How to promote the class engagement of graduate students in seminar teaching: An empirical research

Yexin Liu[1], *Pengbin* Gao[1], and *Weiwei* Wu[2,*]

[1]School of Economics and Management, Harbin Institute of Technology at Weihai, 264209 Weihai Shandong Province, China
[2]School of Management, Harbin Institute of Technology, 150001 Harbin Heilongjiang Province, China

Abstract. Student engagement is of critical importance because it can help students gain more knowledge from the course. This paper investigates how to improve student engagement of graduate students in seminar teaching, and the results show that student self-efficacy, classmate support, and teacher support have significant positive effects on student engagement. These findings highlight the value of self-efficacy, classmate support, and teacher support. Therefore, college should take measures to promote self-efficacy, classmate support, and teacher support.

1 Introduction

Graduate students in higher education are increasingly challenged by governments to contribute to national economic development [1]. In order to meet such challenge, graduate students should achieve high levels of course completion, which can provide them with working skills for employment. Student engagement is generally considered to be a better predictor of course completion [2]. The premise is deceptively simple, perhaps self-evident: the more students study or practice a course, the more they tend to learn about it [3]. Therefore, how to improve student engagement becomes an important topic.

Despite there exists large bodies of research on student engagement, most of them focuses on elementary and secondary students. There is a dearth of empirical research that focuses specifically on the engagement of graduate students [4]. In particular, seminar teaching is often used in the graduate training [5], and its effectiveness directly depends on student engagement [6]. Therefore, it is important to explore how to promote the class engagement of graduate students in seminar teaching.

Following this introduction, the remainder of this paper is structured as below. The next section offers an overview of the previous research related student engagement, and proposes the hypotheses of this paper. Section 3 provides research design adopted in this paper. Section 4 presents the basic statistics and regression results. The final section contains discussions and concluding remarks.

* Corresponding author: wuweiwei@hit.edu.cn

2 Literature review and hypothesis development

2.1 Student engagement

Student engagement is an acknowledged way to improve the outcomes of learning. Student engagement can be simply defined as the time and effort students devote to the course activities [7]. Student engagement takes many forms, and behavioral engagement, affective engagement, and cognitive engagement are the most important three forms [8]. Behavioral engagement consists of students' involvement in course activities, which includes positive conduct, involvement in learning, and participation in other related activities. Affective engagement is comprised of students' attitudes, interests, and values particularly related to positive interactions with faculty, staff, students, academics, or the institution. Cognitive engagement stresses students' investment in learning and motivation to learn. Overall, students with high levels of engagement may show initiative in learning, demonstrate intense effort and concentration, and express positive emotions during learning [9]. Although student engagement is complex, it is argued that enhancing students' motivations can be an useful way to enable students to engage in [10]. This can be achieved by student and teacher respectively.

2.2 The effect of student self-efficacy on student engagement

There is a view that education is about students constructing their own knowledge [11]. This assumes that students are their own learning agents. Self-belief is reported as a key attribute in motivation, and thus it can be a motivator for engagement. Student self-efficacy is a situation-specific belief that students have on their ability to organize and execute the actions required to learn and master tasks and assignments at a satisfactory level [12]. According to Bandura (1980), individuals' behavior is affected by outcome expectations [13]. Outcome expectations are referred to the judgment individuals make about the likelihood of behaviors that would lead to certain outcomes. However, individuals would not produce behaviors unless they held the self-belief that they are capable of doing so [14]. Therefore, the more students have a high level of self-efficacy, the more they put in effort and energy to accomplish course. Following the arguments, we hypothesized that:

H1: Student self-efficacy has positive effect on student engagement.

2.3 The effect of classmate support and teacher support on student engagement

It is argued that the social support is also a critical determinant of student engagement [15]. Social support can be generally defined as the degree to which a person's basic needs are gratified through interaction with others [16], and the classmate support and teacher support are two of the most important social support for student engagement. Classmate support involves the perceived acceptance and assistance offered to student by classmates and has been found to be associated with a wide range of student well-being [17]. Classmate support is characterized by positive features, which can fulfill a student's need for relatedness and help them to develop a sense of satisfaction. Therefore, students with positive peer relationships are more behaviorally and emotionally engaged in class. The teacher-student relationship is also important. Students who feel supported by their teachers tend to exhibit greater compliance with a teacher's expectations, which, in turn, reduce their involvement in distractive and deviant behaviors [18]. Moreover, a teacher's interest

in his or her students might also create an enjoyable, creative classroom environment that fosters student engagement [19]. Following the arguments, we hypothesized that:

H2: Classmate support has positive effect on student engagement.

H3: Teacher support has positive effect on student engagement.

