Peer Learning: Understanding Faculty and Course Characteristics

Amy K. Garver
FSSE Project Associate
Indiana University Center for Postsecondary Research
1900 East Tenth Street
Eigenmann Hall, Suite 419
Bloomington, IN 47406-7512
tflaird@indiana.edu
Phone: 812.856.6056

Antwione Haywood
Project Associate
Indiana University Center for Postsecondary Research

Tony Ribera
Project Associate
Indiana University Center for Postsecondary Research

Thomas F. Nelson Laird
Assistant Professor
Indiana University Center for Postsecondary Research

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Abstract

Using data from 8,386 faculty members that participated in the 2008 administration of the Faculty Survey of Student Engagement, this study found that faculty emphasis on peer learning, a component of active learning, differed by faculty and course characteristics. Findings serve as a point of exploration for researchers and practitioners in faculty development to further examine opportunities to improve peer learning on their campus. Implications for future research include a need to look at individual peer learning activities to better understand course conditions in which faculty are likely to promote them.

Peer Learning: Understanding Faculty and Course Characteristics

Active learning speaks to a heightened sense of classroom engagement where students are not merely passive recipients of information but rather active participants in generating and applying knowledge (Prince, 2004). Chickering and Gamson (1987) stress the importance of active learning in undergraduate education, recognizing that students must reflect on what they have learned in the classroom and discuss it with others. Undergraduate education becomes characterized by higher-order thinking tasks where students analyze, synthesize, and evaluate information (Bonwell & Eison, 1991), and peer interactions arguably can sustain and enhance students' higher order thinking efforts.

Peer interactions supported by faculty offer a way for students to try out the social languages of academic discourse (Wertsch, 1991) and, in turn, to receive critical and instantaneous feedback from others (Lazar, 1995). Lazar states that, "in these exchanges, participants get to develop and support assertions, negotiate meanings, and adjust their ways of thinking" (p. 61). In general, learning environments that foster peer interaction are known to produce higher levels of cognitive growth and intellectual development (Astin, 1993; Evans, Forney & Guido-DiBrito, 1998; Pascarella & Terenzini, 1991; Perry, 1968). Interacting with peers, particularly in regards to intellectual topics, is known to have a positive net effect on not only critical and reflective thinking, but also application of course materials and appreciating diverse views (Kuh, et.al, 1991; Smith, 1977; Twale & Sanders, 1999; Whitt, Edison, Pascarella, Nora, & Terenzini, 1999). However, little evidence exists as to what classroom conditions best predict faculty emphases of peer learning activities, and which groups of faculty are more likely to incorporate these activities. As such, the aim of this study is to better understand course conditions and faculty characteristics that are predictive of faculty emphasizing peer learning activities in their selected

courses so that faculty developers and others alike are able to encourage peer interactions as a viable component of active learning on their campuses.

Review of the Literature

In detailing theories of teaching in higher education, Ramsden (2003) provides helpful context for how faculty may perceive and incorporate peer interaction opportunities in the college classroom. In Theory One (Teaching as Telling or Transmission), students are described as passive recipients. Learning occurs as a result of the instructor's ability to disseminate information and the student's ability to absorb that information. In this theory, peer interaction is not utilized as a teaching method or seen as valuable to a student's understanding of subject matter. The perception and practices shift in Theory Two (Teaching as Organizing Student Activity), with activities (e.g., discussion, group work) utilized as the primary method. Here, teaching is more than telling. Ramsden writes, "It is also about dealing with students, and above all about making them busy" (p. 110). Although peer interaction is valued in this theory, limited understanding of the cognitive and developmental gains is apparent among faculty.

Theory Three (Teaching as Making Learning Possible) builds on the previous theories with faculty and students working collaboratively to make learning possible. Faculty engage in discussions and group work activities to gain a better understanding of the concepts students may be struggling with and identifying ways to better support them. Faculty are more aware of the gains of peer interaction and more intentional in providing students with opportunities to interact. When faculty share the responsibility of learning with their students, students are provided an opportunity to develop both intellectually and interpersonally where they must express themselves appropriately in order to contribute to activities. Through these interactions, students establish a connection with their peers and an appreciation for diverse perspectives. They not

only appreciate the views of others but they learn to balance those views with their own interests. Through feedback and group processing, students can also develop a sense of confidence in their abilities and further their commitment to the activity (Chickering, 1969).

