Research on the Integrated Mode of Ideological and Political Education in Colleges and Universities Based on Multivariate Data Analysis

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Abstract. At present, ideological and political education is highly valued by the state. In order to improve the level of ideological and political education in universities and accelerate the popularization of ideological and political education, an integrated model of ideological and political education in universities based on multivariate data analysis is proposed. Taking the development of ideological and political education as the basic goal, while analysing the inevitable requirements of the integration model, the main classification criteria of the ideological and political education research objects are clarified, and the research on the education integration model is completed. College education. On this basis, the principle of integration processing is proposed, and various data attributes of ideological and political education in colleges and universities are defined. Then, combined with the mapping conditions under the integration mode, a comprehensive environment of ideological and political education based on multivariate data analysis is established. With the aim of grafting the ideological and political education model, we explore the development methods of ideological and political education in colleges and universities, determine the implementation law of ideological and political education for continuous and harmonious development, and propose constructive methods to develop the integrated model of ideological and political education in colleges and universities.

Keywords: Multivariate data · Ideological and political education · Mapping condition · Mode grafting

1 Preface

The traditional theoretical knowledge of data statistics is the foundation of multivariate data analysis. Therefore, multivariate data analysis can be regarded as a branch of traditional data statistics and is a comprehensive analysis method. When multiple objects and indicators are related to each other, statistical rules for each object are obtained through analysis. Multivariate data analysis is applicable to ideological and political
fields, including multivariate normal distribution and its sampling distribution, multivariate normal population mean vector and covariance matrix hypothesis test, multivariate analysis of variance, linear regression and correlation, multiple linear regression and correlation (I) and (II), main component analysis and factor analysis, discriminant analysis and cluster analysis, Shannon information content and its application [1]. This is called multivariate analysis. When the distribution of the population is a multidimensional (multivariate) probability distribution, please use mathematical statistical theory and methods to deal with the population. According to the research characteristics of the ideological and political integration model, multiple data analysis can be divided into multiple basic types of multiple regression analysis, discriminant analysis, cluster analysis, principal component analysis, correspondence analysis, factor analysis and typical correlation analysis [2].

Ideological and political education is the foundation of social progress and development. Ideological and political education can improve the political opinions and moral restraint of the masses, so as to be a bit face-to-face, from the individual to the collective, to improve the ideological and political level of the entire society, so that they can form a social ideology. And ethical social activities. A society. This is also a lifelong learning course in Chinese literature. Ideological and political education is the main content of China’s spiritual civilization construction and one of the main ways to solve social conflicts and problems. Although ideological and political education is important, it is difficult to achieve universalization. Especially in the market economy, the ability of ideological and political education needs to be improved and cannot meet the needs of social development. It is because of our neglect of ideological and political education [3–5]. Personality education is the foundation of the application of ideological and political education. Without this framework, ideological and political education is like a rootless duckweed. Aiming at the problem of the limited development of the integration model of ideological and political education in colleges and universities, a multi-data analysis method is proposed. In studying various political views and ethics, he also pointed out the current status of malfeasance in the current development situation and put forward a series of instructions. Rectification suggestions (Fig. 1).

2 Integrated Model of Ideological and Political Education in Colleges

Ideological and political education is the main development direction of the university integration model, and its main research content can be summarized into three basic directions: educational connotation, necessary requirements, and the target of education.

2.1 Connotation of Ideological and Political Education Development

Ideological and political education is a new direction for the development of quality education in colleges and universities. To some extent, it is different from traditional colleges and universities’ ideological education, but it actively serves all tasks related to students. Summarizing the development of ideological and political education in universities, this application mode has the following development characteristics. First, the development
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Fig. 1. Development needs of ideological and political education in universities

of ideological and political education in colleges and universities has a strong breakthrough. The improvement of integrated technical level breaks through the limitations of traditional ideological and political education and provides more favorable conditions for the in-depth development of ideological and political education in colleges and universities. Compared with the limitations of traditional behavioral education, ideological and political education in colleges and universities has better broken the role restrictions between educators and college students, paid more attention to equality between the two, and thus more respected the subject status of the educated. Make it better for interactive communication. The educating and guiding function of online ideological and political education in colleges and universities has benefited more [6]. Secondly, colleges and universities are the places where the density of students is the greatest. College students can not only learn from vast behavioral data, expand their horizons, and gain insights, but also relax and entertain themselves physically and mentally. Therefore, they are highly sought after by college students. Finally, the guiding role of the development of ideological and political education in universities is obvious. The integrated education information is complex and diverse, the level is uneven, and the negative influence of disseminated negative speech on ideological and political education in colleges and universities must not be underestimated. It is precisely under such a development model that the development of ideological and political education in colleges and universities has always faced severe challenges. Applied issues.

