Constructing The "Five in One" Talent Training Mode Based on Digitalization

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Abstract

The deep integration of digitalization and education is the inevitable trend of educational development. Under the influence of the digital wave, the talent training mode of higher vocational education is facing great challenges, and it is urgent to carry out the digital transformation of education. The construction of digital talent training mode is the only way to deepen the reform of teaching mode and improve the quality of talent training. This paper analyzes the current situation of talent training mode, constructs a talent training quality model by using analytic hierarchy process, quantitatively analyzes the influencing factors of talent training quality, and constructs a five in one talent training mode based on digitalization, which is "value guidance, cultural inheritance, knowledge impartment, skill training and quality cultivation", in order to provide reference for improving the quality of talent training and promoting the digital transformation of higher vocational education.

Keywords: *Digitalization, Five-in-one, Analytic hierarchy process, Talent cultivating mode.*

1 INTRODUCTION

With the in-depth development of a new round of scientific and technological revolution and industrial revolution, the role of digitalization and intelligence in enabling economic and social development has become prominent. The development of digital technology, digital elements, digital thinking and digital cognition marks that human beings have entered the era of digital existence.

Vocational education is the closest to the industry. It has received the greatest impact in the digital age, and the benefits it has obtained in the digital transformation are bound to be the most significant. Vocational education should accurately recognize changes, make scientific changes and take the initiative to seek changes. With the help of digital thinking and methods, it should promote the deep integration of digital technology and education, and actively explore a new mode of talent training.

We should accelerate the progress of digital vocational education, give full play to the amplification, superposition and multiplication of digital technology on the high-quality development of vocational education, and reshape the new ecology of vocational education with the new results of digital transformation.

The national "fourteenth five year plan" clearly puts forward that to enhance the adaptability of vocational education, we must take the digital transformation as the endogenous force of the overall and systematic reform of vocational education, and cultivate high-tech skilled talents with digital literacy and ability. Therefore, it is necessary to build a talent training quality evaluation system oriented by learners' core literacy.

2. CURRENT SITUATION OF TALENT TRAINING MODE UNDER THE DIGITAL BACKGROUND

At present, the application of digitalization in education has been well promoted and popularized in course construction and online and offline combined teaching, which has realized the flexibility and diversity of teaching modes and improved the teaching quality. However, there are also the following deficiencies: the digitalized teaching resource database still lacks the ability of efficient interaction and sharing, and the phenomenon of "information island" is serious; The information standards and technical standards are not unified, the system is chaotic, and there is a lack of overall planning and top-level design [1]; Teachers' digital teaching ability is insufficient, and their digital application level is low.

Although digitalization has been applied in teaching to a certain extent, it has not been fully extended to the whole process of talent training. At present, digitalization is mainly applied to the knowledge objectives of talent training, and has achieved good results. However, it is less applied to the cultivation of ability objectives and quality objectives, or it has not attracted enough attention.

At present, there are still the following main problems in the quality of Higher Vocational Talents Training: influenced by market economy, society and network, students' core values are missing; Influenced by western thoughts and lack of knowledge of excellent traditional culture, students are not confident in culture; Influenced by the teaching mode, teachers' teaching ability and teaching conditions, students' professional knowledge and professional skills are not strong; Influenced by the traditional education mode, students' comprehensive quality is not high.

In the digital age, how to use digital technology to reform the talent training mode and improve the quality of talent training is the purpose of this paper. By analyzing the main problems existing in the quality of talent training at present, this paper constructs a five in one talent training mode based on digitalization, which is "value guidance, cultural inheritance, knowledge transfer, skill training and quality cultivation", and reconstructs the concept and ideas of talent training.

3. ANALYSIS ON THE INFLUENCING FACTORS OF TALENT TRAINING QUALITY

3.1 Construction of Talent Training Quality Model

The traditional evaluation of talent training quality mostly adopts summative evaluation, mainly qualitative evaluation, which is subjective and ignores the role of quantitative evaluation. The evaluation subject is single, which can not meet the requirements of diversification. Therefore, it is necessary to establish three-dimensional and multi-dimensional evaluation indicators, form intelligent and model evaluation methods, and make the evaluation of talent training quality more objective.