Research has largely supported Ramsden's theory. Barkely, Cross, and Howell Major (2005) found healthy peer interaction greatly influence a student's academic and personal development in the college years. The development is heightened as a result of collaborating with peers from diverse backgrounds with a variety of perspectives. Marcum Gerlach (1994) further stated these interactions require students to not only articulate new ideas, but also to listen and appreciate the views of others. As a result of these interactions, peers can help students further develop their interpersonal skills (Bosworth, 1994).

Gilbert, Hunsaker, and Schmidt (2007) and others (Johnson, Johnson & Smith, 1991) suggest faculty play a crucial role in peer learning being experienced by students, and their decision to do so is often rooted in their ability to understand and construct promotive interactions. Promotive interactions include encouragement and support among group members. In addition to supporting one another, it is important for the success of peer learning that a challenging environment is maintained. Johnson, Johnson, and Smith (1991) add that sustaining a challenging atmosphere will further encourage creative thinking, prompt feedback, and student accountability.

In a study of undergraduate students in a nursing program, Baker and Barlow (1988) found support and encouragement from faculty to be the most important attributes in promoting peer interaction and overall student success. Kim and Sax (2009) noted that higher level of positive faculty support contributed to creating a stronger peer-group culture. Personal values of faculty have also been linked with promotion of peer learning. Lindholm and Astin (2008) found that

faculty with strong values toward spirituality were likely to promote personal growth through self exploration and peer learning. Similarly, Cole (2007) reported faculty with greater awareness and appreciation of diverse perspectives tend to promote positive peer interactions in the classroom. Despite faculty characteristics contributing to whether or not they promote peer interactions in their courses, Milem (1998) suggests that characteristics of faculty do not influence student attitudes towards peer learning. He concluded that the environment plays more of a role in defining the types of behavior students exhibit in the classroom.

Classroom environments do play a large part in promoting different behaviors and relationships. Many students are accustomed to competitive and individualistic classroom environments (Bosworth, 1994). In the competitive setting, students are focused on their own achievement as well as preventing the achievement of others (Barkley, Cross, & Howell Major, 2005). To avoid this competitive nature, faculty apply an individualistic approach where student performance is evaluated without comparison to others (Johnson, Johnson, & Smith, 1998). In promoting peer learning, the classroom environment becomes more collaborative in nature. Faculty are intentional in the design of the environment but encourage students to take control of their experience and contribute to the experiences of their peers. Chen and Zimbler (2002) found that 44% of faculty provided students with opportunities to critique each other's work. Tenure status of faculty was an important factor in regards to student evaluation opportunities with tenured faculty at 4-year doctoral institutions providing these opportunities less than their non-tenure-track peers. Teaching field was also important with faculty in the fine arts being more likely to ask students to evaluate each other's work when compared to the average. Faculty in the natural sciences were least likely to engage in these practices.

The study concluded that there was much variation regarding who taught undergraduate students, how much they taught, and the teaching methods used in promoting learning.

Comparing results from a 2000 study of economics faculty to one in 1995, Becker and Watts (2001) found an increase in the amount of time faculty spent teaching. This, however, did not lead to an increase in active learning methods. Becker and Watts write:

> Given this apparent change in the importance of teaching in the reward structure and in time devoted to teaching, we might also expect to find changes in teaching methods used, and in particular, greater use of innovative, active-learning, and technology-based approaches, rather than the chalk and talk methods that were so dominant in the 1995 survey. But this is not the case (p.275).

Lectures were the primary method of instruction for economics faculty in the sample with 83% representing the median amount of time respondents spent lecturing in their courses. Although faculty reported engaging in discussions with students, faculty rarely provided opportunities for peer discussion in their courses.

