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Research Article

Analysis of the Operation and Management of Higher Education by Using the Media Platform

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Universities are considered the main place for university students to study and live and also shoulder the important task of training talents for the future of our country. As a manager of university education and the relevant supervisor of education and teaching, it must constantly seek more efficient teaching mode and use the new communication platform in order to solve the current problems in the management of higher education. Since the media platform plays an important role in the social and political and economic life, it affects the way of education and the way of thinking in universities. Self-media technology promotes the communication between teachers and students in the teaching process. Educators can carry out a variety of teaching through the media, which innovates the educational methods of the University. This fully reflects the advantages of we media teaching in the media era. As a new means of information dissemination, the self-media platform not only has the traditional media communication functions but also gradually affects the way of thinking and lifestyles of university students to promote their correct world outlook, outlook on life, and formation of values. In this paper, self-media platform is used for university education and operation management process to conduct a systematic analysis and research. The Delphi method is used to screen out five major dimensions of hardware platform, content construction, communication mode, the quality of teachers and students in universities, and the environment of media network dissemination and interpret the positive effects of self-media platform in improving university teaching and operation management efficiency. Based on particle swarm optimization (PSO) algorithm, the importance distribution of the five dimensions is identified and an optimal path of university education operation and management is constructed to improve the overall efficiency of university education operation and management.

1. Introduction

The actual effect of university education operation and management will directly affect the improvement of university teaching quality and the quality of university graduates, so how to improve the operation and management of higher education has become a hot social issue [1]. In recent years, with China's economic and social development and progress, the specific teaching mode and training mode have been optimized, but in specific ways on the dissemination of knowledge, it is too single, and the management philosophy and philosophy of education are relatively backward, which is bound to affect the efficiency of education management and the actual effect [2]. In the actual education and management work, many universities have stressed the need to strengthen the teaching management of university students but lacked specific management methods and management channels [3]. At present, the actual operation and management methods of universities are based on traditional conference mode, classroom mode, and group mode, and the supervision of the specific implementation process is not enough, so the real-time management is less effective [4]. The education management work in universities needs to make student management as the center [5]. At present, many university classroom teaching does not start from the perspective of students, nor does it always adhere to the student-oriented education concept [6].

With the development of computer science and technology and Internet media, the development of we media platform has gradually entered public life. The mode of culture and knowledge transmission is gradually changing from the traditional one-way transmission to the two-way cross individual flow mode [7]. As a young group with a certain knowledge reserve, university students should be the core audience in the era of self-media, and their ideological consciousness, behavior style, and values have been deeply affected [8]. In today's diversified environment, the teaching of professional knowledge, the cultivation of core values, and the communication between teachers and students need to rely on the self-media platform to improve their competitiveness [9]. How to make rational use of self-media as a new media means is an important issue that needs to be paid attention to in the ideological and political education of higher education in China. The positive results of the cultivation of College Students' core values can improve the negative effects caused by the poor management of the media environment [10]. Based on the investigation and analysis of related data, this paper explores how to use self-media platform to improve the operation and management efficiency of universities [11–13]. The algorithm in this paper is simple and easy to implement without adjustment of many parameters [14]. At present, it has been widely used in function optimization, neural network training, fuzzy system control, and other application fields of genetic algorithm [15]. Five elements that are closely related to the self-media platform are selected. Based on particle swarm optimization algorithm, an optimal element distribution path is found [16]. This paper aims to solve the problems in the operation and management of the current we media platform in Colleges and universities. The current management problems include poor information communication, low efficiency of operation and management, and the management mode cannot be implemented. Therefore, it is necessary to further improve the management efficiency of colleges and universities [17, 18].

