Exploring the teaching mode of college ideological and political theory course in the era of big data

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Abstract

Firstly, this paper constructs the judgment matrix of ideological and political education evaluation index system in colleges and universities, determines the weight coefficients of indicators at the same level in order of relative importance, and determines the weight coefficients of each indicator based on the total ranking of indicators at all levels. On the concerns of ideological and political education, 78.92% focus on the humorous and easy-to-understand language, and 75.6% focus on the integration of education and realistic examples. In terms of improvement suggestions, 95 people said they want to innovate the classroom and regularly and reasonably evaluate the teaching effect, 92 people said they want to strengthen humanistic care and put people first, and 95 people said they want to carry out all-round social practice activities. The current ideological and political education in colleges and universities urgently needs innovation in order to meet the current educational needs.

Keywords: *ideology and politics, big data, hierarchical analysis method, weight coefficient, teaching mode*

Introduction

The ideological and political education evaluation mechanism universities have made great progress, which is mainly due to the development of education (Shi, 2006) (Tai-cheng & Fa-sheng, 2010). And the scientificization of ideological and political education has been explored closely with the new situation and new circumstances, and great achievements and effects have been achieved in both theory and practice, and the guiding ideology and certain educational concepts as well as specific contents, methods and approaches have become increasingly scientific and distinctly contemporary(H, 2019; Z, 2018) How to effectively implement ideological and political education and implement the cultivation of civic virtues has always been a matter of concern in the construction of the relevant theoretical system (Xiang J 2016).

The literature (Jie-Feng, 2017) suggests that firstly, the online education environment should be optimized in terms of attaching importance to it, improving the real education environment, and creating a good online education environment. The second is to strengthen the network subject

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awareness in realizing the subjective interaction of both teachers and student subjects. Once again, enhance the network emotional effect pay attention to the network emotional effect of college students, guide the network emotional needs of college students. Finally, pay attention to the network group guidance should improve the hardware conditions, enhance the software environment, and improve the ways and means of network group guidance. In the literature (Lv, 2015), among the mechanisms in which acceptance plays a key role in education, the demand-driven mechanism of the audience subject is one of them. According to literature (HUANG, 2015), the acceptance paradigm of ideological and political education has changed from the traditional "passive reception" to "active acceptance", and efforts should be made to build the acceptance field of ideological and political education, establish a receiver-centered acceptance relationship, make the acceptance content stimulate students' To make the receptive content stimulate students' initiative and effectiveness, make the receptive process pursue "schematic completion", and finally make the receptive effect achieve "visual integration". The literature (Yang J 2015)elaborated their insights on the evaluation of college students' ideological and political education. The literature (Tao H 2015) put forward the system analysis method, target test method, comparison method, benefit calculation method and recognition degree calculation method, and proposed the use of mathematical model to solve the evaluation problem of ideological and political education. The literature (Li, 2015) argues that in China educational evaluation is not strictly distinguished from educational assessment, and in the specific application in practice, there are different customary usages for different scopes and occasions.

According to the literature (Xie, 2017), there are many principles of judgment in ideological and political education. The literature (Zhang, Yang, & Wang, 2022) points out the role of the education. The literature (Zhou & Li, 2015) points out that the mechanisms for their evaluation were not scientific enough in the past. The literature (Han X 2017) argues that the effectiveness of education can be judged in the performance of the thoughts and behaviors of the educated in their daily productive life. Literature (Q, 2015) points out that the education refers to the effect of unifying thoughts, solving contradictions, rationalizing emotions and motivating improvement by helping the masses to solve problems in their minds while establishing correct worldview, outlook on life and values through our ideological and political education work, in response to various contradictions in people's minds.

