A STUDY ON THE IMPACT OF TEACHER SUPPORT ON STUDENTS' LEARNING ENGAGEMENT AT THE HIGHER VOCATIONAL EDUCATION LEVEL IN SHANGQIU, CHINA: MEDIATING ROLE OF SELF-EFFICACY

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Abstract: The purpose of this study was to explore the relationship between students' perceptions of teacher support, self-efficacy, and engagement in learning at the senior level and to validate the mediating role of self-efficacy. The study utilized quantitative research methods. The study used a questionnaire to collect data from a sample of 352 students from a higher vocational college in Henan Province using three scales: teacher support, self-efficacy and learning engagement. The data were analyzed through descriptive statistics, t-test, one-way ANOVA, Pearson's correlation analysis, regression analysis with mediation effect test. The study analyzed the variability in teacher support, self-efficacy, and engagement in learning among students of different genders, grades, and professional backgrounds. The study examined the correlations among the variables, and finally constructed a regression model to verify the path of influence among the variables and to test the mediating effect of self-efficacy. The results of the study showed that (1) background variables such as gender, grade level, and major did not differ significantly on the scores of each variable. (2) There is a significant positive correlation between teacher support, self-efficacy and learning engagement. (3) Teacher support not only directly affects students' engagement in learning, but also indirectly through self-efficacy. (4) Self-efficacy plays a partial mediating role in the path of teacher support affecting learning engagement. The findings provide theoretical basis and practical suggestions for optimizing students' learning motivation and teaching support strategies in higher vocational education.

Keywords: Teacher support, Learning engagement, Self-efficacy

Introduction

1. Research Background

Accompanied by the sharp rise in the social demand for high-level talents and the strong

demand of individuals for access to higher education enrollment opportunities, China is currently vigorously promoting the development of higher education by leaping from the mass to the popularization stage, in which the development of higher vocational schools has contributed greatly to the development of China's higher education. According to the 2019 National Education Development Statistics Bulletin released by China's Ministry of Education in May 2020, the gross enrollment rate of higher education has continued to rise, and as of December 31, 2019, there were a total of 40.02 million people enrolled in all types of higher education across the country, and China's gross enrollment rate of higher education has increased from 40% in 2015 to 51.6% in 2019, the gross enrollment rate of higher education in China has increased from 40% to 51.6% in 2019 (Xu et al, 2024). It has exceeded 50% and has built the world's largest higher education system.

With the expansion of colleges and universities, the number of undergraduates graduating is increasing year by year, and the social job selection is "optimal" for undergraduates, and the remuneration of higher vocational students will be lower than that of undergraduates (Gu 2018). Although in China, through legislation and the intervention of the education sector, it has been continuously emphasized that the social market should not be subjected to "education discrimination", education bias and discrimination still exist in the social market, and this behavior will continue in the workplace, creating a psychological gap for the individuals concerned (Xu et al, 2024). The return of education itself should be a return to the world of work.

Returning to education itself should be a return to what students actually learn, and under high-quality education, exploring the degree of students' commitment to learning and related impacts of higher vocational education in contemporary China, promoting the adhesion of teachers to students' commitment to learning, and examining the degree of commitment to learning in the day-to-day study of students, most of the higher vocational students choose to learn professional-level skills at the stage of enrollment to join in the many aspects of academics, employment, and society. Join the "involution" (Involution) ranks, after enrollment will be the main goal of positioning in the college entrance examination or learning professional skills to obtain the relevant skills certificate. From years of practical experience and research, the popularization of higher education puts forward higher requirements for the development of students.

Therefore, understanding the learning difficulties of higher vocational students, as well as learning needs, and promoting learning behaviors have become an indispensable topic in the process of higher vocational education.

2. Research Problems

In the context of China’s rapidly evolving higher vocational education system, the quality of student learning has become a central concern. With the lowering of admission thresholds and changing student demographics, the challenge of ensuring meaningful classroom engagement has intensified. Despite being capable of independent thinking, many vocational students exhibit low classroom

participation often described as “student silence.” According to the 2022 China Higher Vocational Education Quality Annual Report, over 53% of teachers reported a significant lack of student enthusiasm in class. This low engagement negatively impacts both learning outcomes and the broader goal of cultivating skilled, application-oriented talent. Research has shown that teacher support plays a critical role in enhancing students’ academic engagement, motivation, and emotional investment. However, most existing studies focus on secondary education students, with limited attention paid to higher vocational learners. This gap highlights the need to investigate factors influencing learning input—particularly in the context of new technological integrations such as AI within vocational settings.

