Study on the Promotion Strategy of the Effect of Chinese Teaching Based on the Fuzzy Comprehensive Evaluation Model

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Abstract

In the curriculum system of university, Chinese teaching has always been an important part of quality education and plays a vital role in the inheritance of the history of our country as well as the dissemination of humanistic spirit of classical literature and improving the students' ability of using language and aesthetic consciousness and cultivation. However, with the rapid development of the network, QQ as well as WeChat and other we media, Chinese language teaching has been confronted by the students' cold reception and gradually goes to the dilemma of the marginalization. In view of this situation, based on fuzzy comprehensive evaluation method, this paper proposes multi-level fuzzy comprehensive evaluation model to evaluate the effectiveness of Chinese teaching and determine the weight of each index. Based on this, the improvement measures are put forward, which can be proceed from ways of enriching the teaching content, clearing teaching plan, creating teaching methods and improving assessment methods, to fully arouse the enthusiasm of students in learning Chinese, to effectively cultivate and improve innovation ability and innovation consciousness and to improve the quality of teaching in large extent.

Keywords: Fuzzy Synthetic Evaluation Model, Chinese, Teaching Effect, Promotion Strategy.

1. BACKGROUND OF RESEARCH

1.1 Literature Review

Recently, with the rapid development of the network, QQ as well as WeChat and other we-media, Chinese language teaching has been confronted by the students' cold reception and gradually goes to the dilemma of the marginalization. In order to change this dilemma, many scholars in China have carried out a great deal of research on Chinese language teaching in recent years. Wu Haixia and others think that, at this stage, Chinese teaching in higher vocational colleges must keep pace with the times, stick to tradition, and strive to find new models that meet the needs of information society so as to achieve the maximization of teaching objectives. In face of the severe employment market, the application of Chinese language in real life cannot be ignored and the situation in which avoid students have grand plans but little skill in the practice should be avoided (Wu and Fu, 2011). Zhang Hongjian and others think that Chinese teaching can help students learn Chinese actively by means of multimedia, change traditional teaching model and teach with modern equipment. Moreover, combining the actual teaching situation and reasonably designing courseware contents in colleges and universities can attract students' attention and arouse students' interest in learning (Zhang and Zeng, 2011). Liu Zhimei and others propose that in today's Chinese language teaching, Chinese reading teaching is one of the main positions of implementing innovative education. Chinese teachers should actively use the powerful function of computer aided teaching, find out innovation ideas in reading teaching and cultivate students' innovative thinking ability (Liu and Xiao, 2011). Li Xiafen and others believe that Chinese teachers of higher vocational colleges should develop school-based textbooks with local culture and the actual situation of the students in college. In short, Chinese language teaching in higher vocational colleges should actively respond to the challenges of the times, carefully study teaching materials, create micro courseware and give full play to the role of micro lesson in Chinese teaching (Li and Zhang, 2012). Cai Hong and others believe that Chinese in higher vocational colleges is an important basic subject and Chinese teaching should speed up the pace of reform to innovate models of talent cultivation. Only in the way of teaching reform and innovation, can we break the status quo and cultivate more talents (Cai and Wu, 2011).

From the above studies, we can see that most scholars have done theoretical research on Chinese teaching, and some scholars have done research on classroom innovation combined with multimedia technology. However, the
current research scope of the main literature focuses on the theory, and there is no empirical analysis. Therefore, based on the fuzzy comprehensive evaluation model, this paper evaluates the effectiveness of Chinese teaching in higher vocational colleges, determines the weight of each index and then puts forward specific strategies for teaching optimization, which is of great theoretical and practical significance for promoting the effectiveness of Chinese teaching in higher vocational colleges.

1.2 Purposes of research

Under the new normal of the economy, the overall number of college students in China has gradually increased. However, with the continuous development of social economy in China, the demand for applied talents is becoming more and more important. In this context, colleges and universities in China, especially higher vocational colleges, should actively change the thoughts of training talents and improve the students' practical and professional quality. Chinese teaching is an important basic subject and it in higher vocational colleges should speed up the pace of reform to innovate models of talent cultivation and cultivate more high-quality talents for society development. However, at present, there are many problems in Chinese teaching model of higher vocational education, such as single teaching courses and backward teaching methods, which are not conducive to the application of Chinese teaching model and affect the improvement of teaching quality (Lin, 2011). Therefore, based on the discussion of higher vocational colleges, this paper analyzes a series of problems existing in Chinese teaching of higher vocational colleges, makes further studies based on the evaluation model and puts forward relevant strategies for improving teaching quality. In a word, the purpose of this study is to explore the promotion strategy of the effect of Chinese teaching in higher vocational education so as to improve the shortcomings of the traditional teaching process.

