


Instructional Strategy Competence Model for Pre-Service Teachers Using Data-Driven Approaches

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Abstract

The objectives of this study were to: (1) identify and analyze the factors influencing the instructional strategy competence of pre-service primary and secondary school teachers, (2) examine how these factors impact their competence, and (3) develop a comprehensive competence model incorporating personal, school, and social factors using data-driven approaches. The sample consisted of 17 Chinese experts and 320 pre-service teachers in Sichuan Province, selected through purposive random sampling. Data collection involved the Delphi method with experts to gather insights on influential factors and a structured questionnaire for pre-service teachers. Statistical analyses included Cronbach's alpha for reliability, descriptive statistics (mean, standard deviation, interquartile range), exploratory factor analysis for structural validity, and structural equation modeling (SEM) using AMOS to assess factor influences. The results demonstrated strong internal consistency with a Cronbach's alpha of 0.90. Expert responses showed a high level of consensus (mean = 4.86, standard deviation = 0.40, IQR = 1). The developed instructional strategy competence model was validated by experts and found to be highly appropriate for pre-service teachers.

Keywords: Instructional Strategy Competence, Pre-Service Teachers, Data-Driven Approaches, Teacher Competence Model, Delphi Method.

1. Introduction

Education plays a crucial role in shaping individuals and nations alike, with its impact being profound at both levels [1]. However, as science and technology advance and society evolve, the need for educational reform and optimization has become more pressing. Pre-service teacher training, especially for regular students, directly influences the future development of China's education system. Teachers' ability to implement effective teaching strategies is a critical factor in determining the quality of education. Teaching strategies are essential components of teaching activities, serving various functions such as stimulating student interest and enhancing classroom efficiency [2]. Thus, effectively cultivating the teaching strategy competence of pre-service teachers has become a key challenge in education.

This study delves into the factors influencing the ability of pre-service teachers to utilize teaching strategies. Key elements, including teaching motivation, self-efficacy, teaching experience, curriculum, and social expectations, are vital for enhancing their teaching competence. Teaching motivation, which includes fostering enthusiasm, establishing strong values, and promoting lifelong learning, plays a crucial role in improving teaching quality. By effectively integrating these factors, we can enhance intrinsic motivation in pre-service teachers, leading to higher engagement and more effective teaching. In today's dynamic educational environment, the selection and application of teaching strategies are indispensable to improving educational quality.

Higher education institutions, particularly teacher training colleges, are central to cultivating high-quality educators and driving educational reform. For this to succeed, these institutions must leverage their strengths to nurture future educational leaders and refine teaching strategies. Despite progress in teacher education research, the current perspectives are often narrow and lack systematization. When compared to the educational demands of modern society,

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there remains room to improve pre-service teachers' teaching strategy competencies. By thoroughly analyzing these influencing factors, teacher training colleges can create an environment that fosters improved teaching strategies, enhancing teaching methods and deepening educational reform. Thus, constructing a model based on these factors is necessary to advance teacher education, cultivate exceptional educators, and contribute to the development of education in China.

2. Literature Review

The ability of pre-service teachers to develop effective teaching strategies is directly linked to the quality of China's future basic education and the development of primary and secondary school students. In recent years, with the deepening of education reform, there has been growing attention to enhancing the teaching strategy competencies of pre-service teachers. This study aims to explore the factors influencing the teaching strategy abilities of pre-service teachers in China and provide a theoretical foundation for improving teacher education. Key factors, including practical teaching experience, the application of educational technology, teaching reflection, and pedagogical strategy competence, will be examined.

2.1. Practical Experience in Teaching

Teaching practice is a crucial factor in developing the teaching strategy competence of pre-service teachers. It allows students to transform theoretical knowledge into effective teaching practices. The more extensive the teaching practice experience, the better the development of teaching strategy skills [3]. Pre-service teachers gain practical experience by engaging in educational practice, teaching support, and teaching competitions, among other activities. These experiences provide direct exposure to classroom settings, where teachers interact with students, undertake teaching tasks, and refine their strategies through trial and error and reflection. Additionally, observing experienced teachers and participating in teaching seminars can further broaden their perspectives and enhance their practical skills. Overall, practical teaching experience is vital for building a solid foundation in teaching strategy competence for future educators.

