Research on the Cultivation Mechanism of "New-Quality" Vocational Talents under the Perspective of Construction-Ism

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Abstract: This paper studies the path of a "new quality" vocational talent training mechanism from the perspective of construction-ism. Firstly, based on the construction-ism theory, the paper applies the literature analysis method to sort out the mechanism of cultivating "new quality" vocational talents and finally obtains 20 key elements. It constructs the structural equation model, determines the mechanism of cultivating "new quality" vocational talents and puts forward the corresponding suggestions. Then, we constructed a structural equation model, determined the mechanism of cultivating "new quality" vocational talents, and put forward corresponding suggestions. The study results show that the teaching evaluation standards of discipline integration, docking with industry and student-oriented, have a significant positive influence on the cultivation of "new-quality" vocational talents. psychological construction, discipline integration, combination of science and practice, and connection with industry have a significant positive influence on the student-oriented teaching evaluation standard. However, the student-oriented teaching evaluation standard has no significant effect on psychological construction, integration of science and practice, and intermediary effect on "new quality" vocational talents. The five dimensions of curriculum ideology, disciplinary integration, practical integration, industry connection, and student-oriented teaching evaluation standards are related to each other. The results of the thesis provide ideas and theoretical research basis for the cultivation of "new-type" vocational talents.

Keywords: "New-Quality" Vocational Talents; Construction-Ism; Cultivation Mechanism; Structural Equation Modeling

1. Introduction

The development of new productivity requires matching high-quality workers, i.e., "new talent," to provide strong intellectual support for industrial development[1].In an important meeting, the "implementation of the strategy of developing the country through science and education and strengthening the support for modernization and human resources construction" was put forward, which not only highlights the fundamental and pioneering position of education in national development, but also further highlights the "new" type of vocational training's importance and urgency.

This strategic plan not only highlights the basic and leading position of education in national development but also further emphasizes the importance and urgency of cultivating "new-quality" professional talents.

In the face of the requirements of the development of new quality productivity, vocational education, as a form of education closely dependent on the development of industry, needs to re-examine its educational mission and functional positioning and actively explore the cultivation path of "new quality" vocational talents[2]. The core of driving productivity lies in innovation. Therefore, the key to cultivating "new quality" vocational talents is to cultivate their innovation ability. Therefore, exploring the cultivation mechanism of "new-quality" vocational talents under the perspective of construction-ism is a key way to promote the cultivation of "new-quality" vocational talents and accelerate the formation of new-quality productivity.

construction-ism was first proposed by the Swiss psychologist Piaget, and then Stenberg,

Vygotsky, and others have enriched and improved the theory of construction-ism. Different from the traditional "teaching-oriented" teaching model, construction-ism is student-centered, emphasizing students' active exploration of knowledge, active discovery, and active construction of the meaning of what they have learned. Based on the six dimensions of knowledge, learning, students, teacher-student relationship, learning environment, and teaching principles of construction-ism theory, this study explores the mechanism of cultivating "new-quality" vocational talents to support the goal of accelerating the development of new-quality productivity.

2. The Basic Logic of Construction-Ism Theory Enabling the Training of "New-Quality" Vocational Talents

Many scholars have proposed the cultivation of new talents from the perspective of promoting the development of new productivity, thus opening up further in-depth exploration of the path of talent cultivation in higher education [3]. It is mentioned that the current education system still has the phenomena of knowledge-based, the teaching content is out of touch with the needs of the society, and the teaching mode is dominated by indoctrination and decontextualization, which is unable to meet the needs of the cultivation of "new quality talents." Then, he further explored the characteristics of "new quality talents," and he believed that "new quality talents," as the most active and vital part of the new quality productivity, need to have technological thinking, composite thinking, and innovative thinking [4]. Xu Fang and others believe that "new quality talent" is in line with the development needs of the new quality of productivity, with professional and technical characteristics of the innovative "tower" talent, which is not only skilled in the use of advanced production tools, mastering interdisciplinary, cutting-edge knowledge structure, showing rapid iteration of knowledge upgrading capabilities, strategic vision, and foresight. They not only can skillfully use advanced production tools, master interdisciplinary, cutting-edge knowledge structure, show rapid iterative upgrading of knowledge, have strategic vision and forward-looking thinking; they can consciously integrate into the torrent of technological change, lead the disruptive innovation breakthroughs and drive the total factor productivity to jump up significantly [5]. The new quality productivity also puts forward new requirements for the "new quality" professional talent training mechanism. First of all, "new quality" professional talents need to have teamwork ability, communication ability, and innovation consciousness; secondly, "new quality" professional talents should have a broader skill structure, as well as a higher level of innovation ability and problem-solving ability to adapt to the needs of modern production; at the same time, "new quality" professional talents should be able to adapt to the needs of modern production. Secondly, "new quality" vocational talents should have a broader and more comprehensive skill structure, as well as a higher level of innovation ability and problem-solving ability to adapt to the needs of modern production; at the same time, "new quality" vocational talents need to have the ability of practical operation and problem-solving ability [6].

