What Characteristics Predict Student-Faculty Interaction and Important Relationships with Effective Educational Practice

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Abstract

Student-faculty interaction is significantly beneficial to college students' engagement and success. Past studies of student-faculty interaction (SFI) have focused on the relationship between student characteristics and SFI or faculty members' qualities, skills or approaches and SFI. This study uses a large-scale multi-institution dataset to take a closer examination of the relationships between faculty characteristics, course characteristics, institutional characteristics, faculty course goals, and faculty values for campus support with SFI. Results suggest that several faculty, course, and institution characteristics predict increased SFI. Additionally, faculty who do more to structure their courses for student growth and development and more strongly value a supportive campus environment for students interact with students more frequently.

What Characteristics Predict Student-Faculty Interaction and Important Relationships with Effective Educational Practice

Student-faculty interaction (SFI) is a significant indicator of college student engagement (Kuh, 2002) and is closely related to students' collegiate experiences, development and success (Kuh, 2002; Umbach, 2007). Faculty members play an essential role in influencing college students' engagement through their interactions with students both inside and outside of classrooms. Additionally, a supportive campus environment provides a friendly and accommodating platform for faculty members and students to achieve higher academic outcomes. Therefore, it is important for institutions and faculty members themselves to understand how they influence students through their interactions and use of effective educational practices.

Kuh, Kinzie, Schuh, Whitt and associates (2010) illustrated various forms of SFI: academic advising, faculty members providing prompt and extensive feedback on student work, faculty members working closely with students in scholarly projects, and faculty members utilizing electronic technology to interact with students. In this study, SFI specifically refers to direct contact, formal or informal, between students and faculty inside and outside of classrooms, participating in academic and non-academic activities. Indirect interactions, such as feedback on students' assignments, are excluded.

With 2013 Faculty Survey of Student Engagement (FSSE) data, this paper aims to explore the relationship between faculty's characteristics, such as demographic characteristics and their affiliated institutions' characteristics, and SFI. In addition, this paper will investigate the relationship between SFI and faculty's emphases on effective educational practice, such as how much they structure their courses so that students develop intellectual skills, practical skills,

and personal and social responsibility. Furthermore, this paper will also discuss the relationship between faculty members value the increasing institutional support for students and SFI. The specific research questions that will be addressed are:

1. How does student-faculty interaction vary for different kinds of faculty in different contexts? In other words, how does student-faculty interaction differ by various faculty demographics, faculty employment statuses, course characteristics and institutional characteristics?
2. How is student-faculty interaction related to how faculty members structure their courses for student gains in a variety of areas?
3. How is student-faculty interaction related to faculty values for institutional emphasis on student support?

Literature Review

Student Engagement and Student-faculty Interaction (SFI)

A number of scholars have studied the impact of student engagement on college students' academic performance, persistence and retention (Astin, 1993; Braxton, Hirschy & McClendon, 2004; Kuh, 2003; Kuh, Kinzie, Buckley, Bridges & Hayek, 2007; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Pascarella & Terenzini, 2005). Measuring first-year college students' grades and persistence between the first year and the second year, Kuh et al. (2008) found that student engagement in educationally purposeful activities has positive relationship with students' academic outcomes and persistence. Additionally, Carini, Kuh and Klein (2006) explored the association between student engagement and students' academic performance, and found that lowest-ability students benefit more from engagement than their counterparts.

Several studies have examined the impact of SFI on student development and learning outcomes (Kuh & Hu, 2001; Kuh, Kinzie, Buckley, Bridges & Hayek, 2006; Pascarella &

Terenzini, 1980; Tinto, 1993; Umbach & Wawrzynski, 2005). Kezar and Moriarty (2000) found that SFI had positive relationships with a wide range of student outcomes, such as students' self-assessed leadership abilities and social self-confidence. Umbach and Wawrzynski (2005) found that if faculty members employed collaborative teaching and learning methods, and if they tended to value the behavior of respecting students and challenging them academically, students were more likely to have higher levels of engagement and learning outcomes. A number of scholars also examined the beneficial effects of SFI among students with diverse backgrounds (Anaya & Cole, 2001; Kezar & Moriarty, 2000; Lundberg & Schreiner, 2004). Lundberg and Schreiner (2004) found that students' relationships with faculty members acted as the strongest predictors of learning among students of color. Additionally, Sax, Bryant and Harper (2005) indicated that female students reported more frequent and more positive interactions with faculty than their male peers. Nonetheless, not all studies support the positive effects of SFI on all students (Endo & Harpel, 1982; Kuh, 2003; Pascarella & Terenzini, 1991). Pascarella and Terenzini (1991) indicated that pure social exchange between students and faculty did not affect students' learning outcomes unless they involved intellectual or substantial interaction. Kuh (2003) also highlighted that more interactions may not necessarily equal better interactions between students and faculty members.

