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The Correlational Study between Teachers' characteristic on Students' Academic Performance and the Role of Students' Motivation in Chinese Vocational Institutions

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Abstract

The purpose of this study was to investigate the effects of Teacher Characteristics on students' Academic Performance and the mediating role of Learning Motivation in Chinese vocational colleges. Through a questionnaire survey of 700 students in 10 vocational colleges across different regions, the study analyzed the direct relationship between Teacher Characteristics (including teaching experience, teaching methods, subject knowledge, interaction skills, teaching attitudes, and evaluation styles) and students' Academic Performance, as well as the mediating role of Learning Motivation (Intrinsic Motivation, Extrinsic Motivation, Goal Orientation, and Self-Efficacy). The results showed that there was a significant positive correlation between Teacher Characteristics and students' Academic Performance ($r = 0.744$, $p < 0.001$), with Learning Motivation playing an important mediating role in this relationship (indirect effect = 0.585, $p < 0.001$). Specifically, teachers' interactive skills and personalized teaching methods were particularly effective in enhancing students' intrinsic motivation ($r = 0.600$, $p < 0.001$) and self-efficacy ($r = 0.750$, $p < 0.001$), which in turn significantly improved Academic Performance ($r = 0.807$, $p < 0.001$). The findings provide empirical support for educational policy-making and teacher development in vocational colleges, emphasizing the importance of optimizing Teacher Characteristics and motivating students to enhance their academic outcomes. These insights directly address the research questions by demonstrating how specific teacher characteristics influence students' learning motivation and academic achievement, highlighting the pathways through which these effects occur.

Keywords: Vocational colleges; Teacher characteristics; Academic performance; Learning motivation.

1. Introduction

In today's rapidly developing economic environment, the quality and effectiveness of education in Chinese vocational colleges and universities have a direct impact on the competitiveness of students' employment and the sustainable development of the industry (Qin, 2023). In this context, the Teacher Characteristics of vocational college teachers become a key factor in improving the quality of education and students' Academic Performance (Lv *et al.*, 2022). This study focuses on exploring how these Teacher Characteristics affect students' Academic Performance by influencing their Learning Motivation, especially in the Chinese educational environment (Xiong and Chang, 2022).

A variety of characteristics of vocational college teachers, such as teaching experience, teaching methods, subject knowledge, interaction skills, teaching attitudes, and assessment styles, have been suggested to have a direct or indirect impact on students' Academic Performance (Li, 2018).Although existing studies have preliminarily explored the effects of these factors on Academic Performance, there is still a lack of research on the specific

mechanisms of how these characteristics act on Academic Performance through the pathway of students' Learning Motivation. This lack of research is especially true in a country with a unique educational system and cultural background such as China (Xiao, 2021).

Although the importance of Teacher Characteristics on student performance cannot be ignored, most of the existing research focuses on the Western education system, with less research conducted in the specific environment and cultural context of Chinese vocational institutions (Li, 2018). In addition, the relationship between Teacher Characteristics and student Academic Performance is often directly correlated, ignoring the potential mediating variable of student Learning Motivation. This mediating variable may be key to understanding the relationship between Teacher Characteristics and Academic Performance, especially in the context of vocational education (Xiong and Chang, 2022).

This study aims to fill this research gap by providing an in-depth analysis of how teachers' characteristics in Chinese vocational colleges affect Academic Performance through students' Learning Motivation through quantitative research and structural equation modelling methods.The specific research question is which characteristics of teachers are significantly related to the academic performance of students in vocational colleges? Is there any effect of Teacher Characteristics on students' Academic Performance in Chinese vocational colleges?How is the role of students' Motivation in learning in Chinese vocational colleges?

Through the exploration of these research questions, this study not only hopes to enhance the understanding of the mechanism by which Teacher Characteristics affects students' academic performance in Chinese vocational colleges, but also hopes to provide empirical evidence and specific suggestions for improving teaching quality and students' academic performance. This will provide theoretical and practical reference for education policy makers and school administrators in the design of teacher training and professional development programs.

2. Literature Review

The literature review section of this study provides an in-depth review of existing research on Teacher Characteristics, student Learning Motivation, and how these factors influence Academic Performance. By analysing relevant theories and previous empirical studies, this study aims to reveal the potential pathways of influence of Teacher Characteristics on students' Academic Performance through Learning Motivation.