By combing through the literature, this paper believes that the core training goal of "new quality" vocational talents is "innovative thinking," specifically, at the level of thinking, having a strategic vision and forward-looking thinking, and consciously integrating into the flood of technological change. In terms of knowledge structure, they should master interdisciplinary, cutting-edge knowledge structures and can rapidly iterate and upgrade knowledge to lead subversive innovation breakthroughs. In terms of practice, proficiency in the use of advanced production tools and a higher level of problem-solving ability.

The core of construction-ism theory is student-centered, emphasizing students' active exploration of knowledge, active discovery, and active construction of the meaning of what they have learned, and covering six dimensions: the view of learning, the view of knowledge, the view of the student, teacher-student relationships, the learning environment, and teaching principles.

The construction-ism view of learning is that learning is not simply transferring but actively constructing. This requires that the cultivation process of "new-quality" vocational talents pay attention to the ideology and politics of the curriculum. First of all, "new quality"

vocational talents should have the mission of "leading scientific and technological innovation and industrial upgrading, and serving the major strategic needs of the country." Secondly, "new quality" vocational talents should look forward to their career vision, clearly define the career field they want to engage in, connect with industrial demand, combine science and reality, and have the vocational quality of continuous learning. Thirdly, "new-quality" vocational talents should have innovative and digital literacy, as well as the ability for cross-border integration, continuous learning, and adaptation to the environment.

The construction-ism view of the student assumes that teachers and students should interact and question each other to understand each other's ideas in the process of exploration. construction-ism teacher-student relationship believes that the role of students is to be active participants in teaching activities and active constructors of knowledge. The process of cultivating "new-quality" vocational talents can be realized through the construction of an interdisciplinary "basic+core+expansion" series of courses, interdisciplinary project-based learning, and interdisciplinary collaboration to achieve disciplinary integration.

The construction-ism view of knowledge is that knowledge cannot exist outside the individual in the form of entities, and true understanding can only be constructed by the learners themselves based on their experience background, depending on the process of learning activities in a particular situation. construction-ism learning environments believe that the context must be conducive to the learner's construction of meaning for what he or she is learning and that the construction of meaning is the ultimate goal of the teaching and learning process. This requires that the training process of "new-quality" vocational talents emphasize the combination of science and reality and the docking industry. When designing theoretical knowledge courses, basic courses, core courses, and extension courses are arranged step by step. In the design of practical courses, core skills courses and comprehensive skills courses are set up. Focus on the integration of industry and education, school-enterprise cooperation, and give play to the role of the teacher-apprentice system both inside and outside the school.

construction-ism teaching principles support the development of students' skills of self-control and becoming independent learners. This requires that the traditional teaching evaluation standard of "teaching based on teaching" should be changed in the process of cultivating "new quality" vocational talents, and the student-oriented teaching evaluation concept and standard should be reconstructed. The student-oriented teaching evaluation standard should explore the path of "new quality" vocational talent cultivation from four aspects: students' participation, learning outcomes, comprehensive quality, and students' feedback.

To summarize, the basic logic of construction-ism theory empowering the cultivation of "new-quality" vocational talents is shown in Figure 1:

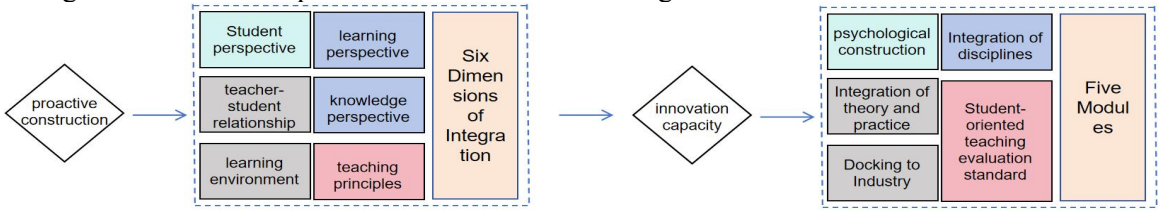

Figure 1. The Basic Logic of Construction-Ism Theory Empowering the Cultivation of "New-Quality" Vocational Talents

3. Identification of Key Elements of "New Quality" Vocational Personnel Training and Research Methodology

3.1 Identification of Cultivation Elements

In the process of exploring the mechanism of cultivating "new-quality" vocational talents, identifying the elements of cultivating "new-quality" vocational talents is the most important.

