

A study on the relationship between higher vocational students' perceived teacher support and learning engagement: The chain mediation of academic self-efficacy and professional commitment

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ABSTRACT

Purpose: The primary purpose of this study is to analyze the interaction between teacher support and student participation in the learning process.

Design/Methodology/Approach: 414 students from vocational colleges participated in this research. The data collected using a reliable and validated questionnaire was made to give an in-depth understanding of how much teachers supported their students' learning as well as their attitudes towards engagement and learning.

Findings: Empirical studies have shown that perceived instructional support has a significant effect on students' participation in the learning process.

Conclusion: Teacher support can not only directly affect students' learning engagement but also indirectly affect students' academic self-efficacy and career commitment.

Research Limitations: This study may have specific limitations in sample selection methods, types and other aspects.

Practical Implications: This study provides guidance and assistance for formulating effective education policies to enhance the level of learning engagement of college students and improve the quality of higher education.

Contribution to Literature: The uniqueness of this study is to explore the internal mechanisms and external conditions that promote vocational college students' learning engagement from the perspective of teacher support.

Keywords: *Academic self-efficacy, Higher vocational colleges, Learning engagement, Professional commitment, Self-determination theory, Teacher support.*

1. INTRODUCTION

An increase in academic investigation shows that learner participation has attracted significant attention in modern education management. Numerous theoretical and empirical studies have been carried out to investigate methods for enhancing students' learning engagement and to determine how these efforts have affected their academic achievement. These studies frequently show that positive learning results across a range of learning outcomes are influenced by student participation. Therefore, improving college students' learning engagement is considered an effective way to improve the quality of higher education (Lam et al., 2014; Lewis, Huebner, Malone, & Valois, 2011). According to Chi (2017), "engagement in learning" is a critical factor in school education.

It should be highlighted that not all students display independence in their educational pursuits despite the importance of learning participation. Higher vocational education teachers in the Chinese educational system commonly address students who fail to attain their potential due to low self-efficacy, a lack of vigour and other related problems. Such limitations significantly impede the production of high-quality talent in higher vocational academic institutions impeding the allure of vocational education (Yu, 2019). An essential step in achieving the goals of educational reform and an essential means to put the modern, high-quality idea of "student-centered" education into practice is to examine the internal mechanisms and external influences that encourage students' engagement in learning.

2. LITERATURE REVIEW

According to the research, a variety of influencing elements including the external environment have a significant impact on the quantity and quality of college students' learning participation. The role of teachers is particularly important in the academic context. The learning environment has been profoundly affected by teachers' words, actions, teaching strategies and other factors. Therefore, it is important to pay attention to teacher behaviour in order to ensure that college students are motivated to learn.

2.1. *Perceived Relationship between Teacher Support and Learning Engagement*

Both internal and external factors influence the adaptability and plasticity of learning. In this process, teaching support is a fundamental concept that can significantly affect students' cognitive engagement and academic achievement. [Greene, Miller, Crowson, Duke, and Akey \(2004\)](#) and their collaborators conducted a study that evaluated the impact of motivated learning tasks, learning-centered assessment and autonomous teacher support on students to gain a deeper understanding of this issue. An empirical inquiry has repeatedly demonstrated that teachers' provision of support for the fundamental psychological requisites of learners is directly associated with increased levels of scholastic engagement and achievement. The seminal works by [Diseth, Danielsen, and Samdal \(2012\)](#) as well as [Ricard and Pelletier \(2016\)](#) provide evidence in support of this view. A great deal of direct and authoritative influence is exerted on students' motivation to study and active participation in academic pursuits by educators in the academic context as they serve as coordinators and executors of didactic procedures. [Hu, Yu, and Liu \(2011\)](#) posited that the self-concept of happiness of college students is interconnected with their social support as it influences their fundamental self-evaluation patterns and constituent elements. According to [Wentzel, Russell, and Baker \(2016\)](#), the proximal stimuli that encourage students' motivation and learning behaviour in the classroom are displayed by teachers. Meanwhile, [Alfaro, Umaña-Taylor, and Bámaca \(2006\)](#) found that teachers have a strong impact on students' level of effort and academic value than peers. Given the uniqueness and importance of the impact of teacher support, this study will take teacher support as the starting point to explore its impact on learning engagement. In summary, this study assumes that perceived teacher support positively affects vocational college students' learning engagement.

