

Non-linear Analysis Method to Enhance the Strategy of Civic and Political Education

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ABSTRACT

Ideological and political education has the teaching characteristics of keeping pace with the times. In this paper, the nonlinear support vector machine is used as the ideological and political text data classification algorithm, combined with the text mining technology to collect and screen the ideological and political education data, and the ideological and political text data is divided into various clustering centers of ideological and political education, which are reflected in the research themes of ideological and political education, the hot spots of curriculum ideological and political research, and the teaching methods of ideological and political teachers. This paper analyzes the acquisition of ideological and political education resources from the perspective of students, and explores the matching degree between the acquisition of ideological and political education resources and the individual needs of students. The research objects and research hotspots of ideological and political education are divided, and the optimization strategy of ideological and political education is proposed. In the classification of research topics, the frequency of "college students" was the highest, which was 12568, and the calorific value of the research content "ideological and political education" and the research object "college students" was 8654, indicating that ideological and political education mainly revolved around "college students". The matching degree between ideological and political education resources and students' individual needs was 69.37%. Combined with the results of nonlinear analysis, ideological and political education can improve the effectiveness of educational content, strengthen the coupling degree between research content and research object, and strengthen the teaching factor of teachers.

Keywords: support vector machine, text mining techniques, nonlinear analysis, clustering, civic education

1. Introduction

With the continuous development of information technology, Internet technology, the rapid

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popularization of new media, ideological and political education of college students is facing unprecedented historic changes [1], new media as an important channel of information dissemination, for the ideological and political education of college students provides a new perspective and rich resources [2]. The university stage is the key stage of the gradual formation of students' values and ways of thinking, and the popularization of new media has given college students more open and diversified information choices [3-4]. However, the problems of information overload, information fragmentation, and inaccurate information brought by new media also make the ideological and political education of college students face more severe challenges [5].

The development and utilization of ideological and political education resources is the foundation and guarantee of good ideological and political education work in colleges and universities, and is also the inevitable dependence of enhancing the effectiveness of ideological and political education work in colleges and universities [6-7]. In-depth study of the basic theory of the development and utilization of ideological and political education resources in colleges and universities, accurately analyze the current reality of the development and utilization of ideological and political education resources in colleges and universities in China, and explore the specific strategy of the development and utilization of ideological and political education resources in colleges and universities, is of great significance to effectively improve the effectiveness of ideological and political education in colleges and universities [8-10].

The process of ideological and political education is essentially the process of dissemination of educational information [11]. Fractional communication, characterized by the interactivity of information dissemination and audience precision, is the key to the paradigm transformation of ideological and political education for college students [12]. The Internet information age, which satisfies the inter-temporal socialization needs of college student groups, has had a great impact on traditional media authority [13]. Traditional ideological and political education takes the educator as the main body, and mostly adopts the didactic type of education for college students, which leads to the lack of integration of college students into ideological and political education [14]. With the development and maturity of information technology, a large number of micro-communication platforms integrating music, video and pictures have been introduced into the daily life of college students, which greatly satisfy the needs of the student body for "visual culture" and inter-temporal interaction [15-16]. Through micro-communication media, students express their opinions, learn knowledge, and show their subjective identity, and "discourse dissemination" is gradually transferred from educators to college students, and the stereotype of traditional ideological and political education as being used to lecturing is gradually broken [17-18].

This paper uses nonlinear analysis to analyze the development of Civic and Political Education from four aspects, namely, Civic and Political Education Research Topics, Research Hotspots, Teachers' Teaching Methods, and Teaching Resources. Data text mining technology is selected to collect and process the Civic and political education data, and analyze the semantic network of each feature word of the Civic and political text. Use nonlinear support vector machine to classify the Civics and politics text data, cluster the classification results and present them visually. Sort the Civics research themes and get the research themes and research hotspots of Civics education. Study the teaching experience of excellent teachers, combined with text mining results, to get the educational optimization direction of Civics teaching. Analyze students' recognition of Civic and Political education resources, and clarify the match between teaching resources and Civic and Political education. According to the development of Civics education, propose the optimization strategy of Civics education.

2. Non-linear analytical modeling

2.1. Civics text data mining technology process

Civic text data mining technology process is mainly divided into 6 steps, massive text collection, Civic

text data preprocessing, massive structured data storage, Civic data text analysis, Civic data results visualization, knowledge acquisition. The specific process of Civics text data mining is shown in Figure 1.

The massive text data collection includes unstructured and semi-structured text data, and the unstructured text data includes webpage articles, chat logs, email content, review content, comment articles and so on.