2. Empirical research of Chinese teaching based on the fuzzy comprehensive evaluation model

In the era of Internet, the rapid spread of all kinds of information resources has caused a series of obstacles in the communication process of Chinese teaching in college. In this context, it is of great significance to analyze Chinese teaching effect based on fuzzy comprehensive evaluation. Based on this, this paper builds a fuzzy comprehensive evaluation model, analyzes the effectiveness of Chinese teaching in colleges and universities through the following ways and proposes targeted improvement measures.

2.1 Construct the evaluation index system.

Table 1 Selection on evaluation index of Chinese teaching based on the fuzzy comprehensive evaluation model

<table>
<thead>
<tr>
<th>Evaluation of student C1</th>
<th>First level index</th>
<th>Second level index</th>
<th>First level index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content of courses C11</td>
<td>Rich content C11</td>
<td>Give prominence to the key points in the curriculum C12</td>
<td>The content is full and close contact with the reality C21</td>
</tr>
<tr>
<td>Teaching attitude C12</td>
<td>The teaching plan is clear and the lesson is fully prepared. C12</td>
<td>Careful teaching and strict requirements. C12</td>
<td>Language is infective to attract students. C22</td>
</tr>
<tr>
<td>Teaching method C13</td>
<td>Diversification of means C13</td>
<td>Teach students in accordance with their aptitude C13</td>
<td>The lecture is passionate and full of spirit C23</td>
</tr>
<tr>
<td>Effect of teaching C14</td>
<td>Improve students' interest in learning. C14</td>
<td>Improve students' ability to solve problems C14</td>
<td>Give prominence to the key points in the curriculum with clear thoughts. C24</td>
</tr>
</tbody>
</table>

Based on the actual situation of Chinese language teaching, this paper constructs a comprehensive evaluation
index system. The setting and weight of each index are shown in Table 1.

2.2 The index weight is determined by analytic hierarchy process.

Weight is a number that is used to represent the proportion of each factor in the whole when it is decomposed into a number of factors (indexes). According to the judgment matrix, the single hierarchical arrangement and the whole hierarchical arrangement are carried out and then the weights of the evaluation factors and the evaluation factors are determined. The purpose of single hierarchical arrangement is to rank the importance of factors in this layer. The weight values of single hierarchical arrangement can be obtained by solving eigenvalue problems, namely $A\mathbf{M} = \lambda_{\text{max}} \mathbf{W}$, and finding feature vectors. In this paper, the method of summing is used to determine the weight.

The elements of $\mathbf{C}$ are normalized by column and we can get $\overline{\mathbf{C}} = \left( \overline{C}_{ij} \right)$, $\overline{C}_{ij} = \frac{c_{ij}}{\sum_{i=1}^{n} c_{ij}}$, $i,j=1,2,m,...,n$.

$\overline{C}$ is added in line and we can get

$$\overline{W} = \left[ \overline{w}_1, \overline{w}_2, \ldots, \overline{w}_n \right]^T$$

$$\overline{W} = \sum_{j=1}^{n} \overline{C}_{ij}$$

The $\overline{w}$ is normalized and we can get

$$w = \left[ w_1, w_2, \ldots, w_n \right]^T$$

$$w = \frac{\overline{w}_i}{\sum_{i=1}^{n} \overline{w}_i} .$$

Using the above method, the judgment matrix of the student evaluation is made, and the Table 2 is obtained.

<table>
<thead>
<tr>
<th></th>
<th>$C_{111}$</th>
<th>$C_{112}$</th>
<th>$C_{113}$</th>
<th>$C_{114}$</th>
<th>$W_1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$C_{111}$</td>
<td>0.5841</td>
<td>0.2561</td>
<td>0.5263</td>
<td>0.2451</td>
<td>0.5421</td>
</tr>
<tr>
<td>$C_{112}$</td>
<td>0.1152</td>
<td>0.1245</td>
<td>0.0578</td>
<td>0.1425</td>
<td>0.1025</td>
</tr>
<tr>
<td>$C_{113}$</td>
<td>0.1658</td>
<td>0.1354</td>
<td>0.1985</td>
<td>0.6254</td>
<td>0.2145</td>
</tr>
<tr>
<td>$C_{114}$</td>
<td>0.1425</td>
<td>0.2125</td>
<td>0.4251</td>
<td>0.1542</td>
<td>0.0541</td>
</tr>
</tbody>
</table>

From table 2, it is known that the weight vector set of student evaluation is $W_1=\{0.5421,0.3458,0.1,0.0121\}$. And the weight vector set of expert evaluation is $W_2=\{0.5351,0.2024,0.2525,0.351\}$ obtained by the same method.