This paper firstly constructs the evaluation index system of ideological and political education work in colleges and universities, and uses the operation of hierarchical analysis to determine the relative rank order of importance of the indicators at the same level, and compares and ranks education items, education methods, education effects, and indicator characteristic items at A-level based on the total rankings of indicators at all levels, and ultimately determines the weights of the evaluation indices of ideological and political education work in colleges and universities after a series of calculations and analyses such as the establishment of the judgment matrix, the ranking of the weight coefficients, and the consistency test. Then the ways and concerns of

college students learning ideological and political education are analyzed. Finally, the problems of ideology and politics and the room for improvement of ideological and political education of college students are analyzed.

Evaluation index system of ideological and political education work in colleges and universities

Hierarchical analysis method

Hierarchical analysis, also known as comparative determination method. It is originally a decision-making method, and was firstly transplanted to the field of education evaluation by the American scholar Stark to solve the problem of determining weights, which is also applicable to the field of ideological and political education evaluation. The essence of this method is to use mathematical means to distinguish the relative importance of indicators at each level in terms of their influence on the achievement of goals by using the step of two-by-two comparison, to give a judgment expressed in numerical values, and to constitute a judgment matrix, and then to determine the weight coefficients of indicators of the same level in the order of relative importance after operation, and to determine the weight coefficients of each indicator according to the total ranking of indicators at each level.

The specific steps are as follows.

(1) Establish the evaluation index model. Figure 1 shows the evaluation index model of ideological and political education work in colleges and universities.
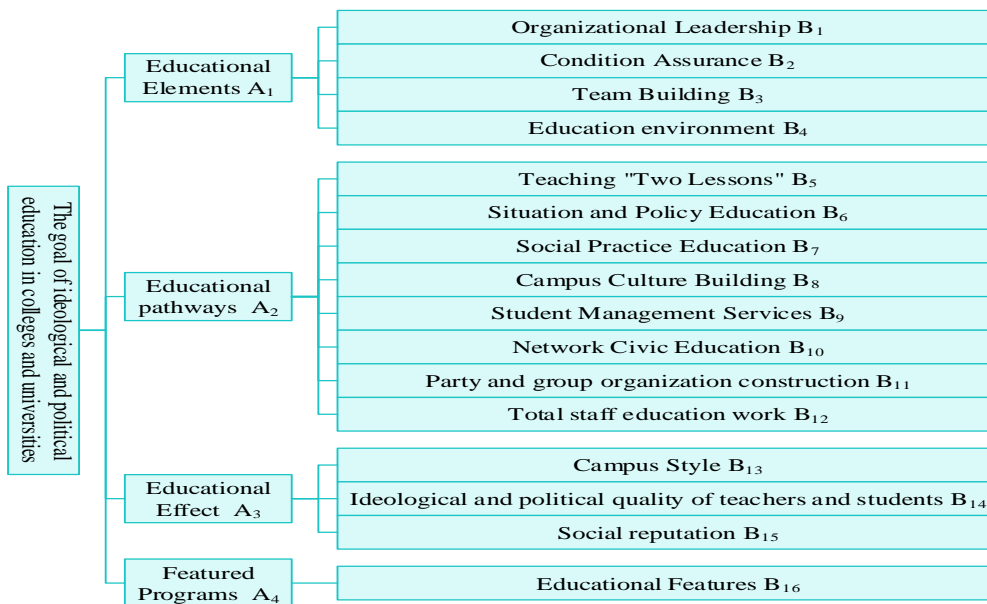

Figure 1: Model of ideological and political evaluation indicators in higher education

(2) Consulting experts. Determining the weight coefficients is based on the data obtained through consulting experts.

We ask relevant experts to compare the indicators of the A tier education elements, education methods, education effects and characteristic items, and for the convenience of calculation, the least important (relatively speaking) factor can be assigned a value of 1, and then the other three factors are compared with it according to the scaled judgment method, and the importance degree is expressed in numerical values.

In the same way, the indicators in the B level are treated. The values are filled in the space of the consultation form. Table 1 shows the consultation table of the weight configuration of the evaluation indexes of ideological and political education work in universities.