Since the massive text data collected in the previous step is mixed with many data or information unrelated to Civic and Political Education, it needs to be subjected to big data text pre-processing, including text data cleansing, word splitting, removal of deactivated words, feature extraction and selection, and text representation.

Massive text data after processing and conversion of massive structured data can be recognized by the machine and can be further automated analysis, the resultant data will be stored for Civic and Political text data mining processing. The results of Civics text data mining are presented visually to get the content of Civics education strategy needed in this paper.

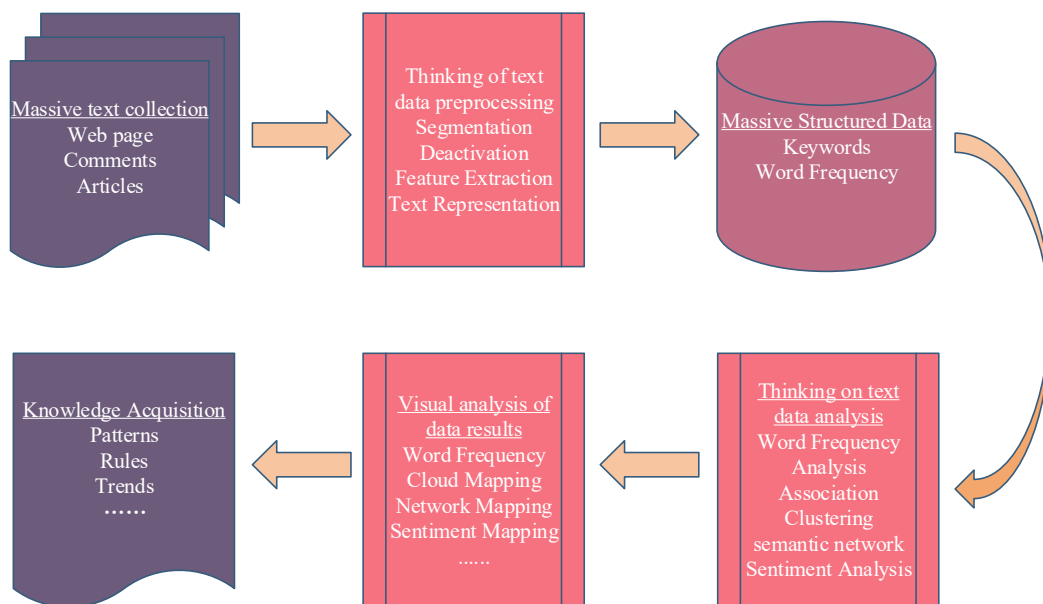


Fig. 1. The process of thinking about text data

2.2. Civics Text Data Mining Techniques

2.2.1. Word frequency analysis. Keywords are the core of the whole article, and the frequency of keywords can reflect the main views and opinions of the review. The keyword frequency cloud can visualize the main keywords in a research field, and the larger the keywords are, the higher the frequency of keywords, and vice versa, the lower the frequency of keywords.

The term frequency (TF) represents the frequency of keywords appearing in this text, assuming the existence of feature word t and text d , n_{ij} represents the weight of feature item t in text d , tf_{ij} is the frequency of feature item t appearing in text d , and n is the total number of texts in the corpus, which is expressed by the formula:

$$tf_{ij} = \frac{n_{ij}}{\sum_{k=0}^n n_{kj}} \quad (1)$$

The inverse file frequency (IDF) is calculated as:

$$idf_i = \log \frac{|D|}{|\{j: t_i \in d_j\}|} \quad (2)$$

where $|D|$ is the total number of documents in the corpus and $|\{j: t_i \in d_j\}|$ denotes the number of documents containing the word t_i . TF-IDF is then denoted as:

$$\begin{aligned} TF-IDF &= TF \times IDF = tf_{ij} \times idf_i \\ &= \frac{n_{ij}}{\sum_{k=0}^n n_{kj}} \times \log \frac{|D|}{|\{j: t_i \in d_j\}|} \end{aligned} \quad (3)$$

2.2.2. Semantic network analysis. A semantic network is a network of relationships between feature words in a text. Semantic primitives are the basic unit of semantic network, which can be represented by a triad (node 1, mapping relation, node 2), and one or several triad primitives form a semantic network, i.e., a directed weighted graph. Assuming that there exists a triad Y , node A and node B , and the mapping relation between the two is vector w , then the triad $Y(A, w, B)$ mapping relation is represented as vector:

$$Y(A, w, B) = A \xrightarrow{w} B \quad (4)$$

Among them, vector w represents the mapping direction and weight from A to B , which can represent the similarity between A and B .