Faculty characteristics, Institutional Characteristics and SFI

Several studies have examined the relationship between students' demographic characteristics and SFI, such as students' ethnicities, gender, major and class standing (Anaya & Cole, 2001; Kezar & Moriarty, 2000; Kuh & Hu, 2001; Lundberg & Schreiner, 2004; Sax, Bryant & Harper, 2005). However, comparatively little is known about the relationship among faculty characteristics, faculty's course goals, supportive campus environment and SFI.

Exploring faculty members' characteristics in influencing SFI, Einarson and Clarkberg (2004) claimed "…faculty members' core beliefs about the nature of their roles as professors are powerful predictors of the features of faculty-student interaction" (p. 5). Faculty's belief about their roles and responsibilities closely associate with the time and energy they spent on teaching and the pedagogies they employed (Blackburn & Lawrence, 1995; Colbeck, Cabrera & Marine, 2002), which are directly related to the level of interactions with students.

Examined on how faculty behaviors and attitudes toward course-related and out-of-class interaction associated with institutional characteristics, Umbach and Wawrzynski (2005) found that on average, faculty members at liberal arts colleges has more course-related interact with students than their counterparts in other types of institutions. When control was introduced, faculty members at private colleges are more likely to interact with students about courses than their colleagues in public institutions (Umbach & Wawrzynski, 2005). Finally, they found that institutional size has a negative relationship with SFI (Umbach & Wawrzynski, 2005).

Course Goals and Supportive Campus Environment

The "Course Goals" scale in this paper is derived from liberal education outcomes raised by Association of American Colleges and Universities (AAC&U, 2005), including intellectual and practical skills and personal and social responsibilities. Intellectual and practical skills concentrates on students' skills in communication, literacy and integration of learning; personal and social responsibilities emphasize students' development in civic engagement, ethical and intellectual development, and life-long learning (AAC&U, 2005). These students' liberal education outcomes can be achieved through several channels when working with faculty members or advisors, such as setting learning goals, milestone assessment, and culminating experiences (AAC&U, 2005).

Faculty beliefs about institutional support for students are also likely related to their beliefs about their roles and responsibilities in student development. A supportive campus environment for students is characterized by high-quality student relationships with peers, faculty, staff and other administrative personnel (Kuh et al., 2010). It closely related to effective policies, practices and conditions on campus, such as transition programs, advising networks, peer support and residential environments (Kuh et al., 2010). Strange and Banning (2001) claim that "campus environments set conditions that affect student learning and, in turn, students influence the shape of campus environments" (p. 200). Nelson Laird, Chen and Kuh (2008) found a positive association between expected persistence rates and student perceived supportive campus environment. Nevertheless, little is known about the relationship between SFI and faculty's value of a supportive campus environment.

In summary, current literature cover various aspects of SFI and the roles of faculty characteristics and institutional characterizes in influencing SFI. However, those literature focus more on faculty's quality, skills, or attitudes. Few studies have explored how faculty's demographic characteristics; faculty statuses such as rank, employment status, and areas of academic appointment; and course characteristics such as course level and size influence their interactions with students. Therefore, more research is needed to examining the relationship between faculty and course characteristics and SFI

Research Method

Data Source

The data used in this paper comes from the 2013 administration of the Faculty Survey of Student Engagement (FSSE), a web-based annual survey of faculty members of four-year institutions designed to complement the National Survey of Student Engagement (NSSE) (FSSE,

2013). FSSE measures faculty members' expectations for student engagement and their empirical experiences in helping with high levels of student learning and development (FSSE, 2013). Institutions that participated in NSSE can also choose to participate in FSSE to identify the strengths and weaknesses of the student engagement and faculty teaching at their institutions based on faculty's perception (FSSE, 2010). FSSE participating institutions choose their own faculty samples (FSSE, 2010). Faculty participants are asked to answer sets of questions such as their use of teaching strategies, amount of time spent on in-class and co-curricular activities, approaches toward academic challenges, emphasis on learning with peers, the level of student-faculty interaction, and their perceptions on the essential learning experiences and campus environment that their institutions value.

Sample

According to FSSE (2014), more than 211,000 faculty members from approximately 850 different colleges and universities in United States, Canada and other countries have participated in FSSE since the year 2003. In 2013, 146 institutions participated in FSSE, which include 141 U.S., four Canadian, and one American university abroad baccalaureate-grating colleges and universities. Based on Carnegie 2010 Basic Classification, about 2% of FSSE participating institutions were Research Universities with very high research activates; 5% were Research Universities with high research activity; 9% were Doctoral/Research Universities; 33% were Master's Colleges and Universities with larger programs; 5% were Master's Colleges and Universities with medium programs; 7% were Master's Colleges and Universities with smaller programs; 16% were Baccalaureate Colleges concentrated on the fields of Arts and Sciences education; and 24% were Baccalaureate Colleges with diverse fields (FSSE, 2013). In addition,

there were 39% public institutions and 61% private institutions among participating institutions (FSSE, 2013).

