

Instruction Teaching Support System and Teaching Competency in Applied Colleges, China

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Abstract: The research investigates the effectiveness of the Instruction Teaching Support System and Teaching Competency in Applied Colleges in China, surveying 303 teachers and 381 students using a quantitative research design. The results demonstrate that the school's initiatives in providing teaching support have successfully met teachers' needs for capacity enhancement and professional development, contributing positively to their daily teaching and career growth. Teachers generally expressed satisfaction with the school's teaching support system, particularly highlighting its positive impact on their teaching practices. The management system in place was seen as stable and well-organized, providing clear development paths and solid institutional backing for overall teaching quality improvement. Additionally, the school's performance incentives, including merit-based pay, title promotions, and welfare benefits, were widely appreciated, effectively motivating teachers and supporting the enhancement of teaching quality across the school. In terms of teaching skills training, teachers acknowledged the school's diversified initiatives aimed at improving their skills. This support has been crucial in helping teachers not only transmit knowledge but also adapt to the evolving demands of modern education, which requires a blend of diverse skills and innovative thinking. The training opportunities provided by the school were recognized as a significant means to equip teachers with the tools needed to face educational challenges. Professional development remains central to improving education quality. The school's comprehensive support system has helped teachers advance in their careers, boosting their sense of achievement and establishing a strong foundation for the overall enhancement of teaching standards at the institution. Students also responded positively to their teachers' competencies, with high ratings reflecting the professionalism and ethical conduct of the educators. Teacher ethics, including care for students, fairness in evaluations, and respect, were seen as key factors in creating a trusting and stimulating learning environment. Students believed that teachers with strong professional ethics could foster a more engaging and motivating educational experience. The students' favorable feedback on teachers' assessment abilities also highlights the latter's comprehensive skills in assigning and grading homework, conducting evaluations, and implementing teaching reforms. These competencies were linked to the robust support system that teachers received from the school, showing that the development of the teaching support system directly influences the enhancement of teachers' teaching competency. In conclusion, the findings suggest that a well-structured teaching support system is instrumental in promoting teachers' professional growth and, in turn, improving their teaching competency.

Keywords: Teaching Support System; Teaching Competency; Teacher Ethics; Teaching Management System.

1. Introduction

Teaching quality is central to the development of higher education, and teachers' competency plays a crucial role in ensuring this quality. China has the largest education system in the world, with over 3,000 higher education institutions, including more than 1,700 public applied colleges serving over 11 million students and employing over 960,000 teachers. The "14th Five-Year Plan" emphasizes the need for high-quality undergraduate education and calls for the transformation of some general universities into applied colleges. As China's higher education continues to develop, new demands and challenges arise for teaching work. Teacher competency, a key standard in assessing professional teaching ability, directly influences teaching effectiveness and student development.

The Teaching Support System provides comprehensive support and services to teachers, encompassing areas such as teaching training, resources, and evaluation. Its primary aim is to improve teachers' teaching competency and teaching quality (Zhao Can & Wang Shiyang, 2020). In China, increasing attention is being paid to the construction of teaching support systems in higher education, particularly for

their critical role in ensuring teaching quality. The impact of such systems on teachers' teaching competency has become a focal point of research.

Investigating the relationship between the teaching support system and teachers' competency is both an intriguing and practically significant topic, holding relevance in contemporary education. The research will proceed through the following key areas:

1.1. Evaluation of the Current Teaching Support System

A review of the status of teaching support systems in applied colleges, focusing on areas such as training, guidance, and resource provision.

1.2. Assessment of Teaching Competency

An investigation into student evaluations of their teachers' competency, including their ability to design and implement lessons and manage student relations.

1.3. Case Analysis and Comparative Research

A comparative analysis of teaching support systems and teaching competency across different applied colleges.

1.4. Correlation Analysis

Examination of the relationship between the completeness of the teaching support system and teachers' competency, including teacher-student engagement and feedback mechanisms.

1.5. Recommendations and Practical Implementation

Proposals based on the research findings to improve teaching support systems and enhance teacher competency, offering practical suggestions for educational institutions.

Researching the impact of school teaching support systems on teaching competency is a significant yet complex issue. The researcher has 20 years of teaching experience in applied colleges, during which the connection between the school's support system and teachers' competency has been evident. However, existing research on how these systems influence competency is insufficient. The researcher aims to comprehensively examine the current state of these systems and their relationship with teaching competency, while also enhancing personal teaching and management abilities to better support student development.