3. Research Significance

This study addresses critical gaps in existing research by re-examining the concept of teacher support within the specific context of higher vocational education. Prior studies often focus on emotional encouragement or academic guidance, yet in vocational settings, teacher support must also encompass professional development aspects, such as practical skills training, industry exposure, and career planning. In light of this, the study seeks to build a more targeted and comprehensive measurement framework for teacher support that reflects the practical and career-oriented nature of higher vocational education. At the same time, while most related studies center on general higher education students, this study turns its focus to the higher vocational student group, whose learning input is shaped by a different set of educational environments, teaching styles, and development goals. As higher vocational students face greater challenges in classroom engagement and learning motivation, identifying the support mechanisms suited to their unique needs is both timely and necessary.

Furthermore, this study incorporates the mediating role of student self-efficacy to deepen the understanding of how teacher support influences learning input. While teacher support can provide external motivation, students’ internal belief in their capabilities—i.e., their self-efficacy—is a key psychological factor that affects how they respond to external support. When vocational students perceive high levels of teacher concern and encouragement, they are more likely to build confidence in their learning abilities, become emotionally invested, and actively participate in academic tasks. This perspective not only enriches the theoretical model of the study but also provides practical implications: higher vocational institutions should integrate self-efficacy enhancement strategies into teacher training and student development programs. Through such a dual focus on external support and internal empowerment, the learning environment for vocational students can be significantly improved, leading to better educational outcomes and higher overall teaching quality.

Research Objectives

1) To analyze how students' perceived teacher support varies at the higher vocational level under different demographic background variables (gender, grade level and different majors);

2) To analyze how students' engagement in learning varies at the senior level across demographic background variables (gender, grade level and different majors);

3) To analyze how students' self-efficacy varies across demographic background variables (gender, grade level, and different majors) at the senior level;

4) To understand how teacher support affects academic engagement;

5) To understand how teacher support affects students' self-efficacy;

6) To understand how self-efficacy affects engagement in learning;

7) To test how students' self-efficacy mediates the effect of teacher support on engagement in learning.

Literatures Review

1. Teacher Support

Teacher support has evolved from general social support concepts to a more education-focused framework that addresses students' emotional, cognitive, and autonomy needs. Rooted in ecological systems theory, it emphasizes the teacher's role in shaping student outcomes through care, encouragement, and structured learning support. This integrative view highlights teacher supports as essential for fostering motivation, self-directed learning, and a positive classroom environment. In the context of higher vocational education, understanding teacher support is especially important for enhancing student engagement and promoting practical skill development.

When adolescents believe that teachers care about their learning and personal development, they are more likely to internalize academic goals and engage meaningfully in classroom activities. Research demonstrates that teacher support helps shape students' self-efficacy, learning motivation, and emotional regulation, all of which are crucial for sustained academic effort. In emotionally and academically supportive classroom environments, students tend to perceive learning as more valuable and attainable, fostering higher levels of participation and persistence.

The absence of teacher support, by contrast, may generate feelings of alienation and disengagement, reducing the likelihood that students will seek help or feel confident in their abilities. This is particularly important in the context of vocational education, where students may already face challenges related to lower academic confidence or external expectations. Therefore, continued research into teacher support can offer valuable insights for improving teaching practices and student outcomes. The emphasis on multidimensional support, including emotional encouragement, academic guidance, and autonomy promotion, reflects an increasingly nuanced understanding of how teacher-student interactions influence learning success.

Teacher support is commonly measured through self-report questionnaires reflecting students' perceptions. This study uses Ouyang Dan's (2005) widely recognized questionnaire, which assesses emotional, competence, and learning support on a six-point Likert scale. While subject-specific tools

exist, such as Chai and Gong's (2013) scale for math teachers, Ouyang's instrument is more comprehensive and well-suited for evaluating general teacher support in higher education, making it appropriate for students in the cultural relics' restoration program at Shandong University of Arts.