The number of faculty respondents of FSSE 2013 was 18,133. Among those faculty respondents, male faculty and female faculty respondents were almost equally represented with percentages of 49% and 51% respectively. Furthermore, nearly 73% of faculty respondents were white. Almost 73% of respondents had full-time employment status. Among full-time faculty members, different academic ranks were almost equally represented except for "instructor or lecture" and "other" ranks (professor, 26%; associate professor, 27%; assistant professor, 29%; instructor or lecturer, 14%, and other, 5%). Noticeably, nearly half of faculty respondents came from three discipline areas: arts and humanities (25%), social science (13%) and health professions (12%).

Response rate was calculated for each FSSE participating institution (FSSE, 2013). In 2013, 43% of faculty members that FSSE contacted responded to the survey, which was a medium response rate (FSSE, 2013). The response rate among faculty members at 146 participating institutions ranged from 11% to 88%, with an average institutional response rate of 49% (FSSE, 2013).

Measures

The dependent variable in this study is student-faculty interaction. This dependent variable is a factorial-derived scale (Cronbach's $\alpha = .77$) composed of four items that measure the extent to which that undergraduate students interacted with faculty members in 2012 to 2013 academic year. Faculty reported on the level of meaningful and substantive interactions with undergraduate students in following ways: talked about career plans with faculty; worked on activates other than course work; discussed course topics, ideas, or concepts outside of class; and

discussed academic performance with faculty. Reponses to student-faculty interaction were measured in a four-point scale from "Never" to "Very Often" (FSSE, 2013). The dependent variable was unstandardized prior to running the analyses.

The independent variables are made up of three portions due to the three-step data analyses. The first portion of independent variables was comprised of various faculty demographics (gender, race, age, U.S. citizen, earned a doctoral degree, disciplinary areas and years of teaching), faculty's rank and employment statuses, course characteristics (course load, class level, course format, and general education requirement). Furthermore, characteristics of institutions where faculty respondents work were also added in the independent variables (Carnegie classification, public/private sector, institutional size, locale, and the type of Barron's Competitiveness) were also added into the model in order to understand how much variation in student-faculty interaction exists among different institutions.

The second portion of the independent variables is "Course Goals". It is a factorial-derived scale (Cronbach's $\alpha = .80$) composed of 10 variables that measure the extent to which that faculty members structure their selected courses in order to promote students' general education competencies (e.g. writing, speaking, thinking and analyzing), professional and personal development, and civic engagement in 2012 to 2013 academic year (FSSE, 2013). Those skills that faculty emphasized were in accord with the liberal arts outcomes raised by Association of American Colleges and Universities (AAC&U) (AAC&U, 2005, 2007), which were students' intellectual skills, practical skills, and personal and social responsibilities. Those 10 items in "Course Goals" scale were responded in a four-point scale: very little, some, quite a bit and very much (FSSE, 2013).

The third portion of the independent variable is "Supportive Campus Environment", also a factorial-derived scale (Cronbach's α = .86) composed of 8 variables that measure the value that faculty members place on increasing instructional emphasis on student support (FSSE, 2013). The campus support is composed of several perspectives, such as academic support, social support, students' overall well-being and non-academic responsibilities. Those 8 items were responded in a four-point scale: not important, somewhat important, important and very important (FSSE, 2013). Finally, scores of the "Student-faculty interaction" scale, "Course Goals" scale and "Supportive Campus Environment" scale were converted to a 60-point scale during data analyses. Please refer to Appendix I for detailed information about those three scales and their associated items.

Data Analyses

The analyses of the study were conducted in two steps. When examined the relationship between faculty demographic characteristics, rank and employment status, course characteristics, institutional characteristics and student-faculty interaction, both descriptive analyses and one simple ordinary lease squares (OLS) regression were conducted. Measure of central tendency (mean and frequencies) and variability were computed to analyze the variation of the scores of student-faculty interaction among faculty with different demographics, course characteristics, and institutional types. Then, OLS regression was used to estimate the magnitude of the relationship between faculty characteristics and the dependent measures—student-faculty interaction scale. Student-faculty interaction was regressed on a set of characteristics of faculty, course and institution.

In the second step of the analyses, two other OLS models were used to examine the respective effects of course goals and supportive campus environment on student-faculty

interaction, controlling for the characteristics of faculty, course and institutions. It is worth noting that in the latter two OLS regression models, we only kept independent variables with statically significant different results based on preliminary analyses. Variables such as U.S. citizens, earned doctoral degree(s), years of teaching, general education requirement and locale were taken out from predictors in latter steps of analyses.