2.2 Inevitable Requirements of the Integration Model

In the context of ideological and political education in colleges and universities, the integration model and the basic education system must be effectively connected in order to exert the most direct effect. Compared with other educational organizations, although ideological and political education in universities has been in a relatively rapid development mode, it is still in its infancy, and a relatively complete research system has not yet been established for this type of development mode. Personality is the basis for the
stable formation of the outlook on life and values. Only when a person’s three outlooks are unified can they have a stable value concept and a stable psychological basis for life values. Human values must be unified and stable, which requires a person’s psychological process and personality form to be unified and stable. Otherwise, split personality can only produce the concept of split [7]. Personality is the inner psychological basis for the formation of a specific world outlook and outlook on life. The world view is an understanding of the world. Although the correct world view comes from the correct theoretical guidance and learning, if there is no benign personality form as the internal psychological basis, external instillation will be difficult to play a role. The integrated model is the main driving force for the formation of specific moral qualities. Personality has qualitative characteristics. Therefore, once a personality is formed, a person will have a corresponding internal texture. Different textures will adapt to different moral tendencies, and a benign personality is easy to establish a benign moral quality. Of course, these basic roles of personality are not absolute, but relative. At the same time, they also interact and change with people’s values, world outlook, life outlook and moral consciousness [8]. Therefore, personality has both unity and stability, as well as differences and variability. These characteristics also determine the difficulty of developing a benign personality. In short, the personality state can be said to be the subtle, concealed and primitive state of ideology and morality, while the ideology and morality are often the development, shaping, maturity and clear personality expression (Table 1).

Table 1. Conditions for the establishment of an integrated model of ideological and political education in universities

| Foundation condition | Necessary establishment condition | Auxiliary conditions | Thought-level condition |
|-----------------------|----------------------------------|----------------------|------------------------|
| Personality           | Theoretical guidance             | Moral values         | Behavior motivation     |
| Mental process        | The theory of learning           | Emotional concept    | Ideological motivation  |
| World view            | Psychological basis              | Moral tendency       | The moral force         |
| The outlook on life   | Behavior on the basis of         | Psychological basis   | Emotional expression    |
| Moral consciousness   | Thoughts on the basis of         | The value of life     | Behavioral expression   |

2.3 Research Objects of Ideological and Political Education in Colleges and Universities

Ideological and political pedagogy is a discipline that guides people to form correct ideological behaviors. It takes the law of the formation and change of human ideological
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behaviors and the law of ideological and political education as its own research objects. Among them, the change of people’s thoughts, viewpoints and positions, as well as the formation of the outlook on life and the world, are the focus of research. Ideological and political pedagogy is a complex network system. With the promotion of the integration model, its main research objects are:

First, study the physical and psychological factors of human beings, the research needs — motivation-the development process of behavior, and reveal the development law of human’s own thoughts and behaviors.

Secondly, to study the relationship between the general relationship, the complex social factors and the formation and development of the three views of the education object, and to analyze how to adjust the impact of the social environment on people across dimensions.

Third, study the management system and leadership function of ideological and political education, evaluate the quality of ideological and political education workers, and explore the path of ideological and political education penetration into the commercial field, so as to promote cooperation in various fields and achieve the purpose of collaborative education. The law of human thought activity. There is a mutual influence between human thoughts and behaviors and their living environment. The social environment produces human needs, and the demand for human motivation also determines human behavior. Some behavioral results are fed back to regulate demand, increase motivation and re-dominate human behavior [9]. This periodic movement reflecting the interaction and mutual restriction of various ideological factors constitutes the process of people’s ideological activities.

3 Integrated Ideological and Political Education Environment Based on Multivariate Data Analysis

With the support of the integrated model of ideological and political education in colleges and universities, according to the operating procedures established by integrated processing, multiple data definitions, and integrated mapping conditions, an integrated ideological and political education environment based on multivariate data analysis is established.

