recognize that some of these CVs may not be complete and may have left out information pertaining to their industry experience. Using 2014 as the cut-off date, the researchers quantified available data such as years of industry experience (if any), years of teaching (zero if this was their first semester teaching) for our two numerical independent variables. The SET data provided us with the level course taught (Freshman, Sophomore, Junior, Senior, Masters 1 and Masters 2), and the department in which the course was taught (Accounting, Finance, Management, Management Information Systems, and Marketing) for our categorical independent variables. To attempt to reduce some multicollinearity concerns, we added dummy variables for the categorical independent variables (course level and department) and created multiplicative interaction numerical independent variables (time in industry and years teaching) to use in regression.

Model and Hypotheses

The focus and purpose of this study was to investigate the impact of different variables on the SET. To accomplish this, we utilized different combinations of our independent variables to create a large number of hypotheses; however, these hypotheses were easily managed by grouping them into two organized sets. Figure 1 depicts the model we used which lead to the development of our numerous hypotheses. For most of these hypotheses, we were able to use published research for the basis of our hypotheses. Where published research was lacking, we suplemented this with our own experience. As will be shown later, we were able to support some of the hypotheses, but not all.

Figure 1: Research Model
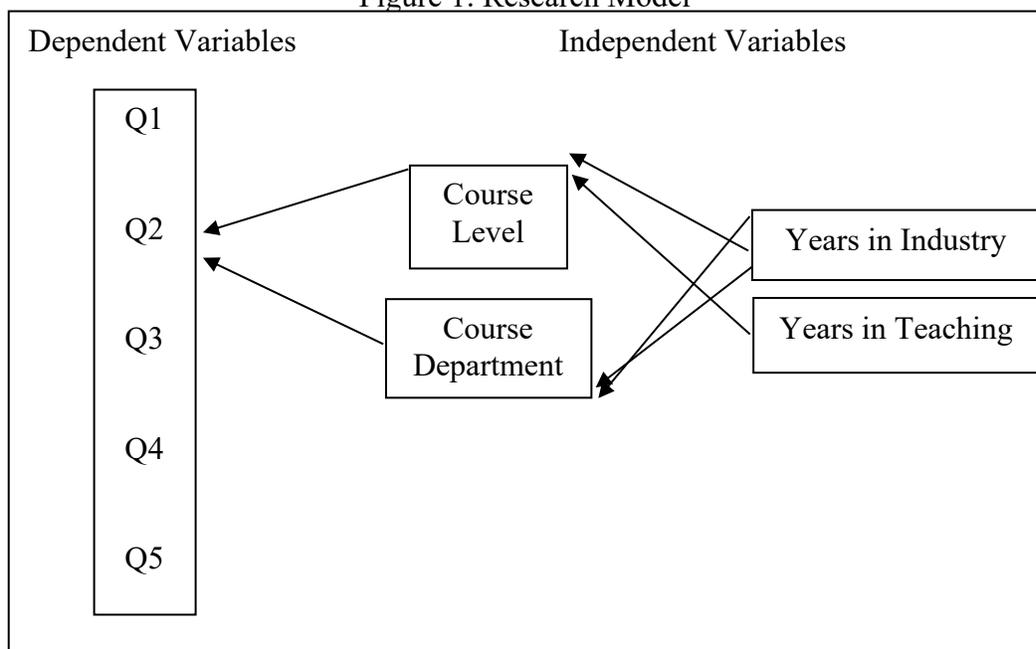
Once we set the direction of our hypothesis for each of the different independent variables, we assume this relationship to be true for all five of the SET questions. For this analysis we ran an ANOVA and *t*-tests assuming unequal variances for our modeling.

1. **Industry Experience.** Prior research and practice over time is not consistent with whether industry experience has a positive influence on teaching evaluations. However, due to the number of faculty job advertisements noting that industry experience is valued, we chose to hypothesize that there is a positive correlation in the SET scores and length of industry experience.

2. **Teaching Experience.** Prior research shows that the SET may in fact be lower the longer one teaches. Although this would seem contrary to retaining faculty indefinitely (post tenure), we will use this as the basis for our hypothesis and state that there is a negative correlation in the SET scores and length of teaching experience.

3. **Course level**. As previously stated, many studies have shown that higher SET scores are seen the higher the course level, including graduate courses. Thus, we hypothesis this to be true with our data as well, that there is a positive correlation with the SET scores and the course level.