Innovative Talent Cultivation", 'New Quality Talent,' 'Innovative Talent,' 'Vocational Undergraduate Talent Cultivation' and other aspects of the literature and materials for After sorting out the literature and data on "innovative talents," "new quality talents," "innovative talents," "vocational,

undergraduate talents" and so on, we initially identified the elements of "new quality" vocational talents cultivation and obtained a total of 20 key elements, which were classified and coded into five dimensions, namely, curriculum ideology, disciplinary integration, integration of science and practice, docking industry, and student-oriented teaching and learning evaluation standards (see Table 1).

Table 1. Key Elements of "New Quality" Vocational Personnel Development

dimensions	code	key elements	code
Psychological construction	K	Mission	K1
		Career Vision	K2
		Lifelong Learning	K3
		Creative Thinking	K4
Integration of disciplines	X	Integration of Courses and Certificates	X1
		Interdisciplinary "Basic+Core+Expansion" Series of Courses	X2
		Interdisciplinary project-based learning	X3
		Interdisciplinary Collaboration	X4
Integration of theory and practice	L	Solidly laying the cornerstone of theoretical knowledge	L1
		Strengthening practical skills	L2
		Develop interdisciplinary "core skills + comprehensive skills" series of courses.	L3
		Cultivate vocational skills to meet the needs of the industry	L4
Docking to Industry	C	School-enterprise cooperation	C1
		Integration of industry and education	C2
		Building a competition platform	C3
		Implementing special training programs	C4
Student-oriented teaching evaluation standard	P	Emphasize students' subjectivity and personalized development	P1
		Focus on the cultivation of practical and innovative abilities	P2
		Promote interdisciplinary learning and comprehensive ability	P3
		Establish a diversified teaching evaluation system	P4

3.2 Research Methodology-Structural Equation Model, SEM

Many psychological, educational, and social concepts are difficult to measure directly and accurately, and such variables are called latent variables, such as the mission of this paper, the integration of industry and education, interdisciplinary curriculum, school-enterprise cooperation, etc. Therefore, we can only use some observable indicators to measure these latent variables indirectly. Therefore, we can only use some observable indicators to measure these latent variables indirectly. Traditional statistical methods cannot effectively deal with these latent variables, while Structural Equation Modeling (SEM) can deal with both latent variables and their indicators. In addition, compared to traditional path analysis, Structural Equation Modeling (SEM) can consider and handle multiple dependent variables at the same time. Researchers can consider the direct and indirect effects of different variables at the same time to understand the influence mechanism more comprehensively. Therefore, this paper chooses structural equation modeling to explore the mechanism of cultivating "new-quality" vocational talents.

Structural equation modeling (SEM) consists of a measurement model and a structural model, and the measurement model is the regression equation between latent variables and observed variables, which is used to describe the relationship between latent variables and observed variables. The expression of the measurement model equation is as follows:

$$X = \gamma_1 \eta_1 + \varepsilon_1 \quad (1)$$

$$Y = \gamma_2 \eta_2 + \varepsilon_2 \quad (2)$$

Combining (1) and (2), the summarized structural equations are as follows:

$$\eta = B\eta_1 + A\eta_2 + \delta \quad (3)$$

Where is the matrix of measured variables on and can also be described as exogenous and endogenous observed variables, where and are exogenous and endogenous latent variables, respectively. and is the error term. is the relationship between endogenous latent

variables, is the effect of pairs, and is the residual term of the structural equation [7]. In this study, all the estimation of structural equation modeling will be done through Amos 24.0 software.

3.3 Research Hypothesis and Theoretical Model

3.3.1 research hypothesis

Combined with construction-ism theory, SEM theory, and related literature research, this study sets that the greater the degree of influence of the elements, the more significant its role in promoting the cultivation of "new-quality" vocational talents, with psychological construction, disciplinary integration, combination of science and practice, docking industry, and student-oriented teaching and learning evaluation standards as latent variables, and the key elements corresponding to the dimensions as observational variables. The key elements corresponding to each dimension are observed variables, and the following theoretical hypotheses are proposed.

Hypothesis H1a: Curriculum Civics has a significant positive influence on the cultivation of "new quality" vocational talents.

Hypothesis H1b: Interdisciplinary integration has a significant positive effect on the cultivation of "new quality" vocational talents.

Hypothesis H1c: There is a significant positive effect of the combination of science and reality on the cultivation of "new quality" vocational talents.

Hypothesis H1d: There is a significant positive effect of the docking industry on the cultivation of "new quality" vocational talents.

Hypothesis H1e: There is a significant positive effect of student-oriented teaching evaluation standards on the cultivation of "new quality" vocational talents.