2.2. *Mediation of Academic Self-Efficacy*

In 2011, a team of researchers conducted a longitudinal study examining the relationship between self-efficacy and activity engagement and came up with some encouraging findings. The results show that an increase in self-efficacy can directly lead to a rise in active participation. This means that when individuals improve their self-efficacy, they are more likely to actively participate in activities and programs. [Martin and Rimm-Kaufman \(2015\)](#) also mention this in their academic work. They found that individuals with higher levels of self-efficacy generally put more effort into their educational and professional pursuits. Similarly, they tend to show optimism and confidence and demonstrate greater resilience and adaptability in the face of difficulties and setbacks which motivates them to participate more actively in activities and projects. [Scott and Walczak \(2009\)](#) suggested that when educators properly support students, it can boost their self-confidence and self-assurance. As a result, this may encourage students motivation to take part in rewarding activities. [Deci and Ryan \(2000\)](#) noted that self-efficacy is an emotional condition that reflects a person's subjective perception of their capacity. They pointed out that the more confident an individual is, the more likely they are to motivate themselves to accomplish a goal. The research results of [Kim, Nimrod, and Maccann \(2018\)](#) also confirmed that continuous and practical support provided by teachers can give students a higher sense of self-efficacy, thus enhancing their academic performance. The relationship between emotional support between teachers and students has also emerged as a major subject of study in education. The findings of the study demonstrate that when students believe their teachers are emotionally supportive of them, their learning participation also improves because of their increased emotional satisfaction and learning confidence and they will participate more actively in the process of acquiring new knowledge.

2.3. *Mediation of Professional Commitment*

The factors that cause college students' involvement in learning are various including social and cultural background, family factors, educational environment, learning motivation and so on. However, [Lian, Yang, and Wu 's \(2006\)](#) theoretical framework highlights the importance of professional commitment in this phenomenon. After

the expansion of higher education enrollment, the number of university admissions has increased and many college students are studying majors that are not the ones they wish to apply for in the college entrance examination. This phenomenon has been observed to elicit a lack of professional dedication, subsequently influencing their level of enthusiasm and investment in academic pursuits. Recent scholarship has revealed that affective and normative commitments within the context of professional dedication are positively and significantly predictive of increased levels of learning engagement.

The research conducted by Gao and He (2011) has revealed that professional commitment exhibits considerable predictability for learning engagement levels within the student population of regular universities. Several studies, including those conducted by Chen and Xu (2013) and Zhang (2015) indicate that students who exhibit solid professional commitment also tend to demonstrate more outstanding commitment towards their academic pursuits. According to prior research conducted by Li, Wang, and Wang (2020) and Liu and Zheng (2020), professional commitments typically serve as an intermediary variable in the relationship between environmental factors and college students' learning situations. On the other hand, the extent of college students' psychological attachment to their institution is manifested through a sense of belonging and is deemed crucial. Additionally, learning engagement is a vital indicator of students' learning situations. Consequently, it can be deduced that professional dedication should be perceived as an intervening variable.

2.4. The Chain Mediating Effect of Academic Self-Efficacy and Learning Engagement

A group of psychologists has presented the argument that examining the direct impact of independent variables on dependent variables is relatively inadequate in light of the developments achieved in developmental psychology research. It is essential to investigate the internal mechanisms of independent and dependent variables to ensure the relevance of the research. This involves examining factors that mediate the relationship between the variables as proposed by Baron and Kenny (1986) and reinforced by Wood, Froh, and Geraghty (2010). Academic self-efficacy has been identified as a positive predictor of learning engagement (Duan & Li, 2008) and emotional and normative commitment can be reliable predictors of engagement during learning (Cao, 2018). Additionally, the study highlights Zhang (2015) observation that professional commitment has a major impact on how social assistance affects learning engagement and how that impact may be adjusted.