4. **Course department.** Determining our hypothesis for the course department was more difficult as there are scant studies discussing the business department courses. We were able to find a study showing that Finance professors score lower on the SET and thus hypothesize this to be true. Other studies discuss students from the different departments, but business students take courses from many different departments and our data does not allow us to identify any specific student (only averages by course section). There was a study that noted quantitatively based courses have lower evaluations. We took this as our basis to hypothesize that courses in Accounting, Finance, and Management Information Systems would score lower than those in Marketing and Management.

5. **Combined independent variables.** In our final analysis, the five SET questions remained as our dependent variables, but the length of industry or teaching experience (numerical independent variable) was used along with the categorical variables of course level and course department (categorical independent variable) to create our combined variables. This was done using a multiplicative function of a binary code for the categorical independent variable with the numerical independent variable. This modeling technique is further explained in our results.

      a. **Industry and course level.** This hypothesis was easily obtained as both industry and course level hypotheses were defined as a positive correlation with the dependent SET variables; thus, we hypothesize that when combined they will also have a positive correlation with the dependent SET variables.

      b. **Industry and department.** As we defined the quantitatively based departments (Accounting, Finance, and Management Information Systems) to have a lower SET score than the other departments (Management and Marketing), we also hypothesize this to be true when combined with the years in industry. We did this due to the positively hypothesized relationship of the years in industry. We felt that there would be no change in the relationship of SET scores by department with the added influence of years in industry.

      c. **Teaching and course level.** With the negative relationship of the hypothesis of years of teaching on the SET, this became more complicated. We have a negative relationship hypothesis (teaching) and a positive relationship hypothesis (course level). We had to pre-suppose which would be the stronger influence. With more consistent research on the positive relationship of course level, we chose to hypothesize that this would be the dominant factor and that this combined variable would have a positive relationship on the SETs.

      d. **Teaching and department.** This was the most complex analysis to hypothesize. In both dependent variables had little prior research off which to base our hypotheses. However, for consistency, we chose to again hypothesize that the dominant factor would not be the years of teaching, but the department. We again hypothesize that courses in Accounting, Finance, and Information Systems would score lower than those in Marketing and Management.

Hypothesis Numbering

The hypotheses are listed with their independent variable letter followed by their dependent variable SET question number (1 through 5). For the combined independent variables, both letters corresponding to the dependent variables modeled are listed: industry experience (I), teaching experience (T), course level (L), and department (D). When modeling if the:

I.#	length of industry experience has a positive impact on the SET (Q1-Q5).
T.#	length of teaching experience has a negative impact on the SET (Q1-Q5).
L.#	course level has a positive impact on the SET (Q1-Q5).
D.#	course department has an impact on the SET (Q1-Q5).
I.L.#	length of industry experience and course level have a positive impact on the SET Q1-Q5).
I.D.#	length of industry experience and course department has an impact on the SET (Q1-Q5).
T.L.#	length of teaching experience and course level has a positive impact on the SET (Q1-Q5).
T.D.#	length of teaching experience and course department has an impact on the SET (Q1-Q5).

For example, our first hypothesis was concerning the years in industry. We list it here with all five SET. The same process was done with the T, L, D, IL, ID, TL, and TD hypotheses.

- I.1 The length of industry experience has a positive impact on the SET question "instructor clearly defined and explained the course objectives."
- I.2 The length of industry experience has a positive impact on the SET question "instructor was prepared for each instructional activity."
- I.3 The length of industry experience has a positive impact on the SET question "instructor communicated information effectively."
- I.4 The length of industry experience has a positive impact on the SET question "instructor encouraged me to take an active role in my own learning."
- I.5 The length of industry experience has a positive impact on the SET question "instructor was available to students either electronically or in person."

Preliminary Variable Analysis

Throughout the analysis we will be comparing variations from the mean SET results. Thus, it is important to view these dependent variable results apart from the impacts of the independent variables. The scale was a five point Likert scale (strongly disagree to strongly agree) with five being the strongest evaluation. As noted in Table 2, the scores were high reflecting positive evaluations of the teachers. All of the questions were slightly skewed left, yet passed the assumptions for Normality allowing us to run t-tests, ANVOA, and regression on them.

