Fuzzy comprehensive evaluation-based university ideological and political education interactive process research

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ABSTRACT

China implements dream of China and a strong military, while country also puts more emphasis on universities students’ ideological and political education activities. University students are the future of a country, the hope of a nation. Their ideological and political education is the guarantee for the national long-term stability. By far, universities ideological and political education interactive process has being proceeded. The paper takes Beijing universities, Shanghai universities, Guangzhou universities and Dalian universities as research objects, makes use of fuzzy comprehensive evaluation method, evaluates four regions university ideological and political interactive process quality from interactive process design, system and mechanism design, interactive management mode, staff participation degree, target coordinate ability, work coordinate ability, emergency response ability these seven perspectives, and further gets conclusion that best ideological and political education interactive process is Beijing universities, secondly is Shanghai universities. Guangzhou universities and Dalian universities are basically on the same level.

INTRODUCTION

University students are front group of social new ideas; they can accept novelty at the fastest speed. To country and society, carry on university students’ ideological and political education is particularly important. Nowadays, each university is also studying ideological and political education activities new forms.

In 2013, Cheng Jing in the article “University students ideological and political several problems research since opening-up and reform”, she took different periods’ university students possessed different ideological and political education features as evidence, took universities political lesson reformation as research objects, analyzed Chinese universities ideological and political education exploring and reforming process for thirty years since opening—up and reform. The article pointed out that after opening-up and reforming, basic experiences and important enlightenment reflected university students’ ideological and political education basic rules.

In 2004, Liu Ye in the article “Modern ideological and political education process research”, he established ideological and political education process theoretical system from the abstract to the concrete. The author interpreted modern ideological and political education process from cultural philosophy, communication phi-
losophy and development philosophy the three perspectives. The article pointed out that ideological and political education process was the process of inheriting, spreading, and creating moral culture, was also communication interactive process, even was process that reflected sustainable development. The article highlighted in whole ideological and political education process, it had rules that education and self-education coexistence and dialectical unity.

In 2009, Li Guo-Ying in the article “Ideological and political education interactive theoretical research”, he researched on ideological and political education interactive types, interactive principles and interactive process. The article pointed out that ideological and political education interactive process was a process that needed two parties’ active participation, during the process, the two parties mutual effected on each other, implemented self-surpassing, the two parties were inter-subjectivities, timely fed back relative information. The author provided “subject-object-subject” ideological and political education mode.

In 2013, Li Hong-Chang in the article “Ideology and politics teachers’ practice wisdom problems and measures research”, took unique values that implemented ideological and political teaching’s teachers and students’ interaction and impelled new curriculum reformation as objects, researched modern ideological and political education teaching theoretical new ideas and new concepts by combining with practice, deeply analyzed current ideological and political education main problems causes, and targeted proposed corresponding solutions.

The paper will take Beijing, Shanghai, Guangzhou and Dalian these four cities’ universities as research objects, it researches university students ideological and political education process from interactive process design, system and mechanism design, interactive management and others totally seven perspectives.

**MODEL ESTABLISHMENT**

University students’ ideological and political education interactive process is focus of numerous teachers. Interactive process quality will directly effect on students’ learning level and ideological and political quality. The interactive process needs teachers’ meticulous designing and students’ positive participation. Factors that impact on interactive education are interactive process design, system and mechanism design, interactive management mode, staff participation degree, target coordinate ability, work coordinate ability, and emergency response ability. The paper will establish comprehensive evaluation model for the seven influence factors.