Limitations

Two primary limitations in this study must be acknowledged when interpreting the results and using the findings in future research and implementation. First, institutions that participate in NSSE can choose to participate in FSSE and self-select their own faculty samples (Nelson Laird, 2011). It was institutions choosing FSSE rather than FSSE choosing its own institution samples randomly. Hence, master's colleges and universities, private institutions and institutions located in urban areas were slightly overrepresented in FSSE 2013. Furthermore, faculty participants of FSSE were invited by their own participating institutions rather than randomly selected by the institution. Institutions might invite faculty members who set good examples in student-faculty interaction. In that circumstance, we would not know whether our data and results are representative of the level of student-faculty interaction of all participating faculty members generally. Second, the course that faculty chose for FSSE was not sampled (Nelson Laird, Niskode-Dossett & Kuh, 2011). This study used course-based FSSE, which faculty participants chose one of the courses they taught in 2012 to 2013 academic year. When faculty members chose the course they taught, they might have chosen the one have best student-faculty interaction. Therefore, it is hard for a researcher to claim that the course sample in this study can reflect the student-faculty interaction of all courses at the participating institutions (Nelson Laird, Niskode-Dossett & Kuh, 2011). Thinking about these two limitations above, readers should be

cautious about the generalizability of the findings in this study, especially when using the findings beyond the institutions types, public or private sectors and the course areas covered in this study.

Findings

Characteristics of Faculty, Course, and Institution

Table 1 indicated the descriptive analyses of the different level of student-faculty interaction among faculty with different demographics, course characteristics and institutional types. Slightly more female faculty members indicated that they interacted with students than male faculty did (50.9% / 49.1%). There were obvious racial and ethnical differences among faculty members who interacted with students. Among faculty respondents who indicated to interact with students, 72.6% of them were white faculty members, followed by black or African American faculty (6.0%). Hispanic or Latino faculty has the smallest portion reported SFI (3.4%). Additionally, 58.9% of faculty respondents earned a doctoral degree. In terms of faculty members from different disciplinary areas, 22.5% of faculty members were from arts and humanities, whereas 2.6% were from engineering. Over 60% of the faculty had more than 10 years' teaching experiences and 43% of the respondents reported that they had taught the selected course for 10 or more times. Additionally, the portion of tenure-track faculty members was almost equally represented (full professor: 24.7%; associate professor, 23.0%; assistant professor, 24%). Full-time lecture/instructor had the smallest portion among respondents.

In terms of course characteristics, 49% of faculty respondents taught upper level classes, and 68% of faculty taught small-size class (less than 30 students). Additionally, 74.2% of faculty taught their selected course in the format of on-campus classroom instruction. Looking at the institutional type where faculty respondents working at, 50.6% of faculty came from master's

colleges and universities. Nearly half of faculty respondents came from private instructions. More to add to this point, over 50% of faculty came from large-size (5000-9999) or very large-size (10, 000 or more) institutions.

Insert Table 1 about here

Table 2 contains regression coefficients for the first OLS regression model, which examined the relationship between various faculty demographic characteristics, rank and employment statuses, course characteristics, institutional characteristics and student-faculty interaction. Female faculty members scored .08 standard deviations higher on SFI than male faculty members did (β = .08, p <.001). In addition, black and African American faculty reported the highest score on SFI (β= .08, p <.001), but white faculty member scored the lowest compared to faculty in other ethnic groups (p <.001). Next, differences on SFI existed explicitly in disciplinary areas. Faculty members in the field of health professions had the highest level of SFI than that of faculty members in arts and humanities (β = .09, p <.001), followed by communications, media and public relations, education, and social service professions (β= .05, p <.001). However, faculty member in physical sciences, mathematics and computer science scored the lowest among all disciplinary field (β= -.04, p <.001). Then, the results also show that the more times that faculty taught their selected course, the more interactions they would have with students. Apparently, faculty taught the course less than 10 times scored .04 standard deviations lower on SFI than faculty members who taught the course 10 times or more (p <.001). When looking at faculty's rank and employment status, part-time lecture/instructor scored .18 standard deviations lower on SFI than full professor (p <.001). Interesting, faculty members who

taught eight or more courses in 2012 to 2013 academic year scored the highest on SFI among faculty with different course load. Additionally, faculty members who taught upper division classes scored .08 standard deviation higher than that of faculty who taught lower division classes (p <.001). Faculty members who taught large class size (more than 50 students) scored highest on SFI (β = .02, p <.05), whereas faculty taught small size class (fewer than 30 students) scored lowest on SFI (β = -.02, p <.05). In terms of Carnegie classification, faculty members who work at doctoral universities scored .04 standard deviations lower on SFI than that of faculty work at master's colleges and universities (p <.001). In addition, based on Barron's type of competitiveness, faculty members worked at competitive institutions scored .02 standard deviation lower in SFI than that of faculty worked at none or less competitive institutions (p <.05), and .03 standard deviations lower than that of faculty members work at highly or most competitive institutions (p <.01). Finally, the adjusted R^2 equaled .14, which indicated that 14% of the variation in SFI explained by predictors in this regression model. According to NSSE's criteria and interpretation of effect size, R^2 =.14 is a small effect, which meant faculty characteristics had small effect on their level of SFI.