The core and difficulty of semantic network analysis lies in the similarity calculation between the nodes, the similarity represents the degree of relevance between two words or texts, the similarity value is between $[0,1]$, the larger the value of similarity represents the closer the connection between two words or documents, and vice versa, the further away it is. Common algorithms for similarity calculation include the Euclidean distance method.

Euclidean distance method, assuming that there are two points x and y in one-dimensional or multi-dimensional space, the Euclidean distance between them is:

$$D(x, y) = \sqrt{\sum_{k=1}^n (x_k - y_k)^2} \quad (5)$$

where n is the number of dimensions and x_k and y_k represent the x th and y th k th attribute values respectively, from which the Minkowski distance can be further derived as:

$$D(x, y) = \left(\sum_{k=1}^n |x_k - y_k|^r \right)^{1/r} \quad (6)$$

Where r is a parameter, the r parameter of the Minkowski distance is commonly set to:

At $r = 1$, $D(x, y)$ is called the Manhattan distance.

At $r = 2$, $D(x, y)$ is the Euclidean distance.

At $r = \infty$, $D(x, y)$ is called the Chebyshev distance.

2.2.3. Civic Text Classification Algorithm:

1) Civics Text Classification Process

The Civics text classification process is shown in Figure 2, which is mainly embodied in the training stage and the testing stage.

(1) Text normalization. Text datasets used for classification are also called "corpora", and most corpora contain a lot of redundant or erroneous information, such as blank documents, too many stop words, spelling errors, dialect slang, web page markup information, etc., and thus the text needs to be normalized before classification. Text normalization refers to cleaning, converting and standardizing

the text into a format that can be used by computer analysis systems. Commonly used methods include text segmentation, stemming, deletion of stop words and special characters, expansion of acronyms, word correction, and case conversion.

(2) Text Feature Extraction. A feature is a measurable attribute of each observation or data in a data set, generally in the form of a numeric vector. Text is a meaningful object composed of words or phrases in a specific order and is unstructured data. However, computers by their very nature can only recognize 0s and 1s, so to achieve automatic text categorization you need to first represent the text in the form of feature-based vectors. Extracting the features from raw data that best distinguish each category is a science, a process known as feature extraction or feature engineering.

Text feature extraction includes two aspects of feature degradation and text representation.

(3) Classifier construction

(4) Performance Evaluation. After the training of the classifier is completed, the test data need to be fed into the classifier through the same feature extraction to get the predicted labels, and then compared with the actual labels to observe how effective the classifier is, which is called the model testing phase. The key to model testing lies in classifier performance evaluation, and the metrics chosen for evaluating the performance of the classifier should be different according to the differences in the classification tasks. There are dozens of common evaluation metrics, among which accuracy and F1 value are the most frequently used evaluation metrics.