2.2. Educational Technology Applications

With rapid advancements in information technology, the integration of educational technology has become essential in modern education. Mastery of educational technology can enrich teaching methods, improve efficiency, stimulate student interest, and support holistic development. For pre-service teachers, learning and applying educational technology involves mastering multimedia tools, online platforms, and various educational software. These tools help develop diverse teaching strategies, such as using multimedia for intuitive instruction, leveraging online platforms for remote interaction, and employing educational software for data-driven teaching [4]. The application of educational technology not only makes teaching more engaging but also enhances the relevance and effectiveness of instruction, offering new possibilities for improving teaching strategy competence.

2.3. Reflection on Teaching

Teaching reflection is a process where teachers critically assess their teaching methods, strategies, and outcomes, identify areas for improvement, and make adjustments for future lessons [5]. This reflective practice is essential for the continuous professional growth of pre-service teachers, helping them recognize their strengths and weaknesses and fostering a habit of self-improvement and lifelong learning. Reflection also encourages pre-service teachers to stay curious and engaged with new teaching concepts and methods, enhancing their teaching strategy competence [6]. Therefore, teaching reflection is a vital component of pre-service teacher development, contributing to their overall teaching effectiveness and professional growth.

2.4. Influencing Factors

The development of pre-service teaching strategy competence is shaped by a variety of factors, including educational experience, professional training, teaching practice, campus culture, teamwork, interpersonal relationships, technology use, recognition, motivation, personal drive, and attitudinal tendencies. These factors can be categorized into three main groups: personal, school, and social factors. According to teacher professional development theory, teachers' "spirit, ability, and knowledge" are foundational for fostering effective classroom interactions [7]. Classroom

interactions reflect the external manifestation of teaching strategy competence, aligning with the core aspects of teaching strategies. The development of pre-service teachers' teaching strategies is a continuous process influenced by these interconnected factors. Improving teaching strategy competence requires collaborative efforts from individuals, schools, and society.

2.5. Pedagogical Strategy Competence of Pre-service Teachers

The pedagogical strategy competence of pre-service teachers refers to their ability to select and apply a variety of teaching methods and techniques based on the teaching objectives, student characteristics, content, and learning environment to achieve educational goals and foster students' holistic development. This competence reflects the professional quality of pre-service teachers before they enter the workforce and also evaluates the quality of teacher training programs in universities, thereby contributing to the reform of higher education in China. However, the current methods for assessing pre-service teaching strategy competence are subjective and lack systematic objectivity. Additionally, the scope and influencing factors of this competence remain unclear and require further exploration. Pedagogical strategy competence is crucial for the future development of pre-service teachers, as it enhances teaching efficiency, promotes student development, and improves teaching quality. Therefore, pre-service teachers must prioritize the development of teaching strategy skills, continually refining their competence through learning, practice, and reflection. Teacher training colleges and education departments should also strengthen their support by providing more practical opportunities and theoretical guidance to help pre-service teachers become outstanding educators.

3. Methodology

3.1. Research Design

This study employed a mixed-methods research design, combining both quantitative and qualitative approaches to explore the factors influencing the teaching strategy competence of pre-service teachers as shown in figure 1. The study utilized expert feedback and pre-service teacher surveys, followed by detailed statistical analysis to examine the identified factors.

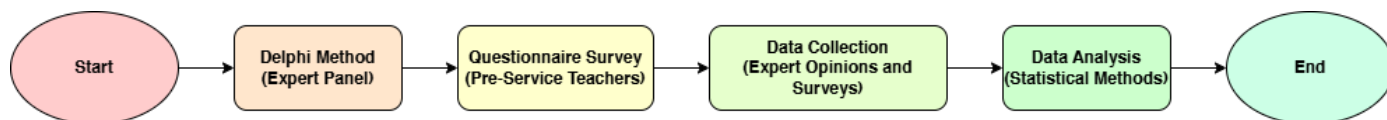


Figure 1. Research Flow

3.2. Participants

The study involved two groups of participants: Expert Panel: The expert panel consisted of 17 experts in education, each holding a Ph.D. and possessing substantial experience within China's educational system. These experts were selected based on their extensive knowledge of the teacher education system in China and their ability to provide valuable insights regarding the factors affecting pre-service teachers' teaching strategy competence. Pre-Service Teachers: Additionally, the study surveyed 320 pre-service teachers from Sichuan Province, China. These participants were selected through purposive random sampling and were enrolled in teacher education programs at universities with varying levels of practical teaching experience.

