

The Management Model of Teacher Professional Development for Public Higher Vocational Colleges in Anyang City of Henan Province

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Abstract

Teacher professional development plays a very significant role in school organisation and student performance. However, there is comparatively little research on management models that influence the professional development of teachers in Chinese vocational colleges. This study aimed to propose the management model of teacher professional development for public higher vocational colleges in Anyang City of Henan Province. The study was a mixed methodology, including qualitative research and quantitative research. The study involved a total of 2,190 teachers from 3 vocational colleges in Anyang City of Henan Province, representing a sample size of 368 teachers. It was found that the management model of teacher professional development in Anyang City of Henan Province is influenced by 7 variables and 23 indicators, which was consistent with the empirical data.

Keywords: Management Model; Teacher Professional Development; Public Higher Vocational Colleges ; Anyang City

Introduction

Teacher professional development plays a very significant role in school organisation and student performance. Teacher professional development involves many processes, actions, and mechanisms which are inevitably mediated by the cultural, social, political, and economic features and conditions of each particular context (Tan & Dimmock, 2014) With the advent of the 21st century, the rapid development of the world's digital and information technologies has brought about tremendous changes in the pattern of world education development. Internet technology, digital technology, big data technology and so on have fundamentally changed the way and channels through which human beings acquire knowledge. The impact of the Internet era on universities is all-encompassing. The fundamental impact is the changes in the identity and functions of teachers, teaching resources and management, and teaching modes (Li Gaihu & Peng Yingxia, 2022) Education information requires teachers to improve their information teaching skills. (Francesc M. Esteve-Mon, 2020) The study found that university teachers must be competent enough to meet the new challenges of today's digital society.

The level of development of vocational education represents the level of economic development and the quality of education of a country. At present, the world is in a situation of great changes unprecedented in a century, and China is also in a stage of high-quality development. Vocational education plays an irreplaceable role in the process of advanced industrial base and modernization of industrial chain. However, due to the influence of Chinese traditional concepts, Higher vocational colleges did not pay enough attention to teachers'

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professional development(Yang Fu,2014). The rapid development of vocational education in China, and the huge number of higher vocational colleges in China require high-quality teachers for higher vocational colleges. The degree of professionalisation of teachers directly determines the quality of higher education. The overall level of the teaching force determines the strength and foundation of local higher education foundation. (Ma Jianhong,2020) Social change requires Chinese higher vocational colleges to strengthen the management of teachers professional development, to improve the development of students in higher vocational colleges with high-quality teachers' construction.

However, up to now, The governance system of teacher development was not perfect (Xiang Li,2022). There are no standardized policy documents or regulatory systems for the management of teacher professional development in higher vocational colleges. In light of the a for ementioned considerations, it becomes evident that an investigation into the factors that shape the management of teacher professional development in public vocational colleges is imperative. This inquiry can prove invaluable in enhancing the efficacy of teacher professional development management and addressing the developmental needs of teachers.

Review Literature

1. Teacher professional development

Fullan and Hargreaves (1992) stated, we use it both to refer to specific developments through in-service or staff development as well as to more thorough advances in teachers sense of purpose, instructional skills and ability to work with colleagues. Darling-Hammond (1994) suggested that teacher professional development was enriched by the expansion of their professional knowledge, the structure and methodology of their pedagogical knowledge, and the integration of knowledge gained through practitioner experience with knowledge generated by institutions of higher education. Keiny (1994) made it clear that "professional development can be viewed as a process of professional growth." Zhu Xudong (2014) understood "professionalism" in education and teaching as the connotation of three dimensions: teaching students to learn, nurturing and serving. Guo Longfei (2015) believed that teacher professional development is the process of continuous maturation of individual teachers' professional knowledge and skills. According to Li Gaihu & Peng Yingxia (2022), teachers' professionalization usually refers to the ways, means, activities and processes by which teachers improve their educational and teaching abilities and professionalism through learning and practice. There are many definitions of teacher professional development, and no uniform regulations.