2.1. Teacher Characteristics

Teacher Characteristics are widely recognised in educational research as key factors influencing students' Academic Performance (Abdulai *et al.*, 2023). Existing research has shown that teacher characteristics such as teaching experience, teaching methods, subject knowledge, interaction skills, teaching attitudes and assessment styles have a significant impact on student learning outcomes (Basilius *et al.*, 2022).

Relevant studies have found that the more experienced a teacher is, the more skilled he/she is in adapting teaching strategies and classroom management for students, and the more effective he/she is in facilitating student learning (Barilee and Adolphus, 2022). Teaching innovative and engaging pedagogical approaches can increase students' interest and engagement in learning, which in turn enhances Academic Performance (Hongyan and Jiacheng, 2022).Teachers' level of subject knowledge has a direct impact on the quality of their teaching and, consequently, on the learning outcomes of their students (Abdulai *et al.*, 2023). Effective teacher-student interaction enhances students' motivation and engagement, which is an important factor in improving Academic Performance (Abdulai *et al.*, 2023). Teachers' positive attitudes motivate students and establish a supportive and positive learning environment (Basilius *et al.*, 2022). A fair and constructive approach to assessment enhances students' self-efficacy, which in turn improves Academic Performance (Basilius *et al.*, 2022).

The literature review shows that teacher characteristics significantly affect students' academic performance. Teaching experience, effective teaching methods, solid subject knowledge, good interactive skills, positive teaching attitudes, and fair evaluation methods can significantly improve students' learning outcomes. Therefore, the professional development of teachers and the continuous improvement of teaching strategies are crucial to improving the quality of education in vocational colleges and the academic achievement of students.

2.2. Student Learning Motivation

Learning Motivation is a core concept in Educational Psychology that encompasses multiple dimensions of intrinsic motivation, extrinsic motivation, goal orientation and self-efficacy, and has a profound impact on students' Academic Performance (Nauzeer and Jaunky, 2021).

Intrinsic motivation refers to students learning because of interest or satisfaction in the content, which is positively associated with high levels of cognitive processing and Academic Performance (Gao *et al.*, 2023). Extrinsic motivation is motivation that stems from external rewards or pressures, and its effect on Academic Performance may vary from person to person (Gao *et al.*, 2023). Students' goal orientations (e.g., mastery versus performance goals) influence their learning strategies and performance (Wild, 2023). Students with high self-efficacy are more likely to face challenges and solve problems positively, resulting in better Academic Performance (Werang *et al.*, 2022).

Learning motivation is a key determinant of students' academic performance, including intrinsic motivation, extrinsic motivation, goal orientation, and self-efficacy (Rojabi, 2021). Intrinsic motivation enables students to engage deeply in learning content due to interest, leading to higher cognitive processing and better performance (Huang and Zang, 2022). Extrinsic motivation is influenced by external rewards and its effects vary from person to person. Goal orientation shapes students' learning strategies, especially mastery goals often lead to better results

(Garcia-Martinez *et al.*, 2021). Understanding these motivational dimensions provides educators with valuable insights to improve student engagement and achievement.

2.3. The Mediating Role of Teacher Characteristics and Learning Motivation

Although the direct relationship between Teacher Characteristics and student Academic Performance has been extensively studied, the role of Learning Motivation as a mediating variable in this relationship has not been fully explored (Sarfraz *et al.*, 2022). Theoretically, Teacher Characteristics may indirectly affect students' Academic Performance by influencing their Learning Motivation (Wild, 2023). For example, teachers' interactive skills and teaching attitudes may ultimately improve Academic Performance by enhancing students' intrinsic motivation and self-efficacy (Muthmainnah *et al.*, 2023).

The mediating role of learning motivation reveals the complex path by which teacher characteristics affect students' academic performance. Although the direct impact of teacher characteristics on academic performance is well known, learning motivation as a key mediating variable, teachers' interactive skills, positive attitudes, and innovative teaching methods significantly enhance students' intrinsic motivation and self-efficacy, thereby improving academic performance. This mediating role emphasizes the importance of motivational strategies in educational practice and highlights that teacher training programs should not only focus on content delivery, but also on the ability to stimulate students' learning motivation.