The analytic hierarchy process (AHP) used in this paper is a comprehensive evaluation method of system analysis and decision-making, which can reasonably solve the qualitative and quantitative problems, and improve the effectiveness, reliability and feasibility of decision-making.

By analyzing the main influencing factors of talent training quality, this paper establishes a five in one talent training quality evaluation index system, as shown in Table 1.

Table 1: Talent training quality evaluation index system

Target layer A	Primary index B	Secondary index C
Five in one talent training model A	Value guidance B1	Network culture C11
		Curriculum ideology and Politics C12
		Campus culture C13
	Cultural inheritance B2	Teaching form C21
		Curriculum system C22
		Social practice C23
	Knowledge impartment B3	Content of courses C31
		Teachers' teaching ability C32
		Teaching method C33
		Curriculum evaluation model C34
	Skill training B4	Training conditions C41
		Practical teaching link C42
		School enterprise cooperation C43
	Quality cultivation B5	Teacher talent view C51
		Creative spirit C52
		Humanistic quality C53

3.2 Determination of Weight Value of Talent Training Mode

Based on the hierarchical structure of indicators and Saaty's nine scale method, through consulting experts and questionnaires, through analysis and unification, the corresponding judgment matrix is established, and then the geometric average method is used for data analysis and weight calculation [4]. The calculation process is as follows:

First, multiply each row of the element a_{ij} in the judgment matrix A and find the root to the nth power:

$$V_i^0 = \sqrt[n]{\prod_{j=1}^{n} a_{ij}} \text{ , among i=1, 2, ..., n.}$$

Secondly, V_i^0 is normalized to obtain: $V_i = \dfrac{V_i^0}{\sum_{i=1}^{n} V_i^0}$

So we can get the eigenvector:

$$W=(V_1, V_2, ..., V_n)^T.$$

Finally, the maximum eigenvalue of eigenvector W is obtained:

$$\lambda_{max} = \frac{1}{n} \sum_i \left(\frac{(AW)_i}{V_i} \right).$$

Consistency ratio:

$$C.R. = \frac{C.I.}{R.I.} = \frac{\lambda_{max} - n}{(n-1)R.I.} \text{ ,wherein, R.I. represents}$$

the average random consistency test index, when n=3, take 0.58; when n=4, take 0.9; when n=5, take 1.12.

Generally, when C.R. < 0.1, it is considered that the inconsistency degree of matrix A is within the allowable range, and its normalized eigenvector can be used as the weight vector.

Table 2 shows the judgment matrix and weight calculation of level-1 indicator B on target layer A.

Table 2: Judgment matrix about B_i to A

A	B1	B2	B3	B4	B5	Weight
B1	1	3	3	2	1	0.313
B2	1/3	1	1/4	1/4	1/5	0.059
B3	1/3	4	1	1	2	0.213
B4	1/2	4	1	1	2	0.231
B5	1	5	1/2	1/2	1	0.184

Note: λ_{max}=5.416; C.R.=0.093

Table 3, 4, 5, 6 and 7 respectively show the pairwise comparison judgment matrix and weight of the relative importance of each factor of the secondary index to the primary index.

Table 3: Judgment matrix about C_{1i} to B1

B1	C11	C12	C13	Weight
C11	1	3	5	0.626
C12	1/3	1	4	0.28
C13	1/5	1/4	1	0.094

Note: λ_{max}=3.086; C.R.=0.082

Table 4: Judgment matrix about C_{2i} to B2

B2	C21	C22	C23	Weight
C21	1	3	3	0.594
C22	1/3	1	2	0.249
C23	1/3	1/2	1	0.157

Note: λ_{max}=3.053; C.R.=0.051

Table 5: Judgment matrix about C_{3i} to B3

B3	C31	C32	C33	C34	Weight
C31	1	4	2	5	0.51
C32	1/4	1	1	2	0.17
C33	1/2	1	1	4	0.24
C34	1/5	1/2	1/4	1	0.08

Note: λ_{max}=4.088; C.R.=0.033

Table 6: Judgment matrix about C_{4i} to B4

B4	C41	C42	C43	Weight
C41	1	3	4	0.63
C42	1/3	1	1/2	0.152
C43	1/4	2	1	0.218

Note: λ_{max}=3.1; C.R.=0.096

Table 7: Judgment matrix about C_{5i} to B5

B5	C51	C52	C53	Weight
C51	1	1	1/2	0.24
C52	1	1	1/3	0.21
C53	2	3	1	0.55

Note: λ_{max}=3.02; C.R.=0.02

In the above tables, the calculated consistency ratio C.R. is less than 0.1, indicating that all judgment matrices have passed the consistency test.