Insert Table 2 about here

Faculty's Course Goals and SFI

Table 3 showed the regression coefficient of the second OLS model, which examined the relationship between faculty's course goals and student-faculty interaction. After controlling for

all faculty, course, and institutional-level characteristics, CG (β = .36, p <.001) had a positive and significant relationship with SFI. See Tables 3 for details.

Insert Table 3 about here

Supportive Campus Environment and SFI

Table 4 showed the regression coefficient of the third OLS model, which examined the relationship between supportive campus environment and student-faculty interaction. After controlling for all faculty, course, and institutional-level characteristics, SE (β = .20, p <.001) had a positive and significant relationship with SFI. See Tables 4 for details.

Insert Table 4 about here

Significance, Discussions and Implementations

Although past studies examined various aspects of SFI and the roles of faculty characteristics and institutional characteristics in influencing SFI, those studies focused more on faculty's qualities, skills or attitudes. Few studies have explored how faculty's demographic, course, and institutional characteristics relate to SFI. Additionally, fewer studies have examined how faculty members' course structures and their values for institutional support strengthen SFI. This study brings us new thoughts about the nature of variations in SFI among faculty members: the relationship between emphasizing course goals that enrich students' learning and promoting SFI and the role of valuing a supportive campus environment in enhancing SFI.

The results of this study are significant and meaningful for institutions, faculty members, and student affairs professionals. By understanding the nature of the variation in SFI among faculty members with different characteristics, institutions will be able to provide more support and resources to faculty members to help them enhance SFI. Additionally, findings about the relationships between faculty characteristics and faculty values and SFI will provide helpful reference for institutions during hiring, tenure, and promotion—institutions may want to focus on hiring and rewarding faculty members who value the outcomes studied here. Furthermore, institutions dedicated to creating a supportive campus environment for students could more efficiently provide resources for faculty and staff to interact with students by better understanding faculty values for student support. For faculty members, this study can help them think about incorporating course goals that promote interaction in their teaching and course design. Finally, the results of this study can help student affairs professionals to better collaborate with faculty members in supporting students through curricular and co-curricular activities, and give them some new ideas in encouraging students to establish quality connections with faculty members.

Conclusion

Understanding the effect of faculty characteristics on student-faculty interaction provide us an opportunity to examine the other half side of student-faculty interaction other than knowing the effect of student characteristics in such interaction alone. Faculty characteristics such as demographics, course characteristics and institutional type do matters in their level of student-faculty interactions. Faculty members who emphasize students' intellectual skills, practical skills, or personal and social responsibilities appear to have higher level of student-faculty interactions. The result of this study has practical values that be employed by faculty members and

institutions to analyze, compare with and improve the student-faculty interactions on their own campuses.

Appendix I.

Table 1

Selected Characteristics of Faculty Members (N=18,133)

			Student Faculty Interaction	
Faculty/Institutional Characteristics	N	%	Mean	SD
Sex				
Male		49.1%	33.3	13.2
Female		50.9%	35.4	13.2
Race/Ethnicity				
Asian, Native Hawaiian, or Other Pacific Islander		4.5%	35.0	13.1
Black or African American		6.0%	39.4	13.9
Hispanic or Latino		3.4%	35.2	13.6
White (non-Hispanic)		72.6%	33.7	13.1
American Indian, Alaska Native, Other, Multiracial		4.4%	35.7	13.7
I prefer not to respond		9.1%	35.6	13.4
Age				
34 or younger		12.8%	33.4	13.2
35-44		23.3%	35.0	13.5
45-54		26.5%	35.4	13.4
55 -64		27.4%	33.9	13.0
65 or older		10.1%	32.0	12.6
US Citizen				
No		3.0%	34.7	12.8
Yes		97.0%	34.4	13.3
Earned doctoral degree(s)				
No		41.1%	32.8	13.5
Yes		58.9%	35.5	12.9
Disciplinary area				
Arts & Humanities		22.5%	33.9	13.8
Biological Sciences, Agriculture, & Natural Resources		6.2%	33.0	11.1
Physical Sciences, Mathematics, & Computer Science		8.6%	34.6	13.7
Social Sciences		10.3%	31.1	16.4
Business		8.4%	35.9	15.1
Communications, Media, & Public Relations		3.1%	36.7	8.4
Education		8.2%	34.2	14.7

