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Role of Ideological and Political Education in Colleges and Universities in Responding to Public Health Emergencies

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Abstract: Nowadays, the spread of the new coronavirus has continuously caused social panic, the public has paid more attention to public health emergencies, and the requirements for emergency response capabilities and emergency management have become higher and higher. However, in response to such incidents, the awareness of prevention is far from enough. All walks of life should contribute their own weak forces, establish and improve response mechanisms, and jointly maintain social stability. Ideological and political education has been established and prospered from its initial exploration to prosperity. Although it has experienced ups and downs for decades, it has always stood firm, and it has enlightenment and guidance in the fight against public health emergencies. This paper has deeply studied the presence of ideological and political education in colleges and universities in responding to public health emergencies from three aspects: information transmission, public opinion influence, and social forces. Based on the comparative experiment of ideological and political education design, this paper has obtained the following results: The efficiency of handling public health emergencies under the influence of school ideological and political education has increased by 7.45%, the public's response speed is faster, and many unnecessary losses can be avoided. School ideological and political education has obvious advantages in handling public health situations.

1. Introduction

With the rapid growth and progress of the sector and society, people's quality of life has also improved to a specified amount. But at the same time, due to the influence of many factors, many people will encounter some situations in their daily life, which bring huge threats to people's lives and property. Affected by the new crown epidemic in recent years, public health emergencies have caused intense discussions among scholars. Chantelle M has developed timely advice guidelines in the context of public health situations, establishing a shorter timeframe, narrower scope, and using a more simplified rapid review method [1]. Hu H has proposed an intelligent computing process based on a simulation system, which has simulated the real situation of information retrieval in social networks, and has promoted the effectiveness, timeliness and integrity of information

transmission [2]. Shen Z has assessed the public's risk awareness level of public health emergencies, which is helpful for officials and decided makers to identify the local's preventive health behaviors for public health emergencies, and has strengthened the exchange of risk information with the public [3]. Gesser-Edelsburg A has surveyed expert perceptions of public health emergency preparedness gaps, revealing barriers to inter-community and hospital, inter-agency collaboration, and multidisciplinary integration of information accessibility and communication [4]. Chen Y has developed recommendations for developers and researchers of quick and easy guides to minimize guideline development time while ensuring quality [5-6]. When public health emergencies occur, the public is often caught off guard, which can easily lead to crowds gathering. Everyone started to get anxious, emotional, and even spread rumors. The actions of positively guiding public opinion and uniting social forces are a very significant part of ideological and political education. This article has studied the response measures to public health emergencies based on ideological and political education in colleges and universities.

2. Public Health Emergency

(1) Coping mechanism

Public health emergencies have the characteristics of suddenness, mass and harm. Once they happen, the loss to everyone would be huge. In addition, the rapid development of society in recent years, the developed transportation network, the complex flow of people, the erratic periodicity of virus infection, and the differential distribution of medical resources are all factors that must be considered in the prevention of major public health events. The response mechanism of general public health emergencies is shown in Figure 1.