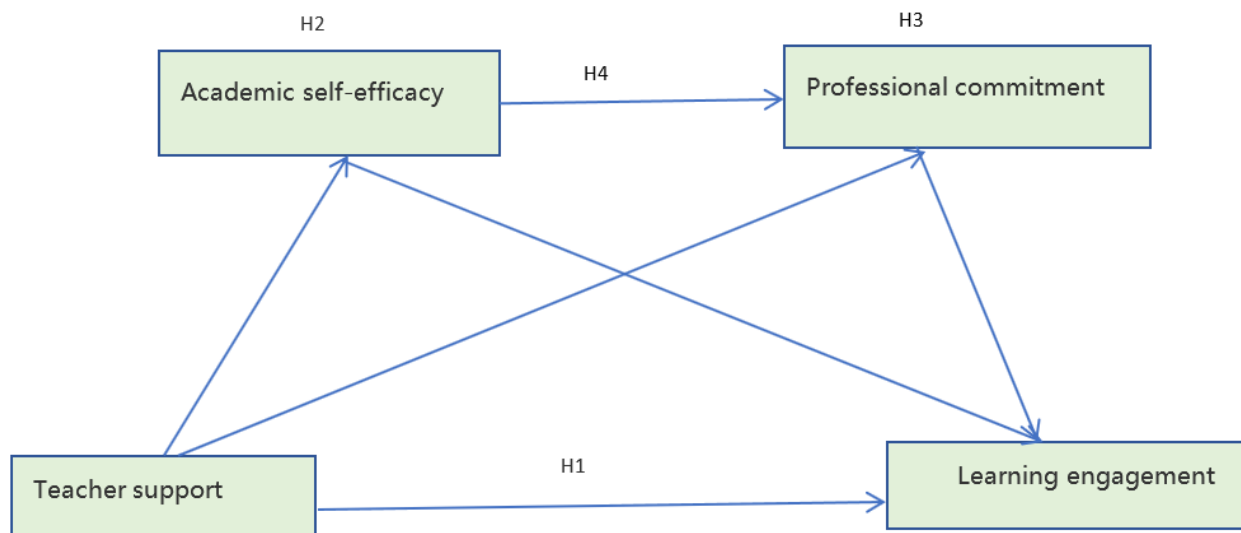


Figure 1. Research model.

The provision of pedagogical assistance is an important factor that has a significant, dual-edged impact on learners' involvement in the educational process with the latter channel being particularly highlighted by the mediating impact of motivation-derived parameters such as self-efficacy and professional commitment. The scope of the teacher support that students perceive has the potential to significantly impact their engagement in learning. This is achieved by bolstering their academic self-efficacy and cultivating their professional commitment. It has been demonstrated through empirical research that professional commitment serves as a constructive influence on

academic self-efficacy, thereby creating a reinforcing link between these two constructs. Individuals who demonstrate greater adherence to their profession are inclined towards higher academic self-efficacy.

The objective of this study was to investigate the effects of teacher support on students' academic engagement in vocational colleges and to explore how professional commitment and academic confidence relate to teacher support. Data was collected through questionnaire and statistics and analyses were made on the obtained data in order to achieve this goal. The specific research model is shown in [Figure 1](#).

3. METHODOLOGY

3.1. Research Design and Implementation

The present study entails an explanation of the sample characteristics and the methodology of data acquisition. The research instruments will be discussed in more detail in the following sections.

3.2. Sample Description and Data Collection

414 questionnaires were distributed throughout a higher vocational learning institution using the cluster sample technique and 21 of them were assessed as improperly completed because they followed a recurring pattern of error. Finally, 387 valid questionnaires were successfully obtained yielding a remarkable efficacy rate of 93.47%. The participants of the study are comprised of 120 first-year students (31%), 121 second-year students (31.36%) and 146 third-year students (37.7%). Further description reveals that the gender distribution was characterized by 119 male participants (31%) and 268 female participants (69%).

3.3. Research Tools

The current study comprises four dimensions: educator support, academic self-belief, professional commitment and learning engagement. These components are measured using various instruments.