2. Vocational education

The "Law of the People's Republic of China on Vocational Education" (2022) stipulates that vocational education refers to "education implemented to cultivate high-quality technical and skilled personnel, and to equip the educated with the vocational ethics, scientific and cultural and professional knowledge, technical skills and other vocational comprehensive qualities and action abilities required for engaging in a certain occupation or realizing vocational development." Germany's "Vocational Education Report 2021"(2011) defined that education model combined the teaching of scientific theoretical knowledge with the acquisition of vocational practical ability. Switzerland was the first country in the world to recognize higher vocational education as formal education. Higher vocational education, together with basic vocational education, has constituted the modern vocational education system. Switzerland's

higher vocational education builds a flexible, open, formal and efficient lifelong learning system for learners through two types of approaches.(E Tian, 2022) Vocational education in China includes vocational school education and vocational training. Compared with developed countries in the world, there are still some gaps in China's higher vocational education. In order to accelerate the development of vocational education in China.the government actively promotes the development of Chinese vocational education at a high level and with high quality.

3. Management of the teacher professional development for vocational colleges

Teacher professional development is influenced by multiple factors. Different influencing factors will have different impacts on teachers professional development. Fessler (1985) divided the influencing factors into two areas: personal environmental factors and organizational environmental factors. Organizational environment factors included school regulations, public trust, social expectations, professional organizations, and teachers' associations. The organizational environment of the school and the school system is the second major factor influencing teacher development. Li Yong & Duan Qionghui et al.(2022) pointed out the state required colleges to strengthen teacher development work and professionalization of personnel, and increased the investment of resources such as teacher development personnel, funds and venues, but the degree of implementation is insufficient. Individual development and team building are divorced from each other, and the degree of integration and development needs to be improved. Higher vocational colleges do not pay consistent attention to the teaching team, the awareness of building a team around excellent teachers is not strong, and personal development fails to form a synergy with team development. Yang Xianrong (2016) & Li Honglang (2016) used the classical theory of planned behavior to explore the factors affecting the professional development behavioral tendencies of higher vocational teachers, and to promote the teachers of higher vocational colleges to the path of professional development. Vocationality and higher are the basic attributes that define the professional development competence of higher education teachers. Vocationality consists of teachers' pre-service professional knowledge, post-service professional experience, and professional skills synthesized from the two. The higher level of professionalism is the requirement of the degree of professionalism. Vocationality is mainly composed of teachers' professional knowledge, technical knowledge and humanistic knowledge, and is presented in the form of vocational skills (competence).

Research Methodology

1. Instruments

the study used purposive sampling to select 20 documents and 5 education experts for semi-structured interviews. The components and indicators of the management of teacher professional development were identified by the researcher through a literature review and semi-structured interviews. A questionnaire(5-point Likert scale)was designed based on these basic information and was sent by the QUESTIONNAIRE STAR.

2. Sample

There are 2,190 teachers from three public higher vocational colleges in the Anyang City, Henan.The proportional stratified random sampling technique was used to select the sample for this research. The researcher calculated the sample size with the G-Power software (set as Chi-square test at: Df = 231, α err prob = .05, Effect size w = 0.4, power = 0.8), totally at least 368.

3. Data Analysis

1) The researcher conducted descriptive statistics on the mean (5 levels) ,standard deviation , Skewness, and Kurtosis of the collected data to measure the respondents' perception of the research objectives and the content of the study. The statistics of the respondents' scores on the questionnaire indicated the level of perception of the respondents on the objectives of the study.

1.00 – 1.80	Lowest	1.81 – 2.60	Low
2.61 – 3.40	Moderate	3.41 – 4.20	High
4.21 – 5.00	highest		

that mean score of 51 indicators of management of the teacher professional development for the Public Higher Vocational Colleges in Anyang City of Henan Province which were at moderate level and high level was 3.37-3.99. There were 2 indicators at moderate levels and 49 indicators at high levels. There were standard deviation between .88-1.27. The absolute values of skewness and kurtosis do not exceed 3 are reasonable. It indicated that the data essentially accepted a positive tertiary distribution. This mean the data from sample size was representative of the population.