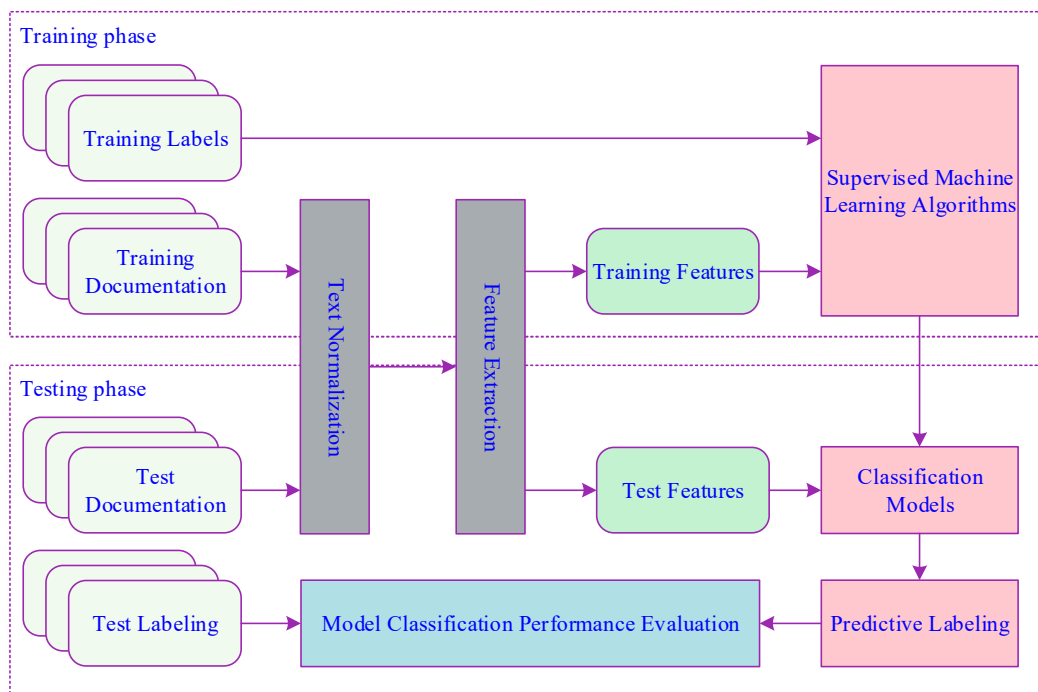


Fig. 2. The process of thinking about the text

2) Support Vector Machine SVM Algorithm. Support vector machine is a supervised learning method based on statistical learning theory. In layman's terms, Support Vector Machine is a classification model which models a classifier that maximizes the interval over the feature space, i.e., its learning strategy is interval maximization, and ultimately, the problem of Support Vector Machine can be transformed into the problem of solving convex quadratic programming. The relevant principles and formulas of support vector machines are described in detail below.

Suppose a training dataset on the feature space is given:

$$D = \{(x_1, y_1), (x_2, y_2) \dots (x_n, y_n)\}, i = 1, 2, \dots, n \quad (7)$$

where $x_i \in R^n$ is a n -dimensional input vector and $y_i = \{-1, +1\}$ is the labeling class. x_i can be called an instance, and y_i is the class labeling of x_i . The goal of learning is to find an optimal separating hyperplane in the feature space. Namely:

$$w^* \cdot x + b^* = 0 \quad (8)$$

w^* is the normal vector and b^* is the intercept. This optimal separating hyperplane classifies instances into different classes. The corresponding classification maximization decision function is:

$$g(x) = \text{sign}(w^* \cdot x + b^*) \quad (9)$$

3) Nonlinear Support Vector Machines. Nonlinear support linear vector machines are mainly implemented using the kernel trick. The kernel trick is to transform the input space R^n to a new feature space H with a nonlinear transformation, the mapping is denoted as $\phi(x)$ so that the original nonlinear model can be converted to a hyperplane model in the H space, and then the classification model can be obtained by continuing the training with a linear support vector machine in the new space. For all $x, z \in R^n$, the kernel function is defined as follows:

$$k(x, z) = \phi(x) \cdot \phi(z) \quad (10)$$

Thus, the original problem can be transformed into a problem of solving the optimization of the following equation:

$$\min_{\alpha} \frac{1}{2} \sum_{i=1}^n \sum_{j=1}^n \alpha_i \alpha_j y_i y_j k(x_i, x_j) - \sum_{i=1}^n \alpha_i \quad (11)$$

$$\text{s.t.} \sum_{i=1}^n \alpha_i y_i = 0 \quad (12)$$

$$0 \leq \alpha_i \leq C, i = 1, 2, \dots, n \quad (13)$$

Eqs. (11), (12), and (13) can be rewritten in the form of a matrix:

$$\min \frac{1}{2} \alpha^T Q \alpha - e^T \alpha \quad (14)$$

$$\text{s.t.} y^T \alpha = 0 \quad (15)$$

$$0 \leq \alpha_i \leq C, i = 1, 2, \dots, n \quad (16)$$

Where the elements of the e matrix are all 1's and Q is a semi-positive definite matrix. $Q_i = y_i y_j k(x_i, x_j)$

2.2.4. Clustering algorithms. Clustering is an important method of knowledge discovery, which is widely combined with Chinese information processing technology and applied in the process of network information processing to satisfy the viewers to easily and quickly find the information resources they need from the Internet. Clustering can be called unsupervised learning, because it is in contrast to classification learning, the samples used for clustering are unlabeled, and must be determined automatically using a clustering algorithm.

Text clustering is an effective application of the clustering problem in text mining, is one of the important methods of text mining, according to the definition of text categorization can be known as text classification is based on a collection of documents that already know the category labels of the category classification.

K-means clustering is relatively simple, its local search ability is very strong, and the speed of convergence of the calculation is very fast. It is the above characteristics that make the K-means

algorithm well suited to the problem of clustering high-dimensional text vectors. In this paper, K-means algorithm is chosen as the main algorithm for civic education text classification.