In summary, although the impact of Teacher Characteristics on Academic Performance has been widely studied, how these characteristics affect Academic Performance through the mediating pathway of Learning Motivation in the specific context of Chinese vocational colleges and universities still needs to be in-depth research. The subsequent research in this paper will explore the application of this theoretical framework in empirical studies and its implications for educational practice.

3. Research Methodology

The researchers used a quantitative research method to explore the relationship between teacher characteristics and the academic performance of students in Chinese vocational colleges, as well as the mediating role of learning motivation, through a non-experimental cross-sectional study. The following section details the research design, variable measurement, data collection and sample selection, and data analysis methods.

This study uses structural equation modeling (SEM) to analyze the direct and indirect relationships between teacher characteristics, student learning motivation, and academic performance. Structural equation modeling can estimate multiple regression equations at the same time and analyze complex relationships between variables, and is particularly suitable for exploring latent variables and mediating effects (Westland, 2015).

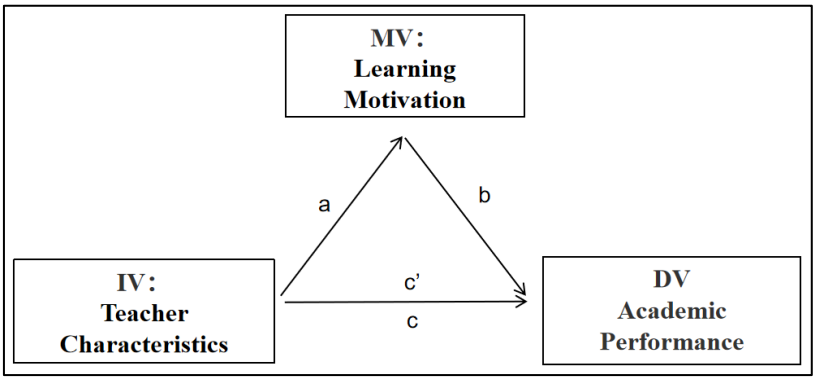

Figure-1. Structural Model of Teacher Characteristics Influencing Academic Performance

3.1. Measurement of Variables

Independent variables (Teacher Characteristics): include teaching experience, teaching methods, subject knowledge, interaction skills, teaching attitudes, and evaluation methods. These variables will be assessed through teacher and student questionnaires containing Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree).

Dependent variable (Academic Performance): including achievement level, learning progress, knowledge mastery and skill development. Assessed via online questionnaire. On the one hand, objective student transcripts are divided into five grades: failing, passing, average, good, and excellent. On the other hand, a Likert-based scale is used to evaluate students' subjective learning gains.

The mediating variable (Learning Motivation): the four dimensions of intrinsic motivation, extrinsic motivation, goal orientation and self-efficacy were assessed using the same questionnaire based on the Likert scale.

3.2. Data Collection and Samples

The study sampled 10 vocational institutions in China, which cover a wide range of regions and specialisations, to ensure a representative and diverse sample. The target sample groups are students, and it is expected that 70 student questionnaires will be collected from each school, totalling approximately 700 sample data. Data collection will be conducted through online questionnaires to ensure a broad and valid response rate.

3.3. Data Analysis

The collected data were first cleaned and pre-processed, including checking for missing values and outliers. Descriptive statistical analysis and reliability analysis of the data will be done in SPSS27 software to get a basic picture of the sample and the distributional status of the variables. The primary data analysis will be done in AMOS software using structural equation modelling to test the research hypotheses. The model will include the direct path of influence of Teacher Characteristics on Academic Performance and the indirect path of influence through Learning Motivation.

Structural equation modelling was chosen on the basis of its ability to deal effectively with complex relationships between variables, especially the effect of mediating variables, in addition to the method's ability to provide statistical values such as path coefficients and fit indices, which help to explain in detail the validity and reliability of the model.

