Application of Multimedia Courseware in the Ideological and Political Classroom Teaching in Higher Vocational Colleges in the Big Data Era

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Abstract. With the coming of the big data era, massive data and the progress of related data collection and analysis technology have brought unprecedented challenges and opportunities. “Multimedia courseware and contemporary” is a core course that cultivates the ideological, which requires a combination of the characteristics of the big data era and higher vocational college students for overall planning and communication. Marxism and socialism theoretical resource databases with Chinese characteristics are established and improved to guide the students at higher vocational colleges to participate in the course discussion using the big data, thereby improving the teaching quality and effect, and helping them grow into high-level innovative talents with political integrity, professional competence, and overall development.

Keywords: Big Data, Ideological and Political Course for Students in Higher Vocational Colleges, Multimedia Courseware and Contemporary, Teaching Reform

1. Introduction

With the rapid development of information and network technology, big data is affecting people's work, learning, and life[1-2]. The influence of today's society is extensive and far-reaching[3-4]. As an essential course to cultivate the comprehensive quality of higher vocational college students, the ideological and political course for students at higher vocational colleges, especially the multimedia courseware and the contemporary compulsory ideological and political course for doctoral students covering all specialties in the country. Given the challenges and opportunities of the big data era[5-6], reform of teaching content, teaching form, teaching effect feedback and other aspects is necessary.
2. Challenges facing the ideological and political courses for students at higher vocational colleges in the big data era

In our daily lives, we can go shopping, book ticket, order food, etc. via Internet without leaving home. This benefits from the active support of information, network. In particular, the collection, calculation, scientific research and other services of human society. Volume, i.e., the data scale is large, the data volume increases sharply, and it is growing at the rate of doubling every two years; 2. Variety, that is, more unstructured data, such as video, audio, photos, documents, etc.; 3. Speed, i.e., fast real-time response, data is stored in the network or cloud, and can be searched at any time. The online response is implemented by searching, downloading and using; 4. Value, i.e., the data are rich in value, all kinds of data originally belong to the data garbage left by accident, but as long as they are properly used, great value will be generated. The 4V characteristics of big data determine the characteristics of the era of big data to a certain extent, that is, we are in an age of massive data and continuously generating new massive data. Quantitative data is easy to search and use, and rich in value. It is necessary to perform thorough and effective data mining and application.

For the sake of simplicity, this paper only focuses on the ideological and political classroom teaching at higher vocational colleges:

\[ S = \{ (x_i, y_i) \in \mathbb{R}^n \times \{ +1, -1 \} \} \quad (1) \]

\( (x_i, y_i) \) are independent identically distributed. Hence, the optimization problem of regularized dynamic functions can be expressed as follows

\[ \min_{w \in \mathbb{R}^d} \Phi(w), \Phi(w) = r(w) + \frac{1}{n} \sum_{i=1}^{n} f_i(w) \quad (2) \]

\( w \in \mathbb{R}^n \), \( r(w) \) represents a regularization term, a dynamic function \( f_i(w) \) from data \( x_i \) caused by.

Suppose the dynamic function is dynamic, the objective function \( \phi(w) \) It has strong convexity. Many researchers have studied the solution of the optimization problem (2), among which the gradient descent method is the simplest first-order optimization method

\[ w_{i+1} = w_i - \eta g(w_i) \quad (3) \]

Where \( g(w) \) represents the total gradient of all data objective functions \( \Phi(w) \) at \( w_i \), \( \eta \) represents the learning step.

It also brings opportunities for curriculum reform and innovation, such as resource base of massive data, cloud computing and computing technology that can provide data analysis for teachers and other data-intensive scientific and technological progress.

3. Exploration of multimedia courseware and contemporary curriculum teaching reform in the big data era
Students at higher vocational colleges are the group with the highest academic degree, an essential source of high-level scientific and technological talents. The teaching purpose of the compulsory ideological and political course for loyal successors is to help the students at higher vocational colleges fully understand and systematically grasp the contemporary multimedia courseware, analyze and grasp the significant theoretical and practical problems in the contemporary world and China with the basic viewpoints of the contemporary multimedia courseware. On this basis, it is necessary to fully consider the features and influence of the era of big data, and carry out reform and exploration in multimedia courseware and contemporary curriculum teaching.

