

Ideological-Political Construction and Practice of "Modern Climatology" Based on Big Data

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ABSTRACT

Curriculum ideological-political education is an effective way to attain the whole process and all-round education. It actively explored the ideological-political construction and practice of "Modern Climatology" course, and established the educational objectives of knowledge imparting, ability training and quality improvement. Combined with the characteristics of atmospheric science specialty, the effectual way of "combining knowledge teaching with value orientation" was explored. With the help of big data technology, the development of teaching resource database, teaching methods and teaching evaluation in the ideological-political education has been realized, thus forming a more scientific, comprehensive, intelligent and personalized ideological-political mode of the course, and achieving the goal of integrating the ideological-political education into the knowledge education. These have further improved the professional quality of meteorological practitioners in the future, and continuously transported talents to meteorological departments for "building the frontline of meteorological disaster prevention and reduction".

Keywords: Curriculum ideology-politics, Disaster prevention and reduction, Fundamentals of Modern Climatology, Big Data.

1. INTRODUCTION

General secretary Xi Jinping pointed out that the primary problem of education is to "What kind of personnel should they train?" The fundamental task of our education is to "Cultivating socialist builders and successors with all-round development of morality, intelligence, physique and aesthetics" [1]. In August 2021, the China Meteorological Administration launched a program of practical activities with the theme of "People First, Life First" to help build China into a powerful country. On the other hand, the classroom is an important place for the development of ideological-political education in universities. All kinds of courses should go hand in hand with ideological-political theory courses [2-5]. Under the above two premises, it is necessary to think about the curriculum ideological-political construction under the background of meteorological power. This paper takes "Fundamentals of Modern Climatology", one of the core courses of atmospheric science, as an example.

"Fundamentals of Modern Climatology" is one of the compulsory courses for the basic platform of atmospheric science majors. At present, it is offered for atmospheric science major and applied meteorology major. The course focuses on professional certification,

aims to train students to meet the professional standards of China Meteorological Administration, takes industrial regulations as the guide, uses excellent teaching materials and resources at home and abroad, tamps students' theoretical foundation and cultivates students' post situational awareness, so as to contribute to the training system of high-quality and zero distance employment.

Youth is the hope and future of meteorology. Through the study of this course, students can master the necessary basic theories of "Fundamentals of Modern Climatology" and have the ability to master the law of climate and climate change. Under the background of climate warming, young students can keep the overall situation in mind, continue their blood, adhere to the lofty concept of "People First, Life First", have the awareness of pursuing advantages and avoiding disadvantages, build a solid front line of meteorological disaster prevention and reduction, integrate their youth struggle into the meteorological cause of the Communist Party of China, and contribute more youth strength to the construction of a Meteorological Power.

2. CONSTRUCTION FOUNDATION

Cultivating young talents is a major strategic task related to the future and destiny of the Communist Party of China and China. It is the common political responsibility of university and meteorological department. Only by paying attention to the organic integration of professional knowledge teaching and curriculum ideological-political elements, can we cultivate and bring up the successors of meteorological undertakings who can shoulder important responsibilities [6].

2.1. Teaching of professional basic knowledge

Starting from the actual business of the meteorological department, according to the professional certification requirements and the business requirements of climate diagnosis and prediction, this course combs the knowledge points that student should master in limited class hours, and compiles the syllabus and relevant teaching materials in line with professional characteristics.

2.2. Teaching of research frontier

Starting from the characteristics of the course, it is emphasized that the safety of people's lives and property should always be put first, and the prediction and early warning level of rainfall, typhoon, mountain torrent and debris flow should be improved. Teachers actively explore the formation mechanism of extreme weather such as heavy rainfall and typhoon under the background of climate warming, such as taking typhoon as the research object to study the climate change characteristics and causes of tropical cyclones in the South China Sea. In class, teachers timely convey the results of scientific research to students as cases, which not only enriches the teaching content, but also broadens students' thinking. In this way, the virtuous circle development mode of scientific research feeding teaching is realized, which organically combines the teaching content with academic research.