The basic idea of the K-means algorithm is a clustering algorithm that clusters n input sample into K classes according to their sample characteristics, where K is a positive integer. The goal is to find the minimum of the sum of the squares of the distances between the input samples and their corresponding cluster centers. That is:

$$J = \sum_{j=1}^k J_i = \sum_{i=1}^k \sum_{j=1}^n w_{ji} \|X_j - C_i\|^2 \quad (17)$$

K-means algorithm algorithm steps:

- 1) Set the number of clusters $K > 0$, with a small tolerance error $\varepsilon > 0$.
- 2) Randomly select K starting positions of cluster centers $(i = 1, 2, 3, 4, 5, \dots, K, \text{order } t = 1)$.
- 3) For $j = 1 \dots, N$.
 - (1) Calculate the distance between the input sample and each cluster center.

$$d_{pv} = \|x_j - C_i^{i-1}\| (i = 1, \dots, K) \quad (18)$$

(2) Calculation of sample categories

$$w_{ji} = \begin{cases} 1, & \text{if } d_{\mu_i} \leq d_{jm} \forall m \neq i \\ 0, & \text{otherwise} \end{cases} (i = 1, \dots, K) \quad (19)$$

- 4) Updating the clustering centers.

$$C_i^t = \frac{\sum_j w_{ji} x_j}{\sum_j w_{ji}} (i = 1, \dots, K) \quad (20)$$

- 5) Calculate objective function $\mathcal{G}$, if $|J_{t-1} - J_t| < \varepsilon$, end, otherwise $t = t + 1$, go back to step III.

3. Non-linear analysis of the development of civic education

3.1. Classification of Civic Education Topics

4,583 topic words about the strategy of Civic Education were obtained by TF-IDF algorithm of natural language processing, SVM text classification and K-means clustering. Sorted according to the number of occurrences of each theme word, 50 theme words with the highest number of occurrences were selected for statistical analysis, the average TF-IDF value of each theme word was calculated and the research type of each theme word was labeled, and the theme words were respectively labeled as research object O, research content T and research method M. Eleven theme words having the same significance or ambiguous research type were excluded from the labeling of the theme words, and the remaining 39 theme words were statistically analyzed. The results of the analysis of the theme words of the strategy of ideological education are shown in Table 1.

The data results of text mining show that the most frequent ideological and political education strategy keywords are "college students", "education", "ideology", "ideological and political education", "politics" and "universities", among which the frequency of "college students" is 12568 and the TF-IDF is 0.65. It shows that these keywords are hot topics in the research of ideological and political education.

Table 1. The results of the analysis of the theme words of the education policy

Sort	Subject matter	Frequency	Type	TF-IDF	Sort	Subject matter	Frequency	Type	TF-IDF
1	College student	12568	O	0.65	21	Theoretical course	4536	T	0.28
2	education	11869	O	0.62	22	Teaching reform	3886	T	0.45
3	thought	11566	T	0.60	23	integration	3758	M	0.39
4	Ideological and political education	11203	T	0.45	24	practice	3562	M	0.68
5	politics	11004	T	0.28	25	Ideological and political teaching	3425	M	0.51
6	university	9568	O	0.75	26	Ideological and political education strategy	3211	M	0.31
7	thinking	9325	T	0.78	27	Ideological and political work	3204	T	0.47
8	courses	9214	T	0.69	28	Large number	2986	M	0.71
9	Course thinking	9087	T	0.73	29	New age	2878	T	0.42
10	College student	12568	T	0.34	30	Thinking of education	2836	T	0.28
11	Thinking class	9004	M	0.56	31	Thinking on the education strategy	2507	M	0.24
12	teaching	8975	T	0.42	32	Thinking on the development of political teaching	1785	T	0.56
13	culture	8868	M	0.33	33	thinking	1605	T	0.23
14	media	8752	T	0.27	34	values	1561	T	0.34
15	construction	8213	T	0.49	35	The Internet	1524	M	0.75
16	network	7658	M	0.57	36	Teaching method	1349	T	0.42
17	work	7491	T	0.31	37	Teaching improvement	1325	T	0.32
18	childcare	7352	T	0.27	38	Campus culture	1856	T	0.59
19	innovate	6958	M	0.26	39	Ideological and political theory	1424	O	0.35
20	New media	5285	O	0.65					

3.2. Analysis of hotspots in the course's political thinking

This paper combines the previous research subject terms of ideological education will be related to the analysis of the research content (T) and the research object (O), the research object (O) and the research content (T) heat map as shown in Figure 3, the research object is mainly divided into college students, education, colleges and universities, colleges and universities, enterprises, teachers, higher vocational and the content of the research for the ideological, ideological and political education, ideological and political education, ideological and political courses, culture, ideological policy, network, parenting, Innovation, curriculum ideology, teaching reform, ideological education system, reform, education.

