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Driving Factors of Students' Achievement: A Case Study of a Private University in Zhanjiang, China

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Abstract

Purpose: This study explores the factors that affect students' achievement in private universities in China. This study investigated the impact of four independent variables (teacher commitment, emotional intelligence, professional development, and professional community) on the dependent variable (student achievement). **Research Design, Data, and Methodology:** The validity and reliability of the survey questionnaire were tested using the Index of Item-Objective Congruence (IOC) and Cronbach Alpha (n=30). Multiple linear regression analysis was used to analyze the effective survey questionnaire data of 70 teachers from Zhanjiang University of Science and Technology to verify the relationship between independent and dependent variables. Then, a 14-week IDI intervention was conducted on 30 teachers, and paired sample t-tests were conducted on data before and after the IDI to verify the impact of IDI on variables. **Results:** The results of multiple linear regression analysis indicate that teacher commitment, emotional intelligence, professional development, and professional community have a significant impact on student achievement. The paired sample t-test results indicate that teacher commitment, emotional intelligence, professional development, and professional community have significantly improved after IDI, and student achievement has also significantly improved after IDI. **Conclusions:** Teacher commitment, emotional intelligence, professional development, and professional community can affect the student's achievement at Chinese private universities. Student achievement can be enhanced by enhancing teacher commitment, emotional intelligence, professional development, and professional community.

Keywords : Teacher Commitment, Emotional Intelligence, Professional Development, Professional Community

JEL Classification Code: I23, J28, L2

1. Introduction

After more than 40 years of development, private universities in China have made tremendous progress in terms of the number of schools and student scale. Especially in the past 20 years, China has witnessed a significant expansion of private universities. Private universities in China have evolved from "a beneficial supplement to public universities" to "an important component of China's higher education." After experiencing scale development, Chinese private universities are currently in a critical period of transformation from scale expansion to quality improvement. Achieving high-quality development is an important issue faced by private universities. The quality of talent cultivation is the core of the high-quality development of private universities in China, and student achievement is one of the core indicators for evaluating the quality of talent cultivation. Improving student achievement is one of the urgent and important issues that private universities in China need to solve.

Zhanjiang University of Science and Technology (ZUST) is a private university in Zhanjiang City, Guangdong Province, China. Teacher professional development is an advantage of ZUST in enhancing student achievement. ZUST has elevated the professional development of teachers to the level of university development strategy and has successively launched talent training strategies such as the "Excellent Talent Support Program" and "Supporting

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Teachers to pursue doctoral degrees" to promote teacher professional development. The teacher professional community is an opportunity for ZUST to enhance student achievement. ZUST has established a real-time online classroom platform, enabling teachers and experts from various fields to observe and evaluate classroom teaching, discuss new curriculum development, and answer student questions in real-time, both on and off campus. This has enabled the establishment of a teacher-professional community that breaks through geographical limitations. ZUST also needs to improve student achievement, such as poor university academic performance among its students.

Furthermore, during the teaching process, ZUST's teachers have relatively weak awareness and ability in emotional management among students, and their emotional intelligence is also one of ZUST's weaknesses. In addition, ZUST faces a challenge with teacher commitment. ZUST's teachers have relatively low commitments to their teaching profession, schools, and students, which poses severe challenges for ZUST in the fierce competition for teaching talents in Chinese universities.

How to enhance students' achievement and improve the quality of talent cultivation is the main problem that private universities in China urgently need to solve. As implementers of teaching, teachers are the direct influencers of student achievement. Therefore, exploring the factors that influence student achievement from the teachers' perspective is significant. This study will take ZUST as an example to explore the factors influencing student achievement in Chinese private universities from the perspective of teacher factors in order to provide a reference for improving student achievement.