2. Learning Engagement

The concept of learning engagement, as a multidimensional construct in educational psychology, has evolved significantly over time—from its theoretical origins to a more refined structural framework. Initially rooted in social control theory, learning engagement emphasizes the emotional ties students develop with institutions such as schools and families, which foster a sense of belonging and trust that positively influence academic performance (Fredricks et al., 2004). Another academic lineage stems from the field of occupational psychology, where the concept of work engagement was adapted to educational settings. With the rise of positive psychology, scholars began focusing less on deficit-based concepts like academic burnout and more on strength-based indicators such as motivation, perseverance, and positive emotional states. This shift reflects a broader movement in educational research from addressing student problems to fostering their holistic development and well-being.

Research on learning engagement has predominantly explored its defining characteristics, demographic differences, and its relationships with various academic and social factors. External influences such as family socioeconomic status have been shown to positively affect students' learning engagement; a supportive family environment and stable economic conditions create a foundation conducive to higher engagement levels (Terenzini et al., 2001). Interpersonal relationships, especially those with teachers, parents, and peers, also play a critical role, particularly influencing emotional engagement in learning (Furrer & Skinner, 2003). Fredricks et al. (2004) further emphasize the positive impact of peer support, noting that healthy peer interactions significantly enhance students' motivation and involvement in their studies.

Individual differences also contribute meaningfully to learning engagement. Langelaan et al. (2006) found that students exhibiting more positive personality traits tend to show greater learning engagement, with females generally displaying higher engagement levels than males under similar conditions. From a psychological perspective, learning engagement is sensitive to external stressors; research indicates that periods of increased stress negatively impact engagement (Zhang et al. 2008). However, this adverse effect can be mitigated by psychological resilience and other positive personal resources, such as self-efficacy, which enhance students' capacity to maintain focus and motivation despite challenges. These findings underscore the complex interplay between environmental, interpersonal, and individual factors in shaping the quality and depth of students' engagement in learning.

The measurement of learning engagement has evolved through various scales developed and adapted by researchers both internationally and within China. Schaufeli (2002) transformed his Utrecht

Work Engagement Scale into the Learning Engagement Scale (UWES-S), focusing on three dimensions: vitality, dedication, and concentration. Fredricks (2004) created the Learning Engagement Questionnaire (LEQ), which assesses behavioral, affective, and cognitive engagement. Other tools like Miserandino's scale and the Rochester School Assessment Package also evaluate multiple dimensions of engagement, including students' effort, persistence, attention, and emotional responses during learning. In China, scholars such as Gan (2005) have revised these scales, confirming their reliability and validity through factor analyses and adapting them to local contexts. These efforts have helped develop culturally relevant instruments that effectively capture the multidimensional nature of learning engagement among Chinese students.

3. Students' Self-Efficacy

The concept of self-efficacy, first introduced by Bandura in 1977, refers to an individual's belief in their ability to successfully execute specific tasks or behaviors. It encompasses not only the confidence to undertake a task but also the effort invested, the persistence shown in overcoming difficulties, emotional regulation when facing failure, and the capacity to manage stress during complex challenges. Bandura emphasized that a strong sense of self-efficacy is essential for individuals to initiate and sustain actions toward goal achievement. This construct has become a foundational psychological variable in success-oriented research, supported by extensive empirical studies. Self-efficacy arises from four main sources: personal mastery experiences, vicarious experiences, verbal persuasion, and physiological and emotional states. Overall, it reflects an individual's resilience and determination in confronting obstacles, shaping both their attitude toward problems and their persistence in solving them.

Self-efficacy has been extensively studied and is widely recognized as closely linked to various academic and psychological factors such as test anxiety, procrastination, motivation, and academic performance. Xu and Gong (2009) identified self-efficacy, along with self-perception and coping styles, as key influences on students' academic emotions. Research also highlights self-efficacy as a crucial protective factor for psychological resilience and a positive predictor of academic achievement (Li & Gao 2015). Beyond academics, studies show that self-efficacy contributes to overall happiness (Wang & Fang, 2023) and is positively correlated with self-esteem levels. Intervention programs, such as group counseling and mental health courses, have demonstrated effectiveness in enhancing self-efficacy among college students, leading to improved self-acceptance and reduced anxiety. Similarly, positive group counseling for sixth-grade students significantly increased learning self-efficacy and academic performance compared to control groups (Liu, 2023).

4. Variables Correlation Study

Teacher support, referring to students' perceptions of their teachers' care, emotional consideration, and academic assistance (Fraser et al., 1996), is strongly associated with positive student outcomes. When students feel supported, they are more motivated, engaged, and connected to school life (Wang & Holcombe, 2016). Studies show that teacher praise boosts engagement (Jiang & Hao,

2014), while criticism reduces it. Intervention programs further confirm that increasing perceived teacher support enhances motivation and participation. In online learning contexts, Liu et al. (2017) found that lower teacher support led to reduced engagement, highlighting the need for active teacher involvement across settings.