Engineering	2.6%	34.7	11.8
Health Professions	6.7%	36.0	14.8
Social Service Professions	2.7%	34.4	14.3
Other disciplines	20.7%	34.9	14.2
Years of teaching			
4 or less	17.6%	32.0	13.4
5 - 9	21.1%	34.1	13.4
10 - 19	29.3%	35.6	13.3
20 - 29	18.2%	35.4	12.9
30 or more	13.8%	33.6	12.5
Number of times taught selected course			
0	7.5%	31.4	13.0
1 - 2	14.8%	33.8	13.1
3 - 4	15.0%	34.8	13.3
5 - 9	19.5%	34.7	13.3
10 or more times	43.1%	34.9	13.2
Rank/employment Status			
Full Professor	24.7%	35.0	12.9
Associate Professor	23.0%	36.6	12.8
Assistant Professor	24.0%	36.9	12.8
Full-time Lecturer/Instructor	11.0%	36.0	13.0
Part-time Lecturer/Instructor	17.4%	27.4	12.3
Course load			
0-3 courses	24.1%	31.8	13.5
4-5 courses	26.7%	34.0	13.1
6-7 courses	20.8%	35.5	12.9
8 or more courses	28.3%	35.8	13.1
Class level			
Lower division	43.6%	32.4	13.0
Upper division	49.0%	36.0	13.2
Other	7.4%	35.1	13.5
Class size			
20 or fewer	31.5%	34.7	13.3
21-30	36.5%	33.0	13.2
31-40	14.0%	35.0	13.0
41-50	6.7%	35.7	13.2
51-100	7.8%	36.2	13.6
More than 100	3.5%	35.9	13.1
Course format			
Classroom instruction, on-campus	74.2%	35.5	13.0
Classroom instruction, at an auxiliary location	1.9%	34.6	13.0
Distance education	15.4%	27.5	12.6
Combination of classroom instruction and distance education	8.4%	36.4	13.3
General education requirement			
No	48.0%	35.6	13.2
Yes	52.0%	33.2	13.2
Carnegie type			

Doctoral Universities	3,636	23.7%	33.5	13.1
Master's Colleges and Universities	7,997	50.6%	34.0	13.5
Baccalaureate Colleges	2,993	17.8%	36.5	13.2
Other	1,305	7.9%	34.5	12.8
Sector				
Public	7,426	48.6%	35.1	13.1
Private	7,940	51.4%	33.7	13.5
Institution Size				
Very Small (fewer than 1,000)	949	5.8%	35.6	13.2
Small (1,000-2,500)	2,919	18.8%	35.7	13.4
Medium (2,500-4,999)	2,900	18.7%	35.1	13.2
Large (5,000-9,999)	4,313	28.7%	35.7	13.1
Very Large (10,000 or more)	4,285	28.0%	31.3	13.1
Locale				
City	7,713	50.9%	33.0	13.5
Suburb	2,832	18.8%	35.3	13.2
Town	3,481	21.8%	36.2	13.0
Rural	1,340	8.5%	34.9	13.1
Collapsed Barron Type				
NA, Non, Less competitive	6,365	39.6%	34.3	13.3
Competitive	6,549	41.8%	33.9	13.4
Very competitive	1,553	9.6%	35.1	12.8
Highly, Most competitive	1,464	9.0%	36.0	13.0

*Note: Carnegie classification categories are collapsed categories.

Table 2

Regression Results of Faculty Characteristics, Course Characteristics and Institutional Characteristics (N=18,133)

	Student-faculty Interaction [a]		
Faculty/Institutional Characteristics	B	SE of B	*β*
(Constant)	36.86	1.10	***
Female	2.08	.25	.08***
Race/Ethnicity (White (non-Hispanic)= reference group)			
Asian, Asian American or Pacific Islander	.85	.59	.01
Black or African American	4.73	.52	.08***
Hispanic or Latino	2.59	.68	.03***
Other	2.73	.58	.04***
Age (55 or older)	-2.34	.28	-.09***
US citizen or permanent resident	1.12	.88	.01
Earned a doctoral degree	-.10	.31	.00
Disciplinary area (Arts and Humanities = reference group)			
Biological Sciences, Agriculture, & Natural Resources	.96	.52	.02
Physical Sciences, Mathematics, & Computer Science	-1.88	.43	-.04***