2. Method

2.1. Purpose of the Research

2.2. Research Model

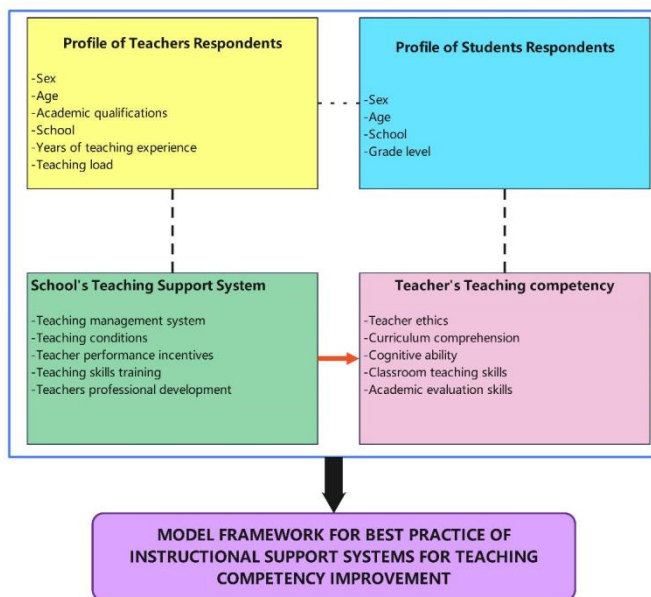


Figure 1. Research Paradigm

This research aims to explore the impact of the teaching support system on the teaching ability of teachers in applied colleges in China. The research evaluates the effectiveness of various components of the institutional teaching support system, including organizational structure, professional support, resource provision, infrastructure, training mechanisms, welfare benefits, and opportunities for professional development. Additionally, the research analyzes the current status of teachers' teaching competency, encompassing areas such as professional ethics, curriculum understanding, student cognition, classroom teaching skills, and academic assessment abilities. Furthermore, this research examines the correlation between teaching competency and the institutional teaching support system. Based on the

findings, recommendations are proposed to optimize the teaching support system to enhance teaching abilities, which will benefit not only the teachers but also students, schools, families, and society as a whole.

Figure I shows how the researcher worked on the research topic. It includes demographic information such as sex, age, and educational background of the ed teachers and teaching job information such as school, years of teaching experience, teaching load, and collects relevant data. Respondent teachers evaluated the school's teaching support system. Afterward, the collected data on the profile of the responded teachers and the assessment of the teaching support system were statistically processed to analyze whether there is a significant difference in the assessment of the teaching support system when the profile is used as a test factor.

It is important to note that the conceptualization of this research is rooted in the premise that school instructional support systems contribute to teacher competency and teaching quality. Figure 1 visually illustrates how influences, assessments, and outcomes are related in this context, providing a structured representation of the key elements of this research.

2.3. Research Sample

In this research, the variable of interest to the researcher is whether there is a significant correlation between the school instructional support system and teachers' instructional competency, which can inform the paths and strategies for improving the school instructional support system and enhancing teachers' instructional competency. According to the research objectives and the nature of the variables, the quantitative descriptive research method was chosen for this research. The quantitative data obtained through the questionnaire provided valuable insights into the prevalence and distribution of participants' perceptions of instructional support and teacher competency.

The researcher is based in Nanning, Guangxi Province. There are more than 60 applied colleges here. The researcher consciously selected three applied colleges. These three schools cover all types of applied colleges including science and technology applications, political and legal applications, and humanities and education applications.

Table 1. Sample of Respondents

College	Teacher Population	Sample size	Student Population	Sample size
School A	640	136	17,000	155
School B	400	87	12,000	111
School C	380	80	12,300	115
Total	1420	303	41300	381

The respondents are teachers and students from the three sampled schools. A purposive sampling technique was used to select specific objects that meet the requirements of the research as survey participants. The teachers need to fulfill the following criteria: (1) Voluntary participation in this research. (2) Reached at least one year of employment and have teaching experience. (3) Have direct experience using school instructional support programs or resources. For Students, they are required to meet the following criteria: (1)

Volunteer to participate in this research. (2) Being enrolled in the school for more than six months. (3) Being from different grade levels.

The total number of teachers in the three schools is 1420 and the total number of students is 41,300. A confidence level of 95% and a margin of error of 5% is assumed. Utilizing the Qualtrics sample sampling online calculator yields the following sample sizes: 303 teachers and 381 students. Specifically, as the table 1.

2.4. Data Collection Tool

In this research, the variable of interest to the researcher is whether there is a significant correlation between the school instructional support system and teachers' instructional competency, which can inform the paths and strategies for improving the school instructional support system and enhancing teachers' instructional competency. According to the research objectives and the nature of the variables, the quantitative descriptive research method was chosen for this research. The quantitative data obtained through the questionnaire provided valuable insights into the prevalence and distribution of participants' perceptions of instructional support and teacher competency.

Data collection was primarily conducted through research questionnaires. The research designed and employed self-developed questionnaires for both teachers and students to assess relevant dimensions. Prior to implementation, the

questionnaires underwent reliability and validity testing, demonstrating good reliability and validity. The questionnaires were then distributed electronically via the online survey platform Questionnaire Star mini-program, facilitating convenient data acquisition and effective sample collection. The entire data collection process lasted for one month.

2.5. Data Analysis

This research primarily used SPSS statistical software as a tool to analyze the data collected. The process of data statistics and analysis was presented logically and appropriately to achieve the research objectives. In the data statistics phase, statistical analysis techniques such as descriptive statistics, correlation analysis, and regression modeling were analyzing the quantitative data collected from the survey.

The Likert scale responses collected from the survey were analyzed using weighted means. The weighted mean was calculated by multiplying each response option by the corresponding weight (see the table below for details on the distribution of options and associated weight scores), adding the products, and dividing by the total number of responses. This approach was applied to provide a summary of all participants' scores on the school's instructional support system and teacher assessment of instructional competency.