2)The researcher analyzed by SPSS software found that KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) value was .940, which was greater than .50. It indicated that the analyzed data was most appropriate for factor analysis. In the Bartlett sphericity test, It was found that the Chi- Square = 14980.859 and the statistical significance = .000. which is less than .05. It indicated the correlation between the 51 variables, which is suitable for factor analysis. Therefore, the researches data passed the factor feasibility test. The research data were analyzed in EFA(exploratory factor analysis) using PCA(principal component analysis) and Kaiser's maximum variance method of rotated square method. The study found that only 7 components (the eigenvalue = 2.53 which greater than 1) were appropriate and overall explained 71.542% of the variance contribution.

Table1. Number of components, Eigenvalue, percentage of variance, and Percentage

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Eigenvalues	% of Variance	Cumulative	Eigenvalues	% of Variance	Cumulative
1	14.848	29.113	29.113	6.490	12.726	12.726
2	5.416	10.619	39.732	5.730	11.236	23.962
3	4.082	8.004	47.736	5.512	10.808	34.770
4	3.580	7.020	54.756	4.977	9.759	44.529
5	3.275	6.422	61.178	4.915	9.637	54.166
6	2.756	5.404	66.582	4.446	8.718	62.884
7	2.530	4.960	71.542	4.415	8.658	71.542
	.623	1.221				

the study found the components and indicators of management of teacher professional development for the Public Higher Vocational Colleges in Anyang City of Henan Province. Details were as follows:

Component 1: Evaluation Management consisted of 9 indicators;
Component 2: Training Management, consisted of 8 indicators.;
Component 3: Platform Management, consisted of 8 indicators;
Component 4: Implementation Management, consisted of 7 indicators;
Component 5: Community Management, consisted of 7 indicators;
Component 6: Scientific Research Management, consisted of 6 indicators;
Component 7: Incentives Management, consisted of 6 indicators.

3)Confirmatory Factor Analysis was used for the management model of teacher professional development for the Public Higher Vocational Colleges in Anyang City of Henan Province.Using the Pearson product moment correlation coefficient, the researcher found that the correlation of each component was very low, which indicated that the components had good independence.The CR(Composite reliability) was between .858 and .913. They were both greater than the general criterion of .7 (Hair, 2010, Fornel and Larcker (1981) suggested .6 or more). The AVE(Average Varience Extraction) values were between .668 and .762. These values exceed the .5 (Fornell & Larcker, 1981) criterion. This was a sufficient indication that the indicators of each measurement model had good validity.

Table 2.The correlation coefficient and convergent validity of measurement model to propose

	Com1	Com2	Com3	Com4	Com5	Com6	Com7
Com1	1						
Com2	.249	1					
Com3	.364	.354	1				
Com4	.246	.339	.268	1			
Com5	.346	.254	.323	.287	1		
Com6	.467	.318	.382	.191	.292	1	
Com7	.291	.418	.355	.351	.386	.238	1
CR.	.913	.912	.876	.858	.889	.900	.905
AVE.	.724	.721	.703	.668	.729	.751	.762

Based on the above statistical results, the researcher used MPlus software to conduct CFA and proposed a first-order model of management model of teacher professional development for the Public Higher Vocational Colleges in Anyang City of Henan Province.