**Data processing**

Organize random sample investigation in Beijing, Shanghai, Guangzhou and Dalian four cities, respectively randomly draw 100 university students and 100 teachers from the four regions, ask them to score the ideological and political education process involves seven factors, full score is 100 scores. The seven fac-

<table>
<thead>
<tr>
<th>Influence factor</th>
<th>Factor Definition</th>
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<tbody>
<tr>
<td>Interactive process design</td>
<td>It includes interactive purpose, implementation schemes, activities rules, activities budgeting.</td>
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<tr>
<td>System and mechanism design</td>
<td>Arrangement on people, wealth and material as well as mechanism setting</td>
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<tr>
<td>Interactive management mode</td>
<td>Interactive activities executors’ selection, testing</td>
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<tr>
<td>Staff participation degree</td>
<td>Thereby reflects staff organization status</td>
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<tr>
<td>Target coordinate ability</td>
<td>For long-term, short-term targets, it makes reasonable coordination and timely corrects deflected targets.</td>
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<tr>
<td>Work coordinate ability</td>
<td>It includes school, institutes, and departments’ cooperation, and forward, medium and post periods’ work coordination.</td>
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<tr>
<td>Emergency response ability</td>
<td>It refers to solution on interactive process occurred unexpected issues.</td>
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</tbody>
</table>
Fuzzy comprehensive evaluation-based university ideological and political education interactive process design, system and mechanism design, interactive management mode, staff participation degree, target coordinate ability, work coordinate ability, and emergency response ability, do equalization processing with data, it can get data as TABLE 2, the seven factors definitions are as TABLE 1.

<table>
<thead>
<tr>
<th>TABLE 2: Original data</th>
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<tbody>
<tr>
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<tr>
<td>Beijing</td>
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<tr>
<td>Shanghai</td>
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<tr>
<td>Guangzhou</td>
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<tr>
<td>Dalian</td>
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<tr>
<td>Interactive process design</td>
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In order to easily taking preliminary comparison of original data, we draw broken line graph, as Figure 1 show. From Figure 1, we only can roughly see that each city each factor scoring status, therefore we cannot use direct comparison to look for the best city in ideological and political education interactive process.

Fuzzy comprehensive evaluation

In general, fuzzy comprehensive evaluation involves three quantities. Set that there are \( n \) pieces of evaluated objects’ correlation factors, it records as \( U = \{ u_1, u_2, \ldots, u_n \} \), and calls it as factor set. And set all possible occurred remarks have \( m \) pieces, it records as \( V = \{ v_1, v_2, \ldots, v_m \} \), and calls it as evaluation set. Because every factor position is different, its function is also different, it appears measurement criterion that is weight, and it records \( A = \{ a_1, a_2, \ldots, a_n \} \).

Comprehensive evaluation steps

Fuzzy comprehensive evaluation steps are proceeding as following methods:

1. Define factor set \( U = \{ u_1, u_2, \ldots, u_n \} \).
2. Define evaluation set \( V = \{ v_1, v_2, \ldots, v_m \} \).
3. Carry out single factor evaluation and get \( r_i = \{ v_{i1}, v_{i2}, \ldots, v_{im} \} \).
4. Construct comprehensive evaluation matrix:
   \[
   R = \begin{bmatrix}
   r_{11} & r_{12} & \cdots & r_{1m} \\
   r_{21} & r_{22} & \cdots & r_{2m} \\
   \vdots & \vdots & \ddots & \vdots \\
   r_{n1} & r_{n2} & \cdots & r_{nm}
   \end{bmatrix}
   \]
5. Comprehensive evaluation: to weight \( A = \{ a_1, a_2, \ldots, a_n \} \), calculate \( B = A \odot R \), and need to make evaluation according to maximum membership principle.

Operator \( \odot \) definition

When make comprehensive evaluation, according to operator \( \odot \) different definitions, it has different models.

1. Model I: \( M(\wedge, \vee) \) —— Principal divisor decisive type
   Computing method is
   \[
   b_{ij} = \max_{k \leq n} \{ a_k \wedge r_{kj} \} \quad (i = 1, 2, \ldots, n; j = 1, 2, \ldots, m)
   \]
   The model evaluation result is up to factors that play main effects on total evaluation, other factors will not impact on evaluation, relatively, the model is fit for the case that comprehensive evaluation is thought to be optimal when single evaluation is optimal.