2. Literature Review

2.1 Student Achievement

Alam and Ahmad (2018) defined student achievement as the academic content students learn in a specific time according to the expected learning goals and established objectives. Student achievement includes the content standards and performance standards for student learning. Among them, the content standard refers to whether students know the learning content, understand what they can do with it, etc. The performance standard refers to the performance level of students in terms of learning content. In quantitative research, standardized exam scores can be objective indicators to measure student achievement (Alam & Ahmad, 2017; Alvarez, 2008). Of course, a questionnaire can also be used to measure student achievement as Chang (2011) conducted a questionnaire survey on teachers to measure and evaluate student achievement based on the foundation of learning ability, achievement of expected goals, learning motivation, learning attitude, learning methods, and other aspects of participation and progress. This study will also evaluate student achievement through a questionnaire survey of teachers.

2.2 Teacher Commitment

Teacher commitment is defined by Lee et al. (2011) as a psychological attachment of teachers to their profession, school, and student. The teacher's commitment to the teaching profession is reflected in their strong willingness to stay in the teaching industry for development (Somech & Bogler, 2002). The teacher's commitment to the school is a positive emotional connection between the teacher and the school, and the deeper this emotional connection, the higher the recognition and loyalty of the teacher to the school (Meyer & Allen, 1991). The teacher's commitment to the student is reflected in the teacher's sense of responsibility and mission toward the success of the students, which will make teachers put in more effort for students to succeed (Aliakbari & Amoli, 2016). This study also quantifies teacher commitment from three dimensions: teacher commitment to the teaching profession, school, and student.

Many scholars have shown that teacher commitment is key to school development and student achievement. Altun (2017) pointed out that teacher commitment is a motivating force that can motivate teachers to devote more time and energy to teaching practices that improve student achievement. Kushman (1992) found a positive correlation between teacher commitment and student achievement. The empirical study by El Kalai et al. (2022) also indicates that teacher commitment significantly impacts student achievement. Teachers with high levels of commitment are more willing to invest more time and energy in teaching. They better motivate students to participate in learning activities and promote better learning achievements. Based on this, the first hypothesis proposed in this study is:

H1: Teacher commitment has a significant impact on student achievement.

2.3 Emotional Intelligence

There are two different definitions of emotional intelligence in the academic community. Emotional intelligence is typically defined as abilities that include recognizing, expressing, understanding, and evaluating the emotions of oneself and others (Mayer et al., 2004; Van Rooy & Viswesvaran, 2004). The emotional intelligence structure model proposed by Salovey and Mayer (1990) includes the ability to evaluate, express, regulate, and use emotions. Furthermore, emotional intelligence is also defined as a personality trait related to typical behavior, also

known as trait emotional intelligence. Emotional intelligence is a mixture of personality traits, such as happiness, self-esteem, optimism, etc., not based on abilities (Petrides & Furnham, 2001). This study defines emotional intelligence as a set of abilities to evaluate, express, regulate, and use emotions.

Scholars have found a connection between teachers' emotional intelligence and student achievement. Emotional intelligence is an important personal advantage for teachers (Wang, 2022). Teachers with higher emotional intelligence are better at encouraging and supporting students, encouraging them to participate in learning activities actively (Welmilla, 2020), and ultimately achieving better learning outcomes. The empirical research results of Alam and Ahmad (2018) indicate that teachers with high emotional intelligence tend to care more about their students, and their emotional intelligence positively impacts student achievement. Based on this, the second hypothesis of this study is:

H2: Emotional intelligence has a significant impact on student achievement.

2.4 Professional Development

The professional development of teachers is usually defined as the continuous development process of increasing their professional knowledge, accumulating teaching practical skills, correcting their values, and improving their personal qualities (Mushayikwa & Lubben, 2009; Vonk, 1991). It is not only a series of activities in which teachers enhance their knowledge and abilities, thereby increasing student learning achievements (Cohen & Hill, 2000; Guskey, 2003), but also the efforts made by teachers for their careers (Day & Sachs, 2004), and is a part of lifelong learning for teachers (Derri et al., 2015).

More and more scholars have found that teacher professional development can promote student achievement (Duschl et al., 2007; Roth et al., 2019). For example, Cohen and Hill (2000) argue that teacher professional development is important in improving student achievement. The professional development of teachers can enable them to organize better and improve classroom teaching, positively impacting student achievement (Alvarez, 2008; Blank et al., 2007). Professional teacher development can promote the development of teacher knowledge and skills, better carry out teaching practice, and thus improve student achievement. Based on this, the third hypothesis proposed in this study is:

H3: Professional development has a significant impact on student achievement.

