Evaluation of Teachers' Educational Technology Ability in Higher Vocational Schools Based on Student Satisfaction

Junguo Wang\textsuperscript{1,a}, Baoxiang Li\textsuperscript{2,b}, Hongbo Deng\textsuperscript{1,a} and Demei Sun\textsuperscript{2,b}

\textsuperscript{1}Guangdong industry and commerce college, Guangdong Zhaoqing 526000, China
\textsuperscript{2}Harbin Engineering University, Heilongjiang Harbin 150001, China
\textsuperscript{a}13036106410@163.com, \textsuperscript{b}sundemi2005@163.com

Keywords: Educational Technology Capability; Information Age; Group Decision Feature Root Law; Countermeasure

Abstract. On the basis of the relevant definition and content description of educational technology ability, an evaluation index system of influencing factors of teachers' educational technology ability in higher vocational school is established from the perspective of student education satisfaction. The weight of the index is calculated. On this basis, I pointed out in the information age of higher vocational school teachers to enhance the educational technology.

1. Introduction

In a sense, education is a process of disseminating information. In the era, knowledge and information mainly through the ear and printed products to spread, with the development of science and technology, the information dissemination has to diversify and facilitate; at the same time the education began to continue find new information communication tool from science and technology. In the early stage of information technology and education combination, education information and education technology has been get great attention form the education sector. In order to face the society the point of informational, education informational technology has become an important symbol of education in the world of modernization. As the enabler and practitioner of this educational change, teachers' training and improvement of their own educational technology skills are of vital importance. In particular, the popularization of micro-class has put some new questions to teacher education technology. However, the students' evaluation of teacher education technology is more direct to this question. Therefore, how to cultivate and improve teachers' educational technology ability has become one of the most pressing problems faced by all countries in education reform and implementation of the strategy of rejuvenating the country through science and technology.

From the point of teachers professional development, it is not only an requirement of teachers' professional development, but also an important aspect of teachers' pre-service education in the face of increasing demands of students .In the informational age, the core issue of teachers has been changed, which not only requires teachers to keep up with the information age, but also to learn the ways and methods that information age education to meet the requirements of students. Therefore, from the student satisfaction, it is very important to evaluate the satisfaction of teachers' educational technology in higher vocational schools.

2. The meaning of educational technology ability

The term "educational technology" was first proposed by the American Council on Education and Technology in 1970. In 1994, the American Association for the Advancement of Education and Technology (AECT) defined it as: the design, development, use, management and evaluation of learning processes and learning resources. The definition of education technology is an organic combination of theory and practice. In 2005, the American Association for the Advancement of Education and Technology (AECT) defined it as "education technology" to promote learning
through the creation, use and management of appropriate technologies and resources. Improve performance research and practice in line with professional ethics. The definition points out in the context of the new era that educational technology is not just about the technology in education, but also in relation to the ethical norms of education.

It is not only helpful to grasp the basic direction and basic frame of teacher education technology ability, but also provide the basis and reference standard for the role orientation of teachers in information environment. This has played a lot of positive impetus to the advantages of educational technology disciplines, to promote the rapid upgrading of teachers' educational technology ability, to accelerate teachers' adaptation to education information environment and to improve students' educational satisfaction in information society.

3. Construction of Evaluation Index System of Teachers' Educational Technology Ability in Higher Vocational

The core of the school organization is the students, in the information age, vocational school teachers, the size of the technical capacity will directly affect the student's educational satisfaction. Under the condition of informatization, there are many factors that influence the ability of teachers' educational technology. It is helpful to find out the influencing factors of the teachers in higher vocational school. The teachers can correctly grasp the importance of educational technology and improve the educational technology ability of teachers themselves. But also help to improve the education of college students and graduate students on the degree. But also for education in the information under the conditions of teachers to find out the existence of teacher education technology and the corresponding countermeasures to lay the foundation for this.

3.1 The Selection of the Related Indicators of Teacher's Educational Technology Ability Based on Student's Satisfaction Degree

It is difficult to form an objective and reasonable evaluation of the educational technology ability of the teachers in higher vocational schools, which is difficult to test the teachers’ educational technology ability in the vocational schools. Therefore, to establish a multi-dimensional, more comprehensive index evaluation system, the selection of indicators to follow the following principles: 1. scientific; 2. relative independence; 3. realistic feasibility; 4. multi-level; 5. sigma completeness.