3.3. Data Collection Procedures

The data collection for this study was carried out through a systematic process involving two main components: the Delphi method with experts and a questionnaire survey among pre-service teachers.

The Delphi method began by gathering expert opinions on the factors influencing the teaching strategy competence of pre-service teachers. The process was structured into four rounds. In the first round, 17 education experts were asked to provide feedback on 53 identified factors that could impact teaching strategy competence. Based on the feedback received, a refined questionnaire was developed in the second round. This questionnaire utilized a five-point Likert scale to assess the importance of each factor, and experts were invited to propose revisions, additions, or deletions to ensure comprehensive coverage of the relevant factors. In the third round, the updated questionnaire was sent back to the experts for re-evaluation. They reviewed the changes and either confirmed or amended the factors based on their

expertise. Finally, in the fourth round, experts were asked to respond to yes/no/uncertain questions, which helped finalize the factors and form the foundation of the report on the impact of these factors on pre-service teachers' teaching strategy competence.

In parallel, a structured questionnaire was administered to 320 pre-service teachers in Sichuan Province to assess how the identified factors influenced their teaching strategy competence. The questionnaire covered aspects such as teaching motivation, self-efficacy, prior teaching experience, and educational technology use. Pre-service teachers responded to each item on a five-point Likert scale. The response rate for this survey was 91.65%, ensuring a high level of participation and yielding reliable data for further analysis. This two-pronged approach—combining expert insights through the Delphi method and surveying pre-service teachers—allowed for a comprehensive understanding of the factors affecting teaching strategy competence.

3.4. Data Analysis

The collected data underwent a series of statistical analyses to evaluate the factors influencing pre-service teachers' teaching strategy competence. The reliability analysis was conducted first, using Cronbach's alpha to assess the internal consistency of the questionnaire. The analysis revealed that the overall reliability of the questionnaire was 0.90, indicating strong internal consistency across the items. Next, descriptive statistics were applied to summarize the central tendency and variability of the responses. This included calculating the mean, standard deviation, and interquartile range (IQR) for each item to provide a clear overview of the data distribution and spread [8].

Following this, exploratory factor analysis (EFA) was performed using SPSS 28 to explore the underlying structure of the data. The Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were used to evaluate the suitability of the data for factor analysis. The results confirmed that the data was appropriate for analysis, with KMO values above 0.7 and significance levels below 0.05, indicating that the data met the necessary criteria for factor extraction.

Finally, structural equation modeling (SEM) was applied using AMOS 21 to examine the relationships between personal, school, and social factors and their impact on teaching strategy competence. The path coefficients were calculated to assess the strength and significance of these relationships. All the p-values for the relationships were found to be less than 0.001, indicating that the relationships were statistically significant and confirming the robustness of the model [9]. This comprehensive analysis provided valuable insights into the factors influencing the teaching strategy competence of pre-service teachers, ensuring the validity and reliability of the results.

3.5. Ethical Considerations

The study adhered to ethical guidelines to ensure the confidentiality and integrity of the data. All participants were fully informed of the study's purpose, and their participation was entirely voluntary. Ethical approval was obtained from the relevant institutions, and informed consent was acquired from all participants. Data collected from the expert panel and pre-service teachers was anonymized to maintain privacy and confidentiality throughout the study.

4. Results and Discussion

Phase 1: Four rounds of expert surveys were conducted using Delphi technique to analyze the multiple factors influencing the ability of pre-service teachers to teach strategies. As the survey deepened, the mean of expert opinions gradually increased, while the standard deviation and coefficient of variation gradually decreased. The rating scale used in the survey ranged from 1.00 to 5.00, with 1.00 to 1.49 indicating strong disagreement, 1.50 to 2.49 being neutral, 3.50 to 4.49 indicating moderate agreement, and 4.50 to 5.00 indicating strong agreement [10]. From table 1, it can be seen that 17 experts strongly agree with a particular view, with a mean score of 4.87, a standard deviation of 0.39, and an interquartile range of 1, indicating that the experts have reached a consensus on this view.