2.5 Professional Community

Cranston (2007) defines the teacher professional community as a group of people who share a common ideal and belief in education. Specifically, the teacher professional community is a professional group of teachers who share common thinking on specific educational issues, observe the classroom and provide feedback to each other, participate in collaborative practices, and share common norms and values (King & Newmann, 2000; Lomos, 2012). Alam and Ahmad (2017) pointed out that in professional teacher communities, teachers can not only discuss and interact offline but also engage in online interaction through social media and other means.

The importance of a teacher's professional community is mainly reflected in improving student achievement (Louis, 2006). Lomos et al. (2011) pointed out that teacher-professional communities can enhance student achievement in the school environment. Moller et al. (2013) found that a strong teacher-professional community can enable students to achieve higher math grades. Vescio et al. (2008) also provided evidence that teacher-professional communities positively impact teaching practice and student achievement. Professional teacher communities not only have a positive impact on peer relationships but also can improve student learning achievement. Based on this, the fourth research hypothesis proposed in this study is:

H4: Professional community has a significant impact on student achievement.

3. Research Methods and Materials

3.1 Research Framework

Researchers can create conceptual frameworks for research based on the existing theoretical frameworks of scholars (Clark & Ivankova, 2017). The conceptual framework of this study (as shown in Figure 1) was developed based on three theoretical frameworks. These three frameworks are derived from three research papers by Alam and Ahmad (2018), Alvarez (2008), and Alam and Ahmad (2017).

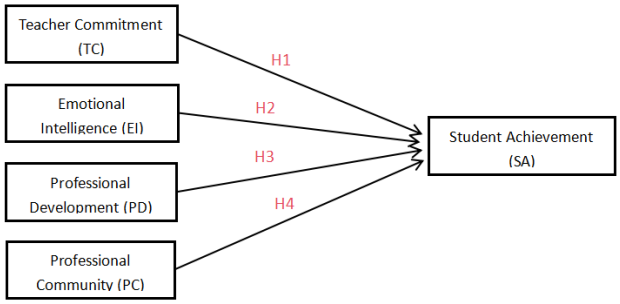

Figure 1: Conceptual Framework

H1: Teacher commitment has a significant impact on student achievement.
H2: Emotional intelligence has a significant impact on student achievement.
H3: Professional development has a significant impact on student achievement.
H4: Professional community has a significant impact on student achievement.

3.2 Research Methodology

This study consists of three stages. The first stage tests the causal relationship between the independent and dependent variables to determine the final research framework and hypotheses. Researchers selected the first-stage survey subjects (n=70) through target and stratified random sampling and conducted a questionnaire survey. Subsequently, a multiple linear regression test was conducted on all hypotheses with a P-value less than 0.005. During this process, assumptions that have yet to pass the test will not be retained.

The second stage is the Intervention Design Implementation (IDI) phase. At this stage, 30 teachers from ZUST were selected as the subjects of IDI. After completing the Pre-IDI survey, they received a 14-week IDI intervention and conducted a post-IDI survey after the intervention was completed.

The third stage is the comparative analysis of the effects of IDI. At this stage, the researcher conducted a paired sample t-test on survey data from pre-IDI and post-IDI to analyze the intervention effects of IDI measures on various variables.

3.3. Research Population, Sample Size, and Sampling Procedures

3.3.1 Research Population

The researcher selected teachers from three of ZUST's 15 secondary colleges (Accounting College, Management College, and Economics and Finance College) as the research subjects. In regression analysis, each variable must have at least ten observations (Hair et al., 2014). The conceptual framework ultimately determined in this study consists of 5 variables, and the minimum sample size for linear regression analysis is 70 people. To prevent the impact of invalid questionnaires and other issues on valid questionnaire data, this study set the survey sample size to 70 people.

3.3.2 Sample size

The sample size for reliability testing is 30, and the sample size for multiple linear regression testing is 70. The sample size of the survey before and after IDI is 30.