From the core teachers’ educational technology ability and the satisfaction of students, the influence of teachers' educational technology ability usually includes 4 dimensions and 16 aspects. The 4 dimensions are consciousness and attitude, knowledge and skills, application and management, social responsibility. To establish a multi-level order structure of education and education technology ability system, indicators are shown in figure 1.

| Evaluation Index Of Teachers' Educational Technology Ability In Higher Vocational | Consciousness and attitude A1 | Knowledge and skills A2 | The Importance of Educational Technology A11 | Educational Technology Application A12 | The necessary part of the quality of teachers A13 | Constantly self-awareness and attitude A14 | Basic education theory A21 | Information Technology Knowledge and Skills A22 | Teaching design method A23 | The Choice and Development of Media Resources A24 | Teaching techniques and methods of effectiveness A25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 1. Evaluation Index of Teachers' Educational Technology Ability in Higher Vocational.
3.2 Weight Determination Based on Root Method of Group Decision

In this paper, the Group eigenvalue method (GEM) is used to evaluate the educational technology ability of the teachers in higher vocational colleges based on the satisfaction of students’ education, then get the weights of the indicators are calculated and sorted. With five grading method: that is, "completely unimportant, generally not important, generally important, very important, very important” five grades, respectively, corresponding to "1,2,3,4,5" points. In the case of the criterion layer in the figure, for example, the four indexes of the general goal are calculated by weighting them, and ordered according to the size of the weights. The evaluation of the indicators to the five relevant experts issued a questionnaire, five experts get the criteria of the score figure as shown in figure 2.

Figure 2. Expert scoring table.

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
<th>S5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>A2</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>A3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>A4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

From the above figure:

\[ x^* = (0.4588, 0.5863, 0.3918, 0.5406) \]

The iteration results of the power law are shown in figure 3 and set \( \varepsilon = 0.0005 \)

Figure 3. Results of each iteration.

<table>
<thead>
<tr>
<th>k</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y_k )</td>
<td>1/4</td>
<td>69.5000</td>
<td>140.6437</td>
<td>140.6457</td>
<td>140.6457</td>
<td>140.6457</td>
</tr>
<tr>
<td>( 1/4 )</td>
<td>88.7500</td>
<td>179.7432</td>
<td>179.7462</td>
<td>179.7462</td>
<td>179.7462</td>
<td>179.7462</td>
</tr>
<tr>
<td>( 1/4 )</td>
<td>59.5000</td>
<td>120.1109</td>
<td>120.1077</td>
<td>120.1077</td>
<td>120.1077</td>
<td>120.1077</td>
</tr>
<tr>
<td>( 1/4 )</td>
<td>82.0000</td>
<td>165.7506</td>
<td>165.7482</td>
<td>165.7482</td>
<td>165.7482</td>
<td>165.7482</td>
</tr>
<tr>
<td>( z_k )</td>
<td>0.4586</td>
<td>0.4588</td>
<td>0.4588</td>
<td>0.4588</td>
<td>0.4588</td>
<td>0.4588</td>
</tr>
<tr>
<td>( 0.5850 )</td>
<td>0.5863</td>
<td>0.5863</td>
<td>0.5863</td>
<td>0.5863</td>
<td>0.5863</td>
<td></td>
</tr>
<tr>
<td>( 0.3926 )</td>
<td>0.3918</td>
<td>0.3918</td>
<td>0.3918</td>
<td>0.3918</td>
<td>0.3918</td>
<td></td>
</tr>
<tr>
<td>( 0.5410 )</td>
<td>0.5407</td>
<td>0.5407</td>
<td>0.5407</td>
<td>0.5407</td>
<td>0.5407</td>
<td></td>
</tr>
</tbody>
</table>

The results of the iteration is: \( x^* = (0.4588, 0.5863, 0.3918, 0.5406) \)

At the same time, we can know \( \varepsilon = 0 < 0.0005 \), its meaning that \( x^* \) is the best expert. The A2 is the most important, A4 is next to it. A3 is not important than others. by using normalization processing, we can get \( W_a = (0.2320, 0.2965, 0.1981, 0.2734) \).

Similarly available

\[ W_1 = (0.1955, 0.2428, 0.2010, 0.3607) \]

\[ W_2 = (0.3054, 0.1948, 0.2193, 0.1340, 0.1465) \]

\[ W_3 = (0.3322, 0.3013, 0.1618, 0.2047) \]
Because the weight of the layer relative to the target layer is \( (0.0454, 0.0563, 0.0466, 0.0837, 0.0906, 0.0578, 0.0650, 0.0397, 0.0434, 0.0658, 0.0597, 0.0321, 0.0406, 0.0842, 0.0972, 0.0919) \).