H2a: There is a significant positive effect of curriculum ideology on student-oriented teaching evaluation standards.

H2b: There is a significant positive effect of disciplinary integration on student-oriented teaching evaluation standards.

H2c: There is a significant positive effect of the integration of science and practice on student-oriented teaching evaluation criteria.

H2d: Docking to industry has a significant positive effect on student-oriented teaching evaluation criteria.

H3a: Curriculum Civics and Discipline Integration are related to each other.

H3b: Curriculum Civics and Science and Practice Integration are related to each other.

H3c: The curriculum is interrelated with industry integration.

H3d: The interrelationship between disciplinary integration and the integration of science and reality.

H3e: Interaction between discipline integration and industry interface

H3f: The combination of science and industry is related to each other.

3.3.2 Theoretical model

The theoretical model of "new quality" vocational personnel training mechanism is constructed by Amos 24.0 software as shown in Figure 2:

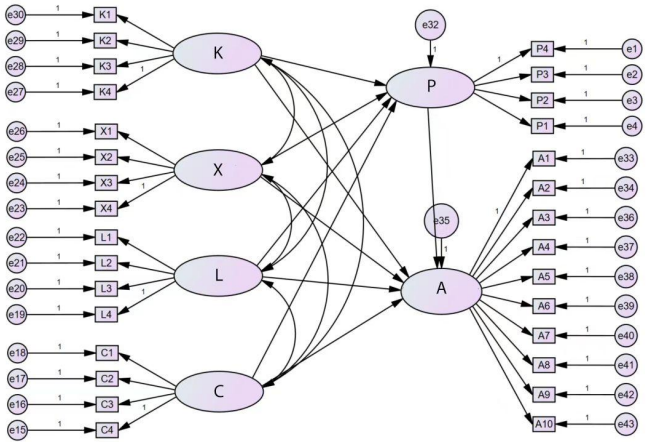

Figure2. Theoretical Hypothesis Model of "New Quality" Vocational Personnel Training Mechanism

In this study, student-oriented teaching evaluation standards and "new quality" vocational talents are considered to be endogenous latent variables, also known as observational variables. Curriculum ideology, discipline integration, science and practice

integration, and industry connection are exogenous latent variables. Endogenous latent variables are realized by exogenous latent variables. In addition, there is a certain causal relationship between the latent variables of "new quality" vocational talents and the latent variables of psychological construction, discipline integration, combination of science and practice, connection with industry, and student-oriented teaching evaluation standards.

4. Analysis of the Mechanism for Training "New-Quality" Vocational Personnel

4.1 Data Sources and Processing

In this study, the questionnaire was designed with the help of a Likert 5-point scale, which consists of a set of statements where 1 means "very poor," 2 means "poor," three means "fair," 4 means "good" and 5 means "very good." 2 for "poor," 3 for "fair," 4 for "good," and 5 for "very good." The total attitude score of each respondent is the sum of the scores obtained from his answers to the questions, and this total score measures the individual's attitudes and perceptions of a particular concept or idea. Therefore, this study is based on the construction-ism theory perspective on the mechanism of cultivating "new quality" vocational talents, and the questionnaire is designed to obtain data through the Likert scale scoring method.

The questionnaire consists of three parts: the first part is the basic information collection of the respondents, which mainly includes the gender, age, educational background, occupational status, and industry of the respondents; the second part is the content of the data scale of "new-quality" vocational talents, which specifies the evaluation standard of "new-quality" vocational talents through 10 questions. The second part is the content of the "new type" professional talent evaluation data scale. They are "curiosity," "independent problem-solving ability," "unique learning method," "hardworking and diligent," "specialized knowledge," "professionalism," "professionalism," "professionalism," "professionalism," "professionalism," "professionalism," "professionalism" and "professionalism." "Professional knowledge," 'Integration of theory and practice,' 'Effective communication and expression,' 'Confidence and determination,' 'Self-confidence,' 'Self-confidence,' 'Self-confidence,' 'Self-confidence,' 'Self-confidence' and 'Self-confidence.' Firmness", 'good at finding problems that others tend to ignore,' 'breaking the inherent thinking pattern' [8]. The third part is the key elements of "new quality" vocational talents training. Based on the key elements identified in section 3.1 of this paper, there are five dimensions affecting the cultivation of innovative talents, and each dimension corresponds to four variables.