3.3.3 Sampling Procedures

The researcher used different sampling methods (nonprobability sampling and probability sampling) for multi-stage sampling:

Phase 1: purposive sampling, using non-probability sampling methods. The researcher selected teachers from three main secondary colleges (School of Accounting, School of Management, and School of Economics and Finance) from ZUST as the subjects of this study.

Phase 2: Stratified random sampling using a probability sampling method. The total number of teachers in the School of Accounting, School of Management, and School of Economics and Finance is 240. Researchers determine the sample size for each college based on the ratio of teachers to the total number of teachers and then draw samples based on the principle of randomness.

Phase 3: Convenience sampling, using nonprobability sampling methods. The study's sample must consist of full-time teachers who have attended classes at ZUST for at least one semester.

3.4 Research Instruments

3.4.1 Design of Questionnaire

Firstly, the researcher identified questionnaire sources from five publicly published articles (Alam & Ahmad, 2017; Alvarez, 2008; Chang, 2011; Hashmi et al., 2021; Wong & Law, 2002).

Then, the researcher designed a survey questionnaire consisting of three parts that could investigate the factors influencing the achievement of Chinese private university students.

Finally, IOC was implemented in the survey questionnaire.

3.4.2 Components of Questionnaire

The questionnaire items in this study consisted of three parts:

Part 1: Basic Information Collection of Respondents. Basic information includes gender, age, college, length of teaching, and professional title.

Part 2: Investigation of Factors Influencing Student Achievement. The items in this questionnaire section mainly focus on investigating factors influencing student achievement in private universities in China. The degree of agreement or disagreement on the rating table is used to measure the degree of influence of each factor.

Part 3: Investigation of Student Achievement Situation.

3.4.3 IOC Results

The researcher invited five experts from private universities in China to implement IOC on the questionnaire, mainly because local experts in China have a more comprehensive and in-depth understanding of Chinese private universities. Among the five experts, two are professors, and three are associate professors. Experts must rate each scale item based on their perception and judgment in a quiet environment: consistency=+1, questioning=0, inconsistency=-1. Only items with an IOC score between 0.50 and 1.00 will be retained on the scale (Mushayikwa & Lubben, 2009). The IOC results show that 14 items on the scale have an IOC score below 0.50: 10 on the TC scale and four on the IE scale. These 14 items will not be retained in the scale. After IOC, the number of items in the scale for each independent variable is teacher commitment (7 items), emotional intelligence (7 items), professional development (6 items), professional community (5 items), and student achievement (6 items).

3.4.4 Pilot survey and Pilot test results

The researcher randomly surveyed 30 teachers and conducted an internal consistency reliability test based on the Cronbach Alpha coefficient on the survey data. For the Cronbach Alpha coefficient, most scholars agree that the minimum internal consistency coefficient is 0.70 (Nunnally & Bernstein, 1994; Taherdoost, 2016). The Pilot test result is shown in Table 1.

Table 1: Pilot Test Result

Variables	No. of items	Sources	Cronbach's Alpha	Strength of association
Teacher Commitment (TC)	7	Hashmi et al. (2021)	0.827	Very Good
Emotional Intelligence (EI)	7	Wong and Law (2002)	0.947	Excellent
Professional Development (PD)	6	Alvarez (2008)	0.949	Excellent
Professional Community (PC)	5	Alam and Ahmad (2017)	0.946	Excellent
Student Achievement (SA)	6	Chang (2011)	0.924	Excellent

4. Results and Discussion

4.1 Results

4.1.1 Demographic Profile

Table 2 presents the demographic characteristics of this study's research population (n=70) and IDI participants (n=30).