Table 1. Analysis of individual factors influencing the ability of teaching strategies

	Individual factors	M	Expert opinion	S.D.	IQR	Consensus
Teaching Motivation	1. Personal awareness of continuous learning and self-improvement	4.92	Strongly agree	0.32	1	consistency

	2. Strong enthusiasm and interest in teaching	4.93	Strongly agree	0.24	1	consistency
	3. Have a sense of value and mission to become an excellent teacher	4.86	Strongly agree	0.34	1	consistency
	4. Teachers' recognition and reflection on their profession	4.76	Strongly agree	0.45	1	consistency
Self-efficacy	1. Actively respond to various teaching challenges	4.87	Strongly agree	0.26	1	consistency
	2. Believe that you have enough ability and knowledge to lead the development of students	4.86	Strongly agree	0.43	1	consistency
	3. Be confident in your teaching ability	4.88	Strongly agree	0.43	1	consistency
Prior teaching experience	1. Sufficient knowledge of education and teaching theory and management	4.87	Strongly agree	0.47	1	consistency
	2. Internship, volunteer teaching, and other related practical experience	4.86	Strongly agree	0.46	1	consistency
	3. Mastery and application of teachers' educational technology skills	4.87	Strongly agree	0.45	1	consistency

The personal factors influencing the teaching strategy ability of Chinese pre-service teachers include personal awareness of continuous learning and self-improvement, strong enthusiasm and interest in teaching, a sense of value and mission to become excellent teachers, and teachers' recognition and reflection on their profession. Actively respond to various teaching challenges, believe that you have enough ability and knowledge to lead the development of students, and have confidence in your teaching ability. A sufficient wealth of education and teaching theories and management knowledge, internship, volunteer teaching, and other related practical experience, and the mastery and application of teachers' educational technology skills are all helpful to improve teaching design, classroom management, teaching resource utilization, teaching evaluation and reflection, and innovation and development skills. Table 2 shows that 17 experts strongly agreed with a particular view, with an average score of 4.85, a standard deviation of 0.37, and an interquartile range of 1, indicating that the experts reached a consensus.

Table 2. Analysis of school factors influencing the ability of teaching strategies

	School factors	M	Expert opinion	S.D.	IQR	Consensus
Teaching curriculum	1. Combination of theoretical teaching and practical teaching	4.83	Strongly agree	0.26	1	consistency
	2. Perfect teaching evaluation mechanism	4.85	Strongly agree	0.19	1	consistency
	3. Humanized course selection	4.86	Strongly agree	0.30	1	consistency
School facilities and resources	1. Complete and advanced training base and related teaching tools and equipment	4.84	Strongly agree	0.43	1	consistency
	2. Library and abundant online teaching resources	4.86	Strongly agree	0.42	1	consistency
	3. Mentor support	4.87	Strongly agree	0.43	1	consistency
	4. Abundant domestic and foreign exchange resources	4.86	Strongly agree	0.39	1	consistency
	5. Public art and cultural facilities	4.84	Strongly agree	0.46	1	consistency
Campus culture	1. The scientific research level of the school and its academic atmosphere	4.83	Strongly agree	0.43	1	consistency
	2. A positive, inclusive, and friendly campus environment	4.82	Strongly agree	0.43	1	consistency

The school factors influencing the teaching strategy ability of Chinese preschool teachers include the combination of theoretical teaching and practical teaching, the perfect teaching evaluation mechanism, and the humanized curriculum selection. A complete and advanced training base and its related teaching tools and equipment, a library and a wealth of online teaching resources, tutor support, domestic and foreign exchange resources, and public art and cultural facilities. The level of scientific research and its academic atmosphere, as well as the positive, inclusive, and friendly campus humanistic environment, are all factors that contribute to the improvement of teaching design, classroom management, the use of teaching resources, as well as teaching evaluation and reflection, and innovation and development skills. From [table 3](#), it can be seen that 17 experts strongly agreed with a particular point of view, with an average score of 4.87, a standard deviation of 0.43, and an interquartile range of 1, indicating that the experts reached a consensus on this view.