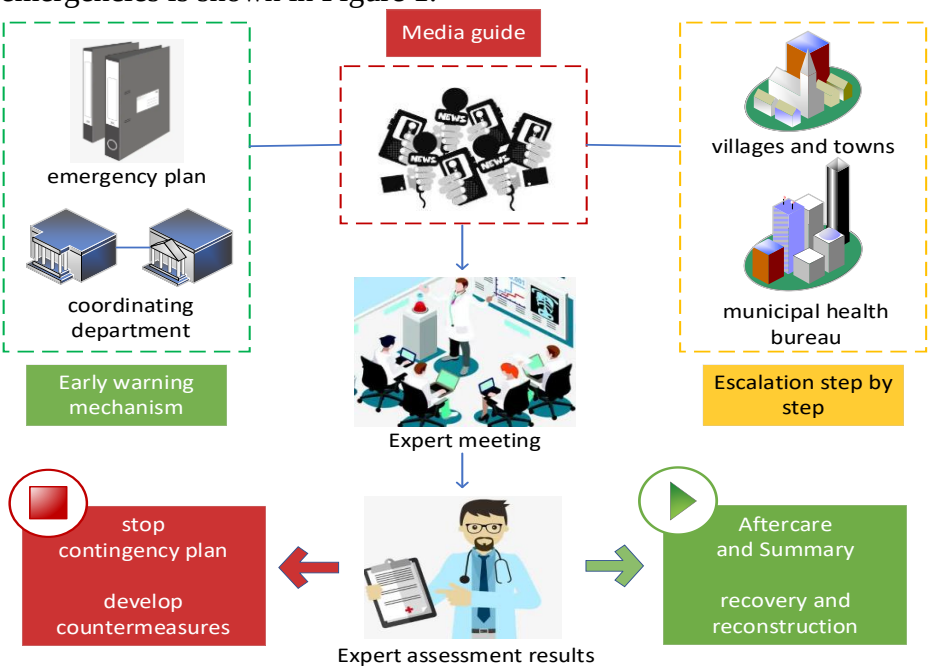

Figure 1: Response mechanism for public health emergencies

As shown in Figure 1, in the countenance of public health accidents, a series of response mechanisms should be established. First, a work early warning mechanism should be established to try to eliminate emergencies in their infancy before they cause losses. Secondly, a public opinion guidance mechanism has been established. Information is released in a timely manner through official media channels. Information transmission channels are quickly established to ensure that

everyone gets correct and reliable information at the first time, so that they can respond calmly. Third, all relevant departments are organized and coordinated to actively carry out corresponding medical and health emergency work. The scope and control area are delineated. Emergency measures were implemented. The handling of public emergencies is a race against time, striving to establish a solution in the shortest possible time. Finally, the overall coping ability of society is improved. Lessons learned from emergencies are learned. The coping mechanism is improved. The ability of organizational personnel to deal with similar incidents is cultivated.

(2) The ideological and political education model of colleges and universities

Teachers should make teaching changes according to the characteristics of students and the actual situation. In order to enhance its effectiveness, the main idea of ideological and political education is to build morality and cultivate people, with moral education as the center. It is still based on teaching and focuses on multi-faceted and comprehensive development. It is imminent to enhance the effectiveness of ideological and political education. It is also particularly important to closely combine it for college students with social practice. The specific education model is shown in Figure 2.

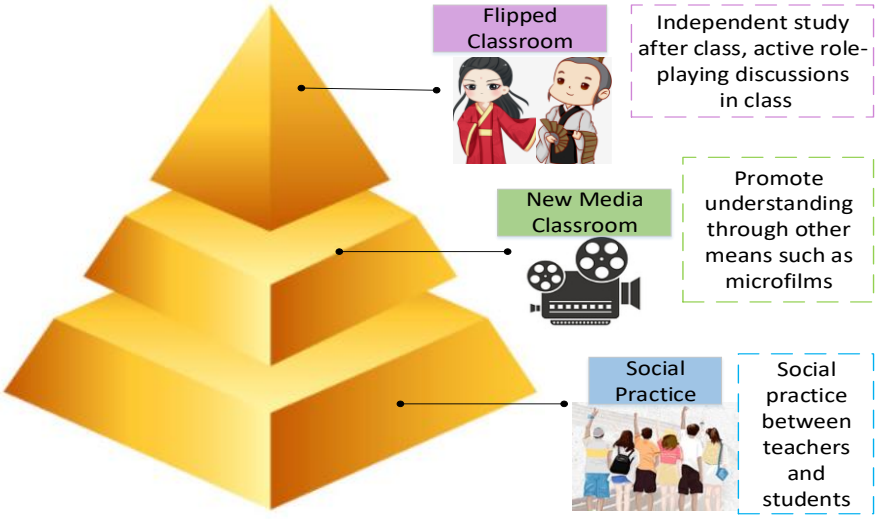

Figure 2: Ideological and political education models in colleges and universities

As shown in Figure 2, in order to focus students' attention in the classroom, teachers adopt new educational methods such as flipped classroom and new media classroom, and use vivid interactive methods such as role-playing and micro-movies to enhance the efficiency of teaching. Ideological and political education and social work are fully integrated to enhance the sense of the times and attractiveness. A lively and attractive teaching environment is created, and problems are designed to guide and encourage students to cooperate and to inspire each other to overcome obstacles, so as to achieve emotional exchange and collision of ideas between teachers and students. The school holds great value to the ideological and political education of students, and schools at different levels make arrangements according to their own conditions. Day-to-day management is intensified, encouraging university students to think freely about debates and to identify firm beliefs in debates, in order to strive to create a harmonious and relaxed learning atmosphere for students.