Table 2. Details on the distribution of options and associated weight scores

Point	Point Range	Adjectival Description	Interpretation
4	3.50 – 4.00	Strongly Agree	Very good
3	2.51 – 3.50	Agree	Good
2	1.51 – 2.50	Disagree	Not Good
1	1.00 – 1.50	Strongly Disagree	Strongly Not Good

Weighted averages were used to calculate the average responses of the participants to the Likert scale, thus providing a quantitative summary of their perceptions.

Frequency analysis helped to determine the distribution of responses for each Likert scale item, thus providing a better understanding of participants' opinions.

The researcher used correlation analysis to examine the strength and direction of the relationship between instructional support systems and teacher competency variables. Regression analysis was used to explore the predictive relationship between instructional support systems and teacher competency while controlling for potential confounding variables. Inferential statistics such as regression analysis and analysis of variance (ANOVA) to test the relationship between hypothesized and inferred variables are techniques that helped examine the association between instructional support systems and teacher competency.

3. Findings

3.1. Demographic Profile of the Student-Respondents

This table provides a comprehensive overview of the demographic profile of the teacher-respondents. The table begins by detailing the gender distribution among the respondents. Of the 303 teachers surveyed, 167 are male,

representing 55.12% of the sample, while 136 are female, constituting 44.88%. This total is reflective of the entire sample population.

Next, the age distribution of the respondents is outlined. The age group with the highest representation is the 26-35-year-old category, which includes 98 teachers, accounting for 32.34% of the respondents. Following this are the 36-45 years old group with 69 teachers (22.77%), the 46-55 years old group with 61 teachers (20.13%), the 22-25 years old group with 47 teachers (15.51%), and those above 55 years old with 28 teachers (9.24%). The age data cumulatively accounts for all 303 respondents.

The academic qualifications of the respondents are also presented. The majority of the teachers hold a bachelor's degree, with 181 respondents (59.74%). Those with below a bachelor's degree numbered 52 (17.16%), while 54 respondents (17.82%) possess a graduate degree, and 16 respondents (5.28%) hold a doctoral degree. Together, these qualifications cover all 303 teachers surveyed.

School affiliation is another key demographic variable in this table. The largest group of respondents, 136 teachers (44.88%), are from School A. School B accounts for 87 respondents (28.71%), and School C comprises 80 respondents (26.40%). These figures total the complete respondent population.

Table 3. Profile of the Student-Respondents

Demographic Profile	Categories	Frequency	Percentage
Sex	Male	167	55.12
	Female	136	44.88
	Total	303	100.00
Age	22-25 years old	47	15.51
	26-35 years old	98	32.34
	36-45 years old	69	22.77
	46-55 years old	61	20.13
	above 55 years old	28	9.24
	Total	303	100.00
Academic Qualifications	Below bachelor's degree	52	17.16
	Bachelor's degree	181	59.74
	Graduate degree	54	17.82
	Doctoral degree	16	5.28
	Total	303	100.00
School Affiliation	School A	136	44.88
	School B	87	28.71
	School C	80	26.40
	Total	303	100.00
Years of Teaching Experience	0-3 years	54	17.82
	4-6 years	37	12.21
	7-10 years	34	11.22
	11-20 years	48	15.84
	More than 20 years	130	42.90
	Total	303	100.00
	Total	303	100.00
Teaching Load	2 subjects or less	59	19.47
	3-4 subjects	110	36.30
	5-7 subjects	100	33.00
	8 or more subjects	34	11.22
	Total	303	100.00

Years of teaching experience is segmented into several categories. The group with the most extensive teaching experience, more than 20 years, includes 130 respondents, making up 42.90% of the sample. This is followed by the 0-3 years category with 54 respondents (17.82%), the 11-20 years category with 48 respondents (15.84%), the 4-6 years category with 37 respondents (12.21%), and the 7-10 years category with 34 respondents (11.22%). Collectively, these categories encompass all 303 respondents.

Finally, the teaching load is categorized by the number of

subjects taught. The largest segment, teaching 3-4 subjects, includes 110 respondents (36.30%). This is followed by those teaching 5-7 subjects with 100 respondents (33.00%), those teaching 2 subjects or less with 59 respondents (19.47%), and those teaching 8 or more subjects with 34 respondents (11.22%). These categories complete the demographic profile of the 303 teachers surveyed.

3.2. Assessment of Teacher-Respondents on the Teaching Support System

Table 4. Summary Assessment of the Teaching Support System

Domains	Mean	SD	Verbal Description/ Interpretation	Rank
Teaching Management System	3.10	0.79	Agree/Good	2.5
Teaching Conditions	3.09	0.81	Agree/Good	4.5
Teaching Performance Incentives	3.09	0.78	Agree/Good	4.5
Teaching Skills Training	3.12	0.76	Agree/Good	1
Teacher Professional Development	3.10	0.78	Agree/Good	2.5
Teaching Support System	3.10	0.77	Agree/Good	-

Scale:1-1.50: Strongly Disagree/Poor; 1.51-2.50: Disagree/Fair; 2.51-3.50: Agree/Good 3.51-4.00: Strongly Agree/Very Good

This is a summary of the overall teaching support system, presenting the mean scores, standard deviations (SD), verbal

descriptions or interpretations, and ranks for various domains. The domain with the highest rank is "Teaching Skills

Training," which has a mean score of 3.12 and an SD of 0.76. This indicates that respondents strongly agree that the training provided for teaching skills is effective and supportive, interpreted as "Agree/Good."