Table 3. Analysis of social factors influencing the ability of teaching strategies

	Social factors	M	Expert opinion	S.D.	IQR	consensus
Social expectations	1. The importance of parents, the public, and the government to the teaching profession	4.88	Strongly agree	0.89	1	consistency
	2. Positive guidance of education policy	4.86	Strongly agree	0.30	1	consistency
	3. Internet attention and related media reports	4.88	Strongly agree	0.54	1	consistency
Social support	1. Teacher Welfare	4.86	Strongly agree	0.34	1	consistency
	2. Off-campus vocational skills improvement training	4.89	Strongly agree	0.33	1	consistency
	3. Competitive pressure on teachers	4.85	Strongly agree	0.33	1	consistency
	4. Social ethics and public supervision	4.87	Strongly agree	0.33	1	consistency
Social control	1. Social, professional organizations and peer evaluation	4.86	Strongly agree	0.45	1	consistency
	2. Requirements of relevant national laws and regulations	4.84	Strongly agree	0.32	1	consistency

The social factors influencing the teaching strategy ability of preschool teachers in China include the importance of parents, the masses, and the government to the teaching profession, the active guidance of education policies, the attention of the Internet, and related media reports. Teacher welfare security, off-campus vocational skills improvement training, and teachers' professional competition pressure. Social ethics, public scrutiny, social and professional organizations, peer evaluation, and relevant national laws and regulations all contribute to improving teaching design, classroom management, use of teaching resources, teaching evaluation and reflection, innovation, and development skills.

A questionnaire survey was conducted among 320 pre-service teachers in Sichuan Province, China and the questionnaire recovery rate was 91.65%. SPSS 28 statistical analysis software was used to analyze the influencing factors of Chinese preschool teachers' teaching strategy competence, including individual, school, and social aspects. The evaluation system of Chinese preschool teachers' teaching strategy competence was also analyzed, and the overall reliability analysis was carried out, as shown in [table 4](#).

Table 4. Reliability analysis

Influencing factors	Cronbach α coefficient	Project entries
Personal factors	0.91	10
School factors	0.79	10
Social factors	0.70	9
collectivity	0.90	29

When Cronbach's α coefficient > 0.7 , the reliability of the questionnaire was within the normal range. When the coefficient > 0.8 , it indicates that the questionnaire has excellent reliability. According to the data in [table 4](#), the overall reliability coefficient of the questionnaire was 0.90, indicating that individual, school, and social factors all showed high reliability. The reliability of these indicators is high, so they are reasonable and credible. The following is an example of the personal factors section to illustrate the process of effectiveness testing. KMO and Bartlett's sphericity tests should be performed before factor analysis to determine if the data are suitable. When the KMO value is between 0 and 1, the closer the statistic is to 1, the stronger the correlation between the variables, and the better the effect of factor analysis. In practice, when the KMO statistic is higher than 0.7, the results are better, and when the KMO statistic is less than 0.5, factor analysis is not suitable [11]. The factor analysis results showed that the KMO value for the personal factors component is 0.80, significance < 0.001 , indicating that factor analysis is suitable. The minimum eigenvalue threshold for the common factor is usually set to 1 when extracting factors. According to the data in [table 5](#), the variance of the extracted common factors in the individual factor dimension is more significant than 0.5, indicating that all indicators are highly explanatory enough that there is no need to exclude any of them.

Table 5. Common factor variance

Common factor variance		
Entry	Initial	Extract
a1	1.00	0.52
a2	1.00	0.56
a3	1.00	0.94
a4	1.00	0.95
a5	1.00	0.92
a6	1.00	0.55
a7	1.00	0.93
a8	1.00	0.97
a9	1.00	0.96
a10	1.00	0.98

Note: The specific items affect the personal factors of pre-service teachers' teaching strategy ability.

[Table 6](#) illustrates the interpretation of the total variance for the individual factor sub-dimension. The initial eigenvalues of the first three components were 5.67 and 1., respectively 5.67 and 1.06, both greater than 1, while from the fourth component onwards, their initial eigenvalues are both less than 1.

Table 6. Explanation of the total variance of individual factors

Ingredients	Total variance explained					
	Initial eigenvalues			Extract the sum of squares of the load		
	Total	Variance percentage	Cumulative %	Total	Variance percentage	Cumulative %
1	5.67	56.73	56.73	5.67	56.73	56.73
2	1.55	15.52	72.25	1.55	15.52	72.25
3	1.06	10.56	82.82	1.06	10.56	82.82
4	0.69	6.86	89.68			
5	0.57	5.72	95.39			
6	0.40	3.96	99.35			
7	0.03	0.32	99.67			
8	0.02	0.23	99.90			
9	0.01	0.06	99.96			
10	0.01	0.04	100.00			

Extraction method: principal component analysis.