3 Research design

3.1 Sample and data collection

This paper tested the proposed hypotheses by using the survey data from Chinese graduate students. A pretest was conducted with aims to identify the potential problems of the questionnaire. After the pretest, the questionnaire was revised according to the feedbacks. The participants were randomly selected, and they were informed that the data they provided could only be used for research purposes. We sent 400 questionnaires, and 286 valid questionnaires were returned. The effective response rate was 71.5%.

3.2 Variables and measures

We used the scale of Wang et al. (2014) to measure student engagement [20]. The measurement includes three dimensions, which are behavioral engagement, affective engagement, and cognitive engagement. The student self-efficacy was measured by the scale of Pintrich and De Groot (1990) [21]. The classmate support and teacher support were measured by the scale of Torsheim et al. (2012) [22].

3.3 Reliability and validity

Cronbach's α is commonly used to evaluate the reliability of multi-item scales. The Cronbach's α value of student engagement was 0.895. The Cronbach's α values of student self-efficacy was 0.785. The Cronbach's α values of classmate support and teacher support were 0.807 and 0.850 respectively. All values were larger than 0.7, which indicated that the measurement has good reliability.

Table 1. Means, standard deviations and correlations.

	Means	SD	1	2	3	4	5	6
Behavioral engagement	3.84	0.93	1.000					
Affective engagement	3.37	0.99	0.468**	1.000				
Cognitive engagement	3.26	0.99	0.412**	0.751**	1.000			
Student self-efficacy	3.35	0.57	0.410**	0.437**	0.387**	1.000		
Classmate support	3.77	0.84	0.203*	0.410**	0.336**	0.430**	1.000	
Teacher support	2.93	0.74	0.492**	0.436**	0.422**	0.516**	0.437**	1.000

Note: **P<0.01

Exploratory factor analysis was performed to test whether the items of student engagement were loaded on the designed dimension. The results indicated that all the items were loaded at the designed dimension, which verified the construct validity.

4 Results

Table 1 displays descriptive statistics of the variables. The results showed that student self-efficacy, classmate support and teacher support have significantly positive correlations with student engagement.

This paper run regression analysis to test the proposed hypotheses. The results were shown in Table 2, Table 3 and Table 4.

Table 2. The regression result of behavioral engagement.

	B	SE	Standardized Coefficients	t	Sig.
Constant	2.127	0.117		18.185	0.000
Student self-efficacy	0.225	0.067	0.366	3.381	0.001
Classmate support	0.079	0.06	0.136	1.311	0.192
Teacher support	0.225	0.07	0.390	3.202	0.002

From Table 2, we can know that student self-efficacy and teacher support have significant impacts on behavioral engagement.

Table 3. The regression result of affective engagement.

	B	SE	Standardized Coefficients	t	Sig.
Constant	0.459	0.127		3.614	0.000
Student self-efficacy	0.375	0.072	0.416	5.179	0.000
Classmate support	0.336	0.066	0.396	5.127	0.000
Teacher support	0.131	0.076	0.155	1.709	0.090

From Table 3, we can know that student self-efficacy, classmate support and teacher support all have significant impacts on affective engagement.

Table 4. The regression result of cognitive engagement.

	B	SE	Standardized Coefficients	t	Sig.
Constant	0.980	0.163		6.002	0.000
Student self-efficacy	0.229	0.093	0.290	2.467	0.015
Classmate support	0.137	0.098	0.185	1.399	0.165
Teacher support	0.295	0.084	0.395	3.499	0.001

From Table 4, we can know that student self-efficacy and teacher support have significant impacts on affective engagement. Altogether, the three proposed hypotheses are all verified.

5 Discussion and conclusion

Student engagement is important because it could help students gain the most from their higher education experience. This paper investigates how to improve student engagement, and the results show that student self-efficacy, classmate support, and teacher support have significant positive effects on student engagement.

Our findings offer important theoretical contribution. This paper provides theoretical arguments and empirical evidence for illustrating the impacts of self-efficacy, classmate support, and teacher support on student engagement. This contributes to the broader literature on student engagement of graduate student by identifying the important antecedents, and provides a promising potential direction for college to improve the student engagement of graduate students. Our findings also contribute to practices. Our finding

highlights the value of self-efficacy, classmate support, and teacher support. Hence, college should take measures to promote self-efficacy, classmate support, and teacher support.

Although this paper offers some important points, it also has some limitations that can be addressed in the future research. Firstly, this paper only describes the direct impact of self-efficacy, classmate support, and teacher support on student engagement, but a limitation is that it does not explain the mediating mechanisms and moderating mechanisms of these relationships. Therefore, in order to get more benefits from self-efficacy, classmate support, and teacher support, future research is encouraged to investigate the mediating mechanisms and moderating mechanisms.