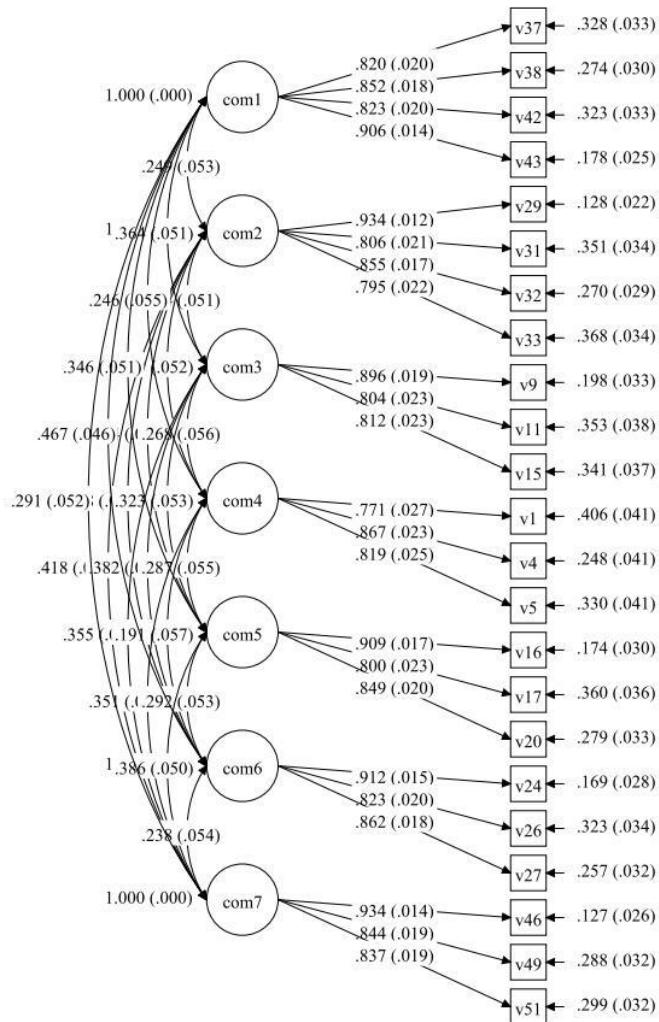


Figure 2. First order CFA of management model of teacher professional development for the Public Higher Vocational Colleges in Anyang City under Henan Province.

Figure 2. was showed the first Order CFA of management model for teacher professional development for the Public Higher Vocational Colleges in Anyang City of Henan Province which fit with the empirical data, because of the value of Chi-Square=253.087, df=209, P-Value=.0200, RMSEA=.024, CFI=.992, TLI=.990, SRMR=.031. The study found that five of the six fitted indicators achieved a good fitting degree. They were χ^2/df , RMSEA, CFI, TLI and SRMR. Although the chi-square p-value of .0200 for this model was statistically significant and indicated that the model was not accepted. However, the values were susceptible to being strongly influenced by the sample size of the estimated parameters, and statistics are usually of little substantive help when using real-world data to evaluate theoretical models. All other fit indicators for the model were in the good fit range. both CFI and TLI were well above the fitted value .09, RMSEA and SRMR were largely below the fitted value .08, and χ^2/df was in the in the good fit range. Therefore, the measurement model passed the fitness-to-fit indicator tests.

Research Conceptual framework

From the analysis and synthesis of related documents and research, including semi-interviews with the educational experts., The study explored the components of the professional development management of teachers in public higher vocational colleges in Anyang City of Henan Province. On this basis, it formed a management model of teacher professional development in public higher vocational colleges in Anyang City of Henan Province.