Following closely in rank are "Teaching Management System" and "Teacher Professional Development," both with a mean score of 3.10. The SDs for these domains are 0.79 and 0.78, respectively. These scores reflect strong agreement among respondents that the management system and professional development opportunities are well-implemented, both interpreted as "Agree/Good."

The domains "Teaching Conditions" and "Teaching Performance Incentives" share the same mean score of 3.09 and SDs of 0.81 and 0.78, respectively. These domains are tied in rank at fourth place, indicating a positive perception of teaching conditions and performance incentives provided by the school, interpreted as "Agree/Good."

Overall, the composite score for the Teaching Support System is a mean of 3.10 with an SD of 0.77, interpreted as

"Agree/Good." This overall score suggests that respondents generally perceive the teaching support system in their school to be effective and supportive across various domains, contributing positively to their teaching experience.

It can be seen that the main programs in the school instructional support system that teachers can directly benefit from are teaching skills training, instructional management system, and teacher professional development. This is consistent with the researcher's practical experience (Hou Haoxiang. 2023).

In addition, it is important to reiterate that the three sample schools selected for this research are very representative. They all have a very good quality of teaching and a reputation for running schools and stand in the first tier of schools in the region. These are corroborated in the findings.

3.3. Demographic profile of the student-respondents

Table 5. Profile of the Student-Respondents

Demographic Profile	Categories	Frequency	Percentage
Sex	Male	237	62.20
	Female	144	37.80
	Total	381	100.00
Age	18-20 years old	176	46.19
	21-25 years old	204	53.54
	26-30 years old	1	0.26
	Total	381	100.00
School	School A	155	40.68
	School B	115	30.18
	Guangxi Normal College	111	29.13
	Total	381	100.00
Grade	Grade 1	109	28.61
	Grade 2	152	39.90
	Grade 3	97	25.46
	Grade 4	23	6.04
	Total	381	100.00

This table provides a detailed account of the demographic profile of the student-respondents. The table starts with the gender distribution of the respondents. Out of the 381 students surveyed, 237 are male, which constitutes 62.20% of the total, while 144 are female, making up 37.80%. This demographic aspect is reflective of the entire sample population.

Following this, the table presents the age distribution of the student-respondents. The majority of the students fall within the 21-25 years age group, with 204 students representing 53.54% of the respondents. The 18-20 years age group includes 176 students, accounting for 46.19%, and the 26-30 years age group has 1 student, making up 0.26%. These age categories sum up to the total number of 381 respondents.

The school affiliation of the student-respondents is another demographic variable shown. The largest group of students, 155 respondents (40.68%), are from School A. This is followed by 115 students (30.18%) from School B, and 111 students (29.13%) from Guangxi Normal College. These figures together represent the entire respondent population.

Lastly, the table outlines the grade level distribution of the respondents. The highest proportion of students are in Grade 2, with 152 respondents (39.90%). This is followed by 109 students (28.61%) in Grade 1, 97 students (25.46%) in Grade 3, and 23 students (6.04%) in Grade 4. These grade levels

collectively account for all 381 student respondents surveyed.

Through these demographic details, the table provides a comprehensive overview of the student-respondent profile, encompassing gender, age, school affiliation, and grade level.

3.4. Assessment of Student-respondents on the Teaching Competency

This table provides a summary of teaching competency, presenting the mean scores, standard deviations (SD), verbal descriptions or interpretations, and ranks for various domains. The domain with the highest rank is "Teacher Ethics," which has a mean score of 3.36 and an SD of 0.74. This indicates that respondents strongly agree their teachers exhibit good ethical behavior, interpreting it as "Agree/Good."

Following closely in rank is "Classroom Teaching Skills," with a mean score of 3.35 and an SD of 0.74. This reflects strong agreement that teachers possess effective classroom teaching skills, also interpreted as "Agree/Good."

The domain "Academic Evaluation Skills" ranks third, with a mean score of 3.34 and an SD of 0.71. This suggests respondents agree their teachers are competent in evaluating academic work, interpreted as "Agree/Good."

Both "Curriculum Comprehension" and "Cognitive Ability" are tied in rank at fourth place, each with a mean

score of 3.33 and SD of 0.73 and 0.72, respectively. These scores indicate that respondents generally agree their teachers

have a good understanding of the curriculum and cognitive abilities, both interpreted as "Agree/Good."

Table 6. Summary Assessment of the f Teaching Competency

Domain	Mean	SD	Verbal Description/ Interpretation	Rank
Teacher Ethics	3.36	0.74	Agree/Good	1
Curriculum Comprehension	3.33	0.73	Agree/Good	4.5
Cognitive Ability	3.33	0.72	Agree/Good	4.5
Classroom Teaching Skills	3.35	0.74	Agree/Good	2
Academic Evaluation Skills	3.34	0.71	Agree/Good	3
Teaching Competency	3.34	0.71	Agree/Good	-

Scale: 1-1.50: Strongly Disagree/Poor; 1.51-2.50: Disagree/Fair; 2.51-3.50: Agree/Good 3.51-4.00: Strongly Agree/Very Good

Overall, the composite score for Teaching Competency is a mean of 3.34 with an SD of 0.71, interpreted as "Agree/Good." This overall score suggests that respondents generally perceive their teachers' competency positively across various domains, recognizing their ethical behavior, teaching skills, evaluation skills, curriculum comprehension, and cognitive understanding.