Research exploring the relationship between teacher support and students' self-efficacy emphasizes the critical role teachers play in shaping students' beliefs about their academic abilities. Rooted in Bandura's (1977) theory, learning self-efficacy refers to students' confidence in their capacity to organize and execute actions necessary to achieve learning goals. During the school years, students may experience fluctuations in confidence and motivation, which can negatively impact their academic progress and performance. Teacher support, therefore, is vital in maintaining and enhancing students' self-efficacy by providing encouragement, setting high expectations, and fostering a positive learning environment that nurtures students' enthusiasm and confidence. Gao's (2022) study specifically highlights that teacher support strengthens students' belief in their own success, thereby significantly boosting academic self-efficacy. This effect is particularly important during adolescence, a critical period for cognitive and personal development, where teacher support substantially influences the formation and consolidation of students' academic self-efficacy.

Research consistently shows that self-efficacy plays a crucial role in promoting students' learning engagement. Studies such as Gan (2015) investigation of higher vocational students reveal a significant positive correlation between self-efficacy and learning engagement. Similarly, Fan et al. (2011) found that high school students with greater self-efficacy exhibited stronger concentration and invested more time and effort into their studies, while those with lower confidence tended to disengage. Liao (2010) demonstrated that general self-efficacy negatively correlates with academic burnout, meaning students with lower self-efficacy experience higher burnout levels.

Furthermore, Liao (2011) confirmed that learning self-efficacy positively predicts learning engagement and can serve as a reliable indicator of academic performance and its changes over time. This body of research underscores that learning engagement encompasses not only observable behaviors but also emotional and cognitive involvement, while self-efficacy acts as both an internal sense of capability and an external motivator. The strong interplay between these constructs highlights the importance of fostering self-efficacy as a key strategy to enhance student engagement and improve teaching quality in higher education.

Methodology

This study adopts a quantitative research approach, using structured five-point Likert scales to collect data through convenience sampling. The target population consists of full-time students in higher vocational institutions in Shangqiu City, Henan Province, China. A randomly selected institution, referred to as Y College, was chosen as the sample school. According to official 2023 documents, this

public institution transitioned from a secondary vocational school to a higher vocational college in June 2023, now enrolling approximately 6,000 students across five academic divisions and 15 majors in fields such as education, culture and arts, and management. Given its transitional status, Y College is representative of higher vocational education. Based on Morgan's table and the student population size, a sample of approximately 400 students was selected for this study. Data were analyzed using SPSS to draw conclusions and offer recommendations.

Results

1. Reliability and Validity Analysis

This study used three reliable and valid instruments. Teacher support was measured with a 19-item questionnaire by Ouyang Dan, showing good reliability ($\alpha = 0.87$). Student engagement was assessed using the 17-item Chinese version of the UWES-S, with excellent reliability ($\alpha = 0.975$). Self-efficacy was measured with a 10-item scale by Schwarzer et al., revised by Zhang et al., also showing high reliability ($\alpha = 0.934$). All scales demonstrated strong validity, making them suitable for this research.

2. Demographic Distribution of Respondents

The sample included 167 males (47.4%) and 185 females (52.6%). Students were fairly evenly distributed across grades: juniors (34.9%), sophomores (33.0%), and freshmen (32.1%), indicating balanced representation. Four major categories were covered: engineering (29.5%), arts (27.6%), medical (22.4%), and education (20.5%), showing good diversity and broad applicability of the findings.

3. Differences exist in perceived teacher support behaviors among students at the higher vocational level with different background variables.

The analysis of perceived teacher support behaviors among higher vocational students with different background variables revealed statistically significant differences. Specifically, variables such as gender, major, grade level, and academic performance contributed to variations in how students perceived their teachers' supportive behaviors. For instance, female students reported higher levels of emotional and learning support than male students, while students majoring in education-related programs tended to perceive more competence support compared to those in technical fields. Additionally, students in higher grades and those with better academic performance consistently reported a stronger perception of overall teacher support. These findings suggest that students' individual backgrounds influence their interpretation and reception of teacher behaviors, highlighting the need for differentiated and inclusive support strategies in higher vocational education.

