The influence of information technology on the classroom transformation of nursing colleges in Anyang city, Henan province

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Abstract

The purpose of this study is: (1) To find factors affecting classroom transformation of nursing colleges in Anyang City, Henan Province. (2) To find the mediating effect of educational philosophy of teachers in colleges on the relationship between information technology and classroom transformation of nursing colleges in Anyang City, Henan Province. (3) To find the moderating effect of orientation of colleges on the relationship between information technology and classroom transformation of nursing colleges in Anyang City, Henan Province. This study included two nursing colleges in Anyang City, Henan Province, and selected 705 students as samples through layered random sampling methods. The questionnaire was used for data collection and collected 699 effective questionnaires. The descriptive statistics and structural equation model (SEM) were used, and statistical software were used for data analysis. The results show that: Factors affecting Classroom Transformation of Colleges include Information Technology, Educational Philosophy of Teachers in Colleges, Orientation of Colleges, etc. Information technology, Educational Philosophy of Teachers in Colleges and Orientation of Colleges have a positive impact on Classroom Transition of Colleges. Educational Philosophy of Teachers in Colleges has a mediating effect in the relationship between information technology and Classroom Transformation of Colleges. Orientation of Colleges has a moderating effect on information technology and Classroom Transformation of Colleges.

Keywords: Classroom Transformation, Information technology, Educational Philosophy of Teachers, Orientation of Colleges

Introduction

With the rapid development of science and technology and the advent of the information age, various new technologies and new means emerge in an endless stream. These changes all affect people's daily life and knowledge concepts. Knowledge is no longer an immutable objective reality, but a constantly generating and changing existence, requiring individuals to constantly reconstruct their own knowledge with an open mind. system. The development of the times not only changes individuals, but also affects the way of international competition. After the outbreak of the new crown pneumonia epidemic, in order to ensure that the teaching progress is not affected, the Ministry of Education requires schools to "suspend classes without stopping", and teachers in colleges have responded positively. For higher education, cultivating innovative and applied talents and focusing on the cultivation of college students' comprehensive quality have become the basic concepts of contemporary university education. Classroom teaching in colleges must keep pace with the development of the times, and always have a sense of crisis and advance awareness, and constantly inject fresh blood and radiate vitality. Although the reform of classroom teaching in colleges in my country has been carried out, the traditional classroom teaching centered on teachers still accounts for a large proportion of classroom teaching in colleges. etc., this has been inconsistent with the new requirements for classroom teaching in colleges, so the reform and transformation of classroom teaching in colleges is imperative.

General Secretary Xi Jinping also mentioned that colleges, as the main force of scientific and technological innovation, must innovate the talent training mechanism and education method, and cultivate more qualified talents and innovative talents for the modernization of our country. talent. In-depth integration of information technology and higher education, innovative talent training mode, so as to cultivate innovative talents. However, the traditional teaching mode has not been able to cultivate innovative talents in line with social development, so colleges must build a new classroom teaching mode to meet the needs of social development. With the promotion of education informatization,

the in-depth integration of information technology and higher education will also become the trend of future education development.

Research Question

1. What are the factors affecting classroom transformation of nursing colleges in Anyang City, Henan Province?

2. Does educational philosophy of teachers in colleges mediating effect the relationship between information technology and classroom transformation of nursing colleges in Anyang City, Henan Province?

3. Does the orientation of colleges moderating effect the relationship between information technology and classroom transformation of nursing colleges in Anyang City, Henan Province?

Research Objectives

1. To find factors affecting classroom transformation of nursing colleges in Anyang City, Henan Province.

2. To find the mediating effect of educational philosophy of teachers in colleges on the relationship between information technology and classroom transformation of nursing colleges in Anyang City, Henan Province.

3. To find the moderating effect of orientation of colleges on the relationship between information technology and classroom transformation of nursing colleges in Anyang City, Henan Province.

Research Hypothesis

H1: Information technology has a positive direct effect on the classroom transformation in colleges.

H2: Information technology has a positive effect on the educational philosophy of teachers in colleges.

H3: The educational philosophy of teachers in colleges has a positive direct effect on the classroom transformation of colleges.

H4: The orientation of colleges has a positive direct effect on the application of information technology.

H5: Orientation of colleges has moderating effect on the relationship between information technology and classroom transformation of colleges.

H6: The orientation of colleges has a positive direct effect on the classroom transformation of colleges.