That is, the surveyed students recognized their teachers' teaching ability more highly. The three aspects of teacher ethics, teaching skills, and academic evaluation skills are also

the most valued elements by students. The study of (Du Hugen. 2023) suggests that teacher ethics resides as a central element in student evaluation. Classroom teaching skills, academic assessment skills, curriculum comprehension, and cognitive ability to recognize learning situations remain important considerations of teachers' teaching ability (Bian Dandan, Zong Xuya.2023).

3.5. Relationship between the Teacher Support System and Teaching Competency

Table 7. Correlation between Teacher Support System and Teaching Competency

		Teaching Management System	Teaching Conditions	Teaching Performance Incentives	Teaching Skills Training	Teacher Professional Development	Teaching Support System	Interpretation
Teacher Ethics	Pearson-r	0.45	0.40	0.38	0.50	0.47	0.42	significantly correlated
	p-value	0.03	0.04	0.04	0.02	0.03	0.04	significantly correlated
Curriculum Comprehension	Pearson-r	0.42	0.41	0.36	0.44	0.40	0.39	significantly correlated
	p-value	0.04	0.03	0.05	0.03	0.04	0.05	significantly correlated
Cognitive Ability	Pearson-r	0.48	0.45	0.42	0.46	0.43	0.41	significantly correlated
	p-value	0.03	0.04	0.04	0.03	0.04	0.04	significantly correlated
Classroom Teaching Skills	Pearson-r	0.43	0.40	0.39	0.48	0.45	0.42	significantly correlated
	p-value	0.04	0.05	0.05	0.03	0.03	0.04	significantly correlated
Academic Evaluation Skills	Pearson-r	0.46	0.44	0.40	0.47	0.44	0.43	significantly correlated
	p-value	0.03	0.04	0.04	0.03	0.04	0.00	significantly correlated
Teaching Competency	Pearson-r	0.50	0.48	0.45	0.49	0.46	0.44	significantly correlated
	p-value	0.02	0.03	0.04	0.03	0.04	0.04	significantly correlated

Based on the research hypothesis, the researcher needs to determine the criteria for deciding the level of significance. The significance level for the hypothesis test was set at $\alpha=0.05$. This criterion indicates that any observed difference or relationship with a p-value of less than 0.05 will be considered statistically significant.

This table presents the correlation between the Teacher Support System and Teaching Competency, with Pearson correlation coefficients (r) and p-values for various domains. For "Teacher Ethics," the Pearson correlation coefficients

range from 0.38 for Teaching Performance Incentives to 0.50 for Teaching Skills Training. The p-values are all below 0.05, indicating significant correlations. This suggests that various aspects of the Teacher Support System positively correlate with Teacher Ethics.

In "Curriculum Comprehension," the Pearson correlation coefficients range from 0.36 for Teaching Performance Incentives to 0.44 for Teaching Skills Training. The p-values are all below 0.05, indicating significant correlations. This suggests a positive correlation between the Teacher Support

System and Curriculum Comprehension.

Regarding "Cognitive Ability," the Pearson correlation coefficients range from 0.41 for Teaching Support System to 0.48 for Teaching Management System. The p-values are all below 0.05, indicating significant correlations. This suggests a positive correlation between the Teacher Support System and Cognitive Ability.

For "Classroom Teaching Skills," the Pearson correlation coefficients range from 0.39 for Teaching Performance Incentives to 0.48 for Teaching Skills Training. The p-values are all below 0.05, indicating significant correlations. This suggests a positive correlation between the Teacher Support System and Classroom Teaching Skills.

In the domain of "Academic Evaluation Skills," the Pearson correlation coefficients range from 0.40 for Teaching Performance Incentives to 0.47 for Teaching Skills Training. The p-values are all below 0.05, indicating significant correlations. This suggests a positive correlation between the Teacher Support System and Academic Evaluation Skills.

Overall, for "Teaching Competency," the Pearson correlation coefficients range from 0.44 for Teaching Support System to 0.50 for the Teaching Management System. The p-values are all below 0.05, indicating significant correlations. This suggests a positive correlation between the Teacher Support System and overall Teaching Competency.

In summary, it shows that all aspects of the Teacher Support System are positively and significantly correlated with various dimensions of Teaching Competency, indicating that improvements in the support system are associated with higher teaching competency.

The results revealed in Table 25 are fully consistent with the findings of existing related studies. Although different scholars are focusing on different dimensions to interpret the research. For example, the school teaching support system for the cultivation, molding, assessment, reward, and punishment of teachers' professional ethics is very complete, and it is regarded as the first and foremost foundational element of teachers' teaching ability. (Stanley Liu, Xuquan Wang.2023).

Teachers' curriculum comprehension skills are highly positively correlated with the teaching support system, which is supported by relevant research.