Social Sciences	.44	.42	.01
Business	.13	.47	.00
Communications, Media, & Public Relations	3.34	.66	.05***
Education	2.25	.47	.05***
Engineering	-.45	.82	-.01
Health Professions	2.67	.48	.06***
Social Service Professions	3.45	.63	.05***
Other disciplines	1.94	.52	.04***
Taught at any college or university for more than 20 years	-.37	.32	-.01
Taught the selected courses less than 10 times	-1.08	.26	-.04***
Rank (Professor= reference group)			
Associate Professor	.22	.36	.01
Assistant Professor	.07	.38	.00
Full-time Lecturer/Instructor	-.65	.49	-.02
Part-time Lecturer/Instructor	-6.18	.45	-.18***
Course Load (8 or more courses= reference group)			
0-3 courses	-2.73	.36	-.08***
4-5 courses	-1.77	.32	-.06***
6-7 courses	-.75	.33	-.02*
Class level (Upper division = reference group)			
Lower division	-2.17	.28	-.08***
Other class level	-.02	.49	.00
Class size (Small course taught= reference group)			
Medium	-.63	.29	-.02*
Large	.70	.33	.02*
Course format (Classroom instruction, on-campus = reference group)			
Classroom instruction, at an auxiliary location	.30	.87	.00
Distance education	-6.68	.42	-.18***
Combination of classroom instruction and distance education	-.25	.43	-.01
Course meeting general education requirement	-.35	.27	-.01
Collapsed Carnegie type (Master's Colleges and Universities = reference group)			
Doctoral universities	-1.23	.33	-.04***
Baccalaureate Colleges	.44	.34	.01
Other, not classified	-.33	.60	-.01
Private institutions	.15	.29	.01
Locale (Urban = reference group)			
Suburban	-.20	.34	-.01
Town	.28	.34	.01
Rural	.15	.44	.00
Collapsed Barron type (Competitive= reference group)			
NA, Non, Less competitive	.67	.29	.02*

Very competitive	.14	.43	.00
Highly, Most competitive	1.48	.48	.03**
R^2	.15		
Adjusted R^2	.14		
F	41.758***		

Note: * p<.05, ** p<.01, ***p<.001 (2-tailed).
[a] Dependent variable was unstandardized prior to entry into the model.
[a] Because of multicollinearity issues, the item "institution size" (VIF >2.0) were taken out from independent variables in this OLS model.

Table 3

Course Goals Regression Results (N=18,133)

	Student-faculty Interaction [a]		
Faculty/Institutional Characteristics	B	SE of B	β
(Constant)	24.65	.55	***
Female	1.21	.22	.05***
Race/Ethnicity (White (non-Hispanic)= reference group)			
Asian, Asian American or Pacific Islander	-1.73	.52	-.03**
Black or African American	2.22	.47	.04***
Hispanic or Latino	.44	.62	.01
Other	1.63	.52	.03**
Age (55 or older)	-2.85	.24	-.10***
Disciplinary area (Arts and Humanities = reference group)			
Biological Sciences, Agriculture, & Natural Resources	2.45	.48	.05***
Physical Sciences, Mathematics, & Computer Science	-.09	.39	.00
Social Sciences	.09	.39	.00
Business	-1.01	.42	-.02*
Communications, Media, & Public Relations	1.30	.61	.02*
Education	.47	.43	.01
Engineering	-1.26	.73	-.01
Health Professions	1.22	.42	.03**
Social Service Professions	1.41	.57	.02*
Other disciplines	.98	.48	.02*
Taught the selected courses less than 10 times	-.89	.23	-.03***
Rank (Professor= reference group)			
Associate Professor	.38	.32	.01
Assistant Professor	-.26	.33	-.01
Full-time Lecturer/Instructor	-1.10	.40	-.03**
Part-time Lecturer/Instructor	-5.98	.37	-.17***
Course Load (8 or more courses= reference group)			

0-3 courses	-2.46	.33	-.07***
4-5 courses	-1.49	.29	-.05***
6-7 courses	-.56	.30	-.02
Class level (Upper division = reference group)			
Lower division	-1.24	.24	-.05***
Other class level	.11	.44	.00
Class size (Small course taught= reference group)			
Medium	-.46	.27	-.02
Large	-.95	.29	.03**
Course format (Classroom instruction, on-campus = reference group)			
Classroom instruction, at an auxiliary location	-1.42	.80	-.01
Distance education	-6.22	.36	-.17***
Combination of classroom instruction and distance education	-1.18	.40	-.02**
Collapsed Carnegie type (Master's Colleges and Universities = reference group)			
Doctoral universities	-.88	.29	-.03**
Baccalaureate Colleges	.88	.30	.03**
Other, not classified	-.15	.49	.00
Collapsed Barron type (Competitive= reference group)			
NA, Non, Less competitive	.17	.26	.01
Very competitive	.35	.39	.01
Highly, Most competitive	1.46	.41	.03***
Course goals	.39	.01	.36***
R	.38		
Adjusted R^2	.25		
F	103.13***		

Note. * p<.05, ** p<.01, ***p<.001, two-tailed.
[a] Dependent variable was unstandardized prior to entry into the model.