The total contribution rate of these three common factors is 82.82%, indicating that they can explain about 82.82% of the total variance (more than 60%) [12], indicating that these three common factors can effectively explain the variation of individual factors. Similarly, tables 7 and table 8 show the effectiveness of school and social factors, exceeding 60 percent.

Table 7. Explanation of the total variance of school factors

Total variance explained						
Ingredients	Initial eigenvalues			Extract the sum of squares of the load		
	Total	Variance percentage	Cumulative %	Total	Variance percentage	Cumulative %
1	3.65	36.51	36.51	3.65	36.51	36.51
2	1.24	12.37	48.88	1.24	12.37	48.88
3	1.01	11.26	60.14	1.01	11.26	60.14
4	0.87	7.49	67.63			
5	0.76	7.62	75.24			
6	0.67	6.71	81.95			
7	0.54	5.42	87.36			
8	0.49	4.93	92.29			
9	0.39	3.91	96.20			
10	0.38	3.80	100.00			

Table 8. Explanation of the total variance of social factors

Total variance explained						
Ingredients	Initial eigenvalues			Extract the sum of squares of the load		
	Total	Variance percentage	Cumulative %	Total	Variance percentage	Cumulative %
1	2.10	23.31	23.31	2.09	23.31	23.31
2	2.00	22.22	45.54	2.00	22.23	45.54
3	1.34	14.90	60.45	1.34	14.90	60.44
4	0.83	9.23	69.67			
5	0.69	7.73	77.41			
6	0.66	7.28	84.68			
7	0.51	5.62	90.31			
8	0.47	5.19	95.51			
9	0.40	4.49	100.00			

The total variance interpretation table and rotation component matrix table were analyzed by the exploratory factor analysis method of SPSS 28 software, and the results are shown in table 9.

Table 9. Validity analysis of the questionnaire

Total variance explained						
Ingredients	Initial eigenvalues			Extract the sum of squares of the load		
	Total	Variance percentage	Cumulative %	Total	Variance percentage	Cumulative %
1	8.94	30.82	30.82	8.94	30.82	30.82
2	2.36	8.13	38.95	2.36	8.13	38.95
3	1.93	6.66	45.61	1.93	6.66	45.61
4	1.72	5.92	51.53	1.72	5.92	51.53
5	1.41	4.87	56.40	1.41	4.87	56.40

6	1.31	4.51	60.91	1.31	4.51	60.91
7	1.13	3.89	64.80	1.13	3.89	64.80
8	0.78	2.69	74.01			

As seen from Table 9, the percentage of the first factor in the total variance explanation table is 8.94%, less than 40%, indicating no serious standard method bias problem in this data. Secondly, the cumulative variance interpretation rate of the seventh factor after rotation was observed, and the value was 64.80%, which was greater than 60%, indicating that these seven factors could effectively represent 64.80% of the questionnaire information [13]. Put the statistical results into AMOS 21 and get the results in table 10.

Table 10. Analysis of the influencing factors of independent variables on dependent variables

	Prediction factor	SD	CR	p
Pedagogical Strategies ← Personal Factors	0.41	0.06	9.60	< 0.001
Pedagogical Strategies ← School Factors	0.49	0.06	11.58	< 0.001
Pedagogical Strategies ← Social Factors	0.14	0.08	3.22	< 0.001

According to the data in Table 10, the coefficients of individual, family, and social factors on the ability of teaching strategies were 0.41, 0.49, and 0.14, respectively, and these coefficients were all greater than 0, indicating that they positively impacted the ability of teaching strategies. In addition, the significance p-values of these three dimensions were all less than 0.001, which means that they can all significantly and positively affect the teaching strategy ability of pre-service teachers. Therefore, it can be concluded that personal, familial, and social factors significantly and positively influence instructional strategy competence [14].

Phase 2: To investigate the impact of simulation on the ability of pre-service teachers to teach strategies. We can obtain the results of the competence model operation by using the AMOS 21 software for in-depth analysis, as shown in figure 2.