As can be seen from the figure, the strategy of ideological and political education mainly centers on college students, and the hot content of the research is ideological and political education. The heat value of the research content "ideological and political education" and the research object "college students" is 8654. The strategy of ideological and political education is the concept of ideological and political education, and it is the way forward for the development of ideological and political education in the new era. Compared with the traditional ideological and political education, the strategy of ideological and political education educates college students in an all-round way, so that the

ideological and political education and the professional courses go in the same direction.

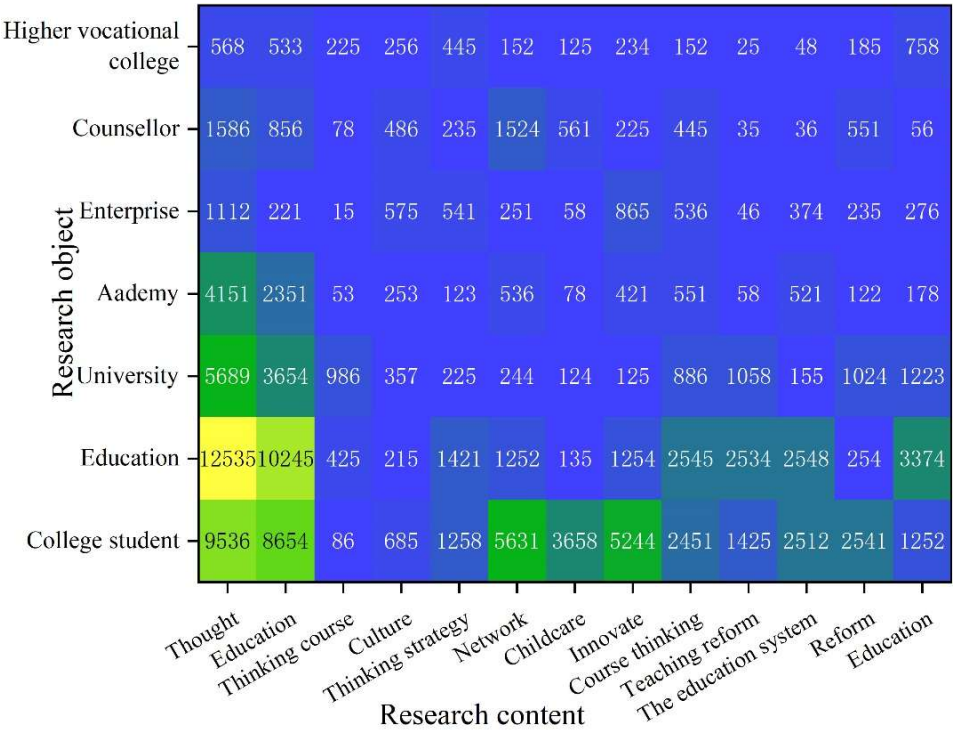


Fig. 3. Study subjects (o) and study the heat diagram

3.3. Teaching Methodology High Frequency Keyword Mining

Teachers are the key force in the development of Civic Education, the main actors in the implementation of Civic Education strategies, and the brainpower and advocates for the enhancement of Civic Education, in order to deepen the optimization of Civic Education strategies, this paper is based on the excellent teachers of the new era, and the use of text mining technology to analyze the growth pattern of the Civic and political excellent teachers with high-frequency keywords.

Text mining is based on the computer's big data processing technology, through the processing of this to analyze and excavate the valuable information in the text. The use of frequency statistics for keyword screening of the text material, found that there are still semantic repetitions of keywords, through the merger of synonyms and then the second word frequency statistics, to get the top 20 high-frequency keyword list, the sample Civics education strategy high-frequency keywords as shown in Figure 4.

High-frequency keywords are mainly verbs, nouns and a few adjectives. Verbs mainly depict the content of the work of excellent Civics teachers, with a relatively high frequency of "striving for excellence", "volunteer service", "academic research", "Thought Leadership", "Psychological Counseling", "Ideological and Political Education", "Development of Party Members", "Career guidance" and other aspects, which reflects the focus direction and specific practice of excellent teachers' daily work. "Innovation for excellence", as an indicator of the developmental dynamics of the strategy of ideological education, appears 685 times.

Nouns and adjectives mainly depict the spiritual qualities of excellent Civic Teachers, such as "sense of responsibility", "patriotism", "the first heart", "unity of knowledge and action", "love and dedication", "no regrets", "diligence", etc., from these key words, we can see the intrinsic of excellent Civics teachers' professional quality.

From the specific connotation of the keywords, the high-frequency keywords mainly focus on the four aspects of daily affairs management, social practice, academic research, and parenting strategies,

and the Civics teachers can optimize the existing Civics education strategies according to the keywords of the educational strategies of the excellent pedagogues.