The specific steps to determine the weight of the index system by using the analytic hierarchy process are shown in Figure 1.
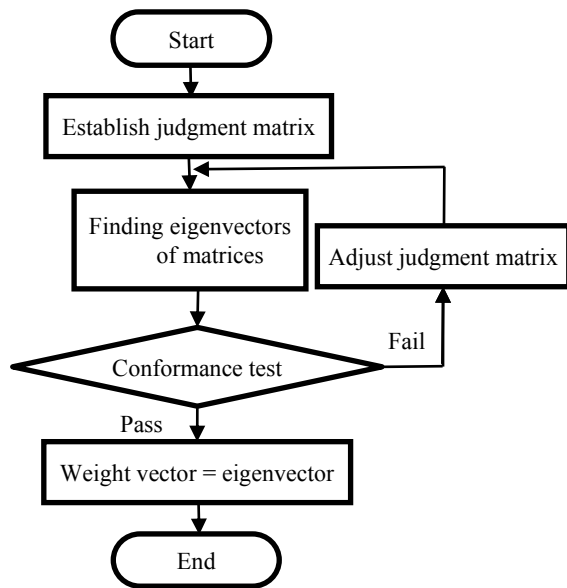
Figure 1: Specific steps of AHP to calculate the index weight

The above calculation process can be realized by MATLAB programming. Taking table 7 as an example, the matlab program is as follows:

```
A=[1 1 1/2;1 1 1/3;2 3 1]
a=eig(A)
[X,D]=eig(A)
a1=a(1,:)
a2=X(:,1)
a3=ones (1, 3)
a4=a3*a2
w=1/a4*a2
ci=(a1-3)/2
cr=ci/0.58
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In the above procedure, a1 represents the maximum eigenvalue, w represents the eigenvector, and cr represents the consistency ratio.

3.3 Conclusion Analysis of Talent Training Mode

From the weight calculated above, it can be seen that: compared with the target level, the ideological and moral level of college students has the greatest impact on the quality of talent training; From the secondary indicators to the primary indicators, network culture has the greatest impact on College Students' ideology and morality; The teaching form has the greatest influence on cultural inheritance; The teaching content has the greatest influence on knowledge transfer; Training conditions have the greatest impact on skill training; Humanistic quality has the greatest impact on the comprehensive quality of college students.

After calculating the relative importance of the factors at the same level, the comprehensive importance of the factors at each level to the overall goal can be obtained through further calculation. After calculation, the influence of network culture, training conditions and teaching content on talent training quality ranks in the top three respectively, as shown in Figure 2.
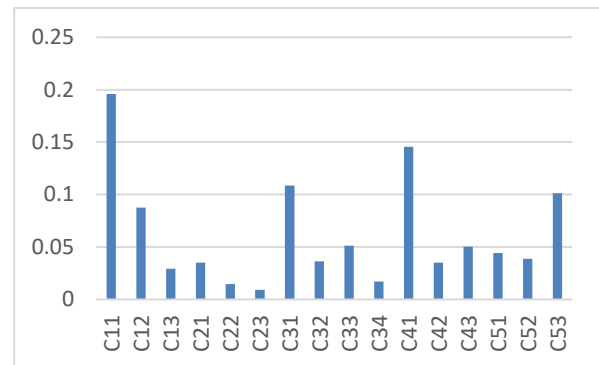

Figure 2: Histogram of comprehensive weight of secondary indicators on target layer

4   WAYS TO REFORM THE MODE OF TALENT TRAINING

4.1 Strengthen the Construction of Value Leading Project

Digital existence has a far-reaching impact on the generation of contemporary college students' values. We should adhere to the value education with digital consciousness, use digital means, and explore personalized education methods. We should strengthen the supervision of digital information, adhere to digital maintenance, and create a safe and open education environment. We should take the construction of values as the focus of the construction of campus culture and strengthen the construction of moral laws and regulations for digital survival. As the main position of values education, the classroom should enrich the teaching contents and means, and create a healthy and upward educational environment [3].

4.2 Promoting Cultural Inheritance Education

Digitalization will give new vitality to traditional culture. To carry forward Chinese traditional culture in a digitalized way, innovation is the key. It is necessary to refine the modern core of traditional culture and find an experience method that meets the needs of modern young people. By integrating digital technology into traditional culture, traditional culture can be more widely spread and promoted. It is necessary to enrich teaching forms, implement virtual education of culture by using multimedia technology, digital display technology, virtual reality VR technology, etc., so that college students can understand the truth and integrate knowledge with practice in a pleasant experience.

4.3 Innovative Teaching Mode

4.3.1 Using Modern Information Technology to Digitize the Curriculum

We should reconstruct the teaching content, construct the digital teaching resource database and use platform, optimize and integrate the teaching resources, and realize the sharing and co construction of resources. We should carry out digital construction of teaching content and mode, and promote digital teaching. Digital teaching is conducive to optimizing the teaching structure of the course, breaking through the boundaries of time and space, realizing the two-way communication between teachers and students in real time, enabling students to truly participate in the teaching process, and highlighting the dominant position of students in the classroom.