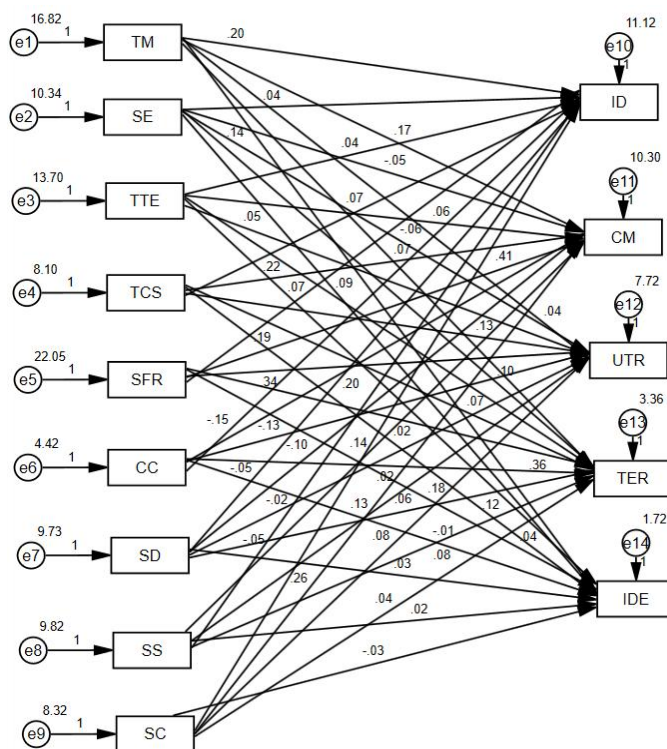


Figure 2. Effect of independent variables on dependent variables

The second step is the dimensional analysis of the influencing factors. The results of the AMOS analysis are shown in figure 3.

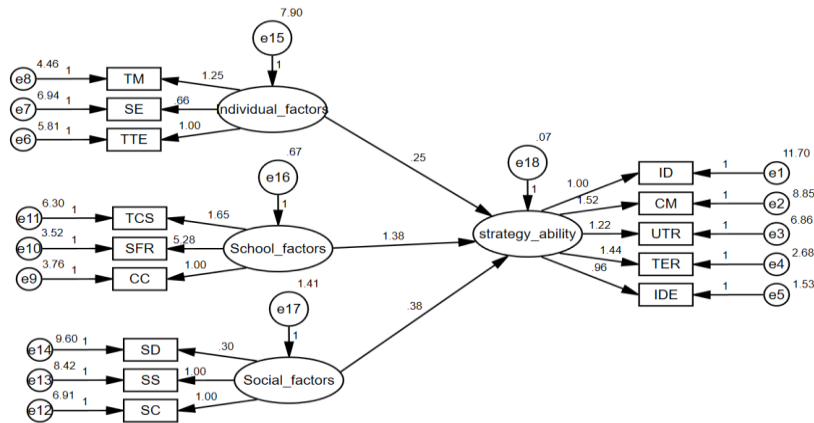


Figure 3. Dimensional influence analysis of independent variables on dependent variables

Based on the simulation results of the AMOS model, a model was constructed to analyze various factors affecting the innovation ability of Chinese university teachers, as shown in figure 4.

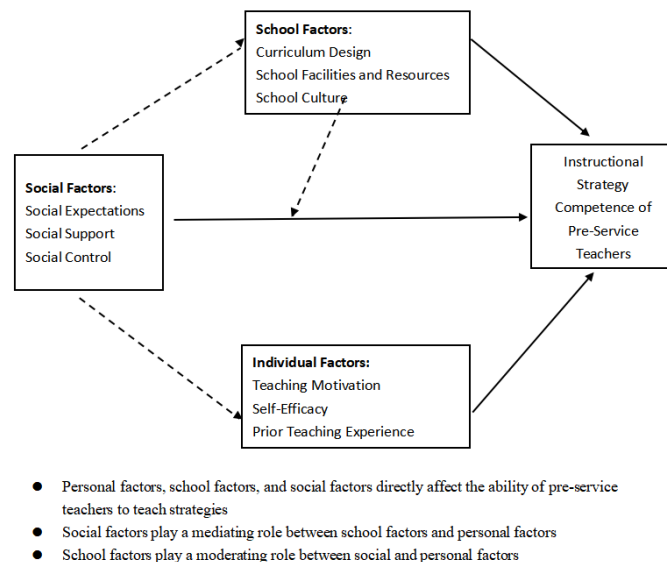


Figure 4. Influencing factors of teaching strategy ability of pre-service teachers in China.