H7: Educational philosophy of teachers in colleges has positive mediating effect between the relationship of information technology and classroom transformation of colleges.

H8: Information technology has positive mediating effect between the relationship of orientation of colleges and educational philosophy of teachers in colleges.

H9: Information technology has positive mediating effect between the relationship of orientation of colleges and classroom transformation of colleges.

H10: Information technology and educational philosophy of teachers in colleges have positive mediating effect between the relationship of orientation of colleges and classroom transformation of colleges.

Conceptual Framework

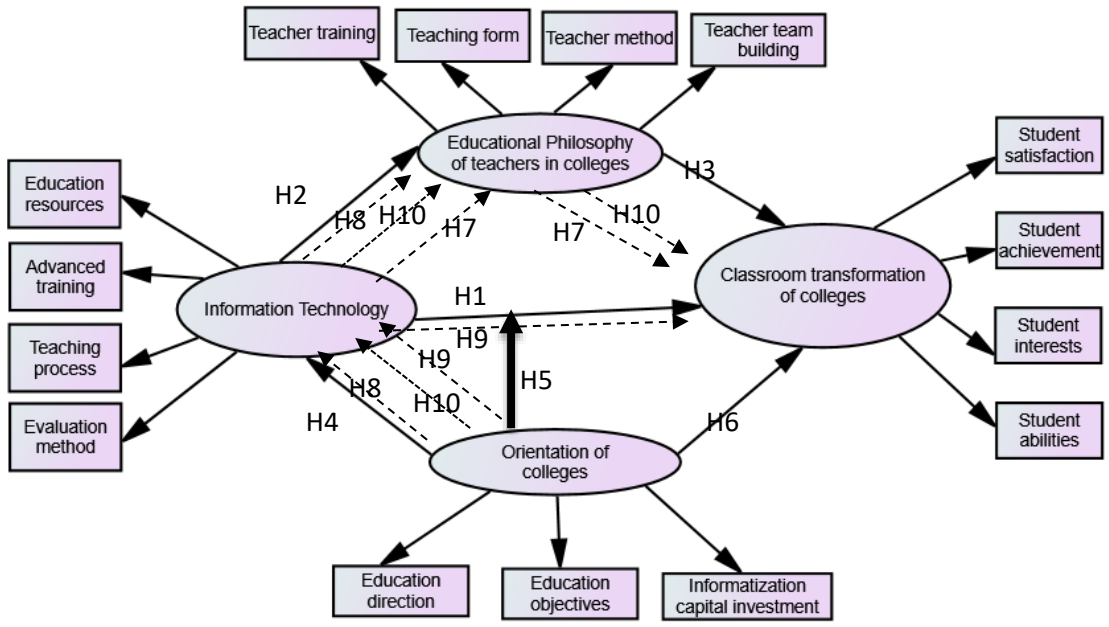


Figure 1 Conceptual Framework

Methodology

Research methodology refers to the systematic process and techniques employed to conduct research, gather information, analyze data, and draw conclusions. It provides a structured framework for researchers to plan, execute, and validate their studies, ensuring that the research objectives are met effectively. The methodology chosen depends on the nature of the research question, the type of data needed, and the overall goals of the study. This research adopted quantitative research. There are three processes involved in research: research design, data analysis, and results. Details were as follows:

Research Design

To achieve the aims of this study, the research design was structured into three distinct stages, as outlined below:

Part one: Study the factors that affect the reform of classroom teaching in Anyang Nursing College. Constructing a model that affects classroom teaching reforms in Anyang Nursing College.

Part two: Use Educational Philosophy of teachers in colleges as mediating variable to analyze the impact of Information technology on Classroom transformation of colleges.

Part three: Orientation of colleges was used as the moderator to analyze the influence of Information technology on Classroom transformation of colleges.

Population and sample

The population of this study were the students who are studying in the 2023 school year of Anyang Nursing College in Henan Province. There were 2 nursing colleges in Anyang City, Henan Province, Henan Nursing Vocational College and Anyang Vocational Technical College Nursing College. In academic year 2023, there were 3,580 nursing students in Henan Nursing Vocational College, and 2,620 nursing students in the Nursing College of Anyang Vocational and Technical College, total 6,200 nursing students in two schools.

Method of Sample Selection uses stratify random sampling method. Researcher will divide students into two groups according to different schools, and then based on the total number of each group of data, according to the proportional sampling. The samples are 705 people calculate by G*power program at power of test 0.80.