Teachers' classroom teaching skills are positively correlated with instructional support systems (Liao Heping, Kong Lingna, Zeng Lin.2023). This also explains why famous schools are more likely to produce famous teachers. The better the school the better teachers there are, and young teachers grow and develop better and faster in good schools.

It involves the teachers' ability to recognize the academic situation and to evaluate academics, which is inextricably linked to the school's instructional support system. Generally speaking, many schools include learning cognizance and academic assessment in the teaching specification for teachers. When teachers write lesson plans, the analysis of learning situations, classroom teaching design, and students' homework assignments are required items. The lesson plans are the teaching materials and inspection items required by the school teaching management department (Liu Mengyuan.2023).

4. Conclusion and Recommendations

4.1. Conclusion

Based on the findings of the research, the following conclusions are hereby drawn:

1. The respondents and their profile cited in the research provide an objective reference for assessing entrepreneurial leadership and innovative awareness to build upon approaches that could be spring board to explore further entrepreneurial development.

The respondents and their profiles cited in the research provided an objective reference for assessing the teaching support system and teaching competency and the relationship between them, to establish methods that can be used as a way to further explore the improvement and development of teachers' teaching competency.

2. The highly affirmative feedback on teachers' teaching competence shows that teachers' professionalism and effective abilities demonstrated in the process of education and teaching are recognized by students.

3. The teaching support system constructed by the school can cover teachers of different backgrounds and needs in a balanced manner, with strong universality and fairness. Regardless of their gender, age, and academic background, teachers can benefit from the school's support system, which is effective in helping different types of teachers achieve better results in teaching.

4. The school's multifaceted support system has led to significant progress in teachers' teaching skills and professional development. Effective teaching skills training, a sound teaching management system, rich career development opportunities, good working conditions, and scientific performance incentives have formed an all-around support network to help teachers realize their maximum potential in their teaching positions.

5. Schools should pay more active attention to the professional growth of teachers and help them improve their teaching skills through systematic training, which not only facilitates the development of individual teachers, but also better serves the learning and development of students, and provides a stronger support for the improvement of the overall quality of teaching and the realization of the educational goals of the school.

4.2. Recommendations

4.2.1. Establish a Comprehensive Teacher Training and Development System

Continuing professional development pathways: Develop clear pathways for teachers' professional development and provide support for professional development at different stages, from induction training for new teachers to continuing education for senior teachers, to ensure that each teacher receives training appropriate to his or her stage of development.

4.2.2. Improving the Teaching Management System.

Establishment of a teaching steering group: A teaching steering group is set up to regularly observe and give feedback on teachers' teaching, provide specific suggestions for improvement, and help teachers to continuously reflect and grow in practice.

4.2.3. Enriching Teaching Resources and Optimizing Modern Educational Tools

Smart Campus Construction: Promote the construction of smart campuses and utilize advanced technologies such as cloud computing, big data and artificial intelligence to achieve efficient allocation and utilization of teaching resources and improve the quality of education.

4.2.4. Promote Cooperation and Team Building among Teachers.

Building Teacher Support Teams: Set up teacher support teams to focus on teachers' difficulties and challenges in the teaching process, provide corresponding resources, suggestions and guidance, and enhance teachers' sense of belonging and support.

4.2.5. Strengthening Teacher-Student Relationships and Interaction.

Promote teacher-student exchange activities: Regularly organize teacher-student interaction activities, such as symposiums, academic exchanges, theme lectures, etc., to enhance understanding and communication between teachers and students, and to increase students' trust and reliance on teachers.

4.2.6. Enhance Teachers' Sense of Professional Identity.

Establishment of a support network: Utilize internal and external resources to establish a support network for teachers, provide psychological counseling, emotional support, and career development guidance, and enhance teachers' sense of professional well-being.

4.2.7. Regular Evaluation and Feedback Loop Mechanism:

Data-driven decision-making: Establishing a data collection and analysis mechanism to provide regular feedback to teachers by collecting and analyzing student learning data, classroom evaluation data, etc., to understand teachers' needs and challenges, analyze teachers' teaching effectiveness, make timely adjustments to support measures, and help teachers improve their teaching methods in a targeted manner.