2.3 Set up an evaluation set.

Based on the evaluation factor set of $C_1=\{C_{11},C_{12},C_{13},C_{14}\}$, $C_2=\{C_{21},C_{22},C_{23},C_{24}\}$, the evaluation set is constructed. The effect of Chinese education is set to be 5 grades, that is, the evaluation set is determined to be $V=\{V_1,V_2,V_3,V_4,V_5\}$, which are excellent, good, medium, qualified and unqualified. If the scale is expressed by percentile system, it can be represented that the degrees among [90,100] are excellent, [80, 90] are good, [70,80] are average, [60,70] are pass and [0 and 60] are fail.

2.4 Construct membership matrix

As the proportion of student evaluation is large, the following analysis is mainly made from student evaluation. The membership matrix $R_i=\{r_{i1}, r_{i2}, \ldots, r_{im}\}$ ($R_i$ is the membership of each $V_1$, $V_2$, ..., $V_m$ among the corresponding remark set of the index $i$ in evaluation factors), among which $j=(1,2,\ldots,m)$. 

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In the form of anonymous investigation, 100 students are asked to investigate and evaluate the quality of teaching. The results of the evaluation are shown in Table 3. The number in the table indicates the number of people who select the corresponding options.

**Table 3** The evaluation results on the teaching quality made by 100 students.

<table>
<thead>
<tr>
<th>Student evaluation C₁</th>
<th>First level index</th>
<th>Second level index</th>
<th>Excellent</th>
<th>Good</th>
<th>Average</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content of courses C₁₁</td>
<td>The content is rich and the point of view is right.</td>
<td>60</td>
<td>25</td>
<td>15</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Give prominence to the key points in the curriculum with clear thoughts.</td>
<td>50</td>
<td>20</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Teaching attitude C₁₂</td>
<td>The teaching plan is clear and the lesson is fully prepared.</td>
<td>40</td>
<td>30</td>
<td>20</td>
<td>15</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Careful teaching and strict requirements.</td>
<td>30</td>
<td>30</td>
<td>20</td>
<td>20</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Teaching method C₁₃</td>
<td>Diversification of means</td>
<td>35</td>
<td>15</td>
<td>20</td>
<td>30</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teach students in accordance with their aptitude.</td>
<td>40</td>
<td>15</td>
<td>30</td>
<td>15</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Effect of teaching C₁₄</td>
<td>Improve students’ interest in learning.</td>
<td>40</td>
<td>30</td>
<td>20</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improve students’ ability to solve problems.</td>
<td>40</td>
<td>40</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

The content of the teaching belongs to the subset:

\[
R_{11} = \{0.4, 0.3, 0.2, 0.075, 0.025\}, \quad R_{12} = \{0.3, 0.2, 0.3, 0.085, 0.015\},
\]

\[
R_{13} = \{0.4, 0.3, 0.1, 0.175, 0.025\}, \quad R_{14} = \{0.4, 0.3, 0.1, 0.2, 0.000\}.
\]

In this paper, 10 teaching experts are asked to make research and evaluation on their teaching quality, and the results are shown in Table 4.

**Table 4** The evaluation results on the teaching quality of 10 teaching experts.

<table>
<thead>
<tr>
<th>Evaluation of expert C₂</th>
<th>First level index</th>
<th>Excellent</th>
<th>Good</th>
<th>Average</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The content is full and close contact with the reality.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Language is infective to attract students.</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>The lecture is passionate and full of spirit.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Give prominence to the key points in the curriculum with clear thoughts.</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

2.5 Analysis of evaluation results

Based on the above weight index, the index value of the criterion layer can be obtained.

\[
C_{11} = \sum_{i=1}^{n} f_i C_{11}(C_{11} \leq 1, \sum f = 1)
\]

\[
C_{12} = \sum_{i=1}^{n} f_i C_{12}(C_{12} \leq 1, \sum f = 1)
\]
Among them, \( i \) represents index of the criterion layer and \( f_i \) represents the weight of each index in the criterion layer.