4.3.2 Improving Teachers' Digital Teaching Ability

At present, the biggest pain point of digital education is still the lack of teachers' ability. Teachers should be the promoters of digital teaching reform and the excavators of digital teaching value. We must establish the concept of digital teaching among teachers, and then change the traditional classroom teaching mode by improving teachers' ability to apply digital technology. We should firmly grasp the teaching direction of "digital + teaching", accelerate the digital transformation of teachers, and realize the transformation from traditional experience teaching to data-based precision teaching.

4.3.3 Innovative Teaching Methods

Digital teaching methods such as inquiry, experience and cooperation can change students' passive learning attitude, give play to students' dominant position, and stimulate their learning enthusiasm and creativity. The task of teachers is to build the whole classroom into a student-centered "service-oriented" classroom, so that students can realize that learning is their own thing, and teachers can get a sense of achievement in the process of students' learning.

4.3.4 Implement Diversified and Differentiated Curriculum Evaluation Model

Teachers should make use of digital technology to reform the course evaluation mode, formulate data collection standards, improve the all-round data collection in the whole process of students' learning, formulate diversified and differentiated evaluation systems and standards, optimize the combination of data-based evaluation methods, form a close combination of learning process and evaluation process, and complete the evaluation in the process of students' learning.

4.4 Strengthen the Training of Vocational Skills

The school should strengthen the construction of information-based, professional and immersive training teaching environment, enhance the application of virtual simulation technology in training, and provide material guarantee for the training of high-quality technical and skilled talents. We will deepen cooperation between schools and enterprises to jointly educate people, undertake social projects, test students' ability to apply professional knowledge and improve teachers' and students' ability to provide social services.

4.5 Cultivate Comprehensive Quality

It is necessary to cultivate and inherit the spirit of craftsman, and improve professional core competence and humanistic quality. In the digital age, it is necessary to cultivate students' ability of data analysis and resource linking and integration [2]. We should take the cultivation of innovative spirit and practical ability as the core content of quality education. We should cultivate students' artistic accomplishment and labor skills, improve students' personality, cultivate students' concept of lifelong learning, and lay the foundation for sustainable development.

5 CONCLUSIONS

The digital transformation of talent training mode in higher education is the inevitable requirement of the development of the new era and an important guarantee for the sustainable and ecological development of higher education. We must seize the opportunities and face the challenges to prepare for educational reform and innovation. This paper puts forward a five in one talent training mode based on "value guidance, cultural inheritance, knowledge teaching, skill training and quality cultivation" under the digital background, and puts forward the concept and ideas of talent training from a new perspective. Through the synergy of the five in one elements, the talent training objectives of higher vocational education can be effectively realized.

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