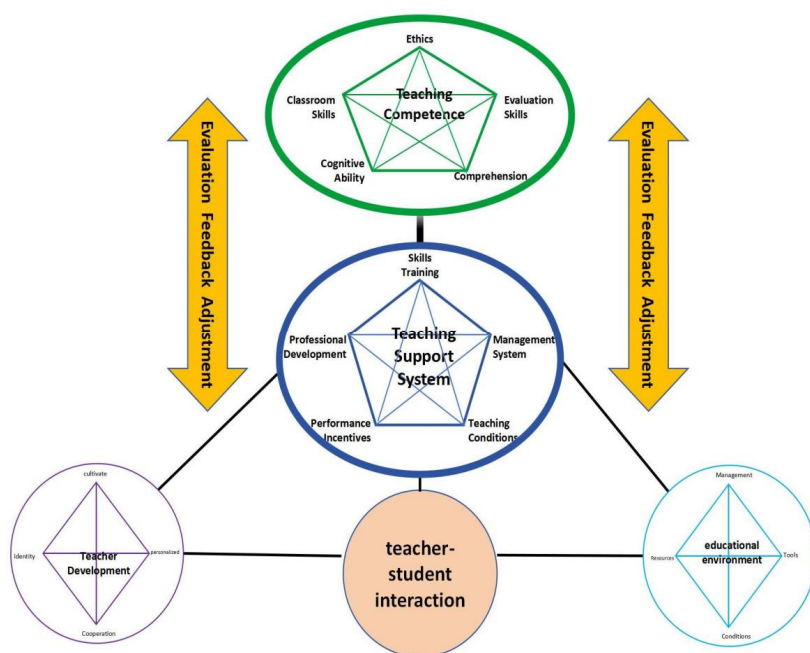


Figure 2. Model Framework for Best Practice of Instructional Support Systems for Teaching Competency Improvement

This research suggests that constructing a dynamic modeling framework is the key to improving teachers' comprehensive literacy, i.e., teaching competence, in terms of professional ethics, teaching skills, academic assessment skills, and cognitive comprehension skills. By continuously optimizing and improving the teaching support system, this model can continuously promote the development of teacher competence. Based on the principles of systematization, individualization, and diversification, the model is developed from the following three core levels: teacher growth, teaching environment, and teacher-student interaction.

At the teacher growth level, the model covers teacher training, professional identity, teamwork, and personalized development to ensure that teachers receive the support they need at different stages of their careers. The teaching environment, on the other hand, encompasses teaching management, teaching conditions, teaching resources, and modern educational tools, providing teachers with a solid foundation to help them teach effectively. Teacher-student interaction, as an active factor in the model, stimulates teaching vitality and innovation by facilitating positive feedback and adjustment inside and outside the classroom.

The liaison loop of the model is the assessment feedback mechanism, which is like the pulse of the model, ensuring

timely optimization of support measures at every stage through continuous analysis of teacher feedback and instructional data. This mechanism allows the model to be dynamically adjusted to ensure that the instructional support system remains efficient, flexible, and sustainable in the long run.

Most importantly, the teacher sits at the center of the model, and all support mechanisms revolve around the needs of the teacher. Every aspect of the model is dedicated to promoting the growth and development of teachers and continuously improving their teaching abilities. Teachers' feedback and improvement needs become the driving force for model optimization, leading to a system of continuous self-improvement, in which the teaching support system and teacher competence progress together in a feedback loop.

Taken together, the model forms a self-adjusting and optimizing system by organically combining the three dimensions of teacher growth, teaching environment, and teacher-student interaction, and by incorporating a dynamic evaluation and feedback mechanism. This not only enhances teachers' teaching competence, but also provides systematic support for their professional development. Teachers' role in the model is proactive; they not only benefit from the optimization of the support system, but also drive continuous

improvement of the system through feedback and data. In this way, the model becomes a self-regulating, self-renewing organism that ensures teachers receive long-lasting, comprehensive support on their career paths, ultimately driving overall improvement in teaching quality.

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Appendix

SURVEY QUESTIONNAIRE

1. Questionnaire 1—Evaluation Scale of School Teaching Support System

Evaluation Scale for School Teaching Support System

Direction: Using the scale provided, please rate the items below based on how it corresponds to your real situation. Put a check (✓) mark on the box that Put a check (✓) mark on the box that corresponds to your true situation. Thanks!

4-Strongly Agree (SA)

3-Agree (A)

2-Disagree(D)

1-Strongly Disagree (SD)

Dimensions	2.1 Teaching Management System			
	4	3	2	1
1.The school has a complete personnel management system for teachers.	☐	☐	☐	☐
2.The school has a complete system of teacher ethics.	☐	☐	☐	☐
3.The school has a complete teaching management system for teachers.	☐	☐	☐	☐
4.The school has a complete teaching evaluation system for teachers.	☐	☐	☐	☐
5.The school has a complete teaching reward system for teachers.	☐	☐	☐	☐
6.The school has a complete student management system.	☐	☐	☐	☐
7.The school has a specialized teaching management department.	☐	☐	☐	☐
Dimensions	2.2 Teaching Conditions			
	4	3	2	1
1.The school has a good reputation for teaching and learning.	☐	☐	☐	☐
2.The school has good library and information resources.	☐	☐	☐	☐
3.The school has a good academic department.	☐	☐	☐	☐
4.The size of the student body taught by the teacher is appropriate.	☐	☐	☐	☐
5.The students love and work hard to learn.	☐	☐	☐	☐
6.The school has good conditions for classroom teaching.	☐	☐	☐	☐
7.The school has good conditions for teaching information technology.	☐	☐	☐	☐