2.3. Organically integrate ideological-political elements into the course

As a basic course of atmospheric science, "Fundamentals of Modern Climatology" actively integrates ideological-political elements into curriculum teaching. Studies have shown that about 70% of natural disasters are caused by meteorological factors, including direct disasters, such as heavy rain crashing down the house, or strong wind blowing down the gantry crane, and secondary disasters, such as forest fire caused by high temperature and drought and debris flow caused by typhoon, which may all cause the loss of life and property. The elements of "Ideological and political education" in this course mostly start from the extreme weather and climate caused by meteorological factors, and form typical cases of Ideological-political education through sorting, organization and refining, such as the extreme rainstorm in Zhengzhou on July 20, 2021, the

seasonal drought in Guangdong, the extreme high temperature in summer in eastern China, etc. It is pointed out that the frequent and repeated occurrence of extreme weather and climate events has brought new challenges to the meteorological forecasting service. Doing a good job of accurate forecasting is related to social development, national economy and people's livelihood. Young students have a great responsibility and glorious mission in the future.

3. CONSTRUCTION AND PRACTICE

3.1. Construction goal

Taking the ideological-political education into the classroom as the goal, taking the natural integration of ideological-political education and professional education as the premise, combined with professional certification and requirements of meteorological industry for physical and mental quality, professional norms and teamwork, actively explore the combination point of ideological-political education in the teaching of "Fundamentals of Modern Climatology" course, so as to achieve the effect of comprehensive education, and lay the foundation for cultivating high-quality meteorological professionals with firm belief, loyalty to the party, strict discipline, standard behavior, solid theory and superb technology [7].

Therefore, in terms of ideological education, the teaching objectives and requirements of this course are as follows. Cultivate applied talents with meteorological professional quality, the concept of building a Meteorology Powers and the awareness of coping with climate change in the new era. Cultivate meteorological professionals with theoretical knowledge of environmental ethics and climatology, and the ability to solve climate change problems, so as to meet the development needs of socialism with Chinese characteristics and the construction of a Meteorology Power in the new era. Cultivate meteorological application-oriented talents in the new era with a sense of social responsibility, mission and brave spirit.

3.2. Application and Practice of Big Data Technology in Ideological-Political education

For a course, teaching objectives, teaching contents, teaching methods and teaching results are the important basis for the development of the course. The teaching effect should highlight its overall goal of ideological-political education, the teaching content should reflect the specific elements of ideological-political education, and the teaching method is the way to realize ideological-political education. The advantages of big data technology provide help for the specific elements of ideological-political education. In the teaching process of "Modern Climatology" course, the effective application of big data technology was emphasized, which made the ideological-political education of this course more scientific, efficient, intelligent and personalized.

3.2.1. Applying Big Data Technology to Construct the Teaching Resource Bank of Ideological-Political education.

In terms of teaching content, the teaching links and contents of professional courses were designed to show the connotation of Ideological-political education, and integrate the core contents such as political identity, national consciousness, cultural self-confidence, civic personality and scientific spirit into classroom teaching. Teacher integrated the ideological- political elements (obtained from various big data platforms), such as the history of meteorological development, the deeds of typical meteorological figures/outstanding figures, with the course content to form a case base, and gathered them into a special and professional big data resource base of ideological -political resources, which not only enriched the teaching content, but also achieved the purpose of ideological and political education.

In school-enterprise cooperation, meteorological departments at all levels not only have rich practical experience, but also have a large number of front-line deeds. It has effectively integrated the resources of meteorological departments and established links with curriculum teaching, which actively promoted the integration of ideological-political education and professional knowledge teaching. Establish a long-term fixed team of part-time teachers, including meteorological experts and meteorological front-line employees, who came to the school to give lectures and lectures from time to time. The teachers in the school have actively excavated the deeds of the part-time teachers and the people around them, and constantly built and enriched the case base of Ideological and political education.