The creation of research instruments

The researchers utilized a questionnaire comprising two parts; Part I: Basic Information of Students. Part II: Factors Affecting Questionnaire Survey. The quality of the questionnaire was evaluated by content validity and reliability. For content validity, it was checked by 5 experts and analyzed using item-objective consistency (IOC). The value of the item value is ≥ 0.50. For reliability, it was analyzed by Cronbach's alpha at 0.80.

Data Collection

The researcher sent Likert (5-point) rating scale questionnaires to the respondents. Questionnaires were sent online.

Data analysis

To analyze the sample characteristics, such as gender, age, major and grade were employed.

To describe the characteristics of observed variables, the descriptive statistics such as the means and standard deviation were analyzed as well as the skewness, the kurtosis, and the Mardia's coefficient was employed to check the normality assumption.

To ensure that the measurement of data is suitable for the confirmatory factor analysis (CFA) and the structural equation model (SEM)analysis, the inter-correlation matrix as well as the tolerance and the variance inflation factor (VIF) were used to check the multicollinearity. The measurement quality such the measurement reliability and the measurement validity also were analyzed.

Statistics test for each hypothesis were 5 direct effects hypothesis, 1 moderating effect hypothesis and 4 mediating effects hypothesis.

Results

Quantitative data analysis

Table 1 Demographic Information

Variables	Level	Frequency	Percentage
Gender	Male	167	23.9
Female		547	76.1
Age range	Below 18	20	2.90
18		109	15.6
19		230	32.9
20		237	33.9

Variables	Level	Frequency	Percentage
More than 21		103	14.7
School	Henan Nursing Vocational College	403	57.7
	Anyang Vocational and Technical College School of Nursing	296	42.3
Major	Nursing	331	47.4
	Elderly People nursing	118	16.9
	Operating room nursing	98	14
	Foreign-related nursing	79	11.3
	Others	73	10.4
Profession	China's top professional	87	12.4
	National first-class specialty	101	14.4
	Provincial first-class specialty	321	46.0
	Others	70	10.0
	I don't know	120	17.2
Grade	First grade	150	21.5
	Second grade	350	50.0
	Third grade	199	28.5
Total		699	100

From Table 1,There were 167 male students, accounting for 23.9% of the sample size, there are 532 female students, accounting for 76.1% of the total. etc.

Table 2 Results of descriptive statistical analysis

Variable	$\overline{X}$	s.d.	CV	skew	z-test	kurtosis	z-test	P.
A	3.60	.992	26.56%	-.647	-6.988	-.594	-3.206	.000
B	3.66	.979	26.75%	-.780	-8.421	-.458	-2.474	.000
C	3.78	1.09	28.84%	-.853	-9.211	-.620	-3.345	.000
D	3.50	1.06	30.29%	-.629	-6.790	-.944	-5.095	.000
E	3.75	.982	26.19%	-.932	-10.061	.193	1.044	.000
F	3.74	1.11	29.68%	-1.119	-12.079	.396	2.139	.000
G	3.61	1.09	30.19%	-.537	-5.800	-.926	-4.998	.000
H	3.54	1.08	30.51%	-.490	-5.289	-1.017	-5.487	.000
I	3.36	1.31	38.99%	-.445	-4.808	-1.264	-6.823	.000

Variable	$\overline{X}$	s.d.	CV	skew	z-test	kurtosis	z-test	P.
J	3.39	1.24	36.58%	-.342	-3.695	-1.377	-7.432	.000
K	3.27	1.29	39.45%	-.279	-3.007	-1.279	-6.900	.000
L	3.29	1.21	36.78%	-.220	-2.374	-1.204	-6.497	.000
M	3.76	1.18	31.38%	-.928	-10.014	-.308	-1.665	.000
N	3.72	1.08	29.03%	-1.027	-11.086	-.010	-.053	.000
O	3.76	.993	26.41%	-1.120	-12.085	.154	.829	.000
Mardia's coefficient						41.108	24.063	.000

From Table 2, All of validates distribute normally while met the requirement of CFA assumption.