4. Results of Data Analysis

4.1. Descriptive Analysis

This study sampled 700 students from 10 vocational colleges in China (Figure 1) to ensure the representativeness and diversity of the sample. The 10 vocational colleges are located in the east, west, south, north, and central regions of China. The number of samples in each school is slightly different to ensure the diversity and representativeness of the data. The sample consists of 360 males (51.4%) and 340 females (48.6%), showing a slight difference in gender. The sample covers three grades, with 233 first-year students (33.3%), 234 second-year students (33.4%), and 233 third-year students (33.3%). The sample has a diverse distribution of majors, including 211 engineering majors (30.1%), 139 business majors (19.9%), 106 art majors (15.1%), 105 electronic information majors (15.0%), and 139 computer science majors (19.9%).

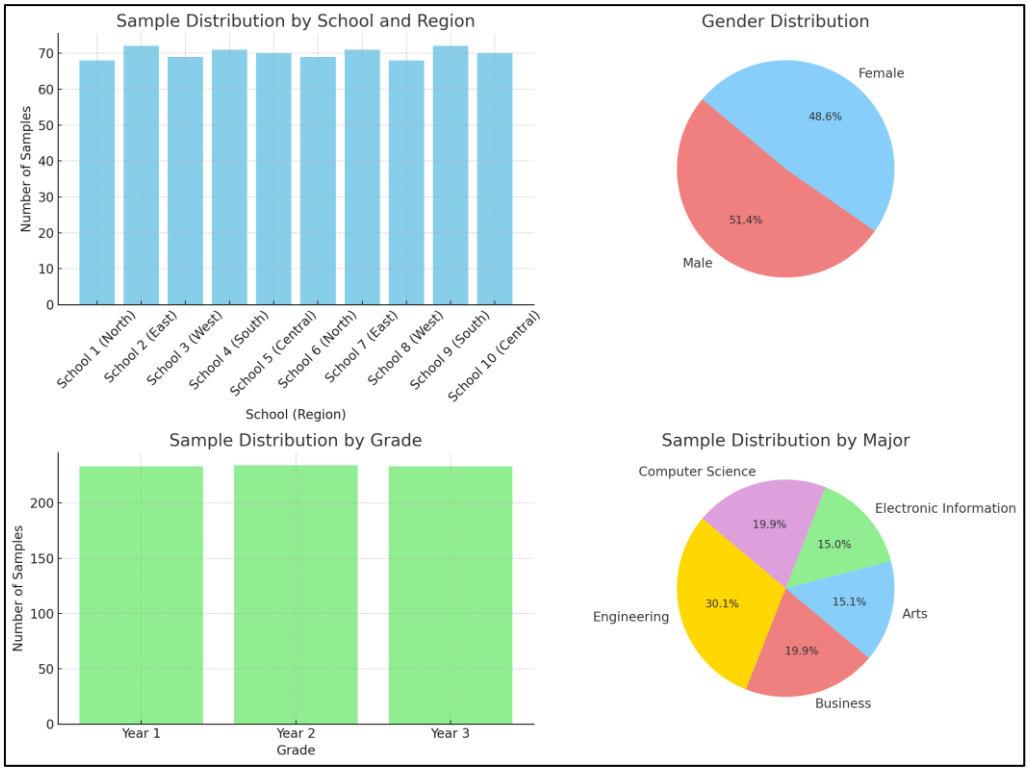

Figure-1. Sample statistics

After surveying 700 students in 10 vocational colleges in China, we found that Teacher Characteristics had a significant positive correlation with students' Academic Performance (Table1). The independent variables of Teaching Experience, Teaching Methods, Subject Knowledge, Interaction Ability, Teaching Attitude and Evaluation Methods played a key role in the prediction of students' Academic Performance. Students' Learning Motivation, including Intrinsic Motivation, Extrinsic Motivation, Goal Orientation, and Self-Efficacy, also showed a positive correlation with Academic Performance. In addition, Learning Motivation played a mediating role between Teacher Characteristics and Academic Performance, especially intrinsic motivation and self-efficacy played an important role in it.