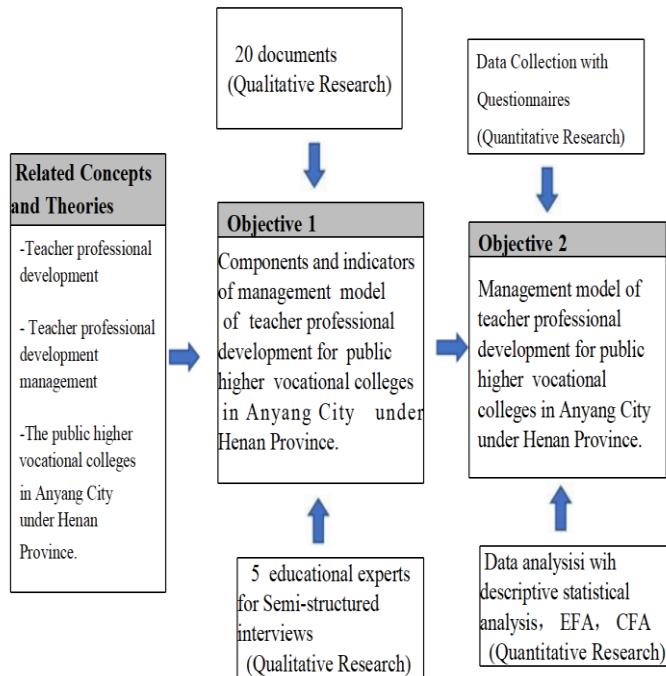


Figure 1. Research Conceptual framework

Research Results

The study obtained the results of the survey by using data analysis software. Descriptive statistical analysis, exploratory factor analysis and validation factor analysis were used to finally verify the research hypotheses that management model from theory and research related and empirical data was consistent. The model showed that there were 7 components and 23 indicators of the management model of teacher professional development for the Public Higher Vocational Colleges in Anyang City of Henan Province. The 7 components were in descending order:

- 1) Platform Management;
- 2) Incentives Management
- 3) Evaluation Management
- 4) Training Management
- 5) Scientific Research Management
- 6) Community Management

7) Implementation Management

A first-order management model of teacher professional development for the Public Higher Vocational Colleges in Anyang City of Henan Province was used to devise a second-order model in this study. The Second Order model was consistent with the empirical data. the statistical value =294.508, Degree of Freedom (df)=223, Chi-square (χ^2/df)=1.3118, P-Value=.0009, Root Mean Square Error of Approximation (RMSEA) = .030, Goodness of Fit Index (GFI) =.987, Tucker-Lewis Index (TLI)=.986, SRMR=.048.