(3) The role of ideological and political education in colleges and universities in public health emergencies

How to prevent and prevent public health emergencies is something everyone should learn. First of all, it is required to start with self-discipline, prevent small and progressive problems, and obey orders, so as to achieve correct protection and not spread rumors indiscriminately. These are a kind

of ideological and political education in emergencies. From primary school to middle school and university, ideological and political education has always occupied a place in school education. The school guides teachers to correctly realize the importance of this education work. And by establishing an effective pre-prevention mechanism, optimizing good students' emotions and effectively integrating after the event, the role of ideological and political education in emergencies can be maximized. A good school and social atmosphere is created to enhance the healthy growth of students. The role of ideological and political education in colleges and universities in public health emergencies is shown in Figure 3.

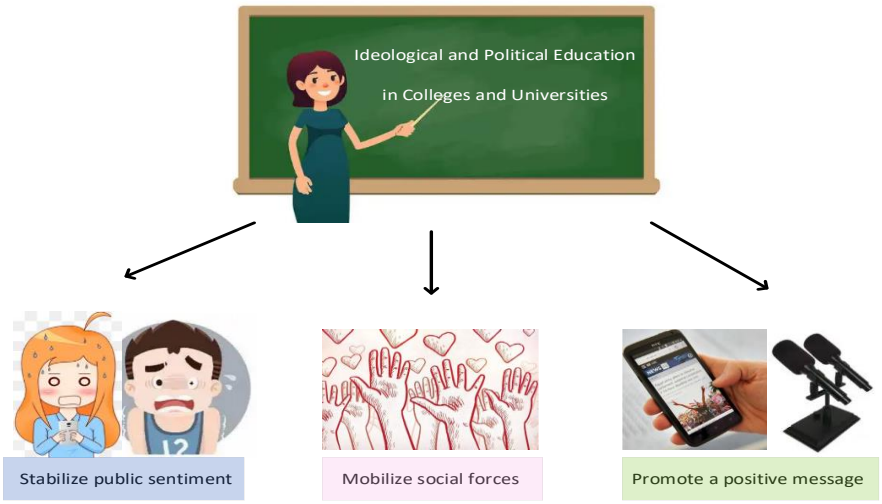

Figure 3: The role of ideological and political education in public health emergencies

As shown in Figure 3, ideological and political education mainly solves public health emergencies from three aspects. First of all, from a psychological point of view, people will feel panic in the face of emergencies, and even unconsciously make some irrational behaviors, such as creating panic, depression, psychological stress and other reactions. At this time, ideological and political education can effectively regulate people's nervousness and build a strong psychological defense line. For example, in the process of fighting against the new crown pneumonia, colleges and universities have cleared the channels for information dissemination, which can spread the advanced anti-epidemic deeds and set up anti-epidemic psychological assistance consultation hotlines. These ways are used to guide college students to rationally and scientifically understand the problems existing in the epidemic, so as to make correct guidance in a predictable way, thereby promoting the positive development of the incident. Secondly, major public health emergencies are extremely destructive, and the subjects who need crisis management are not only the party and the government, medical and health institutions and medical staff, but all the people, including college students. In addition, people's ideological level is constantly improving with the development of economic education. In emergencies, ideological and political education can mobilize the forces of the society to form a synergy between home, school and society, so as to help students get out of the predicament quickly. Finally, the negative shocks of major public health emergencies are multiple and complex. Through ideological and political education, effective information transmission can be carried out to publicize and guide positive information, thereby improving the efficiency of communication and leading the pace of publicity, which can stabilize and enhance social confidence. Its subjective initiative is fully exerted to achieve the fastest response to public health emergencies and to greatly shorten the response time.

As a comprehensive discipline, ideological and political education in school can make students better understand what is happening in the current society, so as to play a good guiding effect. Therefore, the role of ideological and political education in school in public health emergencies is

huge and irreplaceable. It has a good role in preventing and controlling emergencies, and at the same time, it can also provide people with good ideological and political cultivation.

3. Coping Model of Ideological and Political Education in Colleges and Universities

(1) EM algorithm

When making sample observations, the parametric model is often found by maximizing the log-likelihood mechanism of the model distribution. But this method is not applicable when some latent data is not observed, and the EM algorithm can solve this kind of problem by heuristic iterative method.

Given a sample observation data *a*, its value range is:

$$\mathrm{a} = (a(1), a(2)...a(n)) \tag{1}$$

To find the model parameter *A*, first find the log-likelihood function that maximizes the model distribution:

$$A = \arg\max_{A} \sum_{x=1} M \log T(\mathrm{a}^{x} | A) \tag{2}$$

T is the joint distribution.

