

Mediation Effect of Collaborative Learning for Student-Faculty Interaction

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Abstract

Using National Survey of Student Engagement (NSSE) data from senior students (n=95,491), this poster presentation explores the interplay between two effective educational practices--student-faculty interaction (SFI) and collaborative learning (CL). Results from multi-group structural equation model show collaborative learning has a positive mediation effect on SFI for self-reported gains in learning outcomes but a negative mediation effect on SFI for college grades. Further, we find frequencies of SFI and collaborative learning vary by academic disciplines as measured by Holland type.

Research Questions

This study explores whether engaging in collaborative learning mediates the effect of student-faculty interaction on senior students' self-reported learning gains and overall college grades.

Specifically, this study is guided by the following questions:

- Does collaborative learning with peer students mediate the effect of student-faculty interaction on senior undergraduates' self-reported gains and grades?
- Do associations between student-faculty interaction, collaborative learning, and student learning outcomes vary among Holland academic fields proposed by Holland?

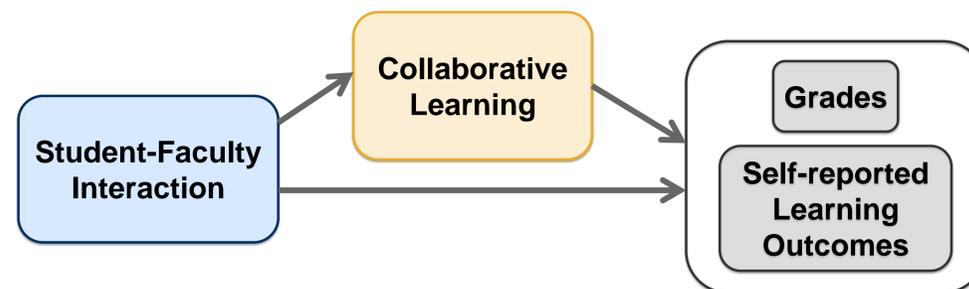
Background

Student-faculty interaction (SFI) has been a predominant topic of interest in higher education studies. It is well-documented and supported by extant literature for its positive effects on students' academic performance as well as affective development (e.g., Komarraju, Musulkin, & Bhattacharya, 2010; Kuh & Hu, 2001; Snow, 1973; Kim & Sax, 2011). However, some studies did not find significant or positive effects on certain learning outcomes (e.g., Kuh, Pace, & Vesper, 1997; Hurtado, Eagan, Tran, Newman, Chang, & Velasco, 2011). For example, Hurtado and colleagues (2011) showed a negative correlation between SFI and cumulative GPA. Kuh, Pace, and Vesper (1997) found SFI was not a significant predictor for academic gains for students attending baccalaureate and doctoral level institutions. They also tested two aspects of interactions and showed cooperation among students was the best predictor for self-reported gains, while SFI did not have significant influence.

According to Moore (1989) three basic types of interactions tend to occur in the learning process—learner to learner; learner to teacher; and learner to content. Few empirical studies have tested the association between the these types of interactions. To gain a nuanced understanding of the dynamics of students' interactions in higher education, it is necessary to do so.

To date, it is unclear to what extent aspects collaborative learning, fosters and encourages students to engage in conversations with faculty outside of class, thereby mediating the effect of SFI on learning outcomes. While studies have found a direct positive relationship with engaging in learning with peers on several learning outcomes (Smith, 1977; Twale & Sanders, 1999; Whitt, Edison, Pascarella, Nora, & Terenzini, 1999), little is known to what extent collaborative learning contributes to students' learning and development through its mediating effects on SFI. Further, if this mediation effects varies by academic discipline.

Framework



Methods

Sample:

- Senior respondents (n=95,491) of the NSSE 2014

Inclusion criteria:

- Mainly take course on campus
- Enrolled as full-time student

Statistical Method:

Multi-group structural equation model

Student-Faculty Interaction:

During the current school year, how often have you:

- Talked about career plans with a faculty member
- Worked with a faculty member on activities other than coursework
- Discussed course topics, ideas, or concepts with a faculty member outside of class
- Discussed your academic performance with a faculty member

Collaborative Learning:

During the current school year, how often have you:

- Asked another student to help you understand course material
- Explained course material to one or more students
- Prepared for exams by discussing or working through course material with other students
- Worked with other students on course projects or assignments

Self-reported Gains:

How much has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas?

- Writing clearly and effectively
- Speaking clearly and effectively
- Thinking critically and analytically
- Analyzing numerical and statistical information
- Acquiring job- or work-related knowledge and skills
- Working effectively with others
- Developing or clarifying a personal code of values and ethics
- Understanding people of other backgrounds
- Solving complex real-world problems
- Being an informed and active citizen

Grades: student's most often letter grade from C- to A

	Abbreviation	%
Realistic	REA	9
Investigative	INV	24
Artistic	ART	7
Social	SOC	32
Enterprising	ENT	23
Conventional	CON	4

Holland disciplinary fields:

Results



Standardized Regression Coefficients in Multiple Academic Fields

	REA	INV	ART	SOC	ENT	CON
PG on SF	0.36***	0.33***	0.36***	0.31***	0.32***	0.30***
GRAD on SF	0.25***	0.21***	0.22***	0.14***	0.15***	0.23***
PG on CL	0.24***	0.22***	0.17***	0.21***	0.21***	0.20***
CL on SF	0.34***	0.44***	0.50***	0.46***	0.47***	0.48***
GRAD on CL	-0.12***	-0.10***	-0.09***	-0.04***	-0.07***	-0.10***
GRAD with PG	0.01	0.01	0.00	0.04***	0.02	0.00

Indirect Effect of Collaborative Learning in Multiple Academic Fields

	REA	INV	ART	SOC	ENT	CON
SF to PG	0.08***	0.10***	0.08***	0.10***	0.10***	0.10***
SF to GRADE	-0.04***	-0.03***	-0.05***	-0.02***	-0.03***	-0.05***

Findings

- Student-faculty interaction has weak but positive indirect effect via collaborative learning on self-reported gains, and minimal negative effect on grades.
- The effects of student-faculty interaction and collaborative learning on learning outcomes also vary among disciplines. But the differences are more evident for effects on grades rather than self-reported gains.
- The frequencies of student-faculty interaction and collaborative learning vary among academic disciplines. Artistic majors have the highest student-faculty interaction frequency, but are the lowest on collaborative learning.

Discussion

Overall, this study explores the interplay between two effective educational practices on student learning and development. In theory and in practice, interaction with faculty and collaboration with other students are correlated by faculty's efforts of approachability and collaborative learning pedagogies (Hurtado et al., 2011; Johnson, 1991; Umbach & Wawrzynski, 2005). It is possible by faculty emphasizing students to engage in collaborative learning, which involve individual's willingness to share and engage in mutual respect (Panitz, 1999; Pascarella, 1980), this effective educational practice opens the door for students to approach faculty about other issues and advice.

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