Purpose of the Study

Understanding the characteristics of the faculty who serve as the architects of peer learning are critical to the promotion of peer interaction. Given the multiple positive outcomes that are empirically associated with peer interaction in the classroom, the role of faculty in facilitating higher levels of learning become extremely important. Despite a growing body of empirical evidence on the gains of peer interaction, very little is known about the faculty who are emphasizing these learning opportunities as well as the course context in which these activities are happening, or rather not happening, in some cases. The purpose of this study is to better understand the characteristics of faculty who are employing learning activities that encourage peer interaction, and the course context in which these activities are happening. The guiding research questions include:

1. Which faculty are more likely to emphasize peer learning in their selected course?
2. What course conditions (e.g., upper division, class size, general education, disciplinary area) are predictive of faculty promotion peer learning activities?
3. Does the effect of faculty and course characteristics appear to be consistent across different types of peer learning activities?

Methods

Data Source

The data for this study come from the 2008 administration of the Faculty Survey of Student Engagement (FSSE). FSSE is an annual survey designed to collect information about faculty members' expectations and perceptions of their students as well as how they structure classroom activities to encourage desirable learning outcomes and behaviors, and their division of time devoted to professional activities (e.g., teaching, advising, and research). In 2008, over 23,000 faculty from 160 baccalaureate-granting institution responded to one of the two survey options FSSE offers participating institutions. For this study only institutions that selected the course-based option were included which asked faculty to answer survey items based on a single course that they taught during the 2007-2008 academic year. Also, in this year institutions had the opportunity to administer an additional set of items related to peer learning. The data come from only US institutions that administered the course-based version of the survey as well as the extra set of items related to peer learning. After deleting cases with missing data, the resulting sample contained responses from 8,386 faculty members working at 110 baccalaureate-degree colleges and universities. The average response rate for institutions included in the study was 45%, with a range from 19% to 85%.

Sample

The greatest proportion of faculty in the sample (43%) taught at a master's level institution, 39% taught at a research institution, and 22% taught at a baccalaureate-level institution. In addition, 35% of faculty respondents worked at a public institution. Women comprised of 46% of our sample, and over 75% were White. African American and Asian faculty make up the largest groups of minority faculty with both representing about 5% of the sample. Only 3% of the faculty were Hispanic, and less than 1% were American Indians or multi-racial. A sizable percentage (8%) indicated a preference not to respond to the race/ethnicity question. A little over 6% did not have US citizenship. The median number of prior years of teaching was 15 and the average course load was 6. The majority (83%) were employed full-time.

The sample also represents faculty from a wide range of disciplinary areas and teaching courses under various classroom conditions. For example, using Biglan's (1973) classification scheme, about one-third taught a course in the soft-pure-nonlife fields, 18% in the soft-applied-nonlife fields, and 14% in the hard-pure-nonlife fields. Nearly two-thirds of faculty taught an upper division course, and half taught a course with enrollments between 21 to 50 students. About 36% taught a course with less than 20 students while 13% taught a large section with over 50 students. Nearly half (48%) of faculty said their course met a general education requirement.

Measures and Analyses

The dependent measure for this study came from items asked at the end of the FSSE survey in 2008 for research and development purposes. Faculty were asked to responded about a single course they had taught during the 2007-08 academic year. In particular, they were asked how much they emphasize various active learning activities in their selected course. The response options for each item were 'very little,' 'some,' 'quite a bit,' and 'very much.' An

exploratory factor analysis, using Principle Axis method and Varimax rotation (KMO = .77; Bartlett's Test, $p < 0.00$), derived a three-item factor solution that explained 49% of the variance and resulted in a reliable measure ($\alpha = 0.76$) of faculty emphasis on peer learning. Table 3 presents the three component items –student-generated learning groups (e.g. study groups, reading groups or writing groups), peer mentoring (e.g. student-led discussion or class sessions, peer critiques), and team-based assignments in their selected course section – and associated factor loadings which ranged from .81 to .60.

The independent measures were selected to identify groups of faculty and to better understand the context in which peer learning is likely to happen. As such, faculty demographics (e.g. gender, rank/employment status, race/ethnicity, course load and citizenship) and course characteristics (e.g. course level, general education status, class size, and disciplinary area) were both included in a regression analysis aimed to predict faculty emphasis of peer learning as part of their classroom activities. All measures were dummy coded (1=reference group; 0=non-reference group) prior to entering into the model, except for course load which left as a continuous variable. The dependent measure was standardized prior to running the analyses. The unstandardized coefficients for dichotomous independent measures can be interpreted as effect sizes since they are equivalent to standardized mean differences with pooled standard deviations. For continuous measures, such as course load, the standardized coefficients are interpreted as an effect size.