Table 1: Weighting of ideological and political evaluation indicators

Layer A	Score	Level B	Score
Elements of Education		Organizational leadership	
		Conditions	
		Team Building	
		Educational environment	
Educational Approach		"Teaching of "two courses	
		Situation and Policy Education	
		Social Practice Education	
		Campus Culture	
		Student Management Services	
		Internet Civic Education	
		Party and League Organization	
		Education for All Students	
Educational Effectiveness		Campus Style	
		Ideological and Political Quality of Students and Teachers	
		Social Reputation	
Educational features		Featured Projects	

(3) Establishing a judgment matrix. The importance of each indicator in the index system has been obtained by consulting the experts and expressed in numerical values.

In order to reflect the generality, letters are used to indicate that all the values in the table are the average of the values given by the experts.

Table 2 shows the weight configuration score table.

Table 2: Weighted allocation of scores for ideological and political education indicators

Layer A	Score	Level B	Score
Elements of Education		Organizational leadership	b_1
		Conditions	b_2
	a_1	Team Building	b_3
		Pedestrian environment	b_4
Educational Approach		"Teaching of "two courses	b_5
		Situation and Policy Education	b_6
		Social Practice Education	b_7
		Campus Culture	b_8
	a_2	Student Management Services	b_9
		Internet Civic Education	b_{10}
		Party and League Organization	b_{11}
		Education for All Students	b_{12}
Effectiveness		Campus Style	b_{13}
	a_3	Ideological and Political Quality of Students and Teachers	b_{14}
		Social Reputation	b_{15}
Education Features	a_4	Featured Projects	b_{16}

Assuming that indicator (i=1,2,3,4) in layer A is linked to indicator (j=1,2,L 16) in the next layer (layer B), create a judgment matrix of the following form:

A_i	B_1	B_2	L	B_n
B_1	B_1 / B_1	B_1 / B_2	L	B_1 / B_n
B_2	B_2 / B_1	B_2 / B_2	L	B_2 / B_n
L	L	L	L	L
B_n	B_n / B_1	B_n / B_2	L	B_n / B_n

$$(1)$$

Write it in matrix form:

$$B_{AR-B} = \begin{bmatrix} b_{11} & b_{12} & \cdots & b_{1n} \\ b_{21} & b_{22} & \cdots & b_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ b_{n1} & b_{n2} & \cdots & b_{nn} \end{bmatrix} \quad (2)$$

B_{AR-B} denotes the judgment matrix of B level on the composition in A level, and b_{ij} is the importance of indicator B_i relative to B_j from the AR perspective.

(4) Ranking of weight coefficients. The ranking of weight coefficients is the ranking of the importance of each index calculated according to the judgment matrix.

$$a_j = \frac{1}{n} \sum_{i=1}^{n} \left(b_{ji} / \sum_{j=1}^{n} b_{ji} \right) \quad (j=1,2,\cdots n) \quad \sum_{i=1}^{n} a_j = 1 \quad (3)$$

Yes:

$$a = \begin{pmatrix} a_1 \\ a \\ M \\ a_n \end{pmatrix} \quad (4)$$

(5) Consistency test. The index weights calculated separately from the judgment matrix are subjected to a one-time test of hierarchical ranking. The steps of the consistency test are as follows:

First, the maximum eigenvalue of the judgment matrix is calculated as λ_{max}. The formula is as follows:

$$\lambda_{max} = \frac{1}{n} \sum_{i=1}^{n} \frac{(B_{AR-B} \cdot a)_i}{a_i} \quad (5)$$

It can be shown that for a judgment matrix of order n with perfect consistency, there should be $\lambda_{max} = n$. When the perfect consistency of the judgment matrix is broken, $\lambda_{max} > n$.

Next, the consistency index is calculated. The calculation formula is:

$$CI = \frac{\lambda_{\max} - n}{n - 1} \quad (6)$$

Finally, the random consistency ratio CR is calculated. The formula is:

$$CR = \frac{CI}{RI} \quad (7)$$

It can be seen that the hierarchical analysis method is a mathematical weighting method that compares peer evaluation indexes two by two, and constitutes a matrix with the results of each comparison, and then applies the matrix principle to derive the weights of the factors. This method has a certain scientific basis, and at the same time, it is a relatively scientific and practical method because it gives a simple calculation formula.