Assuming that there is unobserved implicit data b, b satisfies:

$$\mathrm{b} = (b(1), b(2)...b(n)) \tag{3}$$

Then the function at this time can be expressed as:

$$A = \arg\max_{A} \sum_{x=1} M \log T(\mathrm{a}(x) | A) = \arg\max_{A} \sum_{x=1} a \log \sum_{b(x)} T(a(x), b^{x} | A) \tag{4}$$

Scale Equation 4:

$$\sum_{x=1} a \log \sum_{b(x)} T(a(x), b^{x} | A) = \sum_{x=1} a \log \sum_{b(x)} K_{x}(b(x) \frac{T(a(x), b(x) | A)}{K_{x}(b(x)} \tag{5}$$

$$\sum_{x=1} a \log \sum_{b(x)} K_{x}(b(x) \frac{T(a(x), b(x) | A)}{K_{x}(b(x)} \geq \sum_{x=1} a \sum_{b(x)} K_{x}(b(x) \log \frac{T(a(x), b(x) | A)}{K_{x}(b(x)} \tag{6}$$

$K_{x}(b^{x})$ is the new unknown distribution, which can be known from Inequality 6:

$$\log \sum_{y} \rho_{y} s_{y} \geq \sum_{y} \rho_{y} \log s_{y} \tag{7}$$

$$\rho_{\mathrm{y}} \geq 0, \sum_{y} \rho_{\mathrm{y}} = 1$$

y is the number of iterations, .

If f(x) is a concave function, then:

$$\frac{T(a(x), b(x) | A)}{K_{x}(b(x)} = e \tag{8}$$

e is a constant.

$$\sum K_x(b(x)=1 \tag{9}$$

From Equation 8 and Equation 9, it can be known that:

$$K_x(b(x)=\frac{T(a(x),b(x)|A)}{\sum_b T(a(x),b(x)|A}=\frac{T(a(x),b(x)|A)}{T(a(x)|A}=T(b(x),a(x)|A) \tag{10}$$

(2) Neighbor propagation algorithm

The algorithm first uses all data points as possible cluster centers. Then the network is formed by connecting the data points in pairs, and finally the cluster center of each sample is calculated by using the message passing between the edges in the network.

First, the experimental data is set, and then the data points centered on *a*, *b*, and *c* are generated. The reference degree is set, and then the similarity matrix, the attraction matrix and the attribution matrix are calculated.

1) Attraction iteration

$$X_{i+1}(a,b)=(1-\lambda)X_{i+1}(a,b)+\partial X_i(a,b) \tag{11}$$

i is the number of iterations. *a*, *b* are the data points, and ∂ is the damping coefficient.

$$X_{i+1}(a,b)=\begin{cases}P(a,b)-\max\limits_{c=b}\{T_i(a,c)+X_i(a,c)\} & a\neq b\\ P(a,b)-\max\limits_{c=b}\{P(a,c)\} & a=b\end{cases} \tag{12}$$

2) Iteration of belonging degree

$$Y_{i+1}(a,b)=(1-\lambda)A_{i+1}(a,b)+\partial Y_i(a,b) \tag{13}$$

$$Y_{i+1}(a,b)=\begin{cases}\min\left\{0,X_{i+1}(b,b)+\sum\limits_{c\notin\{i,k\}}\max\{0,X_{i+1}(c,b)\}\right\} & a\neq b\\ \sum\limits_{c\neq b}\max\{0,X_{i+1}(c,b)\} & a=b\end{cases} \tag{14}$$

$Y_{i+1}(a,b)$ means new $Y(a,b)$, $0.5\leq\partial<1$.

Finally, when the cluster center is no longer updated to a specified amount or the maximum number of iterations is reached, the update is stopped. According to the cluster center at this time, the data can be classified.

(3) Matrix factorization collaborative filtering recommendation algorithm

The matrix decomposition method can more accurately predict the rating of each user for unrated items. This algorithm pushes matrix decomposition to a new level for recommendation methods, and is widely used in practical applications.

Define the matrix N as:

$$N_{a\times b}=S_{a\times}T_{\times b} \tag{15}$$

The objective optimization function F of this algorithm is:

$$F\ （p,q)=\sum_{x,y}(g_{xy}-q_yTp_x)2+\beta(\left\|p_x\right\|_2 2+\left\|q_y\right\|_2 2) \tag{16}$$

Among them, g is the rating of a user. p and q are the corresponding extreme values after

minimization. β is the regularization coefficient.