Table 2. SET Central Tendency Results

	Mean	StDev	Range	Skewness
1. Course Objectives	4.36	0.36	2.15	-0.94
2. Prepared	4.44	0.33	1.79	-0.9
3. Communicated	4.28	0.44	2.79	-0.97
4. Encouraged	4.38	0.31	1.91	-0.5
5. Available	4.42	0.33	2.76	-1.53

The independent numerical variables were the length of time spent in industry and time teaching (Table 3). The range was from 0 to 50 for industry and 0 (indicating first year teaching) to 40 for teaching experience. There were two instructors with no teaching or industry experience – they were both recently minted with their Ph.D.s. A vastly larger number of instructors who had no industry experience (72) was present opposed to those who had no teaching experience (3). Both of these variables were skewed right, yet passed the assumptions for Normality allowing us to run t-tests, ANVOA, and regression on them.

Table 3. Independent Variables

	Mean	StDev	Range	Skewness
Years Teaching	12.36	8.62	40	0.907
Industry Experience	11.56	11.55	50	0.95

Our other independent variables were our categorical variables (Table 4). We chose to display them in a multi-variate table to allow the reader to best understand the relationships. The majority (mode) of classes taught were for Junior level classes and in Management. The small number of classes taught for Freshmen fails the Normality assumption ($n > 5$) preventing us from conducting analysis on this variable. (Casual research into the institutions represented indicated that only one institution had a business course in the curriculum, Introduction to Business, at the Freshman level.)

Table 4. Categorical Independent Variables

	ACCT	FIN	MGMT	MIS	MKTG	Total
Freshman	0	0	4	0	0	**4**
Sophomore	14	0	0	0	0	**14**
Junior	31	35	76	13	38	**193**
Senior	14	10	49	3	18	**94**
Masters1	8	5	20	0	7	**40**
Masters2	0	0	10	0	0	**10**
Total	**67**	**50**	**159**	**16**	**63**	**355**

RESULTS

We present the results of our analysis in the same order as the hypotheses and independent variables as previously presented. Within each section we will present some descriptive statistics followed by the prescriptive statistical results.

Industry Experience

Prior to modeling, we looked at the relationship of years in industry with our dependent variables. We were encouraged by the positive correlations as seen in the first column of Table 5, although only the last one indicated a significant correlation. What was also of note was the significant correlations of the SET with each other.

Table 5. Correlations with Years in Industry

	Industry	1. Objectives	2. Prepared	3. Communicated	4. Encouraged	5. Available
Industry	1					
1. Objectives	0.0872	1				
2. Prepared	0.0792	0.8598 **	1			
3. Communicated	0.0736	0.9145 **	0.8417 **	1		
4. Encouraged	0.0797	0.7920 **	0.7900 **	0.826 **	1	
5. Available	0.1060 *	0.7739 **	0.7880 **	0.776 **	0.776 **	1

* $p \leq 0.05$; ** $p \leq 0.01$

However, the failure of any but SET 5 to have a statistically significant correlation with the real world experience also meant that we could not get a significance in our ANOVA and regression analysis for any of them except with the years of industry experience and SET 5. This means we were unable to statistically support our hypothesis except for the relationship between the years of industry experience and the instructor being available. The longer one has spent in industry the more likely the student was to report on the SET that the instructor was available. As noted in equation (1), the influence on SET 5 is mainly from the constant and not from the years in industry. The resulting regression formula was:

$$(1) \ y_5 = 4.39 + 0.003 * I + \varepsilon$$

Years Teaching

Prior to modeling, we looked at the relationship of years teaching with our dependent variables. We were encouraged by the negative correlations as seen in the first column of Table 6. We were additionally encouraged in seeing that there were significant relationships noted with SET 1, 3, and 5.

Table 6. Correlations with Years Teaching

	Years		1. Objectives		2. Prepared		3. Communicated		4. Encouraged		5. Available
Years	1										
1. Objectives	-0.1596	**	1								
2. Prepared	-0.0762		0.8598	**	1						
3. Communicated	-0.1573	**	0.9145	**	0.8417	**	1				
4. Encouraged	-0.0800		0.7920	**	0.7900	**	0.826	**	1		
5. Available	-0.1159	*	0.7739	**	0.7880	**	0.776	**	0.776	**	1

* $p \leq 0.05$; ** $p \leq 0.01$

The significant correlations between years in industry and the SET 1, 3, and 5 mean that we are able to build regression models that contain years teaching with these three SET. The negative correlations mean that we are able to support our hypotheses for these three SET. As is noted in equations (2), (3), and (4), the primary influence on the SET is the constant and not years teaching, however there is a negative impact the longer one teaches on these three SET.

$$(2) \ y_1 = 4.44 - 0.007 * T + \varepsilon$$
$$(3) \ y_3 = 4.38 - 0.008 * T + \varepsilon$$
$$(4) \ y_5 = 4.48 - 0.004 * T + \varepsilon$$

Course Level

Freshmen SET results are shown here for completeness; however, they are not used in the analysis due to the small sample size. Generally, the SET means that all five of the SET increase as the course level also increases as seen in Table 7. But this is only true if one discounts the results from the small Freshmen representation. One anomaly that occurs is that as students progress from Freshmen to Seniors, they do not necessarily immediately progress to the graduate courses; thus, we must then re-evaluate the increasing SET from Masters 1 to Masters 2.