Dimensions	2.3 Teaching Performance Incentives			
	4	3	2	1
1.The school evaluates teachers' teaching load appropriately.	☐	☐	☐	☐
2.The school's distribution of teacher salaries is reasonable and appropriate.	☐	☐	☐	☐
3.The school's teaching incentives are reasonable and appropriate.	☐	☐	☐	☐
4.Teacher promotion is reasonable and appropriate.	☐	☐	☐	☐
5.The school provides good teacher welfare.	☐	☐	☐	☐
6.Teachers with higher workloads receive higher incomes.	☐	☐	☐	☐
7.Teachers with higher quality work can earn higher income.	☐	☐	☐	☐
Dimensions	2.4 Teaching Skills Training			
	4	3	2	1
1.The school provides good support for teaching induction training.	☐	☐	☐	☐
2.Schools provide good training support for improving teaching skills.	☐	☐	☐	☐
3.The school provides good training support for teachers' quality improvement.	☐	☐	☐	☐
4.The school provides good training support for teaching competitions.	☐	☐	☐	☐
5.The school provides good support for collective listening and evaluation.	☐	☐	☐	☐
6.The school regularly conducts open class activities.	☐	☐	☐	☐
7.The school provides personalized teaching skills training.	☐	☐	☐	☐
Dimensions	2.5 Teacher Professional Development			
	4	3	2	1
1.The school's teacher development work is reasonably and appropriately planned.	☐	☐	☐	☐
2.The school has a good policy to support academic advancement.	☐	☐	☐	☐
3.The school normally carries out mentorship support programs.	☐	☐	☐	☐
4.The school encourages and supports teachers to carry out professional social practice.	☐	☐	☐	☐
5.The school advocates and supports teamwork.	☐	☐	☐	☐
6.The school supports teachers to improve their comprehensive professional abilities.	☐	☐	☐	☐
7.The school provides personalized development planning.	☐	☐	☐	☐

2. Questionnaire 2—Evaluation Scale for Teaching Competency

Evaluation Scale for Evaluation Scale for Teaching Competency

Direction: Using the scale provided, please rate the items below based on how it corresponds to your real situation. Put a check (✓) mark on the box that Put a check (✓) mark on the

box that corresponds to your true situation. Thanks!

4-Strongly Agree (SA)

3-Agree (A)

2-Disagree(D)

1-Strongly Disagree (SD)

Dimensions	4.1 Teacher Ethics			
	4	3	2	1
1.My teacher abides by the Education Law of the People's Republic of China and the Teachers Law of the People's Republic of China and teaches according to the law.	☐	☐	☐	☐
2.My teacher actively spreads the excellent traditional Chinese culture.	☐	☐	☐	☐
3.My teacher actively practices socialist core values.	☐	☐	☐	☐
4.My teacher respects and cares for every student.	☐	☐	☐	☐
5.My teacher cares about students' safety, physical and mental health, growth and development.	☐	☐	☐	☐
6.My teacher has good academic integrity.	☐	☐	☐	☐
7.My teachers improve their professional knowledge and teaching skills through continuous learning.	☐	☐	☐	☐

Dimensions	4.2 Curriculum Comprehension			
	4	3	2	1
1.My teacher fully understands the teaching system of the course being taught.	☐	☐	☐	☐
2.My teacher fully understands the objectives of the course being taught.	☐	☐	☐	☐
3.My teacher fully understands the content of the courses taught.	☐	☐	☐	☐
4.My teacher fully understands the key knowledge of the course being taught.	☐	☐	☐	☐
5.My teacher fully understands the teaching difficulties of the course being taught.	☐	☐	☐	☐
6.My teacher fully understands the coursework assessment system of the course being taught.	☐	☐	☐	☐
7.My teacher fully understands the relationship between the course being taught and the professional development of the students.	☐	☐	☐	☐
Dimensions	4.3 Cognitive Ability			
	4	3	2	1
1.My teacher is fully aware of the student's basic information.	☐	☐	☐	☐
2.My teacher fully understands the student's professional background.	☐	☐	☐	☐
3.My teacher fully understands the student's cognitive level.	☐	☐	☐	☐
4.My teacher fully understands the student's motivation.	☐	☐	☐	☐
5.My teacher fully understands the student's learning attitude.	☐	☐	☐	☐
6.My teacher fully understands students' learning behaviors.	☐	☐	☐	☐
7.My teacher is fully aware of students' learning effectiveness.	☐	☐	☐	☐
Dimensions	4.4 Classroom Teaching Skills			
	4	3	2	1
1.My teacher has good ability to prepare lessons.	☐	☐	☐	☐
2.My teacher has good presentation skills of teacher's demeanor.	☐	☐	☐	☐
3.My teacher has good classroom organization skills.	☐	☐	☐	☐
4.My teacher has good classroom management skills.	☐	☐	☐	☐
5.My teacher has good expression skills in language and behavior.	☐	☐	☐	☐
6.My teacher has good emotional management skills.	☐	☐	☐	☐
7.My teacher is good at using modern information technology for multimedia teaching.	☐	☐	☐	☐
Dimensions	4.5 Academic Evaluation Skills			
	4	3	2	1
1.My teacher assigns reasonable and appropriate coursework.	☐	☐	☐	☐
2.My teacher allows students to present different styles of work.	☐	☐	☐	☐
3.My teacher reviews student work quickly and efficiently.	☐	☐	☐	☐
4.My teacher gives fair evaluations of student work.	☐	☐	☐	☐
5.My teacher sets reasonable and appropriate assessments for coursework.	☐	☐	☐	☐
6.My teacher emphasizes students' competence and sustainable development.	☐	☐	☐	☐
7.My teacher actively carries out teaching reforms.	☐	☐	☐	☐