Limitations

There are three main limitations to this study. First, faculty members have the option to choose a specific course to base their responses on. This option allowed for a wide array of course types, but makes it difficult to conclude the courses represented all disciplines at

participating institutions. The second noteworthy point is that our scale for peer learning does not fully encompass all possible learning activities used to promote peer interactions among students, however, it is probably these activities are used across various course contexts (e.g., disciplinary area) and by a wide variety of faculty (e.g., rank/employment status). Lastly, there are limitations on generalizations that can be made with self-selection. However, based on several institutional characteristics (Carnegie type, control, region, and location), participating institutions represent a wide variety of U.S. colleges and universities, even if there were a disproportionate number of public master's institutions, for example, relative to baccalaureate-granting institutions nationally. Moreover, the overrepresented types of colleges and universities tend to enroll a larger number of undergraduates and employ a larger number of faculty. In addition, the faculty members who participated mirror the national population of faculty at baccalaureate-granting institutions along several characteristics (FSSE, 2008).

Results

To better understand the characteristics of faculty who are employing learning activities that encourage peer interactions and the course context in which these activities are happening, a regression analysis was run on the peer learning scale including faculty and course characteristics as the independent measures. The resulting model explained a small but significant portion of the overall variance (adjusted r-squared=0.06). Table 3 summarizes regression coefficients associated with independent measures entered into the model.

Faculty Characteristics

Many demographic characteristics were found to be relatively strong predictors of peer learning. For instance, women tend to emphasize peer learning activities about one-fifth of a standard deviation (B=0.222, $p < 0.001$) more than men. Differences by race and ethnicity also

proved to be strong. Faculty of color in all groups score higher than their white counterparts. African American faculty scored more than two-fifths of a standard deviation (B=0.438, $p < 0.001$) in comparison to White respondents. Hispanic (B=0.294, $p < 0.001$) and Asian faculty (B=0.241, $p < 0.001$) also scored significantly higher than their White counterparts.

Other significant differences were found among faculty characteristics but coefficients were relatively small to moderate. For example, faculty who did not indicate their race (B=.128, $p < 0.001$) and were non-US citizen (B=.133, $p < 0.001$) tended to emphasize peer learning slightly. The same was true for assistant (B=-.084, p<.05) and associate (B=-.114, p<.01) professors when compared to part-time lecturer/instructors. Though the effects were relatively small, the higher ranked faculty scored significantly lower than their part-time counterparts. The total number of courses taught by faculty in an academic year was not found significant.

To illustrate the specific means of the differences we found in our regression analysis and to see if differences were consistent across the scale's component items, we calculated unadjusted mean differences. For instance, the pattern of mean differences (see Table 4) before controls are introduced between women and men faculty were consistent with findings from the model. Men, on average, promote peer learning less than women, and results are consistent when unadjusted means for student-generated learning groups, peer mentoring, and team-based assignments were examined. The patterns for race/ethnicity and citizenship status were also found consistent with results from the model. As for employment status and rank, variation in the patterns of mean differences seemed less apparent across the three peer learning activities. Though significant differences were detected in the model for the overall scale, it appears differences were less pronounce between part-time lecturers and their assistant (mean diff. = 0.05) and associate (mean diff.= 0.00) counterparts for the promotion of team-based assignments.

Course Characteristics

Various course conditions were also found to be predictive of faculty promoting peer interactions in the classroom. For example, faculty who taught courses with less than 50 students were more likely to promote peer learning activities. Specifically, faculty who taught less than 20 students scored nearly one third of standard deviation higher (B=.282, p>.001) and, faculty who taught between 21 to 50 student score over one tenth higher (B=.148, p>.001) on the peer learning scale than those teaching larger course sections. The net effects of teaching a course that met a general education requirement (B=0.077, p<0.001) or was upper division (B=0.145, p <0.001) were modest but significant.