4. Differences exist in individual self-efficacy among higher vocational level students with different background variables.

The analysis showed that significant differences exist in individual self-efficacy among higher vocational students with different background variables. Factors such as gender, major, academic year,

and academic performance were found to influence student's self-efficacy levels. For example, female students generally exhibited higher self-efficacy scores than male students, and students majoring in fields with more structured learning environments, such as healthcare or education, reported greater confidence in their learning abilities. Senior students tended to have higher self-efficacy compared to first-year students, likely due to accumulated academic experience. Moreover, students with higher academic performance consistently demonstrated stronger beliefs in their ability to succeed. These results indicate that background variables play a crucial role in shaping self-efficacy, emphasizing the importance of tailored support to address diverse student needs.

5. Differences exist in academic engagement of higher vocational level students with different background variables.

The analysis revealed that there are significant differences in academic engagement among higher vocational students with different background variables. Specifically, factors such as gender, major, academic year, and academic performance were found to influence students' levels of engagement. For instance, female students generally showed higher levels of emotional and cognitive engagement compared to their male counterparts. Students in majors that emphasized practical application and hands-on learning tended to report stronger behavioral engagement. Additionally, senior students demonstrated higher levels of engagement than freshmen, possibly due to increased familiarity with academic expectations and learning strategies. Students with better academic performance also showed higher levels of motivation, energy, and concentration. These findings suggest that individual background characteristics play an important role in shaping students' academic engagement and should be considered in the design of targeted interventions to enhance learning outcomes.

6. Teacher support has a significant positive effect on students' commitment to learning at the senior level

It is validated in the regression analysis. The regression coefficient of teacher support on learning engagement is 0.510, the standardized regression coefficient Beta is 0.524, the t-value is 18.195, and the p-value is less than 0.001. this indicates that there is a highly significant positive effect of teacher support on learning engagement. This indicates that when students perceive adequate support from teachers in terms of academics, emotions and competence, their motivation, energy and concentration in the learning process also increase, and the level of learning engagement is significantly enhanced.

The model fits well overall, with a coefficient of determination R^2 of 0.952 and an adjusted R^2 of the same 0.952. This indicates that the variables of teacher support and self-efficacy explain 95.2% of the variance in learning inputs, which suggests that the model has very strong explanatory power. The unstandardized regression coefficient B for teacher support is 0.510, the standardized coefficient Beta is 0.524, and the t-value is 18.195 with a p-value of less than 0.001. this shows that there is a significant positive effect of teacher support on learning engagement. Self-efficacy had a B-value of

0.431, a Beta of 0.474, a t-value of 16.449, and a p-value also less than 0.001. this shows that self-efficacy also has a significant positive predictive effect on learning engagement. The Durbin-Watson value of the model is 2.02, which is close to 2, indicating that there is no serious autocorrelation in the residuals. The variance inflation factors (VIF) of the variables were all 6.01. slightly above the threshold of 5 but less than the threshold of 10. considering the two highly correlated independent variables in the model, it is still within the acceptable range, suggesting that multicollinearity has a limited effect on the model.

7. Teachers' supportive behaviors have a significant positive effect on students' self-efficacy at the higher vocational level.

The results of regression analysis show that the standardized regression coefficient Beta of teacher support on self-efficacy is 0.913, the t-value is as high as 41.87, the p-value is much less than 0.001, and the R^2 of the regression model is as high as 0.952. This suggests that teacher support is a core variable that predicts student self-efficacy, and that students are more confident about their own accomplishment of their learning when they feel that their teachers are providing positive guidance, encouragement and resources, their confidence and judgment of their ability to complete the learning task significantly increased.

8. Students' personal self-efficacy at higher vocational level has a significant positive effect on learning engagement.

The hypothesis was verified through regression analysis, and the results are shown, where the unstandardized regression coefficient of self-efficacy on learning engagement is 0.431, the standardized coefficient Beta is 0.474, and the t-value is 16.449 and the corresponding p-value is less than 0.001, which is statistically at the highly significant level. This result clearly indicates that there is a significant positive relationship between self-efficacy and learning engagement.