Determine the set of weight weights

After the evaluation indicators are determined, it is necessary to determine the weight coefficients of each indicator because each indicator contributes to the evaluation objective to a different degree. The so-called weight coefficient is the coefficient used to measure the degree of importance of an indicator, and the weight set is the collection of weight coefficients. The indicator system is composed of a number of indicators, each of which occupies a different position and plays a different role, reflecting not only its own important value, but also its interrelationship with other indicators, and the weight set is the centralized performance of establishing the value and interrelationship of each indicator. It is essentially the cohesion of people's understanding of the value of indicators. If the indicator system indicates which indicators have value in the evaluation activities, the weight set indicates how large these value coefficients are. People's perception of the value of each indicator in relation to each other constitutes the power set of the indicator system. The determination of weights and weight sets of ideological and political education indicator system is very important, but the recognition and implementation of weights and weight sets are more difficult due to the complexity, concealment and diversity of the embodied social values of ideological and political education. In order to avoid the subjective arbitrariness in the weight assignment, the hierarchical analysis method can be used to justify and constitute the weight set.

According to the principle and method of hierarchical analysis method, firstly, the consultation form of weight configuration of ideological and political education work evaluation indexes in colleges and universities and the instruction sheet were made, in which the meaning of the indexes and the requirements of filling in the form were explained, and then 10 experts including leaders of educational administration departments, educational theorists, ideological and political education experts, school leaders and other categories were solicited. After receiving back the consultation form of weight configuration, the weights of the evaluation indexes of ideological

and political education work of colleges and universities were finally determined after a series of calculations and analysis such as establishing judgment matrix, ranking of weight coefficients and consistency test. Table 3 shows the weighting table of evaluation indexes of ideological and political education work in colleges and universities.

Table 3: Weighting of indicators for the evaluation of ideological and political education work

Tier 1 indicators (4)	Weighting	Secondary indicators (19)	Weighting
Elements of Education	0.25	Organisational leadership	0.32
		Conditions and security	0.16
		Team Building	0.34
		Educational environment	0.19
Educational pathways	0.4	"Teaching of "two courses	0.19
		Situation and Policy Education	0.03
		Thematic Education Activities	0.02
		Social Practice Education	0.13
		Campus Culture Building	0.17
		Student Services	0.11
		Student Management	0.09
		Online Ideological and Political Education	0.06
		Party and League Organization	0.07
		Three Education Work	0.12
Educational Effectiveness	0.2	Campus Style	0.20
		Ideological and Political Quality of Students and Teachers	0.30
		Security and Stability	0.26
		Social Reputation	0.21
Educational characteristics	0.15	Featured Projects	0.94

It is worth stating that the weight coefficients obtained from the same index system using different weight design methods are different, and we cannot simply judge which method is the most accurate and can best reflect the objective situation. In fact they each have advantages and disadvantages, but from the perspective of scientific exploration of evaluation of ideological and

political education work in colleges and universities, we should consider various weight design methods together, which can be more perfect and in line with statistical laws.

Assuming that $\alpha_i{}'$ is the weight coefficient obtained by the expert experience method, $\alpha_i{}'$ is the weight coefficient obtained by the hierarchical analysis method, α_i^{-} is the weight coefficient obtained by the matrix operation method, and $\alpha_i^{(4)}$ is the weight coefficient obtained by the Delphi method, then the comprehensive weight coefficient α_i of the evaluation index can be calculated using the following formula:

$$\alpha_i = \beta_1 \alpha_i{}' + \beta_2 \alpha_i^{-} + \beta_3 \alpha_i^{-} + \beta_4 \alpha_4^{(4)} \tag{8}$$

where $\beta_1, \beta_2, \beta_3, \beta_4$ is the credibility or importance coefficient of the expert experience method, hierarchical analysis method, matrix operation method, and Delphi method, respectively, satisfying $\beta_1, \beta_2, \beta_3, \beta_4 \in [0,1]$, and $\sum_{n=1}^{4} \beta_n = 1$.