The questionnaire of this study has a total of 35 items, among which there are 30 variables, including 10 items for judging the "new quality" vocational talents and four items for each of the five dimensions of psychological construction, discipline integration, science and practice integration, docking to the industry, and student-oriented teaching and evaluation standards. The questionnaires were distributed online using Questionstar software, and to improve the accuracy and authenticity of this survey, the target respondents of this survey were teachers, master's degree students, doctoral degree students in higher education institutions, as well as those who graduated from colleges and universities and took up their jobs, and a total of 320 questionnaires were distributed, and 306 questionnaires were recovered. The recovery rate is 95.625%, which meets the requirement of questionnaire recovery. SPSS26.0 was used to test the reliability of the collected questionnaires, and AMOS software was used to establish structural equation modeling for modeling analysis to derive the key elements of the training of "new-quality" vocational talents.

4.1.1 Questionnaire data reliability and validity test

To test whether there is a strong correlation between the original variables, it is necessary to test the reliability and validity of the questionnaire data in the first place. SPSS provides several tests in factor analysis: the article will choose the Alpha reliability coefficient, KMO sampling appropriateness test, and Bartlett's spherical test to test the reliability and validity.

To determine whether the observed variables are objective and stable enough to characterize the latent variables, the internal consistency of the multidimensional scales can be tested by

using Cronbach's coefficient method[9]. SPSS26.0 was used to analyze the data, and Cronbach's coefficient was obtained as 0.917, which indicated that the sample data met the reliability requirements. The KMO test value of the research data is 0.914, which is greater than 0.9, indicating that it is very suitable for factor analysis. The significance p-value of Bartlett's spherical test is less than 0.05, which presents significance at the level of 0.05, so the original hypothesis is rejected, indicating that the questionnaire design is valid. The specific results are shown in Table 2.

4.1.2 Test of normality of questionnaire data

When conducting structural equation modeling, we will use the great likelihood method for factor analysis. Thus, it is necessary to test whether the questionnaire meets the normal distribution. This study uses SPSS26.0 to test normality; the test results are shown in Table 3. The absolute value of the skewness coefficient is less than the standard value of 3, and the absolute value of the kurtosis coefficient is less than the standard value of 10, which indicates that the questionnaire data meets the normal distribution, and the model can be analyzed by the factor analysis using the great likelihood value.

Table 2. Reliability and Validity Tests

Inspection Indicators	value
Cronbach's Alpha	0.917
KMO Sampling Suitability Quantity	0.914
Bartlett's test of sphericity approximation chi-square	5556.218
df	595
Sig.	0

Table 3. Results of Normality Test

Factor	Mean	S.M.	Deviation		Skewness Kurtosis	
			Statistics	Standard Error	Statistics	Standard Error
K1	2.06	1.09	0.992	0.139	0.515	0.278
K2	2.03	1.069	1.124	0.139	0.894	0.278
K3	2.04	1.05	1.128	0.139	0.966	0.278
X4	2	1.073	1.068	0.139	0.661	0.278
X1	2.43	1.274	0.643	0.139	-0.606	0.278
X2	2.49	1.263	0.607	0.139	-0.629	0.278
L1	2.33	1.288	0.794	0.139	-0.423	0.278
L2	2.45	1.343	0.683	0.139	-0.691	0.278
L3	2.3	1.199	0.854	0.139	-0.078	0.278
L4	2.19	1.189	0.89	0.139	-0.107	0.278
X3	2.32	1.26	0.75	0.139	-0.415	0.278
X4	2.27	1.207	0.848	0.139	-0.143	0.278
C1	2.17	1.142	0.919	0.139	0.154	0.278
C2	2.25	1.155	0.852	0.139	0.008	0.278
C3	2.2	1.207	0.969	0.139	0.104	0.278
C4	2.25	1.232	0.891	0.139	-0.136	0.278
P1	2.13	1.202	0.932	0.139	0.006	0.278
P2	2.21	1.182	0.83	0.139	-0.15	0.278
P3	2.15	1.159	0.93	0.139	0.092	0.278
P4	2.24	1.201	0.893	0.139	0.047	0.278

4.2 Structural Equation Model Fitting and Testing

4.2.1 Overall Fit Evaluation

The questionnaire data that passed the reliability and validity test were imported into the initial structural equation model constructed through Amos24.0 software, and the maximum likelihood method was chosen to run the standardized model (see Figure 3). The latent variables constitute the structural model, and the values of the links between the latent variables are the standardized path coefficients; the observed variables constitute the observed model, and the values of the links between the observed variables and the exogenous latent variables are the standardized factor loadings. The error term (e1-e40) represents the measurement error of the corresponding variable.

The fitness of the path analysis model assumed in the model to the data is assessed based on the model output and the discriminatory criteria of the fit metrics. Commonly used

metrics to assess the fitness of SEM include the chi-square degrees of freedom ratio (X2/df), goodness-of-fit index (GFI), modified goodness-of-fit index (AGFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). According to Table 4, it can be seen that all the fit indices are within the fit criteria, the modified goodness-of-fit index is acceptable, and the rest of the indices reach the degree of goodness of fit, which indicates that the model is well-fitted and does not need to be corrected [10].