3.3.1. Perceived Teacher Support Scale of Vocational College Students

"Academic emphasis" and "teacher support" were considered to be highly reliable in past empirical studies. Therefore, we used the Learning Climate Questionnaire (LCQ) to assess the learning climate experienced by participants in this study. Cronbach's alpha test and mean-variance extraction (AVE) verification were conducted on the obtained data to ensure the reliability of the teacher support scale. Our study aims to provide important insights into the relationship between teacher support and subsequent academic achievement for further improving policies related to school education management. According to [Table 1](#), results indicate high levels of internal consistency with the total teacher support scale and its subscales obtaining coefficients of 0.92, 0.87, 0.78, and 0.85 respectively. Furthermore, the AVE values of the teacher support scale demonstrated adequate convergent validity. The present investigation found that the support scale exhibited satisfactory psychometric properties as evidenced by standardized factor loads exceeding 0.5 and composite reliability values surpassing the threshold of 0.6 recommended by scholars ([Fornell & Larcker, 1981](#)).

3.3.2. Academic Self-Efficacy Scale of Vocational College Students

The complex nature of academic self-efficacy can be implemented in the present study as a cognitive assessment of students' perceived ability to complete academic activities and attain scholarly accomplishments. This conceptualization is derived from an amalgamation of the relevant, empirical literature and the selection of effective measurement instruments for this construct comes from the psychometric rigor and scientific validity of the scales advanced by the Motivated Strategies for Learning Questionnaire (MLSQ) [Greene et al. \(2004\)](#). This reflects a principled and judicious approach to research instrument selection. The present investigation involved an analysis conducted by the author whereby Cronbach's alpha and Average Variance Extracted (AVE) metrics were applied to the academic achievement scale data. According to the information given in [Table 1](#), it can be observed that the academic self-confidence questionnaire given to the students illustrates a reliability coefficient of 0.86 and a mean extracted variability (AVE) of 0.61 indicating a strong level of internal consistency among the responses. Our findings align with the benchmarks suggested by scholars in the academic community which supports the remarkable levels of reliability and validity exhibited by the scale.

3.3.3. Learning Engagement Scale of Students in Higher Vocational Colleges

Learning engagement is a complex construct that includes the aforementioned factors and reflects the level of commitment and involvement showed by individuals pursuing academic goals. It encompasses various activities but not limited to engagement in class discussion, participation in group assignments, communication with teachers and peers, self-directed learning and involvement in school clubs and organizations. Learning engagement is an essential aspect of the educational process. Likert scales are used to measure the level of skills students acquire through participation in the learning process. The results show that there is a significant positive relationship between students' learning engagement and academic achievement which supports the validity of the scale for evaluating learning engagement. This study explores the impact of learning engagement on academic achievement using the Likert scale as a measure of responses ranging from 1 (representing significant inconsistency) to 5 (reflecting important consistency). As a supplement, the authors also rigorously evaluated the reliability and validity of the academic achievement scale by examining Cronbach's alpha and AVE measures. [Table 1](#) shows the internal consistency coefficients of the global participation scale and its corresponding subscales which are 0.89, 0.80, 0.71 and 0.93, respectively. The extracted mean square error (AVE) of this scale is 0.59 which conforms to the standard proposed by famous scholars indicating that this scale has good reliability and validity.

3.3.4. Professional Commitment Scale of Vocational College Students

The current study article uses the specialised commitment scale for tertiary-level enrollees developed by [Lian and Lixian \(2005\)](#) after careful consideration of research content and objectives. This instrument comprises fifteen progressively nuanced items encompassing four distinct tenets: emotional inclinations, economic considerations, normative obligations and sustained dedication. A 5-point Likert scale ranging from 1 (very inconsistent) to 5 (very consistent) was employed to gauge levels of measurement. High scores indicated heightened professional commitment and low scores indicated diminished commitment levels. The purpose of this study was to evaluate the reliability and validity of the academic achievement scale. Cronbach's alpha and mean-variance extraction methods were used for analysis. The results showed that the internal consistency coefficients of the professional commitment scale and its sub-scales were 0.91, 0.90, 0.83, 0.83 and 0.89, respectively. The results have high stability and consistency in different dimensions. In addition, the mean-variance extraction (AVE) of the scale was 0.62 which was in line with the benchmark set by scholars proving that the tool has reliable reliability and validity. This means that this scale can be used to measure students' academic achievement levels to understand how to improve their academic performance. It is worth noting that we still need to explore more factors to enhance the reliability and validity of the scale.