Table 3 Intercorrelation matrix

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	1.00														
B	.611**	1.00													
C	.528**	.514**	1.00												
D	.458**	.449**	.619**	1.00											
E	.286**	.258**	.366**	.398**	1.00										
F	.268**	.218**	.330**	.375**	.508**	1.00									
G	.285**	.259**	.343**	.351**	.621**	.515**	1.00								
H	.313**	.282**	.381**	.394**	.470**	.398**	.577**	1.00							
I	.356**	.277**	.450**	.430**	.347**	.228**	.282**	.376**	1.00						
J	.247**	.174**	.302**	.231**	.155**	.052**	.191**	.278**	.474**	1.00					
K	.199**	.174**	.323**	.301**	.176**	.171**	.186**	.177**	.438**	.506**	1.00				
L	.285**	.233**	.348**	.339**	.256**	.183**	.285**	.315**	.569**	.639**	.616**	1.00			

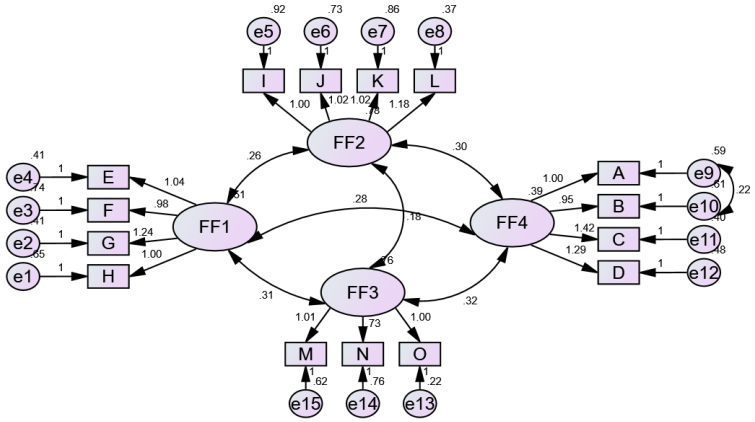
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
M	.255**	.241**	.315**	.331**	.315**	.290**	.248**	.184**	.143**	.124**	.183**	.194**	1.00		
N	.207**	.185**	.280**	.315**	.219**	.315**	.215**	.112**	.092*	.145**	.164**	.141**	.464**	1.00	
O	.357**	.368**	.418**	.390**	.355**	.322**	.344**	.295**	.250**	.074**	.136**	.185**	.659**	.506**	1.00

Note: *represent P≤.05, **represent P≤.01, ***represent P≤.001.

According to the data analysis, all pairs of correlations show a positive link with a moderate scale and can be utilized as indicators in a model of CFA

Measurement model

In measurement models specification in this study, the researcher identified 4 factors:(1) Information technology (FF1), (2) Educational Philosophy of teachers in colleges (FF2), (3) Orientation of colleges (FF3), (4) Classroom transformation of colleges (FF4). and 15 observation variables: (1) Student satisfaction(A), (2) Student achievement(B), (3) Student interests (C), (4) Student abilities (D), (5) Education resources (E), (6) Advanced training (F), (7) Teaching process(G), (8) Evaluation method(H), (9) Teacher training (I), (10) Teaching form(J), (11) Teaching method (K), (12) Teacher team building(L), (13) Education direction(M), (14) Education objectives (N), (15) Informatization capital investment (O).



Chi-square=344.185,Df=83,p=.000,Chi/DF=4.147

TLI=.925,GFI=.935,CFI= 940,RMSEA=.067

Figure 2 The Measurement Model in Unstandardized estimates

The researchers tested the fit of the structural model and found that: (Chi-square=344.185, Df=83, P.=0.000, Chi/Df=4.147, TLI=0.925, CFI=0.935, RMSEA=0.067, GFI=0.935,) the fit of the structural model was acceptable.

Table 4 Measurement model fit valuation after modifying

Measure	Estimate	Threshold	Interpretation
CMIN	344.185	--	--
DF	83	--	--
CMIN/DF	4.147	Between 1 and 5	Acceptable
CFI	0.940	>0.95	Acceptable
RMSEA	0.067	<0.06	Acceptable

Table 5 The results of validity analysis

	CR	AVE	MSV	MaxR(H)	FF1	FF2	FF3	FF4
FF1	0.811	0.520	0.376	0.827	0.721			
FF2	0.830	0.553	0.299	0.853	0.416***	0.744		
FF3	0.788	0.560	0.344	0.840	0.500***	0.239***	0.748	
FF4	0.799	0.503	0.376	0.822	0.613***	0.547***	0.586***	0.709