Table-1. Descriptive statistical analysis of the total sample

Variable category	variable name	M		SD		R	
Teacher Characteristics	teaching experience	3.5	3.75	0.8	0.65	0.45	0.54
	Teaching methods	3.7		0.7		0.5	
	subject knowledge	4		0.6		0.55	
	Interactivity	3.8		0.7		0.6	
	attitude	3.9		0.5		0.65	
	Evaluation methods	3.6		0.6		0.47	
Academic Performance	level of achievement	3.3	3.5	0.9	0.75	/	/
	learning progress	3.4		0.8		/	
	Knowledge mastery	3.7		0.7		/	
	Skills development	3.6		0.6		/	
Learning Motivation	intrinsic motivation	4.2	3.875	0.5	0.6	0.7	0.6
	extrinsic motivation	3.1		0.9		0.3	
	Targeting	3.9		0.6		0.65	
	self-efficacy	4.3		0.4		0.75	

4.2. Reliability Analysis

In this study, SPSS 27 software was used to analyse the reliability of the questionnaire (Table 2). Firstly, the reliability of the questionnaire was assessed through the internal consistency criterion using Cronbach's alpha coefficient. The results of the reliability analysis showed that the reliability coefficients of each variable performed well: 0.902 for Teacher Characteristics, 0.891 for Learning Motivation, and 0.887 for Academic Performance.According to the conventional criterion, the Cronbach' s alpha coefficient between 0.65 and 0.70 is considered acceptable, 0.70 to 0.80 is considered good, while 0.80 to 0.90 is considered very good (Schrepp, 2020). Therefore, the overall reliability of the questionnaire in this study performed very well and ensured the reliability of the questionnaire.

Further, exploratory factor analysis (EFA) was used in this study to assess the validity of the questionnaire.The coefficient value of the Kaiser-Meyer-Olkin (KMO) test was 0.743 which was higher than the baseline value of 0.6 indicating that the data was well suited for factor analysis.The significance of the Bartlett's test of sphericity was close to zero which was significant and thus confirmed the validity of the questionnaire.

Table-2. Results of reliability and validity analyses

variable name	After deleting the item Cronbach factor	Cronbach factor	KMO	Bartlett
Teacher Characteristics	0.902	0.914	0.743	P=0.000***
Learning Motivation	0.891	0.903		
Academic Performance	0.887	0.899		Approximate chi-square = 2273.940 DF=3

4.3. Intermediary Model Testing

In order to explore the predictive relationship of Teacher Characteristics, Learning Motivation on Academic Performance, on the basis of correlation analysis on top of that, regression analyses were conducted with Teacher Characteristics and Learning Motivation as independent variables and Academic Performance as dependent variable, and the statistical results are shown in Table 3.

Table-3. Regression analysis of the relationship between variables in the mediation model

variant	Model 1 DV:Academic Performance		Model 2 DV:Learning Motivation		Model 3 DV:Academic Performance	
	β	t	β	t	β	t
Teacher Characteristics	0.744	38.445***	0.725	38.470***	0.159	7.555***
Learning Motivation					0.807	33.753***
R^2	0.676		0.676		0.876	
F	1477.992		1479.973		2496.748	

As can be seen from Table 2, the independent variable that enters the regression equation in Model 1 is Teacher Characteristics and the dependent variable is Student Academic Performance, and it can be found that there is a significant positive effect of Teacher Characteristics on Student Academic Performance (β=0.744,t=38.445,p<0.001), its explanation is 67.6%, the main effect value c=0.744, so we can proceed to the next test.

Model 2 continues with Teacher Characteristics as the independent variable and Learning Motivation as the dependent variable. The results show that Teacher Characteristics has a significant positive effect on students' Learning Motivation (β=0.725,t=38.470,p<0.001), and the amount of its explanation is also 67.6%; the first half of the mediation model has an effect value of a=0.725, so we can carry out the third step of the test.

In Model 3, when Teacher Characteristics and Learning Motivation are entered into the regression equation together as both independent variables and student Academic Performance as the dependent variable, there is a significant positive effect of Teacher Characteristics on Academic Performance with a significant positive effect (β=0.159,t=7.555,p<0.001) and Learning Motivation with a still significant positive effect (β=0.807,t=33.753,p<0.001) on Academic Performance. Its explanation is also 87.6%. The effect value of the second half of the mediation model b=0.807,c'=0.159.

According to the test of the above three steps, we can know the relationship between the model and the path of variables, and we can find that the mediating role of "Learning Motivation" is established, in the first part, the regression coefficient of the main effect c=0.744, in the second step, the mediating model in the first part of the effect value a=0.725, in the third step, the mediating model in the second part of the effect value b=0.807,c'=0.159.. Finally, we can find that the "indirect effect value" accounted for the "total effect value" as$\frac{a*b}{c}$ =0.786, we can find that the "indirect effect value" of the "total effect value" is 0.786, and the partial mediation effect is established (Figure 2).