A more objective and reasonable weight coefficient can be obtained using this method.

Exploring the ideological and political teaching mode in colleges and universities

Student Classroom Performance

According to the evaluation system, 47% of college students think the teaching materials are boring and uninteresting.

Twenty-six percent of the respondents thought that the teachers were teaching from the book. Table 4 shows the classroom performance of the current ideological and political education teaching for college students.

Table 4: Classroom performance of university students teaching ideology and politics

	Number of people	Percentage
The material is boring and drowsy	139	46
The teacher teaches the same traditional knowledge	77	45
There is little interaction between the students and the teacher and the atmosphere of the class is rigid.	23	21
The knowledge learnt is not put into practice	58	23

The way college students learn ideological and political education

According to the survey results, college students' online concern mainly focuses on social hotspots, domestic and international news, sports events and entertainment news, etc. With the emphasis of colleges and universities on cultivating moral education links of college students, the overall comprehensive quality of college students is optimized, so the concern for social hotspots and domestic and international news is higher, accounting for 79.3% and 78.6% respectively. Similarly, with the interoperability of the Internet, this provides a channel for students who love sports events to cultivate their interests, with 45% of attention. With the rapid development of China's entertainment industry, college students pay relatively high attention to entertainment news, with 57% of attention. Thus, it can be seen that college students pay attention to the Internet on the basis of the mainstream information related to the society, but also involves their own interest areas. When investigating the ways of ideological and political education in colleges and universities, it is found that most of them adopt the methods of "campus official website and online platform content pushing", "online micro-class" and "online ideological and political theme quiz". "35.65% of colleges and universities will adopt the method of "online interaction on thinking and politics", and 26% of colleges and universities will adopt the method of "online competition on thinking and politics".

In addition, 29% of students said they mainly learn through WeChat push, 36% said they learn through micro-classes, and about 60% learn about ideological and political knowledge through Learning Power, microblogs, video websites and TV. Figure 2 shows the channels for students to obtain ideological and political education.
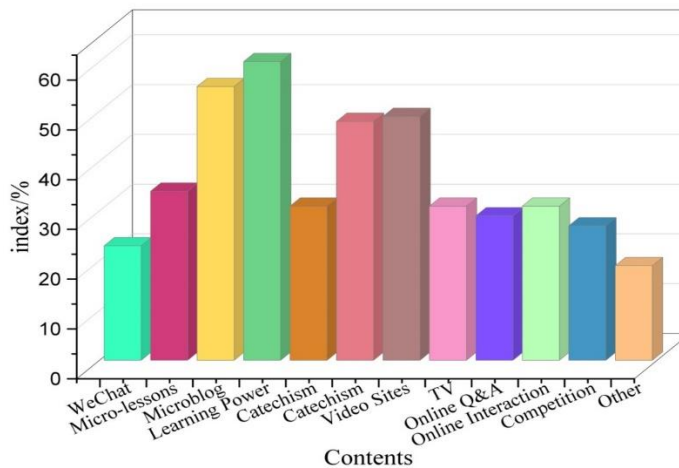
Figure 2: Students' access to ideological and political education