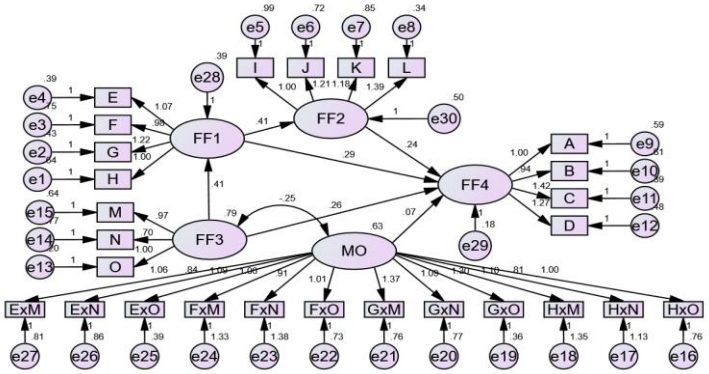
In order to identifying the latent variable reliability, the CR 4.1.3 Symbols for diagram≥0.70, MSV less than AVE and the MaxR(H)>CR, and to identifying the convergent validity of the AVE≥0.50, to identify the discriminant validity by the method of Fornell & Larcker(1981,pp,39-50), the square root of AVE of latent variables must be more than its shared variance to other latent variables.

Table 6 HTMT Analysis

	FF1	FF2	FF3	FF4
FF1				
FF2	0.437			
FF3	0.511	0.230		
FF4	0.616	0.547	0.570	

The usage of the Heterogeneous Trait Single Trait (HTMT) technique (Henseler,J. et al., 2015, pp. 115-135) is the third method of assessing discriminant validity and it is a better way to measure discriminant validity between constructs. The ratio in Table 6's data analysis was between 0.230 to 0.616, which is less than 0.85, indicating that the concept had strong discriminant validity.

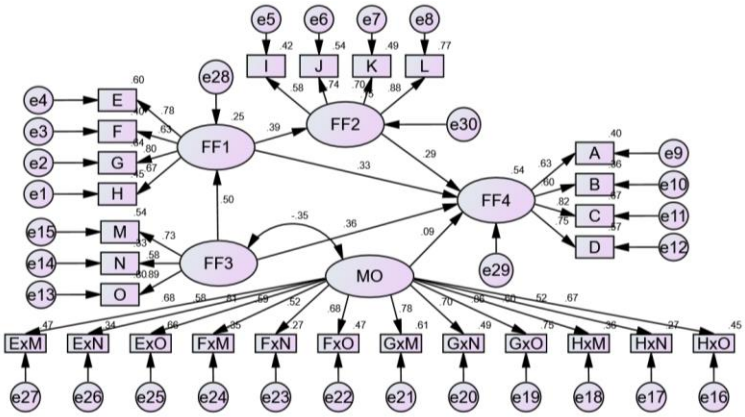
Structural Equation Model



Chi-square=985.099,Df=291,p=.000,Chi/DF=3.385

TLI= 926,GFI=.904,CFI= 939,RMSEA=.058

Figure 3 Structural Equation Models and Model Evaluation in Unstandardized



Chi-square=985.099,Df=291,p=.000,Chi/DF=3.385

TLI=.926,GFI=.904,CFI= 939,RMSEA=.058

Figure 4 Structural Equation Models and Model Evaluation in Standardized

The researcher tested the fit of the structural model and found that the fit of the model was as follows: (Chi-square=985.099, Df=291, P=0.000, Chi/Df=3.385, TLI=0.926, GFI=0.904, CFI=0.939, RMSEA=0.058). indicating that the structural model of this study was reasonable and can analyzed.

Table 7 The Hypotheses Testing

Direct effects	Unstand-ardized	Standar-dized	S.E.	Z-test	P-value	Hypot-heses
FF1⟶FF4	.289	.335	.045	6.455	***	H1
FF1⟶FF2	.414	.391	.053	7.810	***	H2
FF2⟶FF4	.240	.294	.034	7.002	***	H3
FF3⟶FF1	.406	.499	.039	10.495	***	H4

Direct effects	Unstand-ardized	Standar-dized	S.E.	Z-test	P-value	Hypot-heses
MO⟶FF4	.069	.087	.030	2.327	*	H5
FF3⟶FF4	.255	.364	.035	7.396	***	H6

Significance Indicators: *p<0.050,**p<0.010,***p<0.001(Gaskin& Lim, 2018)

According to the analysis results in Table7, the significance results (P value) of the direct hypothesis of HI-H6 in this study were all less than 0.05, indicating that the five direct hypotheses in this study are all valid. The normalized path coefficients of HI-H6 were set to be 0.335, 0.391, 0.294, 0.499 ,0.087and 0.364, respectively. The P values all were ***(P<0.001). It shows that FF1 has significant direct impact on FF4, FF1 has significant direct impact on FF2, FF2 has significant direct impact on FF4, FF3 has significant direct impact on FF1, MO has significant direct impact on FF4,FF3 has significant direct impact on FF4.