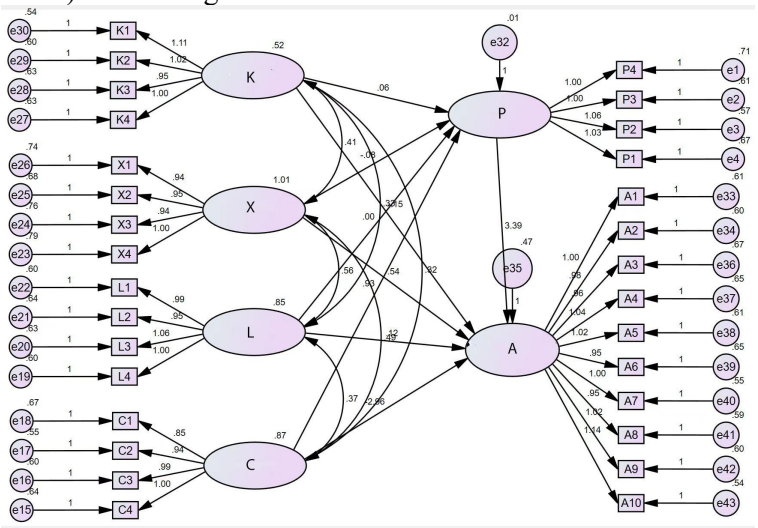

Figure3. Standardized Model Diagram

Table 4. Overall Fit Coefficients

Fit Index		X^2/df	GFI	AGFI	CFI	RMSEA
Initial model fit value		1.286	0.904	0.885	0.904	0.031
Fit Criteria	Acceptable	3.0-5.0	0.7-0.9	0.7-0.9	0.7-0.9	0.08-0.1
	Excellent	<3.0	>0.9	>0.9	>0.9	<0.08

4.3 Hypothesis Testing and Analysis of Model Results

4.3.1 Hypothesis Testing

According to the hypothesis H1a-H3f of the path between latent variables, it is known that there is a mediating effect in the model (see Table 5). Curriculum Civics → student-oriented teaching evaluation standard → "new quality type" vocational talents, subject intermingling → student-oriented teaching evaluation standard → "new quality type" vocational talents, combination of science and reality → student-oriented teaching evaluation standard → "New-quality" vocational talents, docking industry → student-oriented teaching evaluation standard → 'new-quality' vocational talents. Therefore, this study adopts Hayes (HayesAF. Beyond Baronand Kenny, 2009) Bootstrap method to conduct the mediation effect test. The number of Bootstrap is set to 5000 and the confidence level is 95%. By using the bias-corrected (Bias-corrected) method to test the mediation effect, such as the direct effect in the two estimation methods and the confidence interval in the indirect effect do not contain 0, there is an indirect effect, the hypothesis is established; according to Table 6, the standardized coefficients of the paths were obtained, and the path hypotheses H1a-H3f were determined based on the level of significance p, where p<0.05, the hypothesis is is established.

Table 5. Mediating Effects Calibration Results

Hypothetical	Effect	SE	S.E.	significance level	Bias-corrected		Test result
				P Value(*)	95% confidence level		
					upper limit	lower limit	
Curricular Civics→ Student-oriented Teaching Evaluation Criteria→ "Newly Qualified" Vocational Talents	Total effect	0.032	0.089	0.705	-0.132	0.223	Reject
	Indirect effect	0.154	0.215	0.015	-0.017	0	
	Direct effect	-0.123	0.23	0.102	-2.165	0.038	
Integration of disciplines → student-centered teaching	Total effect	0.318	0.116	0.011	0.074	0.533	Accept
	Indirect	0.299	0.303	0.003	0.001	0.067	

evaluation standards → "new quality" vocational personnel	effect						
	Direct effect	0.019	0.322	0	0.39	0.578	
Integration of science and practice → student-oriented teaching evaluation standard → "new quality" vocational talents	Total effect	0.113	0.092	0.186	-0.057	0.302	Reject
	Indirect effect	0.124	0.196	0.491	-1.019	0.107	
	Direct effect	-0.011	0.209	0.244	-0.154	0.74	
Industry-aligned → student-centered teaching evaluation standards → "new quality" vocational personnel	Total effect	3.325	0.088	0.028	0.019	0.365	Accept
	Indirect effect	0.205	2.477	0	1.085	1.989	
	Direct effect	3.12	2.489	0.003	0.004	0.855	