Differentiate Equation 16 with respect to p_x, q_y, respectively, to get:

$$\frac{\partial F}{\partial p_x} = -2(g_{xy} - q_y^T p_x)q_y + 2\beta p_x \tag{17}$$

$$\frac{\partial F}{\partial q_y} = -2(g_{xy} - q_y^T p_x)p_x + 2\beta q_y \tag{18}$$

The above two equations are then iterated using the gradient descent method:

$$p_x = p_x + \alpha((g_{xy} - q_y^T p_x)q_y - \beta p_x) \tag{19}$$

$$q_y = q_y + \alpha((g_{xy} - q_y^T p_x)p_x - \beta q_y) \tag{20}$$

4. Experimental Design of Ideological and Political Education in Colleges and Universities in Response to Public Health Emergencies

(1) Experimental method

10 students from a university who have received ideological and political education in colleges were invited, and then 10 people who had not participated in ideological and political education in colleges were invited to the society. The students were set as group A, and those invited from the society were group B. It is known that the members of the two groups A and B are of the same age, and the gender distribution is even. The two groups were placed in two identical public health emergencies. The comparison and simulation experiments were carried out in terms of reaction speed, loss degree and duration, and the experimental data were observed and recorded.

(2) Data analysis

1) Response speed

Let the two groups A and B be in the same emergency, and observe the reaction speed of the two groups in the face of the emergency. The results are shown in Figure 4.

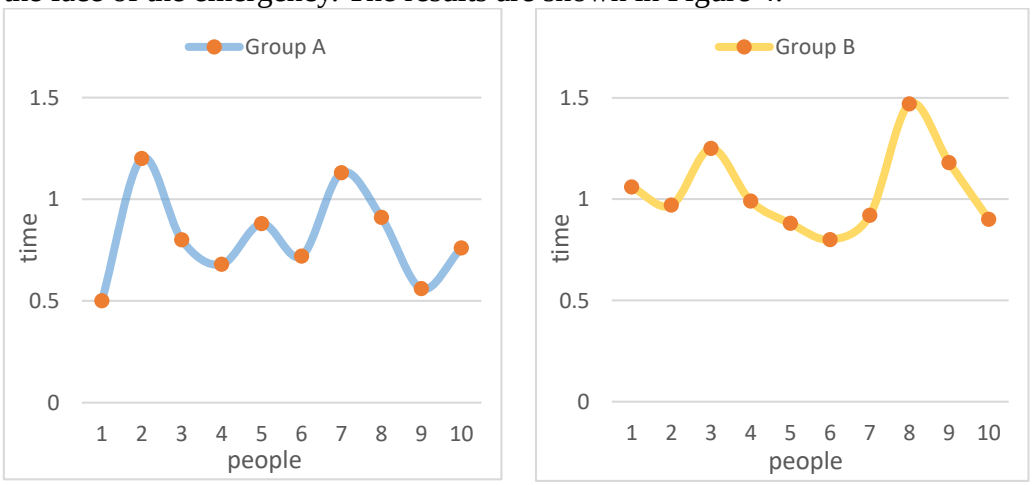

Figure 4: Response speed comparison chart

As shown in Figure 4, the fastest reaction time of group A was 0.5 seconds and the slowest was 1.2 seconds. The average reaction time was 0.91 seconds. Group B had the fastest reaction time of 0.8 seconds and the slowest of 1.47 seconds. The average reaction time was 1.04 seconds. It has

been explained that in the face of the same emergency, group A responds faster, so if a public health emergency occurs, people who have received ideological and political education would respond and respond faster. In a critical moment, the ideological and political work of college students is a very important and complicated task. This work requires not only certain professional knowledge, but also good psychological quality, organizational skills and leadership skills to achieve effective management and scientific guidance.

2) Degree of loss

Professional were asked to evaluate the losses caused by the two groups of members in the simulation experiment, with a full score of 5 points. The loss degree table is shown in Table 1. The comparison of the loss degree of the two groups of experiments is shown in Figure 5.