3.1 Integrated Processing of College Ideological and Political Data

Parallel coordinates of multivariate data is one of the mainstream technologies for the integration of ideological and political information. A significant advantage of parallel coordinates is that it has a good model foundation, and its projective geometric interpretation and duality characteristics allow it to express the projection information of high-dimensional data in multiple low-dimensional subspaces simultaneously [10]. But the integration of parallel coordinates mainly focuses on the visualization of the original ideological and political data, not on the specific university data analysis task. Because a point-line transformation is used in parallel coordinates, it is easy to produce view aliasing, that is, over-drawing problems. This problem is especially serious when the number of samples in the ideological data set is large. When the goal of integrated data
analysis is pattern recognition, the most concerned thing is not all the information of each sample itself, but the difference between classes. That is to say, it is not necessary to visualize all the integrated data samples, and only the ideological and political samples with a special contribution to the classification can be visualized. For multiple linearly separable cases, the integrated vector set is a subset of the ideological data vector. The integration vector refers to all the ideological and political education samples located on the extreme edge of the training set, that is, the samples located on the convex hull of the training set. In fact, the integration vector is the convex vertex of the sample set. Therefore, using the integrated processing algorithm to crop the ideological and political data training set samples and using the integrated vector of the training set as the representative of the training set to draw parallel coordinates can reduce the view aliasing problem of parallel coordinates and facilitate the observation of ideological and political integration Data structure and feature information to distinguish multiple categories. Set \( p \) to represent the highest-level disposal conditions for the integration of ideological and political education, \( p \) to represent the lowest-level disposal conditions for the integration of ideological and political education, and \( W \) to represent the integrated order of magnitude of multiple ideological and political data samples. The integrated processing results of the data are expressed as:

\[
e = \frac{\tilde{p} \int (W - \chi y_1)^2 dy_1}{\tilde{p} \int \beta y_2 \cdot ||r_1 + r_2|| dy_2}
\]

(1)

Among them, \( \chi, \beta \), represent the conditions for the application of multiple data and integrated analysis in the context of ideological and political education in colleges, \( y_1, y_2 \), represent the data samples of two different ideological and political education in colleges, and \( r_1, r_2 \), represent integrated ideological and political Multivariate classification coefficients and characteristic information parameters of the data.

### 3.2 Definition of Diversified Data of Ideological and Political Education in Colleges and Universities

The hierarchical structure of ideological and political education data in colleges divides the diversified space into rectangular subspaces, and the size of the subspace is determined by the size of the integration node. The level of the tree map is based on the order from the root node to the leaf node, and the horizontal and vertical conversions are sequentially performed. The rectangular subspace is divided horizontally. The next layer will be divided vertically, and the next layer will be divided horizontally. analogy. For each divided ideological and political data collection space, corresponding pattern matching or necessary explanation can be performed. For the integration of multivariate data, there is very little data diversification mapping method that can directly map the data information and the information that the model subject wants to know. Generally,
multivariate methods are used to deal with this mapping relationship. In order to better understand the diversity of ideological and political education data, the process of understanding information can be layered. Hierarchy is generally divided into two steps. The first step is to understand the approximate distribution information of the data through a multiple view, such as density, pattern, and size. You can understand the general distribution range or structure information of the information; the second step is to observe the details with another view on the selected detailed data area. In order to explore the data relationship between the various data dimensions in a multi-dimensional data set, two-dimensional data can be represented in a scattered manner; but the more the data has more dimensions, the more difficult it is to process. As the number of dimensions increases, the number of possible diversified portfolio index levels continues to increase.

Set \( \tilde{I} \) to represent the upper-level grading conditions for the data of multiple ideological and political education, and \( \hat{I} \) to represent the lower-level grading conditions for the data of multiple ideological and political education. The simultaneous formula (1) can define the diverse data of ideological and political education in colleges as:

\[
R = \sqrt{\frac{\sum_{\tilde{I}}^\hat{I} (q_1 + q_2)^2 e}{3u'|T|/\chi E}}
\]  

In the above formula, \( q_1 \) and \( q_2 \) respectively represent two different data parameters of ideological and political education in colleges and universities, \( u' \) represents the application information of the integrated model, \( T \) represents the cyclical implementation time of ideological and political education, and \( \chi \) represents the modality of ideological and political education Analysis conditions, \( E \) represents the number of ideological and political samples in an integrated education environment.