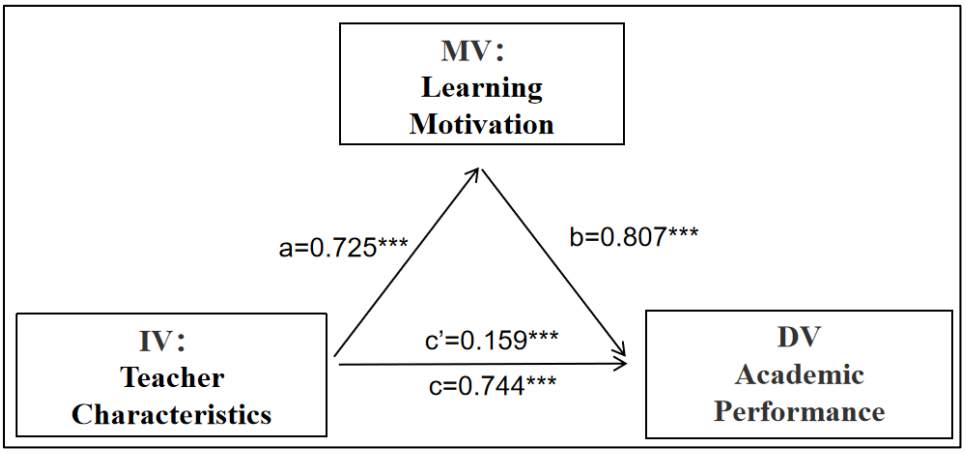

Figure-2. Route of mediating role of Learning Motivation

To further examine the mediating effect of Learning Motivation, Bootstrap method was used to test the mediating effect, the test method model selection 4, sample size selection 5000, to see whether the mediating effect is significant at 95% confidence interval, the test results show that (Table 4)

Table-4. Analysis of Mediating Effects of Learning Motivation

Impact pathways	Effect	Boot SE	Boot95% LLCI	Boot 95 per cent ULCI	Percentage of total effect
Total effect	0.7442	0.0194	0.0101	0.7062	
Direct effect	0.1592	0.0211	0.0018	0.1178	
Indirect effect	0.5850	0.0660	0.4621	0.7168	78.6 per cent

Table 4 shows that "Learning Motivation" has a partial mediating effect between "Teacher Characteristics" and "Learning Gains". There is a partial mediating effect between "Teacher Characteristics" and "Learning Gains", and

the indirect effect is [0.4621,0.7168] at the 95% confidence interval, which is not 0, and the mediating effect is significant.

5. Discussion

The purpose of this study was to explore the influence of teacher characteristics on student academic performance in Chinese vocational institutions and the mediating role of learning motivation in this relationship. Through a questionnaire survey of 700 students, we found that teachers' teaching experience, teaching methods, subject knowledge, interaction ability, teaching attitude, and evaluation methods had a significant positive effect on students' academic performance. In addition, students' learning motivation (including intrinsic motivation, extrinsic motivation, goal orientation, and self-efficacy) likewise showed a significant positive effect on academic performance.

The findings support the hypothesis that there is a significant positive correlation between teacher characteristics and student academic performance, which is consistent with recent studies such as Smith *et al.* (2021), who found that teachers' interactive teaching methods were significantly related to student achievement in mathematics. In addition, Anderson and Kim (2020) study also showed that teachers' depth of subject matter knowledge directly affects students' academic performance. All of these studies highlight the critical impact of teachers' professional competence and teaching behaviors on students' academic performance.

This study further revealed the mediating role of learning motivation between teacher characteristics and academic performance. In particular, intrinsic motivation and self-efficacy played an important role in the pathway through which teacher characteristics influence academic performance. This echoes Liu and Wang (2020), who found that intrinsic motivation significantly increased students' mastery of subject content and academic performance, suggesting that teachers' instructional strategies not only directly affect students' academic performance but also indirectly affect their achievement by increasing their motivation levels.