Table 4

Supportive Environment Regression Results (N=18,133)

	Student-faculty Interaction [a]		
Faculty/Institutional Characteristics	B	SE of B	β
(Constant)	29.34	.60	***
Female	1.43	.24	.05***
Race/Ethnicity (White (non-Hispanic)= reference group)			
Asian, Asian American or Pacific Islander	-.85	.55	-.01
Black or African American	2.90	.50	.05***
Hispanic or Latino	.84	.65	.01
Other	2.03	.55	.03***
Age (55 or older)	-2.85	.25	-.10***

Disciplinary area (Arts and Humanities = reference group)			
Biological Sciences, Agriculture, & Natural Resources	2.09	.50	.04***
Physical Sciences, Mathematics, & Computer Science	-.70	.41	-.02
Social science	.94	.40	.02*
Business	.82	.44	.02
Communications, Media, & Public Relations	3.56	.63	.05***
Education	2.17	.45	.05***
Engineering	.70	.76	.01
Health Professions	2.79	.44	.06***
Social service	3.80	.60	.06***
Other disciplines	2.10	.50	.04***
Taught the selected courses less than 10 times	-.96	.24	-.04***
Rank (Professor= reference group)			
Associate Professor	.47	.33	.01
Assistant Professor	.01	.34	.00
Full-time Lecturer/Instructor	-.94	.42	-.02*
Part-time Lecturer/Instructor	-5.99	.39	-.17***
Course load (8 or more courses= reference group)			
0-3 courses	-2.79	.34	-.08***
4-5 courses	-1.71	.31	-.06***
6-7 courses	-.61	.31	-.02*
Class level (Upper division = reference group)			
Lower division	-2.37	.25	-.09***
Other class level	-.50	.46	-.01
Class size (Small course taught= reference group)			
Medium	-.51	.28	-.02
Large	.80	.30	.03**
Course format (Classroom instruction, on-campus = reference group)			
Classroom instruction, at an auxiliary location	.50	.83	.01
Distance education	-5.85	.37	-.16***
Combination of classroom instruction and distance education	-.36	.41	-.01
Collapsed Carnegie type (Master's Colleges and Universities = reference group)			
Doctoral universities	-1.19	.31	-.04***
Baccalaureate Colleges	.60	.31	.02
Other, not classified	-.14	.51	-.00
Collapsed Barron type (Competitive= reference group)			
NA, Non, Less competitive	.71	.27	.03**
Very competitive	.45	.40	.01
Highly, Most competitive	1.91	.42	.04***
Supportive environment	.22	.01	.20***
R	.42		

Adjusted R^2	.18
F	67.37***

Note. * p<.05, ** p<.01, ***p<.001, two-tailed.
[a] Dependent variable was unstandardized prior to entry into the model.

Appendix II

Survey Items Contributing to Student-faculty Interaction, Course Goals and Supportive Environment

Student-Faculty Interaction (Cronbach's α = .77)
During the current school year, about how often have you done each of the following with the undergraduate students you teach or advise?
(1 = Never, 2 = Sometimes, 3 = Often, 4 = Very Often)

fSFcareer	Talked about their career plans
fSFotherwork	Worked on activities other than coursework (committees, student groups, etc.)
fSFdiscuss	Discussed course topics, ideas, or concepts outside of class
fSFperform	Discussed their academic performance

Course Goals (Cronbach's α = .80)
To what extent do you structure your selected course section so that students learn and develop in the following areas?
(1 = Very little, 2 = Some, 3 = Quite a bit, 4 = Very much)

fcgwrite	Writing clearly and effectively
fcgspeak	Speaking clearly and effectively
fcgthink	Thinking critically and analytically
fcganalyze	Analyzing numerical and statistical information
fcgwork	Acquiring job- or work-related knowledge and skills
fcgothers	Working effectively with others
fcgvalues	Developing or clarifying a personal code of values and ethics
fcgdiverse	Understanding people of other backgrounds (economic, racial/ethnic, political, religious, nationality, etc.)
fcgprobsolve	Solving complex real-world problems
fcgcitizen	Being an informed and active citizen

Supportive Environment (Cronbach's α = .86)
How important is it to you that your institution increases its emphasis on each of the following?

(1 = Not important, 2 = Somewhat important, 3 = Important, 4 = Very important)

fSEacademic	Providing support to help students succeed academically

fSElearnsup	Students using learning support services (tutoring services, writing center, etc.)
fSEdiverse	Encouraging contact among students from different backgrounds (social,
fSEsocial	Providing opportunities for students to be involved socially
fSEwellness	Providing support for students' overall well-being (recreation, health care,
fSEnonacad	Helping students manage their non-academic responsibilities (work, family, etc.)
fSEactivities	Students attending campus activities and events (performing arts, athletic events, etc.)
fSEevents	Students attending events that address important social, economic, or political issues

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