Table 7. Course Level Mean SET

	Means				
Level	**SET 1**	**SET 2**	**SET 3**	**SET 4**	**SET 5**
Freshmen	*4.383*	*4.435*	*4.283*	*4.120*	*4.438*
Sophomore	4.244	4.304	4.083	4.316	4.303
Junior	4.263	4.393	4.180	4.307	4.384
Senior	4.472	4.560	4.421	4.517	4.554
Msters1	4.248	4.310	4.056	4.331	4.383
Msters2	4.686	4.714	4.708	4.738	4.758

We used SPSS to run GLM Univariate ANOVA and pairwise comparisons for the five SET for each of the course level (see Table 8). The two course levels and relationship are shown in the first columns. Then the SETs are listed with the level of significance or non-significance (ns). As our hypotheses indicated, the higher the course, the higher the SET. The one exception was for the SET rating for Senior level courses being higher than Masters 1 for SET 1, 2, and 3.

Table 8. GLM Significant Results for Course Level

			SET 1	SET 2	SET 3	SET 4	SET 5
Freshmen	<	**Masters 2**	ns	ns	ns	0.005	ns
Sophomore	<	**Masters 2**	0.036	0.032	0.005	0.008	0.009
Junior	<	**Senior**	0.009	0.042	0.015	0.001	0.030
Junior	<	**Masters 2**	0.004	0.036	0.002	0.000	0.005
Senior	>	**Masters 1**	0.096	0.015	0.004	ns	ns
Masters 1	<	**Masters 2**	0.010	0.010	0.000	0.003	0.020

Although not all pairwise relationships showed a statistically significant relationship, those that did supported our hypotheses, with the one exception being Senior and Masters 1.

Course Department

When looking at the department in which the courses were taught, the mean SET results initially supported the research that SET scores in Accounting, Finance, and Management Information Systems were lower than those in Management or Marketing (Table 9). This research tested to see if any of these differences were significant.

Table 9. SET Means for Departments

Department	Means				
	SET 1	SET 2	SET 3	SET 4	SET 5
MIS	4.081	4.396	4.085	4.368	4.430
ACCT	4.252	4.339	4.095	4.277	4.323
FIN	4.309	4.383	4.159	4.274	4.388
MGMT	4.427	4.473	4.374	4.423	4.441
MKTG	4.423	4.500	4.370	4.466	4.516

We used SPSS to run GLM Univariate ANOVA and pairwise comparisons for the five SET for each of the departments (see Table 10). Although not all departments showed significant results, for those that did, they followed our hypotheses. We were able to show that there were significant differences for both Accounting and Finance having lower SET scores than those from Management and Marketing departments in at least some of the SET. The only comparative relationship that showed significance in all SET was that Accounting SET scores were less than Management.

Table 10. GLM Significant Results for Department

			SET 1	SET 2	SET 3	SET 4	SET 5
ACCT	<	MGMT	0.011	0.037	0.000	0.069	0.047
ACCT	<	MKTG	ns	ns	0.037	0.002	0.013
FIN	<	MGMT	ns	ns	0.048	ns	ns
FIN	<	MKTG	ns	ns	ns	0.046	ns

Industry and Course Level

This analysis used regression modeling to predict the SET means. We used the numerical independent variable for years in industry to make a new combined numerical variables using a binary indicator for the categorical variable course in a multiplicative process. An excerpt from the results is shown in Table 11. When running the regression, the original time in industry numerical independent variable was not included with the combined variables due to the high multicollinearity between this variable and the combined variables. The single variable linear regression was presented earlier in this manuscript. This same process was done for all combined regression analysis.