Then, combined with the actual situation of Chinese teaching, the weight of assessment for students, teachers of same field, experts and teachers themselves \( W \) is determined as \((0.4,0.2,0.2,0.1)\), and the comprehensive evaluation matrix obtained by each assessment subject is \( R_i \), \( \begin{bmatrix} Y_1 \\ Y_2 \end{bmatrix} \).

\[ Y_1 = (0.272,0.420,0.233,0.067,0.008) \]

\[ Y_2 = (0.405,0.431,0.112,0.041,0.011) \]

The final results of the comprehensive evaluation (three-level fuzzy comprehensive evaluation) are as follows:

\[ Z = W \ast R = (0.5,0.2,0.2) \begin{bmatrix} 0.271,0.423,0.245,0.254,0.5112 \\ 0.210,0.251,0.113,0.025,0.0322 \end{bmatrix} = \begin{bmatrix} 0.2979,0.4239,0.2211,0.0501,0.007 \end{bmatrix} \]

Finally, as the evaluation object is the quality of Chinese teaching, the final score of the teaching quality of the teachers is obtained according to the selection of the indexes:

\[ F = Z \ast N_2 = (0.2979,0.4239,0.2211,0.0501,0.007) \begin{bmatrix} 92 \\ 75 \\ 52 \\ 42 \\ 79 \end{bmatrix} = 79.1254 \]

It can be seen that the final score of teaching quality obtained by using fuzzy comprehensive analysis method is 79.1254 belonging to the level of good but close to the excellent, which verifies the accuracy of the model.

3. PROMOTION STRATEGY OF THE EFFECT OF CHINESE TEACHING BASED ON THE FUZZY COMPREHENSIVE EVALUATION MODEL

3.1 Enrich the teaching content and improve the literary accomplishment of students.

The effective application of the Internet to Chinese teaching can enrich the content of teaching and extend the content of classroom teaching. Teachers should actively make use of the advantages of network teaching, gradually improve the teaching practice and realize the rich content of Chinese teaching and the improvement of teaching quality. Teachers can recommend students to use APP platforms, like "Listen to books for lazy people" "have a book" to self-study classic masterpiece and promote literary quality with multi-ways. The students' reading and writing ability can be trained intangibly and the students' comprehensive quality can be improved by constantly improving their literary attainment.

3.2 Teachers should clear the teaching plan and optimize the system of curriculum structure.
Teachers should first clear the teaching plan and optimize the system of curriculum structure when they are teaching Chinese. Teaching objects, environment, methods and contents should be unified to make courseware, so as to improve the whole teaching effect. At the same time, Chinese teachers should also put the teaching material type and teaching organizer in the auxiliary teaching position, and we need to judge whether the teaching materials are practical in a diversified perspective. The teaching plan to train students should take the ways of thinking of changes with innovation, divergent thinking with flexibility, joint category with fun, explore with surprise, innovation with differences and comparison with plentiful content as the ultimate goal.

3.3 Innovate teaching methods and cultivate students' learning habits.

Teachers can introduce the current concept of general education, micro class and Massive Open Online Course into Chinese teaching of higher vocational colleges. The traditional teaching method and the network teaching platform should be combined cooperating with each other. Teachers should make proper use of multimedia technology and novelty design in making courseware based on multimedia platform teaching, such as limiting the number or frequency of inserting pictures, sounds and videos in courseware. Teachers can send their own multimedia courseware to students so that students can review them after class. Moreover, Chinese teaching in higher vocational colleges can adopt the way of "Mastery Learning" and evaluate students' ability of mastering goals by setting goals so as to promote students' habit of active learning. Besides, teachers should properly introduce situational guidance and divergent thinking and interact with students in a timely manner to achieve the maximum effect of teaching model.

4. CONCLUSION

In a word, the current problems of Chinese teaching in higher vocational colleges are becoming more and more serious and it is urgent to reform and innovate. According to teaching idea of taking students as the teaching subject and based on fuzzy comprehensive evaluation method, starting from the overall planning of education, this paper takes two evaluation ways of student evaluation and expert evaluation, selects 4 first level indexes and 8 second level indexes of student evaluation and 4 first level indexes of expert evaluation to make research on the Chinese teaching in higher vocational colleges. It is found that rich content and prominent in lectures contribute to a large proportion in the second level index of students’ evaluation; full content and close to reality are more important in the first level index of expert evaluation. Therefore, corresponding improvements should be made in the Chinese teaching in higher vocational colleges based on the results of the above research. Specifically, we can enrich teaching content from the Internet; clarify teaching plans and optimize curriculum structure; innovate teaching methods and cultivate students’ learning habits; improve assessment methods to improve teaching effect. In the further process of teaching innovation, we need to refine the teaching objectives and solve the existing problems. The promotion strategy of the effect of Chinese teaching in higher vocational colleges can effectively improve students' learning effect, and lay a foundation for training new-type talents for the 21st century. And the research results of this paper can provide a scientific reference for the Chinese teaching of the relevant colleges and universities.

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