Table 6. Results of Hypothesis Testing

Hypothetical	(SE)	P value(*)	Test result
H1a	-0.123	0.102	Reject
H1b	0.019	***	Accept
H1c	-0.011	0.244	Reject
H1d	3.12	0.003	Accept
H1e	3.261	0.001	Accept
H2a	***	***	Accept
H2b	***	***	Accept
H2c	***	***	Accept
H2d	***	***	Accept
H3a	0.407	***	Accept
H3b	0.33	***	Accept
H3c	0.322	***	Accept
H3d	0.565	***	Accept
H3e	0.492	***	Accept
H3f	0.366	***	Accept

Note: * is 0.000**

4.3.2 Analysis of model results

Observing the test results in Table 5, it can be seen that (1) the student-oriented teaching evaluation standard has a significant mediating effect in the intersection of disciplines and "new-quality" vocational talents, and the confidence interval of the total effect (0.074.0.533) does not contain 0, the confidence interval of the indirect effect (0.001.0.067) does not contain 0, and the direct effect (0.390.0.578) does not contain 0. The student-oriented teaching evaluation standard has a significant mediating effect on the industry interface and "new-quality" vocational talents. The confidence interval (0.390.0.578) does not include 0. The student-oriented teaching evaluation standard has a significant effect on the mediation of industry-aligned and "new-quality" vocational talents, and the confidence interval (0.019.0.365) does not include 0 for the total effect, and the confidence interval (1.085.1.989) does not include 0 for the indirect effect, and the direct effect (0.074.0.533) does not include 0, and the indirect effect (0.001.0.067) does not include 0, and the direct effect (0.001.0.067) does not include 0. The direct effect confidence interval (0.004.0.855) does not include 0. (2) The role of student-oriented teaching evaluation standard in the mediation of curriculum politics and "new quality" vocational talents is not significant, the total effect confidence interval (-0.132.0.223) includes 0, the indirect effect confidence interval (-0.017. 0.000) includes 0, the indirect effect confidence interval (-0.017. 0.000) includes 0, and the total effect confidence interval (-0.017. 0.000) includes 0. The total effect confidence interval (-0.132.0.223) contains 0, the indirect effect confidence interval (-0.017.0.000) contains 0, and the direct effect confidence interval (-2.165.0.038) contains 0. The student-centered teaching and learning evaluation criteria are not significant in the integration of science and reality, and the "new-quality" vocational personnel and the total effect confidence interval (-0.057.0.302) contains 0, and the indirect effect confidence interval (-1.019.0.107.0.302) contains 0. 1.019.0.107) contains 0, and the direct effect confidence interval (-0.154.0.740) contains 0.

Observing the test results in Table 6, it can be seen that (1) the significance levels of the teaching evaluation standards of subject integration, docking industry, and student-oriented teaching on the cultivation of "new quality" vocational talents are 0.000, 0.003, and 0.001, and the P-value is less than 0.05, indicating that the teaching evaluation standards of subject integration, docking industry, and student-oriented teaching have a significant influence on the cultivation of "new quality" vocational talents and that the P-value of the teaching evaluation standards of "new quality" vocational talents is less than 0.05. Evaluation standards have a significant positive effect on the cultivation of "new quality" vocational talents. On the other hand, the significance levels of curriculum politics and science and practice on the cultivation of

"new quality" vocational talents are 0.102 and 0.224, with P-values greater than 0.05, indicating that there is no significant positive influence of curriculum politics and science and practice on the cultivation of "new quality" vocational talents. Positive influence. (2) The significance levels of psychological construction, discipline integration, rationality and practicality integration, and docking industry on student-oriented teaching evaluation standard are all 0.000, and the p-values are all less than 0.05, indicating that psychological construction, discipline integration, rationality and practicality integration, and docking industry have a significant positive influence on student-oriented teaching evaluation standard. (3) Similarly, according to the P-value of less than 0.05 that is judged to pass the test, the results show that the curriculum civics and discipline integration, the combination of science and reality, and the docking industry are related to each other, the integration of disciplines and the combination of science and reality, docking industry are related to each other, and the combination of science and reality is related to docking industry are related to each other.

5. Conclusions and Recommendations

5.1 Conclusions

This paper creatively screens the key elements of "new-quality" vocational talents cultivation based on construction-ism theory, constructs structural equation model from five dimensions of psychological construction, discipline integration, combination of science and practice, docking to industry and student-oriented teaching evaluation standard, and at the same time, takes student-oriented teaching evaluation standard as a mediator to explore its mediating effect in the process of "new-quality" vocational talents cultivation. At the same time, the student-oriented teaching evaluation standard is used as a mediating variable to explore its mediating effect in the process of cultivating "new-quality" vocational talents. The empirical evidence shows that discipline integration, docking industry, and student-oriented teaching evaluation standards have a significant positive effect on the cultivation of "new-quality" vocational talents. Curriculum ideology, discipline integration, science and practice integration, and connecting with industry have a significant positive effect on the student-oriented teaching evaluation standard. However, the student-oriented teaching evaluation standard has no significant effect on psychological construction, integration of science and practice, and intermediary effect on "new quality" vocational talents. The five dimensions of curriculum ideology, disciplinary integration, practical integration, industry connection, and student-centered teaching evaluation criteria are related to each other.