Table 8 The effect decomposition in the indirect effects

Indirect path	Unstand-ardized	95%C.I		standardized	Hypot-heses
		Lower	Upper		
FF1-->FF2-->FF4	0.100	0.073	0.141	0.115	H7
FF3-->FF1-->FF2	0.168	0.126	0.221	0.196	H8
FF3-->FF1-->FF4	0.118	0.093	0.150	0.165	H9
FF3-->FF1-->FF2-->FF4	0.040	0.032	0.051	0.060	H10

The indirect effect of FF1 on FF4 was 0.100, with 95% confidence interval [0.073,0.141] excluding 0. This indicates that FF1 has a significant mediating effect on FF4 through FF2.The indirect effect of FF3 on FF2 was 0.168, with 95% confidence interval [0.126,0.221] excluding 0. This indicates that FF3 has a significant mediating effect on FF2 through FF1.The indirect effect of FF3 on FF4 through FF1 was 0.118, with 95% confidence interval [0.093,0.150] excluding 0. This indicates that FF3 has a significant mediating effect on FF4 through FF1.The indirect effect of FF3 on FF4 through FF1 and FF2 was 0.040, with 95% confidence interval [0.032,0.051] excluding 0. This indicates that FF3 has a significant mediating effect on FF4 through FF1 and FF2.

Moderating effects analysis

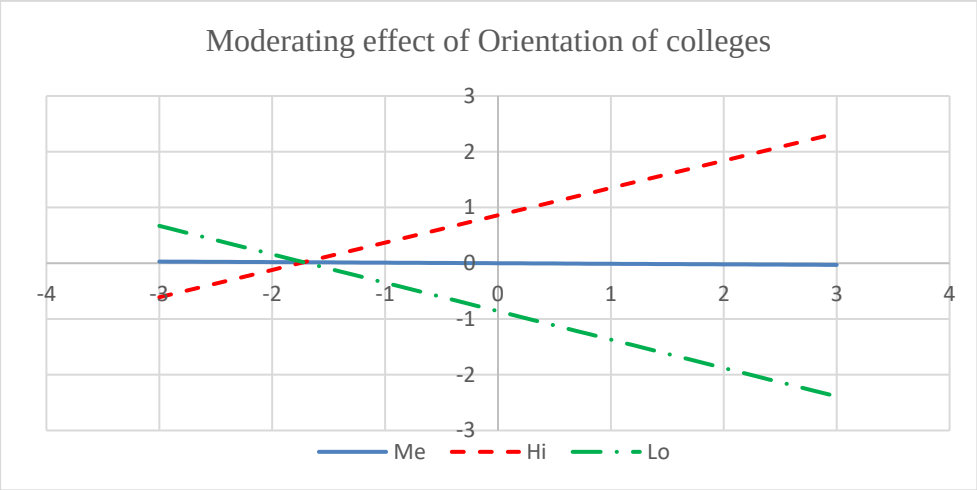


Figure 5 Moderating effects analysis

When the data of Me in Figure 4-4 becomes larger, if Hi and Lo, one becomes larger and another becomes smaller, indicating that Me has a moderating effect on the latter two, If Hi and Lo become larger or smaller at the same time, it means that Me has no moderating effect on the latter two. In Figure 4-4, Me represents FF3, Hi represents FF1, Lo represents FF4. It can be seen that when FF3 becomes larger, FF1 become larger, FF4 becomes smaller. It showed the relationship between FF1 and FF4 was moderated by FF3 and was statistically significant.

Conclusion

The research results show that as follows:

1) Factors affecting classroom transformation of colleges include information technology, educational philosophy of teachers in colleges, orientation of colleges, etc.

2) Information technology, educational philosophy of teachers in colleges and orientation of colleges have a positive impact on classroom transition of colleges. Educational philosophy of teachers in colleges has a mediating effect in the relationship between information technology and classroom transformation of colleges.

3) Orientation of colleges has a moderating effect on information technology and classroom transformation of colleges. After data analysis and inspection, the relationship model and empirical data are better.