College students' concerns about ideological and political education

79.48% of them focus on the educational content from the perspective of college students, 78.92% focus on the humorous and easy-to-understand educational language, 75.6% focus on the subtle integration of educational theory into real-life examples, and 59.8% focus on the teaching form of active interaction between teachers and students. Another 85.4% of students pay more attention to the explanation of classroom knowledge points, 80% pay more attention to the application of ideological and political spirit, and about 86% pay more attention to the teaching quality and teaching style of the classroom. 79% pay more attention to the assignment of classroom homework, and 17.1% pay attention to other aspects. College students still want deeper improvement and innovation for education content. From the perspective of the network channel, the ideological and political education of college students should not only adhere to the basic principles of Marxism as the internal basis, but also pay more attention to the flexibility and vividness of the external expression, combine theoretical knowledge and network education and teaching and constantly innovate, so as to truly realize the network education of people. Figure 3 shows the concerns of college students about ideological and political education.
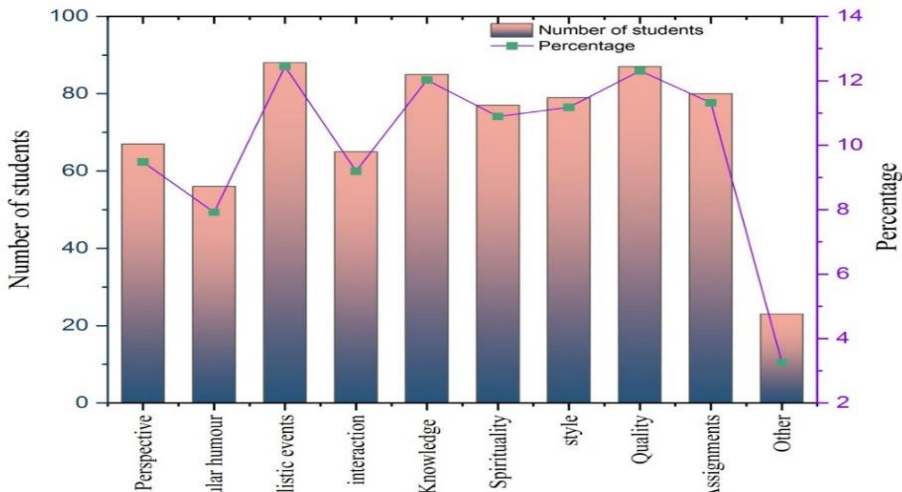
Figure 3: College students' concerns about ideological and political education

Problems of ideological and political education in the context of big data

With regard to the problems of ideological and political education in their universities, 64 people think that the teaching classroom is unattractive, 86 people think that the teaching form is single, 39 people think that there is a lack of network system supervision, and 80 people think that the level of educators needs to be improved. Another 80 people mainly believe that society cannot keep up with the changes of the times.

45 people think that the level of information technology in education is not high. College students are not active in independent learning and lack the spirit of active learning to seek knowledge.

Colleges and universities should increase supervision and regularly check and guide students' online learning. In conclusion, colleges and universities should pay attention to the two-way interoperability between online and offline and increase the combination in order to give full play to the timeliness of ideological and political education. Figure 4 shows the existing problems.
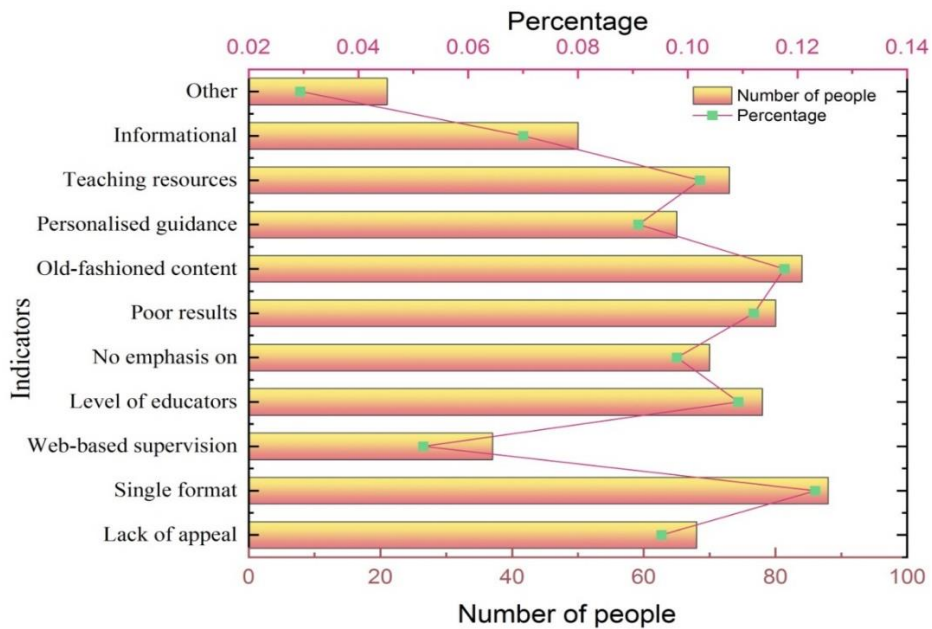