Table 1. reliability and convergence validity.

Variable	Cronbach's alpha	CR	AVE
Teacher support	0.92	0.96	0.68
Academic self-efficacy	0.86	0.86	0.61
Learning engagement	0.89	0.94	0.59
Professional commitment	0.91	0.95	0.62

4. DATA ANALYSIS AND DISCUSSION

The current study examined the samples using the aforementioned research methodology and tools. The ensuing discourse explicates the acquired data and deliberation.

4.1. Common Method Deviation Test

Self-reporting procedures may introduce a systemic methodological problem into the data collection process. The use of Harman's single factor test is suggested as an effective method for diagnosing the presence of such deviations in order to reduce the risk of unconscious biases and ensure the quality and reliability of data. According to the research done by [Zhou and Long \(2004\)](#), there was an identifiable amount of common method deviation in the outcomes. The assessment disclosed the identification of ten factors that had positional values surpassing unity explaining 68.98% of the variation. It is important to note that the primary component only contributed 30.04% to the interpretation falling short of the accepted critical criterion of 40%. Therefore, we can infer from this study that no significant standard deviation was present.

4.2. Descriptive Statistics and Correlation Analysis of Each Variable

In this survey, the indicators assessed by the researchers included academic achievement, academic confidence, academic participation and educator support. Descriptive statistical techniques were used to measure the central trend and variability of these four variables i.e., mean value and standard deviation. A Pearson correlation technique was used to explore the interconnectivity among the constructs of pedagogue support, academic self-confidence, professional dedication and learning commitment. The findings demonstrated that all four variables demonstrated affirmative associations with one another. The present investigation aimed to scrutinize the probable connections among teacher support, learning engagement and professional commitment within the context of vocational college students. This study explores the relationship between teacher supports, level of learning engagement, professional commitment and career decision-making self-efficacy. Through data analysis, we found that a positive correlation between teacher support and learning engagement with a correlation coefficient of 0.44 and a p-value less than 0.01. In addition, teacher support and professional commitment were positively correlated with a correlation coefficient of 0.25 and a p-value less than 0.01. Notably, we also found a significant positive relationship between learning engagement level and career decision self-efficacy with a correlation coefficient of 0.35 and a p-value less than 0.01. The above results suggest the importance of teachers' support and students' involvement in learning and provide valuable references for improving students' self-efficacy in career decision-making. These results highlight the potential impact of learning engagement on the career decision-making process of students attending vocational colleges. Furthermore, the findings show a positive relationship between teacher guidance and academic self-confidence with the procurement of commitment to career building. The present research proposes that the augmentation of teacher support and the reinforcement of students' professional dedication and academic self-efficacy levels are plausible means for improving learning engagement. The positive correlation observed between commitments, academic self-efficacy and learning engagement has been substantiated through a series of statistical and correlational analyses which are detailed in Table 2. This evidence supports the initial research hypothesis and establishes its viability for further investigation through path analysis.

Table 2. Statistics of basic information.

Variable	Basic statistics			Correlation coefficient		
	M	SD	N	Teacher support	Academic self-efficacy	Learning engagement
Teacher support	3.38	0.58	387	1		
Academic self-efficacy	3.14	0.59	387	0.35**	1	
Learning engagement	3.29	0.49	387	0.44**	0.58**	1
Professional commitment	3.58	0.50	387	0.25**	0.39**	0.51**

Note: ** p< 0.01.

4.3. The Mediate Role of Academic Self-Efficacy and Professional Commitment between Perceived Teacher Support and Learning Engagement

Based on the research hypotheses proposed in the article, the path analysis method is adopted. The investigation is conducted using the Statistical Package for the Social Sciences (SPSS) macro program devised by Hayes and Preacher (2013) while gender and grade type are regulated as controlled variables in the analysis. The present research investigated the interrelationships among pedagogical support, scholarly self-assurance, occupation allegiance and educational engagement. Bootstrapping was conducted by means of process V4.0, a computerized tool compatible with SPSS 25.0. The technique repeated 5000 times allowed the authors to assess the mediating impact's robustness using a bootstrap resampling strategy and setting the confidence interval at 95%.