Discussion

Research Objective 1: Based on the results of literature review and questionnaire survey. According to the analysis results in Table 7, the significance results (P value) of the

direct hypothesis of HI-H6 in this study were all less than 0.05, indicating that the five direct hypotheses in this study are all valid. The normalized path coefficients of HI-H6 were set to be 0.335, 0.391, 0.294, 0.299 ,0.030and 0.364, respectively. The P values all were 3*(P<0.01). It shows that information technology has significant direct impact on classroom transformation of colleges, Educational Philosophy of teachers in colleges has significant direct impact on classroom transformation of colleges, Orientation of colleges has significant direct impact on classroom transformation of colleges. Found the factors affecting classroom transformation of nursing colleges in Anyang City, Henan Province were information technology, Educational Philosophy of teachers in colleges and orientation of colleges.

Research Objective 2: Based on the results of literature review and questionnaire survey. According to the analysis results in Table 8, The indirect effect of information technology on classroom transformation of colleges was 0.100, with 95% confidence interval [0.073,0.141] excluding 0. This indicates that Information technology has a significant mediating effect on classroom transformation of colleges through Educational Philosophy of teachers in colleges. Found the mediating effect of educational philosophy of teachers in colleges on the relationship between information technology and classroom transformation of nursing colleges in Anyang City, Henan Province.

Research Objective 3: Based on the results of literature review and questionnaire survey. According to the analysis results in Table 7, The significant result of the direct assumption of H5 in this study (P value) was 0.02, which was less than 0.05, which indicates that the assumptions in this study are effective. According to the analysis results in Figure 5, It showed the relationship between information technology and classroom transformation of colleges was moderated by orientation of colleges and was statistically significant.

Recommendation

Recommendation for policy formulation

Rebuild a new management system. Establish a scientific evaluation system, so that the effect of classroom teaching effects that cannot fully evaluate digital resource

construction and integration of information technology and education and teaching. The innovation of the work mechanism is to emphasize that the leadership is strong and coordinated by many parties. In the process of promoting, teaching reform is the "first leader" project.

Create a new training plan. The academic effect evaluation indicators, student academic performance evaluation rules, etc., clarify the change of academic evaluation to the usual learning process, further standardize the assessment of the usual learning process, and use the learning platform to build learning and management services such as intelligent diagnosis and evaluation, intelligent feedback evaluation, and conduct full monitoring and evaluation of students' online learning process to form big data for each student learning behavior, and provide teachers with accurate teaching.

Develop new teaching ability. It is necessary to give full play to the functions of teachers' teaching development centers and face different types of teachers to conduct targeted training. In -depth integration training for information technology and teaching, and solve the difficulties and problems of teachers' difficulties in teaching effects, teaching resource design and production in information teaching.

Recommendation for practical application

Pay attention to the development of emerging technology. For classroom teaching, NETP2016 emphasizes teachers to participate in the learning experience with the help of technology design. For teaching evaluations, NETP 2016 focused more on big data in teaching in the next five years to provide a more complete and detailed description of students' needs, interests and abilities, and conduct sustainability, formation and embedded evaluation, and transform into the integrated evaluation system and personalized teaching. The "Thirteenth Five -Year Plan" issued by the Ministry of Education issued by the Ministry of Education in June 2016 also clearly states: we must rely on information technology to create an information teaching environment, promote the reform of teaching concepts, teaching models, and teaching content, and promote the in -depth and extensive application of information technology in daily teaching.

Technology is never all. Only by adhering to the educational concept of "learning as the center", respecting each student, responsible for the development of each student, and implementing the requirements of classroom teaching transformation, can we cultivate

high -quality talents that cultivate the comprehensive development of morality, intellectual, physical and labor.

Recommendation for further research

The deep integration of information technology and college classrooms has become an unstoppable trend to improve the quality of classroom teaching and enhance the competitiveness of schools. As the most flexible part of the entire education system, higher education plays the role of a "leader" in promoting classroom teaching reform, and has achieved more results in practice. In order to better reform classroom teaching in colleges and universities, it is recommended to take measures from four aspects: the country, schools, departments, and teachers. The state should increase investment and continuously improve vocational education policies. Schools should establish an effective incentive system and build high-quality teaching resources. Departments should build a scientific curriculum system and allocate teachers' tasks reasonably. Teachers should improve teaching objectives and enrich teaching content. Innovative teaching methods, multi-dimensional teaching evaluation.

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