Table 2: Demographic Profile

Entire Research Population (n=70)		Frequency	Percent
Gender	Male	18	25.71%
	Female	52	74.29%
Age	Under 30 years old	3	4.29%
	Between 30 and 40 years old	40	57.14%
	Between 41 and 50 years old	17	24.29%
	Over 50 years old	10	14.29%
Teaching years	Less than 5 years	12	17.14%
	5-10 years	30	42.86%
	11-15 years	12	17.14%
	Over 15 years	16	22.86%
Title	Teaching assistant	5	7.14%
	Lecturer	43	61.43%
	Associate professor	17	24.29%
	Professor	5	7.14%
Total		70	100%
IDI Participants (n=30)		**Frequency**	**Percent**
Gender	Male	7	23.33%
	Female	20	76.67%
Age	Under 30 years old	3	10.00%
	Between 30 and 40 years old	20	66.67%
	Between 41 and 50 years old	6	20.00%
	Over 50 years old	1	3.33%
Teaching years	Less than 5 years	5	16.67%
	5-10 years	18	60.00%
	11-15 years	6	20.00%
	Over 15 years	1	3.33%
Title	Teaching assistant	5	16.67%
	Lecturer	20	66.67%
	Associate professor	4	13.33%
	Professor	1	3.33%
Total		**30**	**100%**

4.1.2 Results of multiple linear regression

The researcher conducted multiple linear regression (MLR) analysis on the data collected from 70 valid survey questionnaires to determine the support of the four

hypotheses proposed based on the conceptual framework. The results of the MLR analysis are shown in Table 3.

Table 3: The multiple linear regression of five independent variables on student achievement.

Variables	Standardized Coefficients Beta value	t-value	p-value	VIF	R^2
Teacher Commitment (TC)	0.428	2.76*	0.008	2.35	0.702
Emotional Intelligence (EI)	0.212	2.08*	0.043	1.58	
Professional Development (PD)	0.371	2.98*	0.005	2.41	
Professional Community (PC)	0.317	3.15*	0.003	1.88	

Note: p-value <0.05*

According to Table 2, the standardized coefficients beta of the four independent variables are all greater than 0, indicating a positive correlation between the independent and dependent variables. Among them, the standardized coefficient beta of teacher commitment is the highest, and the emotional intelligence is the lowest. From a statistical perspective, teacher commitment impacts student achievement most, while emotional intelligence is the lowest. The P-values of the four independent variables are all less than 0.05, indicating that all four independent variables significantly impact the dependent variable. The VIF values of the four independent variables are all below 5, indicating no issue of multiple commonalities between them. The R-squared value is 0.702, indicating that the independent variable accounts for 70.2% of the dependent variable. Therefore, all four hypotheses proposed by the researcher are supported by results from multiple linear regression analysis. At this point, the research hypothesis of this study is ultimately determined as follows:

H5: There is a significant mean difference in teacher commitment between Pre-IDI and Post-IDI stages.

H6: There is a significant mean difference in emotional intelligence between Pre-IDI and Post-IDI stages.

H7: There is a significant mean difference in professional development between Pre-IDI and Post-IDI stages.

H8: There is a significant mean difference in the professional community between Pre- and Post-IDI stages.

H9: There is a significant mean difference in student achievement between Pre-IDI and Post-IDI stages.

4.2 IDI Intervention Stage

The IDI intervention is divided into four intervention stages, with a total duration of 14 weeks. The schedule and main intervention activities for each stage are shown in Figure 2.

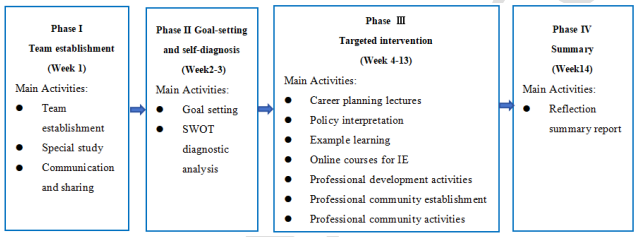

Figure 2: IDI Activities

4.3 Results Comparison between Pre-IDI and Post-IDI

The researcher performed a paired samples t-test analysis on all six independent and dependent variables to determine whether any disparity existed in students' entrepreneurial intentions between the pre- and post-IDI stages and whether any improvements were evident. The subsequent table demonstrates the paired samples t-test analysis for the six variables as depicted below:

Table 5: Paired-Sample T-Test Results

Variables	Mean	SD	t-value	df	Sig.
Teacher commitment					
Pre-IDI	3.27	0.653	7.70	29	P<0.001
Post-IDI	4.42	0.680			
Emotional intelligence					
Pre-IDI	3.79	0.675	7.03	29	P<0.001
Post-IDI	4.61	0.428			
Professional development					
Pre-IDI	3.39	0.827	6.27	29	P<0.001
Post-IDI	4.49	0.577			
Professional community					
Pre-IDI	3.47	0.889	6.61	29	P<0.001
Post-IDI	4.62	0.441			
Student achievement					
Pre-IDI	3.57	0.924	4.84	29	P<0.001
Post-IDI	4.57	0.532			

Table 4 shows teacher commitment significantly increases between pre-IDI (M=3.27, SD=0.653) and post-IDI (M=4.42, SD=0.680). When p<0.001, the mean difference is 1.15. That means H5 supported the idea that teacher commitment is significantly different between the pre and post-IDI stages.

According to Table 4, emotional intelligence significantly increases between pre-IDI (M=3.79, SD=0.675) and post-IDI (M=4.61, SD=0.428). When $p<0.001$, the mean difference is 0.82. That means H6 supported the idea of a significant emotional intelligence difference between the pre-and post-IDI stages.

According to Table 4, professional development significantly increases between pre-IDI (M=3.39, SD=0.827) and post-IDI (M=4.49, SD=0.577). When $p<0.001$, the mean difference is 1.10. That means H7 supported the idea that professional development is significantly different between the pre and post-IDI stages.

According to Table 4, the professional community significantly increased between pre-IDI (M=3.47, SD=0.889) and post-IDI (M=4.62, SD=0.441). When $p<0.001$, the mean difference is 1.15. That means H8 supported the idea that there is a significant difference in the professional community between the pre-and post-IDI stages.

According to Table 4, student achievement significantly increases between pre-IDI (M=3.57, SD=0.924) and post-IDI (M=4.57, SD=0.532). When $p<0.001$, the mean difference is 1.00. That means H9 supported that there is a significant difference in student achievement between the pre-IDI stage and the post-IDI stage.

According to the paired sample t-test results, the mean values of the four independent variables significantly improved before and after the IDI stage. Meanwhile, student achievement also significantly improved after the IDI.

5. Conclusions, Recommendations and Limitations

5.1 Conclusions & Discussions

This study uses ZUST as an example to explore the influencing factors of student achievement in private universities in China. It explores the impact of four independent variables, namely teacher commitment, emotional intelligence, professional development, and professional community, on student achievement through a scientific research design.

Secondly, multiple linear regression analysis was used to examine the effects of variables, including teacher commitment, emotional intelligence, professional development, and professional community, on the dependent variable of student achievement. The results indicate that all four variables in this study significantly impact the dependent variable of student achievement. Improving the levels of four independent variables, namely teacher commitment, emotional intelligence, professional development, and professional community, through appropriate IDI interventions can improve student achievement.

Subsequently, the researcher designed a 14-week IDI intervention plan that included four stages (team establishment stage, goal setting, self-assessment stage, targeted intervention stage, and summary stage). Thirty full-time teachers from ZUST were selected as intervention subjects, and intervention measures such as team building, goal setting, self-diagnosis, career planning lectures, policy interpretation, and online course learning were implemented.

Finally, the researcher conducted a paired sample t-test analysis of the questionnaire survey data before and after the IDI of 30 intervention subjects. The results show that the means of the four independent variables after IDI have significantly improved compared to before, and the dependent variable, student achievement, has also significantly improved after IDI. The IDI intervention designed in this study effectively enhances teacher commitment, emotional intelligence, professional development, and professional community. Furthermore, improving teacher commitment, emotional intelligence, professional development, and professional community can promote student achievement.

Many factors affect student achievement in private universities in China. Compared to other school staff or parents, teachers have the greatest impact on student learning, which means that the impact of teacher growth on student growth should also be the most direct. Therefore, exploring the factors influencing student achievement from the perspective of teacher growth is a good attempt. This study focuses on and explores the impact of four factors, teacher commitment, emotional intelligence, professional development, and professional community, on student achievement in Zhanjiang, China. The research results indicate that improving teacher commitment, emotional intelligence, professional development, and professional community can enhance student achievement. These research findings provide methods and path references for improving student achievement in private universities in China and help promote the high-quality development of private universities in China.