Before the first year of high vocational college students in mainland China began to learn multimedia courseware and contemporary, they had already studied courses of Marxist Philosophy in the undergraduate stage, and also learned courses such as the theoretical and practical research of socialism with Chinese characteristics and the introduction to Dialectics of nature in the master stage. Avoiding the repetition of teaching content and form, adapting to the challenge in the big data era and meeting the training needs of high-level talents are the key to multimedia courseware and the realization of “higher and higher”, “stronger and stronger” and “deeper and deeper” teaching objectives step by step from undergraduate to doctoral ideological and political courses, which requires overall planning.

The overall planning of multimedia courseware and contemporary curriculum teaching reform lies in: leading the eight major topics contained in the curriculum outline with the latest achievements of Marxism Sinicization in a comprehensive and high-level way, that is, using the latest achievements of the contemporary theory to interpret the economic and political pattern, contemporary development, social construction, ecological environment and contemporary science of the contemporary world. Technology, social trend of thought, contemporary capitalism, contemporary socialism, and other themes are discussed and analyzed in teaching. With the unique characteristics of massive data and technical analysis as the technical support of teaching content and form, through specific case expand and gradually cultivate the global vision and world vision, and improve the ability of students at higher vocational colleges to analyze and solve major theoretical and practical problems by using Marxist position, view, and approach.

The overall planning of multimedia courseware and contemporary curriculum teaching reform should also be specific teaching contents, integrating big data into the teaching methods consolidate.

The survey showed, among which, 4.36% were “excellent”, 26% were “good”, 43.28% were “medium”, and 26.36% were “poor”. From the results of the survey, the overall situation of Ideological and political online teaching is not ideal, (as shown in Table 1)

**Table 1.** How do you evaluate the application of network teaching in ideological and political courses at your school?

| Option   | Subtotal | Proportion |
|----------|----------|------------|
| Excellent| 24       | 4.36%      |
| Good     | 143      | 26%        |
| Secondary| 238      | 43.28%     |
| Poor     | 145      | 26.36%     |

In general, the application of network teaching is still not very high. Some colleges and universities have excellent network teaching courses, but the assessment standard is relatively low, which has little
binding force on students. Most of the classes use ppt display teaching, but most of the teachers only use ppt as a brief version of the “textbook”, listing the knowledge points, lack of case analysis and interaction, and students' participation is not high. Some schools are equipped with classrooms and media for online teaching, but teachers rarely organize the development of online courses.

**Table 2.** If you do not use the Internet frequently for ideological and political education, what are the main reasons (multiple choice)?

| Option                                                                 | Subtotal | Proportion |
|------------------------------------------------------------------------|----------|------------|
| Not required in teaching assessment index                              | 76       | 13.82%     |
| Network teaching is troublesome and energy-consuming                    | 240      | 43.64%     |
| Without the help of network teaching, we can have a good class         | 139      | 25.27%     |
| Teaching content and course nature are not suitable for use            | 120      | 21.82%     |
| Inadequate mastery of network information technology                    | 170      | 30.91%     |
| School network teaching equipment and conditions are not perfect       | 261      | 47.46%     |
| Teaching objects, classroom performance of students, and other factors| 150      | 27.27%     |
| Not interested                                                         | 38       | 6.91%      |
| Others                                                                 | 55       | 10%        |

4. Conclusions

For the reform of multimedia courseware and ideological and political courses for contemporary higher vocational college students, it is necessary to establish a faculty team familiar with the technology and development frontier of big data and able to fully apply it to teaching. Currently, most multimedia courseware and contemporary instructors are graduates of humanities and social sciences with no background in science and engineering. Hence, colleges and universities should organize teachers to receive big data technology training as planned, to facilitate faculty team in skilful use scientific data search, management, analysis, virtual online communication, cooperation, and other related technologies, and gradually applying them to teaching practice.

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