2. Research Status

2.1. The Status of Domestic Research. The group of campus we media is mainly students, and a few are graduates, teachers, and parents. The content theme is mainly related to students, and the content is mainly professional learning, campus life, etc. At present, the vast majority of we media are public welfare, especially the official media. Only a few are for-profit [19]. Campus media is the epitome of social media, and many changes have taken place. With the development of the Internet, the information dissemination and communication methods of self-media platform are widely used in all kinds of universities. The interaction between communication media and traditional media is very different [20]. Its outstanding spread characteristic is the mutual dissemination between the media and the audience, and in the process of mutual communication, there are also broad, fast, fair, and other characteristics between the two. Through the analysis of the communication form and characteristics of the self-media, Wang Li found some invalid phenomena in the dissemination of the media from the modern society. At the same time, the author also proposes to strengthen the sense of social responsibility operation of network operators to regulate the phenomenon of self-media failure. From the characteristics of the media itself, its development is accompanied by certain vulnerabilities and drawbacks. Through the research and comparison of these problems, many scholars have given corresponding solutions, which provide new ideas for the development and improvement of the media itself. But the analysis of the literature in this area is more focused on the practical problems and the reasons, not closely integrated with the training contents of the socialist core values to provide guidance for the cultivation of university students' work. The media has strengthened the propaganda of socialist core values. The media has a positive impact on the cultivation of socialist core values, and there are three main aspects. First, the rich content of the media can make the cultivation of socialist core values more vivid. Secondly, due to the media interaction and timeliness, teacher-student interaction has been strengthened. The timeliness of Cultivating College Students' socialist core values has been enhanced. Finally, through the media platform, management efficiency and results can be improved in higher education. The new "new media era" requires colleges and universities to do a good job in the management and construction of various new media platforms. There are not only the external requirements of the superior departments to improve the level of government information and patient service but also the internal needs of the school to serve teachers, students, and staff.

3. Foreign Research Status

Foreign research on self-media platform mostly focuses on social influence. A media report from the American Journalism Institute gives a detailed explanation of the concepts, characteristics, modes of transmission, and dissemination effects of the media from the angle of the media, arousing worldwide sensational effects. Online blogs are the earliest forms of media that originated in the media. The whole trajectory of self-media development has followed the path of old media-new media-self-media. In his article, William, a well-known British mediaman, discusses how self-media spreads information through traditional media, and at the same time, the author points out that there are many potential advantages compared with traditional media. Gilmer once pointed out the following. Since the advent of media communicators, the traditional way of social hot news dissemination has been radically changed, and social media is no longer one to many. But is determined according to the way in which the information disseminator and the receiver communicate with each other.

4. Methods

Teaching operation management refers to the management of teaching process and other work according to the teaching plan. The content of teaching operation management includes organizing teaching activities, formulating syllabus, formulating teaching courses, dividing teaching venues, and

arranging teachers to attend classes, as well as organizing examinations, marking papers, and other work. Therefore, it is necessary to fully understand the current situation of the operation and management of colleges and universities, analyze the problems existing in the management process, and take corresponding measures to solve them, so as to improve the management level of teaching in colleges and universities. There are many indicators of operational management efficiency in universities related to the self-media platform. The Delphi method is applied to select the five most important index dimensions from a large number of indicators. An expert set $E = \{E_1, E_1, \ldots\ldots, E_m\}$ is defined, where E_i is the ith expert and the evaluation set is defined as $A = \{(a_1, r_1), (a_2, r_2), \ldots, (a_n, r_n)\}$, where (a_i, r_i) is the original evaluation set given by the ith expert, a_i is the specific evaluation value, and r_i is the fluctuation range of the evaluation value.

The best evaluation index set is an optimized evaluation set based on the original evaluation to meet the requirements of diversity, reliability, and convergence of indicators. The best evaluation index set can be expressed as:

$$x_i = \{x_1, x_2, \ldots, x_n\}. \tag{1}$$

In the knowledge integration results of expert group, weighted mean $U(x)$ and standard deviation $\sigma(x_i)$ can be expressed as

$$\begin{cases} U(x_i) = \sum_{i=1}^{n} x_i \times w_i, \\ \sigma(x_i) = \sqrt{\sum_{i=1}^{n} \left[x_j - (U(x))^2\right] \times w_i}. \end{cases} \tag{2}$$

In formula (2), w_i is the weight coefficient; based on the expert evaluation knowledge set, the normal distribution of the importance distribution of the index is obtained. The importance of using particle swarm algorithm to extract the index is optimized to find the best way to improve the efficiency of operation management by using the self-media platform. In the d dimensional space, let any factor a be z_i that has an important impact on university management, then the population composed of these particles is $S = \{\overrightarrow{z_1}, \overrightarrow{z_2}, \ldots, \overrightarrow{z_m}\}$, where any one of $\overrightarrow{z_i}$ is $\{z_{i1}, z_{i2}, \ldots, z_{\mathrm{id}}\}$, representing the vector point of i-th particles in the d dimensional space. $\overrightarrow{P_i} = \{p_{i1}, p_{i2}, \ldots, p_{\mathrm{id}}\}$ is used as the optimal location in the process of particle optimization, and $\overrightarrow{V_i} = \{v_{i1}, v_{i2}, \ldots, v_{\mathrm{id}}\}$ is the optimal speed; then, in d dimension space, the path optimization process of the influence factors in the self-media platform can be described as

$$\begin{cases} \overrightarrow{V_i^{k+1}} = \overrightarrow{V_i^k} + \varsigma_1 \times \kappa_1 \times \left(\overrightarrow{p_i^k} - \overrightarrow{z_i^k}\right) + \varsigma_2 \times \kappa_2 \times \left(\overrightarrow{p_j^k} - \overrightarrow{z_i^k}\right), \\ \overrightarrow{z_i^{k+1}} = \overrightarrow{z_i^k} + \overrightarrow{V_i^{k+1}}. \end{cases} \tag{3}$$

The particle movement diagram affecting the efficiency of operation and management of higher education is shown in Figure 1.