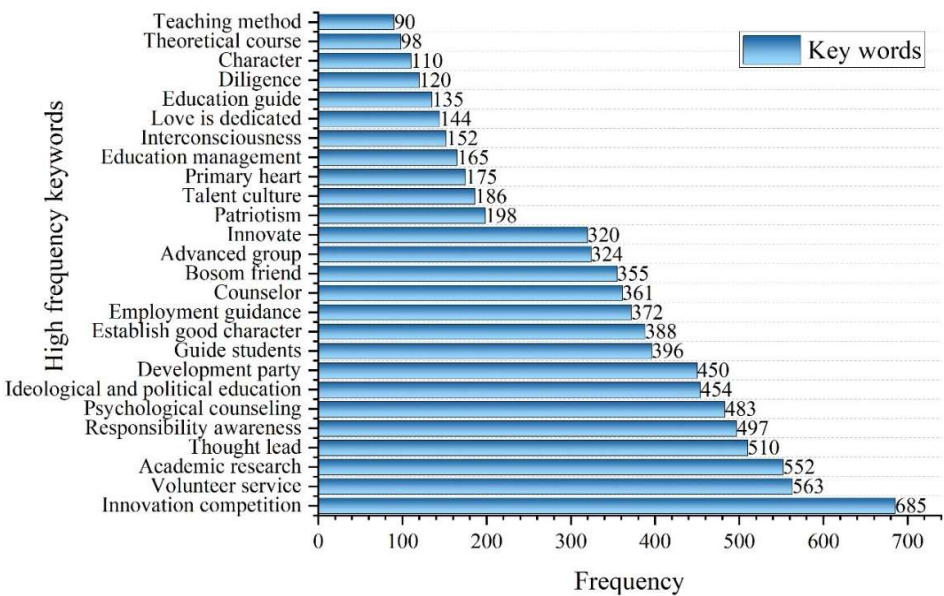


Fig. 4. Teachers are thinking about the high frequency keywords of education strategy

3.4. Access to Civic Education Resources

This research focuses on undergraduate students from freshman to senior year, who are attending as well as have attended the Civics classroom in one of the colleges as the main respondents. The college has five academic departments and 30 undergraduate majors. In view of the fact that the school only offers related Civics courses in the freshman and sophomore grades, in order to facilitate the survey, this study firstly samples students who are attending Civics classes as much as possible according to the respondents' grades and majors on the basis of obtaining class schedules of Civics classes taught in the school. At the same time, students in other grades were surveyed through counselors, classroom teachers and other channels. The survey was mainly distributed through the online questionnaire, the questionnaire used anonymous form, a total of 673 pieces of data information were recovered. After statistical processing, excluding 131 invalid questionnaires that did not complete the answer or checked all the scale questions as the same answer, 542 valid data were obtained.

In this study, the data were analyzed by descriptive statistics through the SPSSAU online analysis platform, and student interviews were used as auxiliary research objects, with the help of which the content of the interviews was used to understand the learning experience of college students based on the teaching of Civics and Politics.

The recognition of college students' access to Civics resources is shown in Table 2. In the pre-study section, 74.44% of the students said that the Civics teachers would release relevant pre-study tasks through the teaching platform before class, and more than 71% of the students thought that the materials shared by the Civics teachers through the teaching platform before class were helpful to their own learning.69.37% of the students thought that the teaching materials pushed by the Civics teachers could satisfy their own personalized learning needs.

Table 2. The recognition of the students' access to the resources of the university

	Very different (%)	Different meaning (%)	General (%)	Consent (%)	Very agree (%)
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Thinking teachers will often publish pre-acquisition tasks through the teaching platform.	3.12	1.05	21.39	51.02	23.42
The information Shared before the teacher's class is very helpful to your study.	2.85	0.98	25.13	50.11	20.93
Thinking teachers often expand the content of the course.	2.21	1.59	24.75	52.13	19.32
The development of the course resources Shared by the teachers and teachers is in line with your interest.	2.14	1.08	29.23	47.21	20.34
Thinking teachers often push relevant review content.	0.19	2.04	28.15	51.04	18.58
The review content of the thinking teacher can meet your personalized learning requirements.	2.65	1.52	26.46	48.23	21.14

4. Optimization strategies

4.1. Effectiveness of Civic Education Content

The effectiveness of the teaching of Civics and Political Science in colleges and universities is an evaluation index of whether and to what extent the actual effect of the teaching of Civics and Political Science is in line with the preset objectives of the teaching. The effectiveness of teaching Civics and Political Science in colleges and universities refers to the actual effect of Civics and Political Science teachers in helping students to improve their ideological and moral qualities and establish a correct worldview, outlook on life and values through teaching activities based on certain social development requirements and specific teaching objectives of the courses. Measuring the effectiveness of teaching Civics courses in colleges and universities is not only to examine students' understanding of Marxist theory, but also to examine students' absorption, internalization and practice of Marxism.