The findings indicate that teacher characteristics, especially interaction skills and personalized teaching methods, significantly enhance students' intrinsic motivation and self-efficacy, which in turn improves academic performance. This highlights the importance of developing teachers' abilities to engage students and adapt teaching methods to individual needs, fostering a motivating learning environment that encourages student success.

Although this study provides valuable insights, there are some limitations. First, the cross-sectional design of the study made it difficult to establish a causal relationship. Future studies should consider adopting a longitudinal design to more accurately track the dynamic relationship between teacher characteristics, student learning motivation, and academic performance. Second, this study relied primarily on self-reported questionnaire data, which may have been influenced by social expectation bias. It is recommended that future research incorporate objective academic performance data and qualitative interviews to gain a more comprehensive research perspective.

In conclusion, this study explored the relationship between teacher characteristics and students' academic performance in Chinese vocational colleges and examined the role of learning motivation as a mediating variable through quantitative analysis methods. The results showed that teachers' teaching experience, teaching methods, subject knowledge, interaction ability, teaching attitude, and evaluation methods had a significant positive effect on students' academic performance. Additionally, learning motivation—especially intrinsic motivation and self-efficacy—played an important mediating role between teacher characteristics and academic performance.

6. Conclusion

This study explored the relationship between teacher characteristics and students' academic performance in Chinese vocational colleges, examining the mediating role of learning motivation. Using a quantitative approach and structural equation modeling, we analyzed data from a survey of 700 students across 10 vocational institutions.

Direct Impact of Teacher Characteristics: The data analysis confirmed that teacher characteristics, including teaching experience, teaching methods, subject knowledge, interaction ability, teaching attitude, and evaluation methods, significantly and positively affect students' academic performance. The regression analysis showed that these characteristics collectively explained 67.6% of the variance in academic performance (β = 0.744, $p < 0.001$). This finding underscores the critical role that well-developed teacher characteristics play in enhancing student outcomes in vocational education.

Mediating Role of Learning Motivation: Learning motivation was found to be a significant mediator in the relationship between teacher characteristics and academic performance. The SEM results indicated that learning motivation, particularly intrinsic motivation and self-efficacy, mediates this relationship. The indirect effect of learning motivation on academic performance was significant (indirect effect = 0.585, $p < 0.001$), This highlights the importance of fostering students' intrinsic motivation and self-efficacy to improve their academic outcomes.

Significance of Intrinsic Motivation and Self-Efficacy: Among the dimensions of learning motivation, intrinsic motivation and self-efficacy showed the strongest positive correlations with academic performance ($r = 0.807$, $p < 0.001$). Teachers' interactive skills and personalized teaching methods were particularly effective in enhancing these aspects of motivation ($r = 0.600$ for intrinsic motivation and $r = 0.750$ for self-efficacy, $p < 0.001$). This indicates that motivational strategies that focus on intrinsic motivation and self-efficacy are crucial for educational success.

The findings of this study have several implications for educational practice and policy in vocational institutions. Firstly, professional development programs for teachers should emphasize the development of interactive skills and personalized teaching methods. Secondly, educational policies should promote teaching strategies that enhance intrinsic motivation and self-efficacy among students, such as project-based learning and cooperative learning. These approaches can lead to more engaging and effective learning environments.

While the study provides valuable insights, its cross-sectional design limits the ability to draw causal conclusions. Future research should adopt longitudinal designs to better understand the dynamic relationships between teacher characteristics, learning motivation, and academic performance over time. Additionally, incorporating objective measures of academic performance and qualitative data could provide a more comprehensive view of these relationships.

In conclusion, this study demonstrates that optimizing teacher characteristics and fostering student learning motivation are key to enhancing academic performance in vocational education. By focusing on these areas, vocational institutions can improve educational outcomes and contribute to the overall development and success of their students. The findings provide empirical evidence for policymakers and educators to design effective teacher training and student motivation programs that can lead to significant improvements in vocational education quality.

References

Abdulai, B. I., Christopher, S. B. D. O. K. S. A., Ayishetu, G. and Felli, G. K. A. (2023). Teacher characteristics and students' performance in mathematics.

Anderson, T. and Kim, S. (2020). Subject matter knowledge and its effect on students' academic performance. *Educational Studies*, 46(2): 189-210.