Table 11. Combined Variables Industry and Course Level

Years Industry	Sophomore	Junior	Senior	Masters 1	Masters 2
32	0	32	0	0	0
32	0	0	32	0	0
13	0	13	0	0	0
5	0	5	0	0	0
16	16	0	0	0	0
16	16	0	0	0	0
16	16	0	0	0	0
23	0	23	0	0	0
36	0	36	0	0	0
35	0	0	35	0	0
35	0	0	35	0	0
…	…	…	…	…	…

For all five of the SET we were able to find a statistically significant regression model as shown in equations (5) through (9). The resulting model contained only one combined variable. This means all other levels of courses taught, when combined with the years that faculty member had spent in industry, did not significantly influence the SET. The most interesting aspect of these models was that the only course level that did impact the SET was courses taught at the Masters 2 level. As hypothesized, this was a positive relationship.

$$(5)\ y_1 = 4.35 + 0.013*M2*Industry + \varepsilon$$
$$(6)\ y_2 = 4.43 + 0.004*M2*Industry + \varepsilon$$
$$(7)\ y_3 = 4.24 + 0.003*M2*Industry + \varepsilon$$
$$(8)\ y_4 = 4.37 + 0.014*M2*Industry + \varepsilon$$
$$(9)\ y_5 = 4.42 + 0.012*M2*Industry + \varepsilon$$

Industry and Course Department

New combined variables were created for this analysis just as they were for the previous section. The resulting regression formulas were found significant for all five of the SET with two departments indicating they contribute to the SET. In all cases Marketing had a positive contribution and Accounting had a negative contribution when combined with years in industry. This supported our hypotheses for these two departments. The regression formulas are shown in equations (10) through (14).

$$(10)\ y_1 = 4.36 - 0.008*Acct*I + 0.008*Mktg*I + \varepsilon$$
$$(11)\ y_2 = 4.44 - 0.007*Acct*I + 0.005*Mktg*I + \varepsilon$$
$$(12)\ y_3 = 4.28 - 0.014*Acct*I + 0.011*Mktg*I + \varepsilon$$
$$(13)\ y_4 = 4.38 - 0.007*Acct*I + 0.008*Mktg*I + \varepsilon$$
$$(14)\ y_5 = 4.42 - 0.006*Acct*I + 0.008*Mktg*I + \varepsilon$$

Years Teaching and Course Level

Initially we were unsure of how to pre-suppose this combined hypothesis due to the conflicting research with negative relationships with years teaching and SET and positive relationships with the higher the course. We chose to hypothesize higher SET ratings with the higher level courses. The results with this combined variable that takes years of teaching into consideration with the level of the course supports these hypotheses.

Although the variables remaining in this teaching model are not as consistent as with the industry model, there was one variable that was in all the models. Masters 2 was always a positive contributor to the SET with longer years teaching; however, in two of the models a lower level course was a detractor in the model. As the amount of the positive contribution of the Masters 2 was greater than the negative detraction of the other courses, we suppose that our hypotheses are supported. Each of the five SET regression models are shown in equations (15) through (19) below.

$$(15)\ y_1 = 4.35 + 0.031*M2*T + \varepsilon$$
$$(16)\ y_2 = 4.43 + 0.024*M2*T + \varepsilon$$
$$(17)\ y_3 = 4.24 - 0.008*M1*T + 0.036*M2*T + \varepsilon$$
$$(18)\ y_4 = 4.37 - 0.005*J*T + 0.029*M2*T + \varepsilon$$
$$(19)\ y_5 = 4.417 + 0.028*M2*T + \varepsilon$$

Years Teaching and Course Department

This was the most complex of our research to set our hypotheses, but we chose to follow the same pattern and pre-suppose that the course department would outweigh the years of teaching. As is shown in the regression equations (20) – (24), these hypotheses were supported for those we supposed would have a negative impact on SET. In all models both Accounting and Finance had a negative impact and in two of the models MIS also had a negative impact on SET; however, neither Marketing or Management (those we supposed would have a positive impact on SET) were significant in any of our regression models for the five SET.

$$(10)\ y_1 = 4.43 - 0.011*Acct*T - 0.016*FIN*T - 0.022*MIS*T + \varepsilon$$
$$(11)\ y_2 = 4.47 - 0.007*Acct*T - 0.011*FIN*T + \varepsilon$$
$$(12)\ y_3 = 4.37 - 0.018*Acct*T - 0.022*FIN*T - 0.019*MIS*T + \varepsilon$$
$$(13)\ y_4 = 4.42 - 0.007*Acct*T - 0.016*FIN*T + \varepsilon$$
$$(14)\ y_5 = 4.46 - 0.009*Acct*T - 0.010*FIN*T + \varepsilon$$