Figure 4: shows the problems

Room for improvement of ideological and political education of college students in the context of big data

85 people said to innovate teaching contents and optimize implementation means, 80 people said to build online and offline two-way interaction platform, 95 people said to carry out all-round social practice activities, 88 people said to promote the construction of online culture laws and regulations.

In addition, 99 people said they wanted to introduce high-quality talents, 85 said they wanted to strengthen the construction of teachers and regular training and learning, 94 said they wanted to strengthen the construction of socialist values, 92 said they wanted to strengthen humanistic care and put people first, and 95 said they wanted to innovate the classroom and regularly and reasonably evaluate the teaching effect. Figure 5 shows the improvement measures of ideological and political education in colleges and universities.
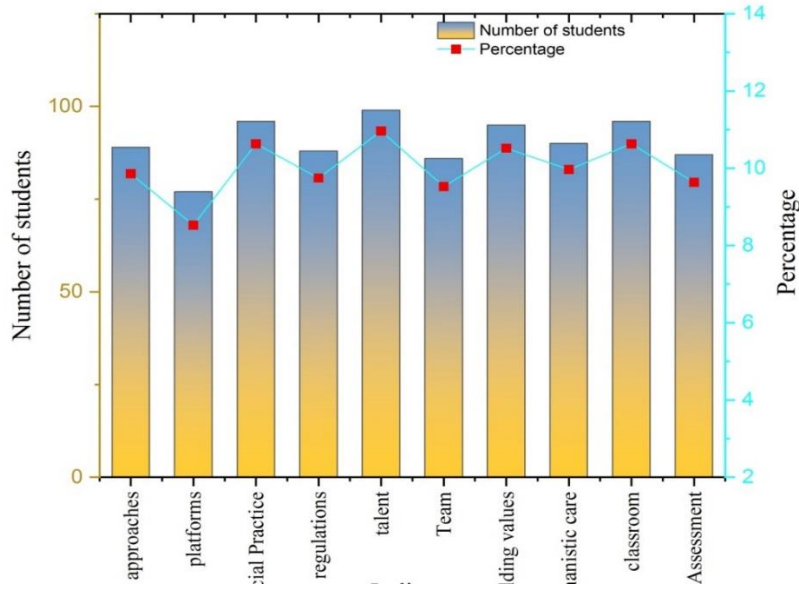
Figure 5: Ideological and political education improvement measures in universities

Conclusion

This paper gives the following reasonable suggestions for improvement through the evaluation system:

In terms of students' concerns about ideological and political education, students are more concerned about the clever combination of educational theories and real-life examples.

The humorous and easy-to-understand language, the form of teaching interaction, the explanation of classroom knowledge, the quality of classroom teaching and teaching methods, and the assignment of classroom homework.

In terms of improvement space, mainly the teaching classroom lacks attraction, 85 people said they want to innovate the teaching content to optimize the means of implementation, 80 people said they want to build an online and offline two-way interactive platform, and 95 people said they want to carry out a full range of social practice activities.

In addition, 99 people said they wanted to introduce high-quality talents, 94 people said they wanted to strengthen the construction of socialist values, 92 people said they wanted to strengthen humanistic care and put people first. 95 people said they wanted to innovate the classroom.

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