Table 1: Loss level comparison table

Score	Describe
1	Only caused a little loss, almost no impact on the whole
2	Inflict loss, and the degree of loss is low, the impact is small
3	cause greater losses, and the degree of loss is higher, and the impact is greater
4	Causes heavy losses, and the losses are very high, and the impact is huge
5	Almost all suffered, and the loss was very high, with devastating effects

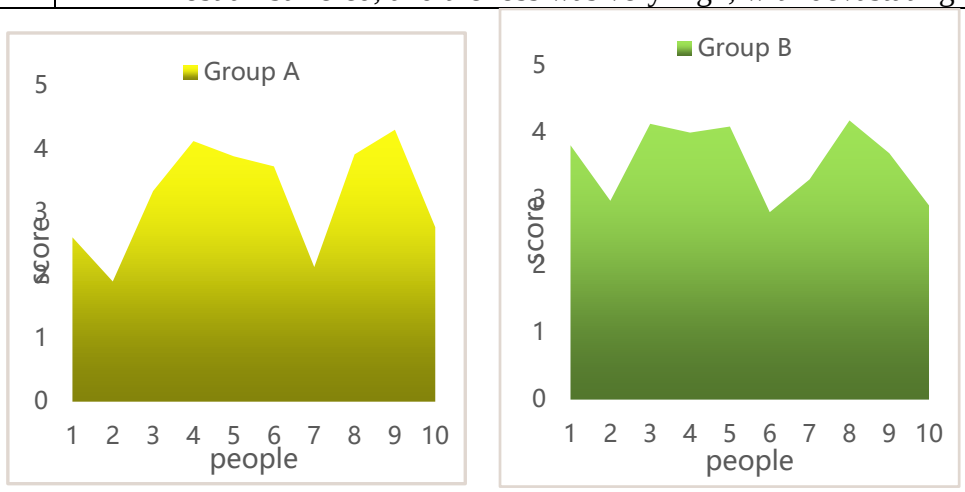

Figure 5: Loss level comparison chart

As shown in Figure 5, the scores of group A ranged from 1.9 to 4.3, and the score gap between members was large. It shows that students have variety levels of ideological and political education and different ability to deal with problems. The score range of group B is between 2.8 and 4.1, and the score gap between members is small. It shows that the ability of people who have not received education to deal with emergencies is roughly the same. The average score of group A is 3.3, and the average score of group B is 3.58. It shows that the average loss of group B is more, and it can be seen from the area of the scores of the two groups that the area of group B is larger. Therefore, the losses of Group B are also higher. Ideological and political education can effectively reduce the harm of emergencies and avoid greater losses to the public, so as to improve the quality of public services.

3) The length of time

The time it took to resolve the public health emergency was recorded for both groups. The result comparison is shown in Figure 6.

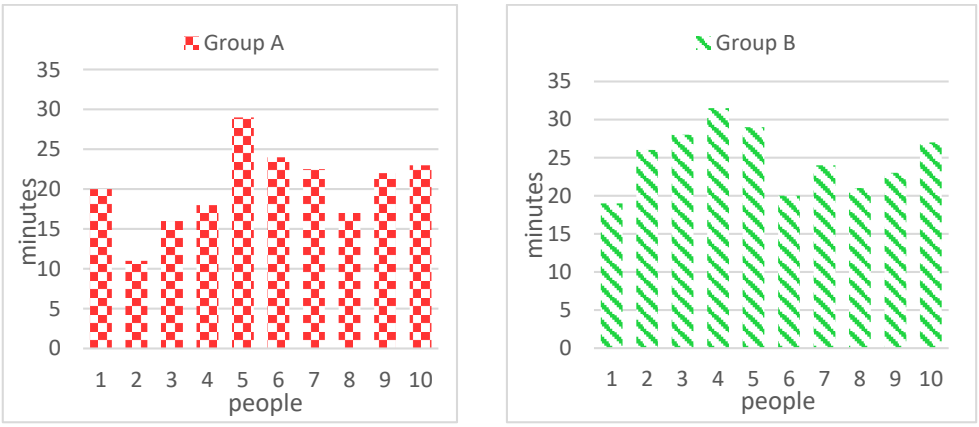

Figure 6: Time comparison chart

As shown in Figure 6, when dealing with the same public health emergency, it was obvious that the students in group A spent less time. Among them, the fastest student only needed 11 minutes to get out of the predicament, and the difference between the fastest and the slowest students was 18 minutes. It shows that the school should focus on narrowing the gap when cultivating students to achieve common progress of all students. Group B takes more time, and basically all members need to spend 20-30 minutes to solve the problem. However, the gap between the best and the worst level is only 12.5 minutes. Relatively speaking, the members of group B have more balanced abilities. Through school ideological and political education, students can broaden their thinking and practical ability and improve work efficiency at all levels, as well as cultivate talents with high comprehensive quality.