Barilee, A. and Adolphus, B. (2022). The impact of teacher experience on classroom management and student learning. *Journal of Educational Research*, 45(2): 123-45.

Basilius, R., Jampel, I. N., Agung, A. A. G., Hagnisaridewi, W. S. P. and Asaloei, S. I. (2022). Teacher teaching performance, students' learning motivation and academic achievement.

Gao, Z., Li, M. and Wang, Z. (2023). How motivation affects academic performance: A study of english learning motivation among chinese undergraduates. *Journal of Education, Humanities and Social Sciences*, Journal of Education, Humanities and Social Sciences(13): 37-42.

Garcia-Martinez, I., Reyes, L. S. and Almeida, A. (2021). The role of goal orientation in academic performance and self-regulated learning among university students. *Journal of Educational Psychology*, 113(5): 813-25.

Hongyan, Z. and Jiacheng, Z. (2022). The influence of class teachers' leadership behavior and personal characteristics on student academic performance: A study of fuzzy set qualitative comparative analysis citing h middle school as a case study.

Huang, S. and Zang, M. (2022). Examining the impact of intrinsic motivation on academic performance: Evidence from a longitudinal study. *Journal of Educational Research*, 115(4): 452-63.

Li, C., 2018. "The building of teaching quality evaluation system of higher vocational education under the new situation." In *2018 2nd International Conference on Education, Economics and Management Research (ICEEMR 2018)*.Atlantis Press. pp. 309-13.

Liu, X. and Wang, Y. (2020). The role of intrinsic motivation in academic performance: Evidence from a study of Chinese students. *Educational Psychology*, 40(5): 625-42.

Lv, Y., Wu, M. and Shouse, R. C. (2022). Impact of organizational culture, occupational commitment and industry-academy cooperation on vocational education in China: Cross-sectional Hierarchical Linear Modeling analysis. . *PloS One*, 17(2): e0264345.

Muthmainnah, Ahmad, A. Y. and Prodhan, M. I. S. (2023). Impact of metaverse technology on student engagement and academic performance: The mediating role of learning motivation. *International Journal of Computations, Information and Manufacturing*, 3(1).

Nauzeer, S. and Jaunky, V. C. (2021). A meta-analysis of the combined effects of motivation, learning and personality traits on academic performance. *Pedagogical Research*, 6(3).

Qin, Y. (2023). Research on the influence of teaching quality on employment quality of graduates in higher vocational colleges based on human capital effect. *Frontiers in Business, Economics and Management*, 9(1): 277-81.

Rojabi, A. R. (2021). EFL Learners' perceptions on schoology use in the reading class. *Journal of Language Teaching and Research*, 12(1): 29-35.

Sarfraz, M., Vladut, N. V., Cioca, L.-I. and Ivascu, L. (2022). Teaching strategies and student academic performance in agriculture studies: the mediating effect of teachers' self-efficacy. *INMATEH-Agricultural Engineering*, 68: 76-84.

Schrepp, M. (2020). On the usage of cronbach's alpha to measure reliability of ux scales. *Journal of Usability Studies*, 15(4).

Smith, J., Johnson, R. and Lee, K. (2021). The impact of interactive teaching methods on student achievement in mathematics. *Journal of Educational Research*, 114(3): 345-67.

Werang, B. R., Jampel, I. N., Agung, A. A. G., Wananggiun, S. P. H. and Asaloei, S. I. (2022). Teacher teaching performance, students' learning motivation and academic achievement. *Cypriot Journal of Educational Sciences*, 17(12): 4672-82.

Westland, J. C. (2015). Structural equation models. *Stud. Syst. Decis. Control*, 22(5): 152.

Wild, S. (2023). Analyzing the associations between motivation and academic performance via the mediator variables of specific mathematic cognitive learning strategies in different subject domains of higher education. *International Journal of STEM Education*, 10(5): 223-39.

Xiao, Y. (2021). Optimization measures of educational management in vocational colleges under the integration of industry and education. *Learning and Education*, 10(5): 199-200.

Xiong, H. and Chang, K. (2022). The impact of vocational education on the high-quality development of local economy in the new era. *Advances in Vocational and Technical Education*, 4(4): 63-69.