Disciplinary differences were also observed. After controlling for faculty and other course characteristics in the model, faculty in the hard-applied-nonlife fields (e.g. engineering) scored over one-third of a standard deviation higher (B=.326, p<.001) than faculty in soft-pure-nonlife fields (e.g., history). Other colleagues in the soft-applied-nonlife (e.g., business) and hard-pure-life (e.g., biology) also scored moderately higher (B=.210, p<.001; B=.184, p<.001, respectively) when compared to the same group of faculty. Though faculty in soft-applied-life (e.g., agriculture) and hard-pure-nonlife (e.g., chemistry) yielded positive significant differences, their regression coefficients were relatively small in size (B=.159, p<.001; B=.082, p<.05, respectively). Faculty in the hard-pure-life fields appeared to promote peer learning activities to the same degree as those in the soft-pure-nonlife fields (e.g., history). Faculty in the soft-pure-life fields (e.g., psychology), however, scored lowest of all groups (B=-.240, p<.001).

Patterns of the unadjusted mean differences for individual item components were fairly consistent with findings from the model expect for a few notable instances by course level and disciplinary area. The results from the model indicated faculty who taught upper division courses

tend to emphasize peer learning more than faculty teaching lower division courses. Unadjusted mean differences for faculty promoting team-based assignment fell in line with the results from the model, though the same was not true for student-generated learning groups and peer mentoring. A similar variation in the mean differences was observed among disciplinary area. Often unadjusted mean differences for team-based assignments largely followed results found from the model, but those from student-generated learning groups and peer mentoring did not. For example, the model found faculty who taught courses in hard-applied-nonlife fields (e.g., nursing) fields emphasized peer learning more than faculty in any other disciplinary area. Mean differences for student-generated learning groups and peer mentoring, however, did not follow the same pattern as very little to no differences were observed.

Discussion and Implications

Faculty can play an important role is shaping peer interactions to enhance active learning in the classroom, however, it requires considerable planning and effort (Whitt, et.al, 1999). Peer interaction cannot simply be seen as a way to keep students busy but rather an intentional approach to achieve specific learning outcomes (Ramsden, 2003). The logic for this study was to better understand who and where peer learning is happening so to identify potential areas of improvement for faculty developers and other members of the institution to offer support.

Though the proposed model identifies faculty and course characteristics that contribute to peer learning, it explains only a small portion of the variance which suggests more needs to be done to better understand what predicts faculty emphasizing these practices. Nonetheless, findings do point to areas where institutions can start their investigation for sources of good practices. For instance, after controlling for all the variables in the model, we found, on average, faculty of color emphasize peer learning more than their White counterparts. The same is true for

women. This is not surprising considering both faculty of color and women are known to include diverse perspectives in their selected courses (Nelson Laird, 2008) in which peer interactions are essential to cultivate multiple perspectives (e.g. Baxter Magolda, 1992). Trivial or no differences were found among faculty by rank and employment status as well as their teaching load which lends support to Milem's (1998) position that classroom environments may play a more significant role in promoting active learning techniques than faculty characteristics.

The moderate net effects observed for upper division, general education courses, smaller classroom enrollments, and various disciplinary areas also support his findings. Our study revealed course context can play a significant role in and to what extent peer learning is emphasized by faculty. It appears the smaller the classroom size, the higher likelihood students will receive known benefits of peer learning. Given many larger classes are often gateway or introductory courses, it is not surprising our results found faculty teaching lower division courses are more less likely to promote peer learning than their counterparts teaching upper division courses. Interestingly though, despite Whitt and others (1999) urges to support peer interactions for first-year students, our results suggest these opportunities are more likely to happen later in their college careers in upper division courses.

Differences by disciplinary area may also serve as an opportunity for faculty developers to highlight good teaching practices while looking for other areas of potential improvement. Our results revealed faculty in hard-applied-nonlife fields, namely engineering, tend to utilizing peer learning techniques more than any other field. Surprisingly, engineering is often a field that is scrutinized for their active teaching and learning practices (Nelson Laird et al., 2008; Nelson Laird & Garver, *in press*). In this case, faculty developers may approach engineering faculty to gain a sense of learning outcomes experienced by students beyond those associated with

discipline. This information could prove to be useful for other faculty in other fields, such as faculty teaching in the soft-pure-life fields (i.e. sociology, psychology), where the benefits of peer interactions appear to be not valued or emphasized.