Because of the layer on the target layer of the total order can be seen in the standard layer A2 and A4 under the subordinate A21, A22, A41, A42, A43 weight value, the first few. And A1 and A3 under the majority of indicators of the weight of the index by the order, which also meet the expert score obtained by the more consistent.

From the weight value can be seen for the impact of educational technology capacity of the factors are divided into: awareness and attitude attached to the continuous self-improvement and learning awareness and attitudes of this indicator, knowledge and skills attached to the basic educational theory of factors. The responsibility of the students under the fair use of knowledge to promote the responsibility of students to promote the safe and effective use of knowledge, regulate the behavior of students all three indicators and several factors. Therefore, the scientific and rational evaluation of educational technology ability of vocational school teachers should focus on these factors.

4. The Countermeasures of Teachers' Educational Technology Ability Improvement

From the whole teacher education and training process, teachers' access to educational technology basic knowledge and basic skills of the effective way is still the course of teaching, which is the basis of teacher education technology and the premise. However, if the training of teachers' technical ability is only dependent on the teaching of the curriculum, then the application and practical ability of educational technology can hardly be improved effectively. Therefore, the training of teachers' educational technology ability must pay attention to the combination of theory and practice, classroom teaching and after-school training combined with the train of thought, to take a variety of teaching models and practical training links, so that teachers of educational technology ability to effect the improvement.

(1) Reinforce the basic theory of education, establish a modern educational concept

Theoretical teaching plays a fundamental role in guiding teachers to establish the concept of modern education, flexible teaching in the use of modern education technology foundation and premise. The teaching of the basic theory of educational technology, with the help of teaching practice to strengthen students' understanding and understanding of modern educational technology. Teachers should make full use of various teaching methods according to the actual teaching of theoretical courses, mobilize the enthusiasm of students to learn, and promote their fundamental changes in educational concepts, learning ideas and educational methods to adapt to the education and teaching reform in the information environment needs.

(2) Reform the course content of teaching, curriculum innovation

Modern education technology curriculum, practical and highly applicable, in the teaching mode and methods, change the traditional classroom teaching mode, according to different teaching needs, using a variety of teaching mode combination teaching. Such as based on the network platform teaching, teachers can be in the network of teaching environment, the task-driven teaching methods to guide students to learn, teachers, tasks, students complete the job, to achieve paperless blackboard chalk of information technology teaching In order to strengthen teaching management, To meet the needs of students after school study counseling, in particular, should do after-school learning Q & A, teachers can use the network communication tools, students to achieve synchronous or asynchronous guidance.

(3) Cultivate a variety of educational environment, to promote the rapid formation of educational technology capacity

Vocational school student activities, is a good stage for students to exercise. In order to expand
the scope of teacher education technology capacity training, education technology ability can be integrated into the teaching activities. Before the education practice, teachers should try to teach micro-class, Mu class teaching and training, strengthen the modern educational technology in teaching practice. During the internship, the school should study the technical situation, strengthen the teachers' awareness of modern educational technology, so as to improve the relevant system, and strictly evaluate the teachers' ability to apply the modern teaching technology of modern teaching teachers in teaching practice.

(4) In the information under the conditions of the implementation of teachers in a specific period of social responsibility

For the vocational school teachers their own educational technology capacity, one of the very important basis and the premise is to establish the information under the conditions of specific social responsibility. Continue to promote students in the use of scientific knowledge, equipment, laboratory equipment has been treated fairly, for different students that there should be differentiated teaching should be treated equally. But also to determine the effective use of knowledge for students and practice, and can not blindly "full house" teaching methods, and actively guide students to effectively transform the theoretical knowledge into practical skills. In addition, the use of knowledge for the safety of students should also be a reasonable finger, and regulate the growth of students.

(5) To grasp the role of teachers in the information society positioning

In the current era of educational information, teachers in the course of teaching the status of the earth-shaking changes, teachers and students in the strengthening of interaction, although the traditional education has been educational information from the "dominant" status into "auxiliary" status, but teachers in teaching and learning process is still very important, plays the role of imparting knowledge.

5. Conclusion

With the development of society and the further deepening of informationization, the educational technology ability of teachers in vocational colleges not only affects the level of education and teaching, but also the test of students' professional level, which is a test of the professional level of teachers. Higher vocational school teachers should be education and teaching work and information society to further contact. However, the training of teachers' educational technology ability is not only the responsibility of teachers, but also the co-ordination between the various departments of the whole society. Only in this way can the teachers' educational technology ability be improved so as to better meet the students' educational satisfaction.

References