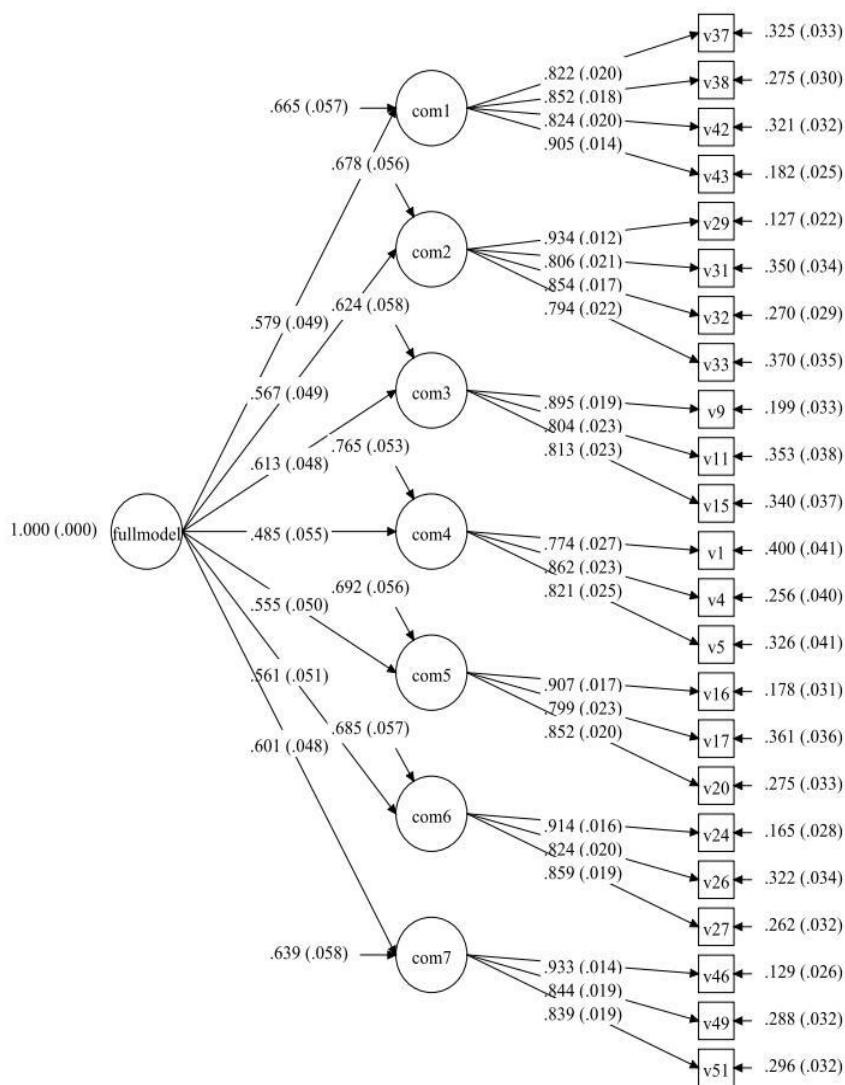


Figure 3. Second order CFA of the management model of teacher professional development for the Public Higher Vocational Colleges in Anyang City of Henan Province.

Discussion

The research results found that there were 7 components and 23 indicators of the management of teacher professional development for public higher vocational colleges in Anyang City under Henan Province, which consisted of Platform Management, Incentives Management, Evaluation Management, Training Management, Scientific Research Management, Community Management and Implementation Management. This research finding was in accordance with the researchs of Xiang Li (2022:53-58) Chen Yujie & Yang Yongjuan (2021:64-68), Ruan Caixia (2015:119-123) Li Xiaohua & Li Yiru (2020:97-106), Yang Fu (2014:5-10), Wang Jun & Yang Yang (2021:64-70), Zang Yanan (2022:47-48) Li Gaihu & Peng Yingxia (2021:94-105) Liu Yi (2022:60-62), Zheng Liang (2022:60-65) Li Gaihu & Peng Yingxia (2021:94-105).

Table 3 Mapping the management model of teacher professional development for the Public Higher Vocational Colleges in Anyang City of Henan Province

Component	Indicators
1. Platform management	1.1 teaching resource database 1.2 enterprise practice and research base 1.3 special funds
2. Incentives management	2.1 evaluation and incentive mechanism. 2.2 praise and reward 2.3 organic integration
3. Evaluation management	3.1 enterprise practice evaluation system. 3.2 the "Double-teacher" Teacher evaluation and assessment system 3.3 talent evaluation system 3.4 professional, classification, phased evaluation standards
4. Training management	4.1 long-term teacher ability training mechanism. 4.2 stable teacher training base. 4.3 teacher training network. 4.4 experts and scholars
5. Scientific research management	5.1 integrated academic thinking 5.2 financial guarantee. 5.3 regular academic salons
6. Community management	6.1 full-time teaching team. 6.2 cooperative culture 6.3 school-enterprise collaborative innovation team
7. Implementation management	7.1 professional development plans 7.2 sound standard system 7.3 teaching reflection serves

These specific indicators can be used as a reference standard for evaluating the level of teacher professional development of higher vocational colleges in Anyang area, as well as a direction of improvement for optimizing and upgrading the management of teacher professional development in higher vocational colleges in this area. Teacher professional development management is a comprehensive and systematic administrative affair, therefore, the teacher professional development management model contains more components. Educational managers could recognize the importance and shortcomings of teacher professional development management according to the actual situation of higher vocational colleges, and utilize it as a reference standard to actively and creatively promote teacher professional development management, improve teacher professional level, and thus enhance the quality of education in colleges.

Recommendation for Further Research

The researcher has identified 7 components of the management of teacher professional development, and needs to collect and collate more literature materials related to teacher professional development, especially the international field of teacher professional development, in order to supplement and enrich the content of this research. The researcher should further explore the relationship between other variables and teachers' professional development on the basis of this study, and construct structural equation models to provide a more effective theoretical basis for teacher professional development of Higher Vocational College in Anyang City. The researcher needs to expand the number of expert visitors to provide more and more useful suggestions for teacher professional development management of Higher Vocational College in Anyang City.

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