Teachers support positive predictive learning engagement while controlling for gender and grade ($\beta = 0.36$, $p < 0.001$), model adjustment $R^2 = 0.19$, $F = 30.31$, $p < 0.001$. This result supports hypothesis 1. Regression analysis shows that teacher support has an impact on academic self-efficacy ($\beta = 0.271$, $p < 0.001$) and professional commitment ($\beta = 0.213$, $p < 0.001$), professional commitment and academic self-efficacy ($\beta = 0.384$, $p < 0.001$) has a direct positive predictive effect. Teacher support, professional commitment and academic self-efficacy simultaneously predict learning engagement, professional commitment ($\beta = 0.300$, $p < 0.001$) and academic self-

efficacy ($\beta = 0.309, p < 0.001$) have a significant positive predictive effect on learning engagement. Therefore, the mediating effect of academic self-efficacy and professional commitment is significant. The results are shown in Table 3.

Table 3. Regression analysis among variables.

Regression equation		Overall fitting coefficient			Regression coefficient	Significance
Result variable	Predictive variables	R	R ²	F	β	t
Academic self-efficacy		0.353	0.124	18.127		
	Gender				0.080	-1.281
	Grade				-0.016	-0.456
	Teacher support				0.353	7.228***
Professional commitment		0.410	0.168	19.260		
	Gender				0.003	0.638
	Grade				-0.012	-0.418
	Teacher support				0.109	2.517**
	Academic self-efficacy				0.296	6.999***
Learning engagement		0.69	0.476	69.289		
	Gender				-0.033	-0.832
	Grade				-0.001	-0.065
	Teacher support				0.191	5.718***
	Academic self-efficacy				0.309	8.915***
	Professional commitment				0.300	7.620***

Note: ** $p < 0.01$; *** $p < 0.001$.

The results show that the bootstrap method further tests the mediation effect. The results showed that academic self-efficacy and career commitment had a significant mesmeric effect (0.173). Specifically, the mesmeric effect can be generated through two mediation chains: first, the indirect effect of teacher support, academic self-efficacy, professional commitment and learning engagement is 0.031. A bootstrap (95%) confidence interval does not contain 0 indicating that the interlocking mesmeric effect of professional commitment and academic self-efficacy is significant. Second, the indirect effect of teacher support, professional commitment, academic self-efficacy and learning engagement is 0.084 indicating that there is a significant mesmeric chain effect between professional commitment and academic self-efficacy. The comparison between indirect path 4 and indirect path 3 shows that path 4 is greater than path 3. By comparing the models, it can be observed that the hypothesis model of chain mediation given in this study has been validated and is more consistent with the data. The results also show that academic self-efficacy affects not only professional commitment but also learning engagement. According to Table 4, teacher support and academic self-efficacy are both critical to this intermediary process. The significance of professional commitment in increasing learners' levels of participation through model comparisons was indicated. In this study, a hypothesis model of chain mediation is presented that is consistent with the collected empirical evidence. Our hypothesis model has been thoroughly verified which proves its reliability and legitimacy. It is worth noting that in Figure 2, we visually depict the apparent ways in which teacher support affects learning engagement. Therefore, we reasonably confirm the endorsement of H2, H3, and H4.

Table 4. Bootstrap results of each path coefficient of the model.

	Effect value	Boot	Boot CI	Boot CI	Effect quantity
		SE	LLCI	ULCI	
Total indirect effects	0.364	0.035	0.222	0.359	
Indirect effect 1	0.109	0.019	0.037	0.114	29.95%
Indirect effect 2	0.039	0.027	0.084	0.189	10.71%
Indirect effect 3	0.031	0.017	0.054	0.121	8.52%
Indirect effect 4	0.084	0.008	0.012	0.044	6.87%

- 1:Teacher support → professional commitment → learning engagement.
- 2:Teacher support → academic self-efficacy → learning engagement.
- 3:Teacher support → academic self-efficacy → professional commitment → learning engagement.
- 4:Teacher support → professional commitment → academic self-efficacy → learning engagement.