4.2. Coupling of research content and research objects

Students are the learners of civic education and teaching, and a full understanding of the situation of students can improve the relevance of the content of civic education, which is useful for cracking the problem of the articulation of the content of civic education in universities and primary and secondary schools. In order to get closer to the students, it is necessary to combine the development of information technology in the new media era and explore the intelligent study mode. With the knowledge of the students, the focus of the content of the civic and political education of each school section is delineated, and then the scientific design of the content system of teaching materials in a gradual and spiral manner, which is an important part of the integration of the content of the civic and political education of universities and primary and secondary schools.

4.3. Optimization Path of Civic Teachers' Factors

Teachers are the most important, crucial and fundamental force in education, and they have a long way to go and an honorable mission to develop the cause of education. Teachers are the key to enhance the effectiveness of teaching and learning of civic and political education in colleges and universities, and they need to be upgraded and improved in the following aspects.

1) Firming the political position of college civics teachers. Strengthen the party's leadership of the college civic education teaching team, strengthen the political nature of civic education teaching, and effectively improve the teachers' ability to adhere to the faith and strictly abide by the political

discipline.

2) Enhance the academic interpretation ability of teachers of Civics and Political Science in colleges and universities. Consciously update theoretical knowledge, organize thematic studies, strengthen the use of academic logic, and pay close attention to social development.

3) Strengthening the classroom management ability of college Civics teachers. They should have a deep understanding of the dynamics of the learning situation, manage classroom teaching dexterously, strive to improve the art of teaching, and fully mobilize teaching emotions.

4) Correcting the professional attitudes of college civics teachers. Establish and improve the long-term mechanism for the construction of teachers' morality and ethics, carry out professional training for teachers of Civics and Political Science, increase the publicity of advanced models among teachers of Civics and Political Science in colleges and universities, and strengthen the cultivation of self-morality.

5) Improve the guarantee mechanism for the development of teachers of Civics and Political Science in colleges and universities. It will establish a backbone teacher support system, improve the assessment and evaluation mechanism for teachers of Civics and Political Science in colleges and universities, effectively improve the treatment of teachers of Civics and Political Science in colleges and universities, and improve the exit mechanism.

5. Conclusion

This paper uses big data text mining technology to analyze the data related to Civics education in a non-linear way, combines the results of Civics text mining, analyzes the research themes of Civics education, the research hotspots of curriculum Civics, and the keywords of Civics teachers' teaching strategies, and discusses the degree of acceptance of Civics education subject-students to teaching resources. The development of Civics education is analyzed and optimization strategies for Civics education are proposed from four levels: Civics education research themes, research hotspots, teachers' teaching methods and teaching resources.

Combined with the text data analysis method of natural language processing technology, we get that the research themes of ideology and politics are mainly centered on the keywords of "college students", "education" and "thought", "college students", "education", "ideology", "ideological and political education", The TF-IDF values of "college students", "education", "thought", "ideological and political education", "politics" and "colleges and universities" are 0.65, 0.62, 0.60, 0.45, 0.28 and 0.75 respectively. The research hotspots of Civic Education have always centered on "college students", "education", "universities", "colleges and universities", and "enterprises", "Teachers", "Higher Vocational", and the research content is mainly focused on the field of Civic and Political Evidence Education.

Combined with the processing of the teaching text data of excellent Civics teachers, we propose practicable methods for teachers to carry out Civics education. The teaching of Civics teachers can be guided by actions such as "Striving for Excellence", "Academic Research", "Thought Leadership" and "Ideological and Political Education". And "ideological and political education" as the guidance for their actions. Meanwhile, in terms of the resources for Civic and Political Education, 69.37% of the students thought that the teaching materials pushed by Civic and Political Teachers could meet their personalized learning needs.

The strategy of Civic Education should focus on the effectiveness of the content of Civic Education, strengthen the coupling between the content of the study and the object of the study, and strengthen the development of the personality of teachers in Civic Education.

6. Recommendation

While discussing the application of new media in education, the potential challenges and problems of new media are not discussed. In future research, it is important to explore how to effectively manage

and use the education resources in the new media, avoid information overload and fragmentation, and will be the key to improving the quality of education.

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