### 3.3 Mapping Conditions for Integration of Ideological and Political Education

As the main representative of the subspace coordinate integration method, the projective geometric interpretation of parallel coordinates has great potential for educational pattern recognition tasks, but the problem of multivariate data analysis hinders its practical application in the field of integrated analysis. The main reason for the parallel coordinate integration is that its point-line dual transformation increases the average data proportion of data information. This point-to-point physical mapping relationship integrates parallel coordinates and scattered point coordinate systems into the same integrated framework. This multivariate data set is equivalent to integrating dual coordinates and parallel coordinates in the same model environment, so it is called Parallel dual data collection. The same sample has both point and line representations in parallel dual integration. The two forms have a certain geometric correspondence. You can transform as needed to adjust the information parameters between the data. Ratio, to alleviate the problem of the deviation of the integrated model, and provide a powerful tool for the identification of multiple ideological and political education models. In the practice of ideological and political education in colleges and universities, describing an objective data collection...
object usually requires multiple integrated attribute variables, so the number of information attribute variables is greater than 1. Such data is generally called multivariate data. Because the educational subject has a strong sense of diversity, the integration of ideological and political data is of great significance for understanding and processing multiple data. As we all know, no one type of data information set can be applied to all model environments, so the choice of ideological and political connotation according to the purpose of the education and the specific environment, or the comprehensive use of a variety of diverse data information, can directly make the integration of ideological and political education in colleges The conditions are met. Let \( f \) represent the parameter proportion conditions of ideological and political education information in colleges and universities, and \( \xi_1 \) and \( \xi_2 \) respectively represent two different multi-dimensional data collection objects. The simultaneous formula (2) can express the integrated ideological and political education mapping conditions as:

\[
S = \frac{\left| \begin{array}{c}
\int_{a_\downarrow}^{a_\uparrow} (f - dl)^2 \bar{R}_j \\
\int_{a_\downarrow}^{a_\uparrow} \tilde{k} \cdot ||\xi_1 + \xi_2|| d\tilde{k}
\end{array} \right|}{\left| \begin{array}{c}
\int_{a_\downarrow}^{a_\uparrow} \tilde{k} \\
\int_{a_\downarrow}^{a_\uparrow} \tilde{k}
\end{array} \right|}
\] (3)

Among them, \( a_\uparrow \) represents the upper limit data analysis conditions in the integrated mapping relationship, \( a_\downarrow \) represents the lower limit data analysis conditions in the integrated mapping relationship, \( d \) represents the analysis and disposal authority of multiple ideological and political education data, and \( l \) represents the integration of ideological and political education information in universities Behavioral mode performance, \( \bar{R}_j \) represents the average characteristic coefficient of the integrated information in the multivariate data set, and \( \tilde{k} \) represents the quantitative analysis of the ideological and political education data of colleges and universities.

4 Rectification and Modification of the Integrated Model of Ideological and Political Education in Colleges and Universities

Combined with the conditions of multivariate data analysis, from the three aspects of ideological and political model grafting, development needs exploration, and implementation of law research, put forward suggestions for the development of university ideological and political education integration model renovation and modification.

4.1 Grafting of Integrated Ideological and Political Model

The idea of model grafting is a process of multi-data fusion. Ideological and political education in universities should also accept the idea of knowledge grafting. This is not only the learning philosophy of other disciplines, but also a new requirement for ideological and political education in universities under the integrated research model. In a sense, knowledge also has basic characteristics of life, such as data information metabolism.
In the process of rectification of multiple data, the ideological and political model grafting mainly involves the teaching of theoretical courses in colleges and universities, that is, the knowledge of ideological and political theory courses that have been processed, specialized, structured, and have “life” are transplanted into the minds of learners. The process of going through the original knowledge structure can be regarded as “grafted” when taught; self-learning can be regarded as “self-grafted”; teaching and learning technology is actually knowledge grafting technology. According to the needs of college students and the needs of problem solving, purposeful and targeted knowledge grafting is conducive to the knowledge innovation of ideological and political theory courses. By using this concept to cultivate reliable successors and qualified builders for socialism. For ideological and political education in colleges and universities, personalized learning is based on the individual characteristics and development potentials of learners, and adopts a suitable way to fully meet the individual needs of learners. The integrated model brings a huge amount of information resources. Students can obtain different information and knowledge according to their own needs. Although the manifestations of these information are different, this expands, expresses and elaborates the internal diversity of knowledge to a certain extent. Conducive to the individual needs of learners with different learning abilities and styles. At the same time, the multi-education transmission mode brought by multi-data analysis can also teach students according to their aptitude. In this way, students can freely choose a virtual or hybrid multi-learning environment, which greatly improves the learning efficiency (Fig. 2).