Secondly, this paper is only focused on the internal factors, and does not consider external environmental factors. However, the external environment can also affect student engagement. Future research is needed to explore the potential effect of external environment on student engagement, which would offer a more integrated explanation.

This research was supported by the Research Project of Postgraduate Education Reform in Harbin Institute of Technology, and the Research Project of Postgraduate Education and Teaching Reform in Harbin Institute of Technology (Weihai).

References

1. Hayter C S, Lubynsky R, Maroulis S. Who is the academic entrepreneur? The role of graduate students in the development of university spinoffs[J]. J. Technol. Transf., 2017, **42**(6): 1237-1254.
2. Zilvinskis J, Masseria A A, Pike G R. Student engagement and student learning: Examining the convergent and discriminant validity of the revised national survey of student engagement[J]. Res. High. Educ., 2017, **58**(8): 880-903.
3. Peters H, Zdravkovic M, João Costa M, et al. Twelve tips for enhancing student engagement[J]. Med. Teach., 2019, **41**(6): 632-637.
4. Alicea S, Suárez-Orozco C, Singh S, et al. Observing classroom engagement in community college: A systematic approach[J]. Educ. Eval. Policy Anal., 2016, **38**(4): 757-782.
5. Hardman J. Tutor-student interaction in seminar teaching: Implications for professional development[J]. Act. Learn. High. Educ., 2016, **17**(1): 63-76.
6. Caratelli L A, Bostwick J R, Templin T, et al. Development and evaluation of an interprofessional seminar pilot course to enhance collaboration between health professions at a student-run clinic for underserved populations[J]. J. Interprofessional Care, 2020, **34**(3): 422-426.
7. Wang M T, Willett J B, Eccles J S. The assessment of school engagement: Examining dimensionality and measurement invariance by gender and race/ethnicity[J]. J. Sch. Psychol., 2011, **49**(4): 465-480.
8. Fredricks J A, Blumenfeld P C, Paris A H. School engagement: Potential of the concept, state of the evidence[J]. Rev. Educ. Res., 2004, **74**(1): 59-109.
9. Prendergast S, Rickinson M. Understanding school engagement in and with research[J]. Aust. Educ. Res., 2019, **46**(1): 17-39.
10. Zepke N, Leach L. Improving student engagement: Ten proposals for action[J]. Act. Learn. High. Educ., 2010, **11**(3): 167-177.

11. Appleton J J, Christenson S L, Furlong M J. Student engagement with school: Critical conceptual and methodological issues of the construct[J]. Psychol. Schools, 2008, **45**(5): 369-386.
12. Olivier E, Archambault I, De Clercq M, et al. Student self-efficacy, classroom engagement, and academic achievement: Comparing three theoretical frameworks[J]. J. Youth Adolesc., 2019, **48**(2): 326-340.
13. Bandura A, Adams N E, Hardy A B, et al. Tests of the generality of self-efficacy theory[J]. Cogn. Ther. Res., 1980, **4**(1): 39-66.
14. Van Dinther M, Dochy F, Segers M. Factors affecting students' self-efficacy in higher education[J]. Educ. Res. Rev., 2011, **6**(2): 95-108.
15. Xerri M J, Radford K, Shacklock K. Student engagement in academic activities: A social support perspective[J]. High. Educ., 2018, **75**(4): 589-605.
16. Pan J, Zaff J F, Donlan A E. Social support and academic engagement among reconnected youth: Adverse life experiences as a moderator[J]. J. Res. Adolesc., 2017, **27**(4): 890-906.
17. Wit D J D, Karioja K, Rye B J, et al. Perceptions of declining classmate and teacher support following the transition to high school: Potential correlates of increasing student mental health difficulties[J]. Psychol. Schools, 2011, **48**(6): 556-572.
18. Roorda D L, Koomen H M Y, Spilt J L, et al. The influence of affective teacher-student relationships on students' school engagement and achievement: A meta-analytic approach[J]. Rev. Educ. Res., 2011, **81**(4): 493-529.
19. Mercer S H, Nellis L M, Martínez R S, et al. Supporting the students most in need: Academic self-efficacy and perceived teacher support in relation to within-year academic growth[J]. J. Sch. Psychol., 2011, **49**(3): 323-338.
20. Wang Z, Bergin C, Bergin D A. Measuring engagement in fourth to twelfth grade classrooms: The classroom engagement inventory[J]. Sch. Psychol. Q., 2014, **29**(4): 517-535.
21. Pintrich P R, De Groot E V. Motivational and self-regulated learning components of classroom academic performance[J]. J. Educ. Psychol., 1990, **82**(1): 33-40.
22. Torsheim T, Samdal O, Rasmussen M, et al. Cross-national measurement invariance of the teacher and classmate support scale[J]. Soc. Indic. Res., 2012, **105**(1): 145-160.