5.2 Recommendations

(1) Dimension of disciplinary integration: Through the construction of an interdisciplinary "basic + core + extension" series of courses and the "integration of courses and certificates," the vocational skills level certificate is integrated with the curriculum system. Through interdisciplinary project-based learning, i.e., creative integration of core knowledge and competencies from different disciplines, students can improve their ability to solve real and complex problems. Through interdisciplinary collaboration, students can be exposed to more diversified knowledge and perspectives, thus broadening their horizons and stimulating their innovative abilities.

(2) Docking Industry Dimension: To enhance students' innovative and hands-on abilities through the joint construction of training bases, joint development of curricula, and internship training. Through the alternation of work and study and order-type cultivation, the actual needs of enterprises are integrated into education and teaching to cultivate "new-quality" vocational talents more in line with the market demand. Through the competition platform, we can stimulate the innovation potential of students and improve their professional skills and teamwork ability, thus promoting industrial development and innovation. Specialized training programs, including online courses, workshops, seminars, etc., are designed to rapidly improve students' professionalism and practical ability to promote industrial development and innovation, thus driving the cultivation of "new quality" vocational talents.

(3) Dimensions of student-oriented teaching evaluation criteria: Respecting students'

differences and encouraging students to make their own choices; focusing on process evaluation, emphasizing practical teaching and helping students to apply theoretical knowledge to practical situations; encouraging students to make their own choices and to come up with innovative ideas and solutions. Students are encouraged to cross disciplinary boundaries and engage in interdisciplinary learning and research; through comprehensive learning tasks and projects, students can exercise their communication skills, teamwork, leadership, and other comprehensive skills. e to practical situations, encouraging students to make their own choices and to come up with innovative ideas and solutions. Students are encouraged to cross disciplinary boundaries and engage in interdisciplinary learning and research; through comprehensive learning tasks and projects, students can exercise their communication skills, teamwork, leadership, and other comprehensive skills.

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References

[1] Zhu Zhiting, Li Tianyu, Zhang Yi. Developing new quality education: a new way forward for the transformation of basic education into digital intelligence. Modern Distance Education Research, 2024, 36(04):3-13+30.

[2] Weng Zhibing, Tian Miao. Challenges and Practical Paths of Higher Vocational Education in the Context of New Quality Productivity. Education y and Career, 2024, (18):102-106.

[3] Zhu Zhiting, Dai Ling, Zhao Xiaowei, et al. Cultivation of new quality talents: a new mission of education in the age of digital intelligence. Research on Electrochemical Education, 2024, 45(01):52-60.

[4] Zhu Zhiting, Dai Ling. Integration and Innovation: New Qualitative Development of Higher Education Empowered by Digital and Intelligent Technologies. Open Education Research, 2024, 30(03):4-14.

[5] Xu Fang, Li Bingyuan. Theoretical Logic and Practical Path of New Quality Talents Empowering New Quality Productivity. Population and Economy, 2024, (04):1-6+18.

[6] WANG Guihu, GUO Changyi. Vocational Education Technical Skill Talent Cultivation Mode Driven by New Quality Productivity. Modern Vocational Education, 2024, (25):61-64.

[7] LIU Xiaoyan, MAO Donglei, YAO Luchen, et al. Characterization of spatial and temporal dynamics of Chaiwoubao Lake area and analysis of influencing factors based on SEM model. Journal of Ecology and Environment, 1-9[2025-01-11].

[8] Zhu Lianbo, Han Jiahong, Tao Yu. Research on the driving mechanism of zero-carbon community construction under the perspective of residents' participation - based on structural equation modeling. Practice and Understanding of Mathematics, 1-13[2025-01-11].

[9] Zheng Yan, Xu Jian, Yue Xingtai, et al. Research on influencing factors of innovative talents cultivation based on structural equation modeling. Western Quality Education, 2024, 10(05):9-13.

[10] PAN Haize, LI Gen, CHEN Yixi, et al. Research on key influencing factors of safety vulnerability of metro shield tunnel construction based on SEM-IPA. Tunnel Construction (in Chinese and English), 2023, 43(06):936-947.