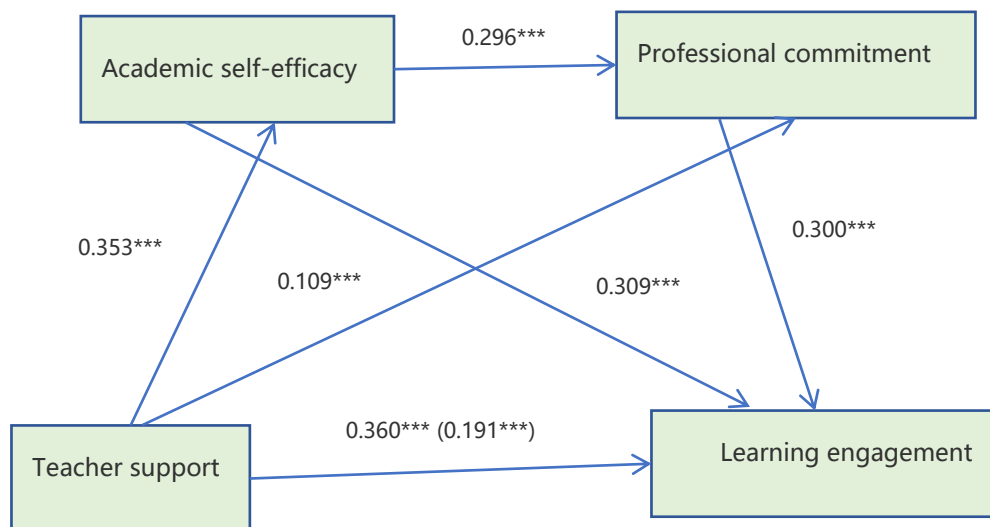


Figure 2. Output results of overall path analysis.

Note: *** $p < 0.001$.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Additionally, the sequential mediation of students' academic self-efficacy and professional dedication which act as mediating variables in the relationship between educator encouragement and students' learning involvement is explored in this study. The findings suggest that higher vocational college students display higher levels of educator endorsement, academic self-efficacy and professional loyalty. The impact of an educator's approval on learners' educational engagement in higher vocational institutions is a subject of profound significance. It is noteworthy that the academic self-efficacy and professional commitment of tertiary-level scholars play a pivotal role in mediating the relationship between educators' approval and the level of educational engagement demonstrated by the learners.

5.1.1. Mediation of Academic Self-Efficacy

Students who experience a supportive teaching method are more inclined to believe in their own academic abilities. The more support students perceive from teachers, the more confident they are in their learning. They spend more time investing in their studies and increase their engagement. Students can participate and actively push their boundaries by participating in a safe and inclusive learning environment. According to [Furrer and Skinner \(2003\)](#), it is crucial to promote this kind of discourse in order to ensure that students have effective and

meaningful educational experiences. It is imperative for students to exercise autonomy in decision-making and strategy selection for problem-solving as this instills a sense of heightened support from teachers, enhances academic self-efficacy, fosters proactive engagement in classroom activities and mitigates apprehension towards learning obstacles. Moreover, students should be persistent and proactive in their learning activities and should have a strong desire to study (Babenko, Mosewich, Abraham, & Lai, 2018; Ryan & Patrick, 2001). According to Tac-Ho and Eun-Il (2019), the faculty of stimulating constructive emotions among students can pave the way for generating a positive self-assessment and stimulate their academic self-efficacy. As a result of this increased efficacy, learners become more resilient and enthusiastic about learning and their motivation to work towards academic objectives increases. Such increased motivation improves concentration and commitment to academic pursuits.

5.1.2. Mediate the Role of Professional Commitment

The present study has yielded findings indicating that the perception of support provided by teachers has an indirect impact on engagement in the learning process through the channel of professional commitment. These results align with previous scholarly inquiries. According to Peng and Luo (2007), students' learning engagement levels can be improved when teachers give more care and support to their academic progress and when students consciously choose to interact with peers who exhibit higher levels of learning engagement. In the context of tertiary education, subjective support stemming from various sources such as institutional support, professional guidance provided by instructors and mutual assistance among fellow learners all play a crucial role in fostering positive academic outcomes.