Through the optimization of the path of particles with different influence factors, it can identify the distribution of factors affecting the efficiency of operation and management of higher education and achieve the purpose of strengthening the operation and management of higher education by using the self-media platform.

5. Results

The construction of educational informatization generally includes infrastructure, information resources, various applications, standards and norms, talent training, support and gap protection, and so on. In order to facilitate statistics, the statistical indicators of educational informatization mainly select indicators that are easy to quantify and closely related to the degree of development, and the meaning of each indicator is relatively simple. The form filling person is easy to understand, but all indicators can well predict the development of school informatization. In the process of selecting the relevant indicators of the university education media platform, 10 experts are invited to mark the importance of the index, and the statistical information obtained is shown in Table 1.

Based on the knowledge aggregation statistics of the expert team, five major dimension indicators of hardware platform, content construction, communication mode, college teachers and students' literacy, and network communication environment are selected. Then, based on the PSO algorithm, the distribution of the importance of factors is recognized to find out an optimal path to improve the efficiency of university education and operation management. Genetic algorithms, ant colony algorithm distribution, and particle swarm optimization algorithm for path optimization results are compared, and the results are shown in Figures 2 and 3.

From Figures 2 and 3**,** we can recognize that the particle swarm optimization algorithm has the shortest optimal path and the highest efficiency. Due to the shortcomings of precocious maturity, genetic algorithm has larger deviation in the later stage of the path selection. However, the ant colony algorithm has large deviation in the initial stage of path finding and can correct the deviation in the later stage, but the overall path finding effect is not as good as the particle swarm optimization algorithm (Figure 4).

From the path optimization error comparison of higher education operation and management, it can be clearly analyzed that the result of particle swarm algorithm is closest to the theoretical value, and the errors of other two path optimization algorithms are greater.

6. Discussion

Since the type of self-media platform has a variety of characteristics, in the specific application process, we should highlight the interactive mode of self-media, and through the self-media platform, the information interaction and dissemination in the management of universities are achieved. In the self-media age, the ways of interacting with university management information have surpassed the

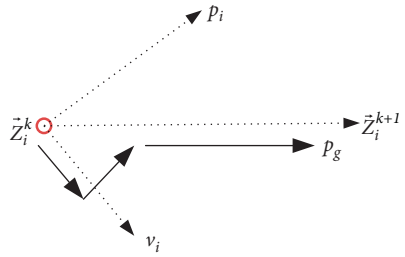

Figure 1: Principle of particle movement.

Table 1: Statistics of expert knowledge sets.

Expert	Weight w_i	Evaluation value a_i	$(a_i - E)^2$	$w_i a_i$
1	0.15	80	5.69	12.58
2	0.05	90	55.41	5.47
3	0.20	75	12.87	2.25
4	0.04	86	131.46	17.54
5	0.08	69	94.36	9.87
6	0.16	75	254.58	4.56
7	0.11	68	9.87	8.77
8	0.04	95	154.7	7.76
9	0.10	88	0.08	7.64
10	0.07	79	17.87	9.36

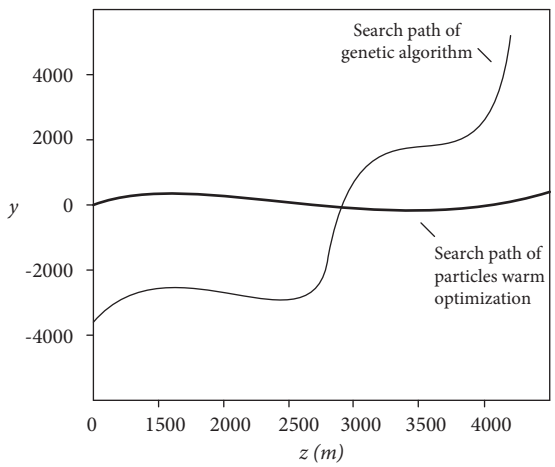

Figure 2: Result comparison 1 of operation and management path optimization algorithm.

existing ways of interaction. The new self-media platform of universities needs to be more humane, in order to meet the needs of university operation and management.