2. Model II: \( M(\oplus, \vee) \) —— Principal divisor promi-
The model has some similarities with I model, but it is more refining than I model. It not only highlights main factors, but also gives considerations to other factors. The model is fit for the range that model I is inapplicable, which is also in case that each factor cannot be distinguished but needed to be refined.

The model according to each factor importance, take all influence factors into consideration, relatively it is fit for the case that requires comprehensive optimization. Therefore, we need to establish the problem factor set \( U = \{u_1, u_2, u_3, u_4, u_5, u_6, u_7\} \), from which \( u_i \) represents interactive process design status, \( u_2 \) represents system and mechanism design status, \( u_3 \) represents interactive management code, \( u_4 \) represents staff activities’ participation status, \( u_5 \) represents target coordinate status, \( u_6 \) represents interactive process each work coordinate status, \( u_7 \) represents process emergency response ability. Due to make comparison of four cities, it needs to standardize TABLE 2 data as TABLE 3. By referencing the article “Universities campus culture construction as well as ideological and political research”, we get the seven influence factors weights, as TABLE 4 show. By TABLE 4 data, it is clear that work coordinate ability is most important, in order to full reflect weight importance, it normalizes weights, data is as TABLE 5, and draws pie graph as Figure 2 show.

<table>
<thead>
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<th>TABLE 3: Horizontal standardized data</th>
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In Figure 2 and following charts, “1” represents interactive process design status, “2” represents system and mechanism design status, “3” represents interactive management code, “4” represents staff activities’ participation status, “5” represents target coordinate status, “6” represents interactive process each work coordinate status, “7” represents process emergency response ability.

From TABLE 4, it is clear that this evaluation universities ideological and political interactive process used weight is

$A = (0.06, 0.22, 0.06, 0.22, 0.06, 0.31, 0.06)$

According to TABLE 3 data, establish comprehensive evaluation matrix:

$R = \begin{bmatrix} 0.31 & 0.26 & 0.20 & 0.23 \\ 0.26 & 0.26 & 0.25 & 0.23 \\ 0.24 & 0.25 & 0.29 & 0.22 \\ 0.27 & 0.23 & 0.24 & 0.25 \\ 0.25 & 0.28 & 0.21 & 0.26 \\ 0.29 & 0.26 & 0.23 & 0.22 \\ 0.24 & 0.29 & 0.24 & 0.23 \end{bmatrix}$

Take model I—— $M(\wedge, \vee)$ as evident, calculate weight and get:

$B = A \cdot R = (0.91, 0.82, 0.73, 0.7)$

Therefore, Beijing universities ideological and political education interactive process is more outstanding than other three cities; result is as Figure 3 shows.

From Figure 3, we can see that best ideological and political education interactive process is Beijing universities, secondly is Shanghai universities. Guangzhou universities and Dalian universities are basically on the same level.

Analysis result

Figure 4 is Beijing each indicator occupied distribution diagram, its distribution is relative even, three higher proportions items are consistent to three higher proportions items in weight figure, so Beijing universities ideological and political education interactive activities quality is higher. Therefore, we easily find that cities with higher ideological and political education interactive activities quality, their each indicator distribution gets closer to weight distribution.
CONCLUSION

The paper used fuzzy comprehensive evaluation method generally will solve a kind of arrangement and selective difficulties. The key to whole process is establishing fuzzy comprehensive evaluation matrix. The matrix compositions are evaluation results of single element. Readers can give weights by themselves according to experiences or reference other documents data. But once weight is unreasonable, it will lead to wrong computing process and impact on results.

Beijing as Chinese capital is national center of politics, culture and economy. Beijing universities due to its good geographical positions, it has numerous educational resources. Shanghai is international metropolis, is also one of Chinese four main municipalities. Guangzhou and Dalian are similarly overseas cities, ideas are relative open, and they have relative faster acceptance degree on novelty. The paper evaluation result is that best ideological and political education interactive process is Beijing universities, secondly is Shanghai universities. Guangzhou universities and Dalian universities are basically on the same level. Thereupon, the paper evaluation result conforms to practice.

REFERENCES