Personal, school and social factors can directly affect the teaching strategy ability of pre-service teachers. Social factors indirectly impact school and personal factors and then affect the teaching strategy ability of pre-service teachers. In addition, school factors indirectly affect social factors, promoting individual teaching strategies' development.

Studies have shown that pre-service teachers with high teaching motivation are more willing to invest time and energy in learning and practicing teaching strategies to improve their teaching strategy ability [15]. Pre-service teachers with high self-efficacy are more inclined to choose challenging teaching tasks and maintain a positive attitude in the face of difficulties, thereby improving their teaching strategy ability [16]. In addition, prior teaching experience also plays a role in promoting the teaching strategy ability of pre-service teachers, and it is easier for pre-service teachers with rich prior teaching experience to identify and apply effective teaching strategies and improve their teaching strategy ability [17].

The teaching curriculum is the core of the teacher education system, which directly affects pre-service teachers' knowledge structure and teaching skills. Studies have shown that a reasonable curriculum can provide systematic teaching theories and methods, thereby improving the teaching strategy ability of pre-service teachers [18]. Campus culture impacts the professional development of pre-service teachers through the implicit curriculum. A positive and supportive school culture can promote self-reflection and growth among pre-service teachers, improving their ability

to teach strategies [19]. In addition, adequate resources and good facilities can provide pre-service teachers with practical opportunities and conditions conducive to improving their teaching strategy skills [20].

In the educational process of pre-service teachers, social expectations can be used as an external incentive to motivate teachers to pursue higher teaching standards [21]. In addition, social support can provide emotional comfort and resource assistance to pre-service teachers and enhance their ability to cope with teaching challenges [22]. Social control refers to society's regulation and constraints on individual behavior. Appropriate social control can help pre-service teachers form standardized teaching behaviors and improve the effectiveness of their teaching strategies [23].

Social expectations can motivate schools to set up more market-oriented curricula, social support can help create a positive school culture, and social control can promote the standardization and modernization of school facilities. Social factors can improve the ability of pre-service teachers to teach strategy by optimizing the teaching curriculum, campus culture, and facilities. They can also indirectly promote the development of teaching strategy ability by enhancing self-efficacy, accumulating teaching experience, and stimulating teaching motivation. In addition, optimizing teaching curricula, campus culture, and facilities can raise society's expectations for education, which motivates pre-service teachers to improve their teaching strategies [19], [20]. The school factor also enhances societal support for pre-service teachers by providing resources and a supportive environment that helps them develop effective teaching strategies in their teaching practice.

5. Conclusion

Teaching motivation, self-efficacy, and prior teaching experience positively impacted pre-service teachers' teaching strategy ability. Teaching curriculum, campus culture, and school facilities positively impact the ability of pre-service teachers to use teaching strategies. Social expectations, social support, and social control positively impact teachers' ability to teach strategies. In addition, social factors and school factors contribute to the ability of pre-service teachers to teach strategies by influencing personal factors. The school factor promotes the development of individual teaching strategies by influencing social factors. Therefore, it is important to cultivate the teaching motivation of pre-service teachers and enhance their confidence in the teaching process. At the same time, to improve the pedagogical, strategic capacity of pre-service teachers, it is necessary to optimize the teaching curriculum, cultivate a positive school culture, strengthen the construction of school facilities and resources, establish reasonable social expectations, provide adequate social support, and implement appropriate social control.

6. Declarations

6.1. Author Contributions

Conceptualization: L.T., T.P., and T.S.; Methodology: T.S.; Software: L.T.; Validation: L.T., T.S., and T.P.; Formal Analysis: L.T., T.S., and T.P.; Investigation: L.T.; Resources: T.S.; Data Curation: T.S.; Writing Original Draft Preparation: L.T., T.S., and T.P.; Writing Review and Editing: T.S., L.T., and T.P.; Visualization: L.T. All authors have read and agreed to the published version of the manuscript.

6.2. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

6.3. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

6.4. Institutional Review Board Statement

Not applicable.

6.5. Informed Consent Statement

Not applicable.

6.6. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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