5.1.3. The Chain Mediating Role of Professional Commitment and Academic Self-Efficacy

The present investigation demonstrates that individuals' perceptions of teacher support have the capacity to forecast learning engagement. This linkage is established through the mediating mechanism of academic self-efficacy which serves as an indirect influence on professional commitment. In fact, vocational learners' awareness of teacher support grows with their academic abilities ultimately strengthening their commitment to their chosen profession. The provision of additional guidance and support from educators has been shown to significantly enhance students' academic self-efficacy, promote a deeper appreciation for their academic disciplines and encourage increased investment of time and effort into their studies. Consequently, this will serve as a catalyst for enhancing the quality of higher vocational education and academic achievement which can benefit not just students but also wider society. Students' expectations are crucial factor in their academic pursuits, signifying validation and appreciation for their acquisition of knowledge and skills. The enhancement of students' self-efficacy through such validation is directly proportional to the implementation of their perseverance and dedication towards professional development ultimately culminating in an amplification of their academic performance.

5.2. Recommendations

The aforementioned research findings indicate that the provision of educational support by professors in higher vocational institutions is a crucial means for fostering elevated levels of academic self-efficacy. On the other hand, it is possible to increase student engagement in the learning process. Therefore, it is recommended that efforts be made in the following aspects.

First, there is a need to raise the standard and excellence of vocational education, actively promote professional identity education and enhance professional commitment. The findings of the present study demonstrate that professional commitment significantly influences the level of learning engagement among vocational students, thereby underscoring the extent of their adoration for their chosen fields of study. The main learning tasks for higher vocational students are professional knowledge learning and professional practice training. If students cannot identify with and accept the professional fields they have learned, it is difficult to improve the enthusiasm and involvement of higher vocational students in learning. Higher vocational institutions should foster students' enthusiasm and desire for professional learning while also assisting them in understanding the learning objectives and career possibilities of their majors.

Second, take multiple measures to improve teachers' quality and students' satisfaction. There are currently very few opportunities for teachers and students to interact outside of class time in colleges and universities. Each

student's learning progress, experience and time are inconsistent. It might be challenging to create a learning environment where students are expected to progress. Higher vocational colleges should strengthen the system construction and set up a class teacher system. Each class is equipped with a full-time teacher as a class teacher, carries out career planning, professional and employment guidance and other academic assistance activities and strengthens the guidance provided to students by qualified teachers. This can not only enhance students' perceived teacher support, improve students' professional quality and cultivate students' professional interests but also enhance students' sense of belonging.

Third, focus on students, guide them to change their mindset and enhance their self-efficacy. Vocational colleges should actively take measures to guide vocational college students to establish a correct learning perspective, carry out learning activities such as learning, interest groups and professional skills training lectures and establish clear learning goals. Students develop targeted learning plans based on their learning objectives, striving to improve learning efficiency, academic self-efficacy and self-learning ability. At the same time, vocational colleges should strengthen the importance attached to the psychological health of vocational students, guide them to master emotional recognition and control methods and help students control their own emotions.

6. LIMITATIONS

Due to limitations in research conditions and time, some vocational colleges in Chongqing, China were selected as the research subjects in this study. The number of vocational students in Chongqing is around 300000. Although representative vocational colleges should be established as much as possible when choosing sample colleges, it is also difficult to achieve comprehensive coverage which is limited in representativeness compared to the number of students in vocational colleges. This study may have specific limitations in sample selection methods, types and other aspects. There may be restrictions on research conclusions with regard to age, region, and category because it is challenging to evaluate more vocational students. To make the samples more representative and increase research accuracy, future studies should broaden the range of sample selection and the number of samples examined.

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INSTITUTIONAL REVIEW BOARD STATEMENT

The Ethical Committee of the International College, Krirk University, Thailand has granted approval for this study on 2 September 2022 (Ref. No. 2022-0902).

TRANSPARENCY

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

COMPETING INTERESTS

The authors declare that they have no competing interests.

AUTHORS' CONTRIBUTIONS

The ideas, concepts, and design of the research, instrument development and data analysis, S.Z.; the data analysis, and formatting of the article, W.W. Both authors have read and agreed to the published version of the manuscript.

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