Lastly, more research needs to be done to see if the type of peer learning varies across faculty characteristics and course conditions. Our exploration of unadjusted means for each of the peer learning activities (e.g., student-generated learning groups, peer mentoring, and team-based assignments) may warrant future research to examine activities individually when trying to predict the conditions in which peer interactions are likely to happen. However, this was not the case for faculty characteristics when unadjusted means were considered. In large the effect for gender and race/ethnicity, for example, was consistent across all three learning activities. This finding supports the notion that faculty who value learning associated with peer interactions, namely active learning, may be an indication of personal or cultural influences that are reflected in their teaching style as the whole (Nelson Laird, Garver, & Niskodé-Dossett, 2007; Singer, 1996; Statham, Richardson, & Cook, 1991; Starbuck, 2003). In this case, our scale, and other like it, my serve as a useful tool to identify faculty who are likely incorporating active teaching practices in their classes.

Conclusion

Largely an exploratory study, these findings serve as a point of exploration for researchers and practitioners in faculty development to further examine opportunities to improve peer learning on their campus. By engaging faculty in discussion about the values of incorporating peer interaction opportunities, more students may benefit from these experiences earlier in their college careers and across disciplinary areas. Also, implications for future

research include a need to look at individual peer learning activities to better understand course conditions in which faculty are likely to promote them.

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Appendix

Table 1.

Independent Variables

Name	Description
Faculty Characteristics	
Female	0 = Male; 1 = Female
Rank/Employment Status	PT/Lecturer Inst; FT/Lecturer Inst; Assistant Prof; Associate Prof; Full Prof
Course load	Continuous variable
Race/ethnicity[a]	White[b] , Asian/Asian American, Black/African American, Hispanic American, Other, Multiple ethnic identifications, Preferred not to respond
Citizenship Status	0 = US citizen; 1 = Permanent or temporary resident of the US
Course Characteristics	
Upper division course	0 = Lower division; 1 = Upper division
General education status	0 = Non-GEC; 1 = GEC
Course size[a]	20 students or less; 21 to 50 students; More than 50 students[b]
Disciplinary area	Hard-Pure-Life; Hard-Pure-Non Life; Hard-Applied-Life; Hard-Applied-Non Life; Soft-Pure-Life; Soft-Pure-Non Life[b] ; Soft-Applied-Life; Soft-Applied-Non Life

[a] Dichotomous indicator created for each group (0 = not in group; 1 = in group)

[b] Reference group

Table 2.

Faculty Emphasis on Peer Learning in Their Selected Course

Scale and Component Items	Factor loadings
Faculty Emphasis on Peer Learning ($\alpha = 0.76$)	
Student-generated learning groups	.81
Peer mentoring	.66
Team-based assignments	.60

Notes: Faculty responded to all items on a scale were 1 = Very little, 2 =Some, 3 = Quite a bit, and 4 =Very much. Mean of faculty responses of component items represent the scale scores.

Table 3.

Peer Learning Regression Results (N=8,386)

	Peer Learning[a]			
	B	SE of B	β	Sig.
Constant	-.513	.058		***
Faculty Characteristics				
Female	.222	.022	.111	***
Rank/Employment Status				
PT/Lecturer Inst		*reference group*		
FT/Lecturer Inst	.030	.045	.009	
Assistant Prof	-.068	.038	-.030	
Associate Prof	-.084	.038	-.036	*
Full Prof	-.114	.038	-.050	**
Course load	.008	.004	.020	
Race/ethnicity				
White		*reference group*		
American Indian	.153	.135	.012	
Asian	.241	.054	.051	***
Black/African American	.438	.050	.094	***
Hispanic	.294	.063	.050	***
Multiple race/ethnicity	.064	.096	.007	
Other race/ethnicity	.175	.093	.020	
No race indicated	.128	.040	.034	***
Citizenship status	.133	.047	.033	**
Course Characteristics				
Upper division	.145	.025	.072	***
General education	.077	.024	.039	***
Class size				
20 students or less	.282	.036	.135	***
21 to 50 students	.148	.034	.074	***
More than 50		*reference group*		
Disciplinary area				
Hard-Pure-Life	.184	.044	.049	***
Hard-Pure-Non Life	.082	.035	.029	*
Hard-Applied-Life	.090	.100	.010	
Hard-Applied-Non Life	.326	.053	.072	***
Soft-Pure-Life	-.240	.037	-.077	***
Soft-Pure-Non Life		*reference group*		
Soft-Applied-Life	.159	.037	.053	***
Soft-Applied-Non Life	.210	.033	.081	***
Multiple R	0.259			
Adjusted R-squared	0.064			
Standard Error	0.967			
F	24.05	***		

[a] Dependent variable standardized prior to entry into the model.