Combining the above three aspects, the overall evaluation data of the two groups of experiments are calculated, and the results are shown in Figure 7.

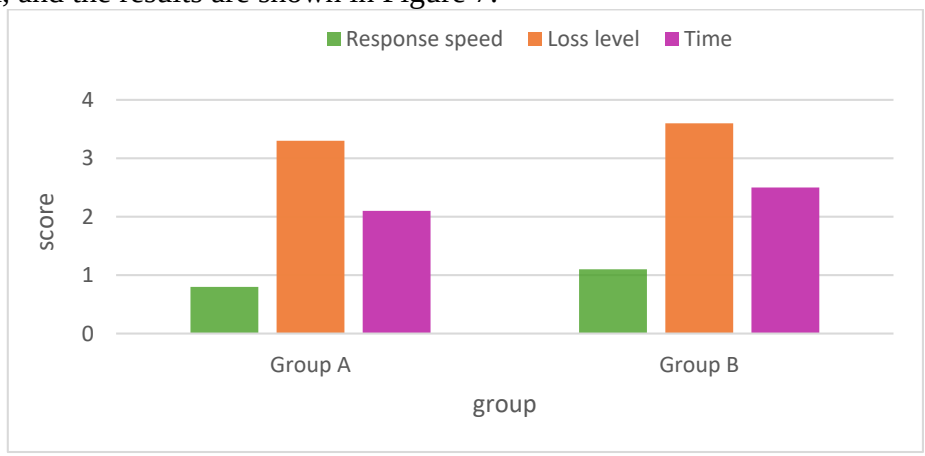

Figure 7: Overall effect comparison chart

As shown in Figure 7, the experimental data of group A in terms of reaction speed, loss degree, and time were weighted to obtain an overall score of 6.58, and the weighted result of group B was 7.11. It is known that the experiments of the members of group A were carried out under the influence of ideological and political education in colleges and universities. The experiments of group B did not have any external force and internal addition. After calculation, the experimental effect of group A was 7.45% higher than that of group B. The efficiency of handling public health emergencies under the effect of political education can be increased by 7.45%.

Through this experiment, the following methods of handling public health emergencies are summarized: First, the incident is investigated and analyzed. Causes and transmission routes are

identified, and relevant information is collected in a timely and accurate manner, so that necessary protective measures can be taken. Second, a comprehensive prevention and control plan was formulated scientifically. The responsibilities of governments at all levels have been clarified, and various control measures have been implemented, so as to strengthen the construction of emergency response capabilities and improve the monitoring network, which can strengthen monitoring efforts. Finally, epidemiological investigations were actively carried out, and publicity and education were carried out to avoid and reduce the harm caused by public health incidents to people's lives and health.

5. Discussion

Based on the relevant information and methods of dealing with public health emergencies, combined with the specific research of the content of this article, the main work and results are as follows:

(1) Through literature research and data, the response measures to public health emergencies are analyzed and summarized, and the role process and effect of ideological and political education in responding to such events are expounded.

(2) The algorithms involved in the processing of ideological and political education are studied. The EM algorithm is used to calculate the probability expectation and model parameters. The nearest neighbor propagation algorithm is used to classify the data and the crowd, and finally matrix decomposition is used to predict and score.

(3) Through a questionnaire survey of 20 people who have received or not received ideological and political education, a comparative experiment is designed. The results have shown that the educated people can deal with emergencies faster and more efficiently, and the results are more satisfactory.

6. Conclusion

In the countenance of emergency response to public health emergencies, the public needs to further improve their emergency response capabilities. They also need to learn basic hygiene knowledge and sort out prevention awareness in order to control and reduce hazards to the greatest extent, so as to ensure and maintain people's health, social security and stability. This paper has analyzed the problems existing in the current public response to public emergencies. The necessity of perfecting the coping mechanism is expounded, combined with the current social system and the status quo of system construction. Ideological and political education in colleges and universities has been used to improve the management system, improve emergency response agencies, strengthen publicity efforts, and establish a normalized response mechanism to provide reference for relevant personnel. At the same time, students can enhance their skills to determine and eliminate problems by learning knowledge and skills such as crisis management and coping methods, and cultivate teamwork spirit and social responsibility.

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