5.2 Recommendations

This study demonstrated through multiple linear regression analysis that teacher commitment, emotional intelligence, professional development, and professional community significantly impact student achievement. Paired sample t-tests have shown that IDI intervention significantly improves teacher commitment, emotional intelligence, professional development, and professional community and student achievement. Based on the research results, the researcher proposed four suggestions to promote student achievement in private universities in China from the

perspectives of enhancing teacher commitment, emotional intelligence, professional development, and professional community through intervention.

For teacher commitment. Firstly, establish a commitment of new teachers to the teaching profession, school, and students. Establish a preliminary commitment to the teaching profession, school, and students through new teacher onboarding training. For example, through guidance on teacher career planning, helping new teachers determine their career development goals and develop action plans to achieve these goals, establishing their commitment to the teaching profession By explaining the school's development plan, prospects, current talent policies, and salary benefits to newly hired teachers, establish their loyalty to the school; By learning from role models and other means, help new teachers clarify their responsibilities and missions, and encourage them to work hard for the success of their students. Another thing is to pay attention to the maintenance of teacher commitments for in-service teachers, and school management should pay attention to maintaining teacher commitments. For example, when formulating new policies in schools, the school should start with the actual needs of our teachers to maintain their commitment to the school. Implementing the above measures and activities enhances teacher commitment and then promotes the improvement of student achievement.

For emotional intelligence. The improvement of emotional intelligence is achieved over time, but rather a long-term and sustained process. Firstly, by promoting the important impact of emotional intelligence on work and life, teachers can be motivated to enhance their emotional intelligence. Secondly, it helps teachers improve their emotional intelligence from theoretical and practical perspectives. For example, by organizing teachers to read relevant books and participate in sharing sessions on related topics, they can learn more knowledge and skills about emotional management and interpersonal communication. Practice and enhance emotional intelligence by organizing teachers to participate in social activities, role-playing, and team collaboration games. By implementing the above measures and activities, teachers can enhance their emotional intelligence, thereby promoting the improvement of student achievement.

For professional development. Firstly, the teacher development department formulates an annual teacher professional development plan, regularly organizes teachers to participate in various types of professional development activities, and at the same time, formulates reward policies to encourage teachers to participate in professional activities, such as exchanging teaching points, to encourage teachers to invest more time in professional development. Another thing is to provide sufficient support for the professional development of teachers. If within the allowable range of school funds, teachers are allocated different amounts of professional development special funds based on their professional titles, and teachers are allowed to reimburse their various expenses for participating in professional development activities, reducing the economic burden of teachers participating in professional development activities. The above measures and activities promote the professional development of teachers and thereby improve student achievement.

For professional communities. Firstly, create a positive atmosphere for the development of professional communities at the school level and develop a special plan for establishing and developing professional communities, guiding the establishment of a stable group of professional communities. Another aspect is to provide support for establishing teacher-professional communities and developing community activities, for example, establishing a teacher-professional community service center to assist teachers in carrying out professional community activities (providing activity funding sponsorship, free activity venues, activity assistance volunteers, etc.). The above measures and activities promote teachers' professional community development, improving student achievement.

5.3 Limitations for Future Research

This study has certain limitations in terms of the research sample, research variables, and intervention design. The goal of future research is to overcome these limitations and conduct further research on the influencing factors of student achievement in Chinese private universities.

Research sample: This study only includes specific teachers from ZUST and needs more diversity and universality. Future research can select research samples from private universities in different regions of China to diversify the research samples and ensure the universality of research results.

Research variables: This study only identified four independent variables from four teacher factors. In future research, independent variables can be set from more perspectives, such as the student and school management perspectives, to explore more factors that affect students' success in private universities in China.

Intervention design: In terms of intervention activity design, future research can consider setting different intervention activities for the same variable and comparing the intervention effects. In terms of intervention effectiveness evaluation, this study only evaluates the effectiveness of IDI by comparing the data before and after it. In the future, it is possible to increase the evaluation of the continuity of intervention effectiveness to verify the effectiveness from a long-term perspective.

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