9. Self-efficacy mediates the relationship between teacher support and student engagement.

This analysis uses self-efficacy as a mediating variable to explore whether the path of teacher support on learning engagement is partly indirect through students' self-efficacy. The total effect of teacher support on learning engagement was 0.93 ($t = 61.20$, $p < 0.001$, confidence interval [0.90, 0.96]). This indicates that teacher support has an extremely significant positive effect on student engagement in learning. The indirect effect of teacher support through self-efficacy was 0.42 with a 95% confidence interval of [0.36, 0.48], which did not contain 0. This indicates that the indirect effect was significant. This indicates that teacher support can indirectly promote students' engagement in learning by enhancing their self-efficacy. The direct effect of 0.51 ($t = 18.20$, $p < 0.001$, confidence interval [0.45, 0.56]) was also significant. This suggests that teacher support retains a direct influence on learning engagement in addition to the indirect path through self-efficacy.

Table 1: Validation of Mediating Effect

Path	Effect	SE	T-test	P	LLCI	ULCI	%
Total effect of teacher support -> student input	0.93	0.02	61.20	0.00	0.90	0.96	
Teacher Support -> Self-Efficacy -> Student Input Delayed Indirect Effect	0.42	0.03	-	-	0.36	0.48	45.16%
Teacher Support -> Student Input Direct Effect	0.51	0.03	18.20	0.00	0.45	0.56	54.84%.

Discussion

The findings of this study indicate that teacher support plays a significant role in shaping higher vocational students' academic self-efficacy and learning engagement. Consistent with Bandura's theory of self-efficacy, the results show that when students perceive strong support from teachers whether in emotional encouragement, academic guidance, or competence-building feedback they are more likely to believe in their ability to succeed academically. This aligns with Gao Pan's (2022) research, which emphasized that supportive teacher behaviors can strengthen students' beliefs about their academic capabilities, particularly during critical developmental periods like adolescence and early adulthood.

Furthermore, the results confirm that students' self-efficacy and engagement levels vary significantly across different background variables. For example, female students reported higher emotional engagement, while students with higher academic performance showed stronger concentration and motivation. These findings suggest that demographic and contextual variables such as gender, major, and academic achievement influence how students experience teacher support and how they internalize academic challenges. Educational institutions should therefore take these individual differences into account when designing interventions to improve students' self-regulated learning and classroom participation.

The study supports the use of well-validated instruments such as the Teacher Support Scale, the Utrecht Work Engagement Scale-Student (UWES-S), and the General Self-Efficacy Scale in Chinese vocational education settings. The high reliability and validity of these instruments demonstrate their applicability in assessing student perceptions and psychological constructs in localized educational contexts. Overall, these findings contribute to the growing body of literature that highlights the essential role of teacher-student interactions in fostering positive academic outcomes, especially in vocational institutions where students often face unique learning challenges.

Conclusions

This study examined the relationship between teacher support, self-efficacy, and academic engagement among students in higher vocational colleges. The results revealed that teacher support significantly influences students' academic self-efficacy and learning engagement, confirming the critical role of supportive teacher behaviors in students' academic development. It was also found that students' perceptions of teacher support, self-efficacy, and academic engagement differ significantly across demographic background variables such as gender, major, and academic level. These findings underscore the importance of individualized support strategies in educational settings.

Moreover, the study validated the effectiveness of established measurement instruments within the Chinese vocational education context, demonstrating that reliable and valid tools can accurately capture students' psychological and behavioral responses. In summary, enhancing teacher support can foster students' belief in their academic capabilities and promote deeper learning engagement, which are essential for improving overall educational outcomes in vocational institutions.

This study has several limitations. First, the sample was limited to students from a single higher vocational institution, which may restrict the generalizability of the findings to other regions or types of colleges. Second, the data were collected through self-reported questionnaires, which may be subject to social desirability bias or personal interpretation. Lastly, the cross-sectional design of the study limits the ability to draw causal conclusions about the relationships among teacher support, self-efficacy, and academic engagement. Future research should consider longitudinal approaches and a more diverse sample to enhance the robustness of the findings.

Based on the findings of this study, the following strategies are proposed: teachers in higher vocational colleges should provide more targeted and diversified support, including academic guidance, emotional encouragement, and confidence-building strategies, to enhance students' sense of self-efficacy. School administrators should implement professional development programs that train teachers in supportive teaching practices and student-centered approaches. Personalized learning environments should be promoted to accommodate differences in students' backgrounds, interests, and learning styles, thereby fostering higher levels of academic engagement. Finally, future policy design should emphasize teacher-student interaction quality as a key factor in improving educational outcomes.

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