Fig. 2. Grafting principle of integrated ideological and political model
4.2 Development Needs of Ideological and Political Education in Colleges

Ideological and political education is a discipline that is constantly developed and updated in practice. Advances in multivariate data analysis have created a new horizon for traditional ideological and political education, accumulated rich resources for the long-term development of ideological and political education in colleges, and urgently required college education organizations to strengthen theoretical and practical research in order to further enrich ideological and political education. The theoretical system guides the practice of ideological and political education with high-level theoretical research results. In order to meet the needs of the times and social development, network ideological and political education in colleges and universities must continuously promote the innovation of education forms, that is, systematic, timely, active, diversified, and interactive. Systematic means that the construction of university ideological and political education should rely on an integrated development platform, comprehensively utilize ideological and political education materials, create new methods of ideological and political education, open up a new situation in ideological and political education, and then achieve comprehensive education, humanistic education and ideological and political education. Organic integration of education; Timeliness means that the ideological and political content needed for education needs to be updated in a timely manner, and subjective issues must be reflected in a timely manner; Activeness means that the educator always maintains a dominant position and promptly and proactively judges the personal education needs, or according to the specific needs of college students Make judgments and respond quickly to the situation; diversification means that the content and forms of online ideological and political education in colleges and universities must be diversified, making full use of multiple implementation modes such as integrated platforms, and multi-pronged approaches such as language, writing, communication, and influence. Students are more receptive; interaction refers to the interaction between educators and student groups, to exchange ideas through multiple information media, and to solve practical application problems (Table 2).

4.3 Adhere to the Rules of Ideological and Political Education for Harmonious Development

Ideological and political education is an important work to solve ideological problems, it is the spiritual support for the progress of the social integration model, and it is a strong guarantee for the training and transportation of qualified personnel for the society. It is required to be consistent with the harmonious development of society. As a field of ideological and political education in colleges and universities, ideological and political education also needs harmonious development. Whether it is the construction of a theoretical system, or educational content, work methods, etc., it needs harmonious development. Important support must always adhere to the guidance of Marxist principles, apply scientific worldviews and methodologies in practice, and strive to promote the construction of socialist ideological positions in a multi-data analysis environment. Purposeful indoctrination and guidance are required to allow advanced Educational philosophy is fully integrated with mainstream ideology. Ideological and political education in colleges and universities should adhere to the guidance of important ideas such as
Table 2. Basic development needs of ideological and political education in universities

| Ideological and political education connotation | Theoretical system teaching resources | A system of ideological and political theories | Ideological and political education practice |
|-----------------------------------------------|-------------------------------------|-----------------------------------------------|--------------------------------------------|
| Ideological and political education development behavior | Integrated teaching model | Guiding ideological and political work | Ideological and political teaching needs |
| Characteristics of ideological and political education development approach | Systematic | In time | The initiative |
| Educational connotation interpretation | Relying on the integrated development platform | Timely update ideological and political education content | Ideological and political education needs |

Marxism-Leninism, student-oriented, advancing with the times, and harmonious development, closely integrate the actual situation of ideological and political education in colleges and universities, and strive to realize the theory and content of ideological and political education All-round innovation in aspects, methods, mechanisms, etc., adhere to the integration of features, follow the rules of students’ ideological development and meet the actual needs of students, unify the three, strengthen the guidance of education with the help of a multi-information platform, and build a new stage of “thinking and cultivating talents” By spreading mainstream culture and ideas through model media, it will greatly enhance the sense of the times and influence of ideological and political education in colleges and universities, and train national successors with high comprehensive quality.

5 Conclusion

This paper cites multiple data analysis methods to solve the current problem of integration of ideological and political education in colleges and universities. After clarifying the development direction of the ideological and political education and the inevitable requirements of the integration mode, the research of this article is completed through the integration of the model. This article establishes a good ideological and political education environment based on multivariate data analysis. By exploring the future development direction of ideological and political education, the implementation method of ideological and political education is clarified and the integrated teaching model is determined. Based on the implementation of the harmonious development of the ideological and political education implementation rules, it provides new ideas for the future development of ideological and political education.
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