(1) There are many self-media platforms that affect the operation and management of universities. Excessive interference factors are not conducive to finding an optimal management path. This not only wastes too much college resources, but also is not conducive to the improvement of teaching management efficiency. From the analysis of actual operational results of the Delphi method, the relevant experts are consulted to identify and classify the affected factors to find out five key factors related to the operation and management of universities as well as the hardware construction, content construction, communication mode, quality of teachers and students in universities, and network communication environment related to the media platform.

(2) The five factors screened out are still different in the degree of importance distribution. Based on the particle optimization algorithm, this paper determines the importance distribution of the five factors, that is, to improve the quality of teachers and students in universities ⟶ to optimize the environment of network communication ⟶ to enhance the hardware construction of platform ⟶ to optimize the content ⟶ to optimize communication mode. Compared with genetic algorithm and ant colony algorithm, particle swarm optimization has obvious advantages in speed optimization and position optimization and performs well in error control.

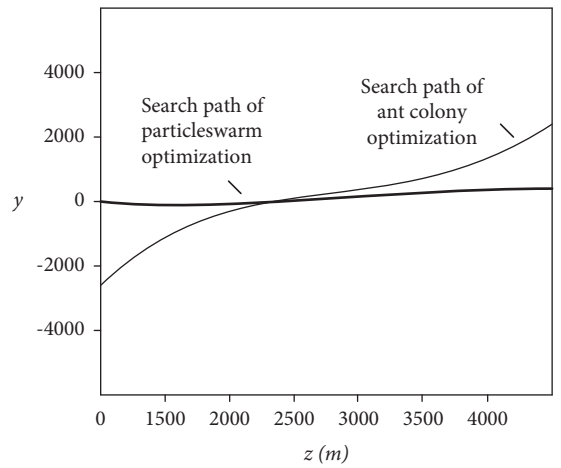

Figure 3: Result comparison 2 of operation and management path optimization algorithm.

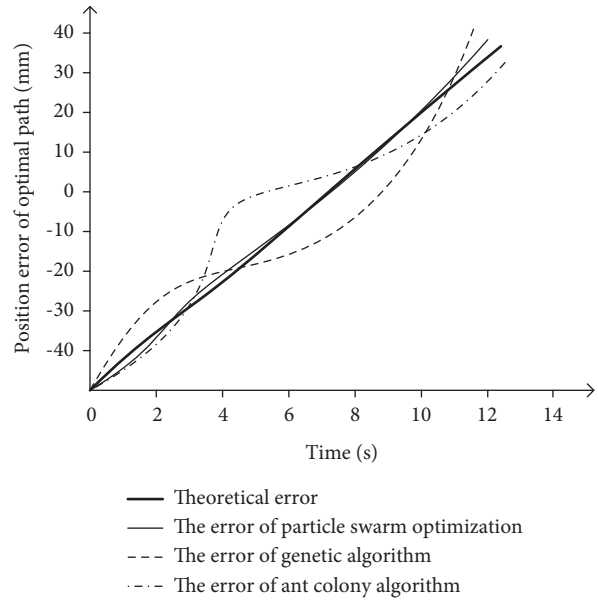

Figure 4: Comparison of path optimization error of university education operation and management.

7. Conclusions

Since the type of self-media platform has a variety of characteristics, in the specific application process, we should highlight the interactive mode of self-media. Through the self-media platform, information interaction and dissemination in the management of universities can be achieved. In the self-media age, the ways of interacting with university management information have surpassed the existing ways of interaction. In the process of teaching, a new way of discourse is achieved, and the teaching content is effectively communicated to protect and expand the coverage and influence of the educational discourse and enhance the sense of the times and science of higher education. In view of the new situation of university education and self media, it is necessary to clarify the specialization direction, main contents and main measures of university education under the new situation. The various types of self-media and related educational resources are integrated to realize the promotion effect of media platform on teaching. Putting forward relatively complete and more feasible ideas can meet the needs of university operation and management.

7.1. Research Contribution

(1) From the perspective of self-media platform, the operation and management mode of higher education is studied in this paper.

(2) In the process of identifying and extracting the influence factors in the self-media platform, the Delphi method and particle swarm optimization are innovatively combined to improve the operation and management of university education.

(3) In the analysis of the influence factors of higher education operation and management, the best path to improve the operation and management of higher education is obtained.

7.2. Research Status and Problems

(1) Operation management method and mode are too single, and the actual operation effect is poor.

(2) The existing research method plays a role of bridge between universities and students.

(3) The current study does not show the most efficient operation and management method of the universities' education.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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