Summary

In general, the results of this study did not indicate statistical evidence which negated any of the hypothesis; many of our hypothesis were statistically supported. Results indicated a positive correlation between the length of industry experience and higher SET in relation to one's availability to students and to work effectively with Graduate students as well as that the longer one teaches the lower SET will be in regards to one's ability to effectively communicate, define course objectives, and be available to students. The level of the course was found to impact SET in that lower level courses tend to receive lower SET; the department of the course was found also to impact SET in that courses in Accounting, Finance, and Management Information Systems were found to have across the board lower SETs than courses in Marketing and Management. Finally,

we found that when combined with years of industry experience or years of teaching experience, the patterns related to course level and department held thus indicating that experience is not as important to SET as is the course level or department.

CONCLUSION

We begin by acknowledging that this study was limited by the available information not only of the SET but also the qualification of professional experience. Future research would benefit from the use of individual student evaluations to allow structured equation modeling (SEM) of variance in the data. Research would also benefit by being able to verify the length and type of industry experience held by the instructor as well as the type of teaching experience of the instructor, such as time spent in a different type of institution than the current one of evaluations. Despite these limitations, our study does make a significant contribution in this area as it is the first to discuss, to our knowledge, the impact of industry experience on one's SET along with being one of relatively few that utilized years of teaching experience as a variable. This study is also significant in that it adds to the very small amount of literature that is focused on the business college. Along with this, we noted in our study preparations that a preponderance of studies discussing SET do not use the actual evaluations administered by the institution but rather utilized independent instruments administered by the researchers. Though sometimes difficult to obtain, future research would benefit greatly from using the original, institutionally administered SET from additional universities, both domestic and international, at all levels, to validate the results of this study.

While it might be tempting to add the findings of this study to the body of literature that argues the invalidity, or at least the disconnect, of SET to actual teaching quality, a better use of the findings is that one standardized set of evaluations used across campus places some faculty more directly in line to fail. As this study confirmed prior research (Uttl & Smibert, 2017) that those teaching quantitative based courses receive the lowest levels of SET, institutions should explore the use of more tailored SET, or at least a scaled version of SET, for those teaching in quantitative courses as well as those teaching in more theory-based courses as to remove potential biases and to allow evaluation of instructors based on their actual subject matter rather than a generic instrument. This is a particularly important factor when one considers the tenure and promotion system and that while within the business college, the SET numbers can be interpreted per class, once the promotion decision reaches the institutional level, the trend of lower SET in quantitatively based classes may not be understood.

The finding that industry experience is positively correlated only to availability to students brings up an important question for business colleges: why is it that we want our faculty to have more industry experience? Being a college professor is in itself a profession, one that requires years of training and experience to achieve. With an already lengthy educational process needed to begin an academic career, the addition of industry experience, and the time and necessary career change added by that experience, might serve to only discourage otherwise qualified candidates for the profession from pursuing it. Future research needs to investigate not only why someone would want to leave industry to pursue an academic career but also why colleges would specifically seek someone who did this. Specific to the findings of this study, research needs to further investigate exactly what impact being available to students actually brings to the campus (eg: involvement, retention, satisfaction) and the development of the students.

The results indicating lower SET correlated to the longer one teaches should be of particular concern. Not only does the institution need to be concerned about the potential decline of work performance over time but also the potential impact that long serving faculty might have on the retention and graduation rates of students. Future research would benefit from the exploration of the continuance rates of students in the areas of retention in relation to their experiences with long serving faculty. A particular study of interest might be the impact of long serving faculty on a student's decision to change their major.

The positive correlation between SET with teaching Marketing and with the SET at the Graduate 2 level also lends itself well to future research. Of the course departments studied, the field of Marketing would be considered the most dynamic and the most susceptible to change (Kotler, 1997). Future research would benefit from deeper investigation into what specific characteristics of those teaching Marketing make them appealing to students along with what aspects of their industry experience allow them to make a positive impact in Graduate courses that is not present when considering undergraduate courses.

Finally, but of equal importance within this study is the impact of course level on faculty SET. As stated by Hippensteel and Martin (2005), often junior faculty, those just entering the tenure system, are placed in lower level introductory or service courses. Given that lower SET are seen in lower level courses, this practice may be unintentionally sabotaging the potential advancement of junior faculty who depend on SET in promotion and tenure decisions. Additional research is certainly appropriate into the potential impact on career progression when evaluated teaching lower level courses.

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