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

Table 4.

Unadjusted Mean Differences for Component Items

	Student-generated learning groups			Peer Mentoring			Team-based assignments		
	Mean	SD	Mean Diff	Mean	SD	Mean Diff	Mean	SD	Mean Diff
Faculty Characteristics									
Gender									
Female[a]	2.03	0.95	--	2.06	0.95	--	2.21	1.06	--
Male	1.83	0.92	-0.20	1.88	0.89	-0.18	2.06	1.07	-0.15
Rank/Employment									
PT/Lecturer Inst[a]	2.03	1.00	--	2.06	0.96	--	2.13	1.11	--
FT/Lecturer Inst	2.04	0.95	0.01	2.09	0.94	0.03	2.17	1.06	0.04
Assistant Prof	1.95	0.94	-0.08	1.95	0.94	-0.11	2.18	1.05	0.05
Associate Prof	1.89	0.92	-0.14	1.95	0.91	-0.11	2.13	1.07	0.00
Full Prof	1.83	0.9	-0.20	1.89	0.89	-0.17	2.06	1.06	-0.07
Race/Ethnicity									
White[a]	1.87	0.92	--	1.91	0.9	--	2.08	1.05	--
American Indian	1.96	0.96	0.09	2.08	0.99	0.17	2.27	1.07	0.19
Asian	2.14	0.99	0.27	2.09	0.95	0.18	2.39	1.09	0.31
Black/African Amer	2.22	1.05	0.35	2.29	1.07	0.38	2.47	1.12	0.39
Hispanic	2.15	0.99	0.28	2.12	1.02	0.21	2.37	1.09	0.29
Multiple race/ethnic	1.83	0.91	-0.04	2.02	0.93	0.11	2.17	1.1	0.09
Other race/ethnicity	2.05	0.98	0.18	2.02	1.05	0.11	2.2	1.14	0.12
No race indicated	1.96	0.95	0.09	2.06	0.97	0.15	2.1	1.07	0.02
Citizenship status									
Non-US citizen[a]	2.12	1.00	--	2.08	1.00	--	2.32	1.10	--
US citizen	1.91	0.93	-0.21	1.95	0.92	-0.13	2.11	1.06	-0.21
Course Characteristics									
Course level									
Upper division[a]	1.87	0.92	--	1.96	0.93	--	2.24	1.10	--
Lower division	1.96	0.95	0.09	1.96	0.92	0.00	1.97	1.00	-0.27
General education status									
GEC[a]	1.94	0.95	--	1.98	0.94	--	2.07	1.05	--
Non-GEC	1.90	0.93	-0.04	1.94	0.91	-0.04	2.18	1.08	0.11
Class size									
20 students or less	1.98	0.94	0.18	2.07	0.95	0.26	2.21	1.06	0.30
21 to 50 students	1.91	0.94	0.11	1.92	0.91	0.11	2.12	1.08	0.21
More than 50[a]	1.80	0.91	--	1.81	0.89	--	1.91	1.02	--
Disciplinary area									
HPL	1.95	0.91	0.04	1.95	0.89	-0.09	2.21	1.03	0.23
HPN	1.9	0.91	-0.01	2.05	0.91	0.01	1.93	0.97	-0.05
HAL	1.92	0.9	0.01	1.99	0.95	-0.05	2.03	0.98	0.05
HAN	1.91	0.94	0.00	2.01	0.91	-0.03	2.56	1.13	0.58
SPL	1.69	0.87	-0.22	1.67	0.82	-0.37	1.85	0.98	-0.13
SPN[a]	1.91	0.94	--	2.04	0.97	--	1.98	1.00	--
SAL	2.08	0.97	0.17	2.03	0.93	-0.01	2.2	1.07	0.22
SAN	1.99	0.98	0.08	1.89	0.89	-0.15	2.48	1.15	0.50

[a] Reference group in regression model