Students were also encouraged to use the resource library, because it is professional, scientific and rigorous, and has a positive and positive guiding effect on students; students' ideas also be appropriately included in the resource library after screening and sorting, taking into account the needs of students, so that the ideological-political teaching resources reflected the personality characteristics of the younger generation and the characteristics of the times. Big data technology improved the teaching effect, so that students can master theoretical knowledge and professional skills, but also clear the goal of moral education, actively participated in psychological quality, professional quality, teamwork and other aspects of training.

3.2.2. Big data drives the reform of teaching mode and method to realize the individualized teaching and learning of ideological-political education

Big data technology makes ideological-political education broke through the constraints of time and space, let teachers and students out of the traditional classroom, and realized ideological and political teaching from a closed classroom to a more open field. In teaching methods, we have tried many organic combination of

teaching methods, such as teacher centered case analysis, Student centered group activities (including pre- class investigation, report, PBL discussion in class), lectures on typical personages / deeds, appreciation of image data, etc., enriching the form of Ideological-political education and increasing students' perceptual knowledge. Online and offline blended teaching made the ideological- political elements of the course everywhere, and the moral education work played a role at any time, which greatly improved the teaching effect of the ideological-political education.

Big data technology also helped teacher to obtain personalized information about students, such as hobbies, learning styles, ideological and moral levels, and personality characteristics. Teacher carried out ideological-political education according to the characteristics of each student. Reasonable and effective use of these data combined the ideological-political teaching content with the actual development needs of students, and chose their favorite teaching methods and methods to carry out ideological- political teaching and research. For students with different characteristics, the corresponding ideological-political requirements were formulated according to the specific teaching content. For example, for students who were interested in emergency disaster reduction, their ideological-political teaching requirements of extreme weather and climate events were formulated as follows: by analyzing the causes, hazards and disaster prevention and reduction measures of extreme weather and climate events, students realized the importance of having solid professional theoretical knowledge. At the same time, students were trained to solve problems with wisdom when they face of extreme weather and climate events. So that in the future, students can use high prediction accuracy and early warning timeliness to build a solid front line for people's disaster prevention and reduction. Through the example of glorious sacrifice of meteorological workers in artificial precipitation enhancement operation, strengthened the students' sense of professional ethics and social responsibility.

Big data enabled teacher not only to analyze the overall situation of ideological-political education from a macro perspective, but also to consider every student and every teaching link from the details, taking into account the personalized growth of learners.

3.2.3. Using big data technology to improve the evaluation of ideological-Political education

In terms of teaching effectiveness, we should not only have the requirements of theoretical knowledge and professional skills, but also clarify the objectives of students' Moral Education. To evaluate the effect of ideological-political education, we had objective and comprehensive data and scientific evaluation methods. Conventional ways and methods cannot obtain all the information, while big data can track and record the whole process of students' learning behavior and learning effect, realized the process evaluation of students' learning, and broke through the limitations of traditional evaluation.

With the help of the advanced teaching platform of "Learning Link", "Modern Climatology" adopted online and offline hybrid teaching. The data quantification based on the "Learning Link" platform made the formative and process evaluation faster, more convenient and more accurate. The data storage of the whole teaching cycle provided by "Learning Link" facilitates teacher to collect and analyze course data, from the preview before class, classroom interaction, the completion of homework after class and other levels of analysis, covering every teaching link scientifically, basically realizing the quantitative analysis of students' learning situation [8].

The main contents of the ideological-political evaluation of "Modern Climatology" course included: learning process evaluation (50%) + team cooperation evaluation (50%). The evaluation of learning process included attendance (10%), classroom participation (20%) and homework (20%). According to the full-cycle data derived from "Learning Link", the attendance evaluation adopted the deduction system, 2 points were deducted for absenteeism, 1 point was deducted for late arrival and early departure. The evaluation of classroom participation was based on the plus point system. If student answered the question actively, he (she) would get 2 points for correct answer and 0 point for wrong answer. If he (she) answered the question passively, he (she) would get 2 points for correct answer, 1 point for correct answer under the teacher's inspiration, and 0 point for failure to answer. 1 point would be deducted for sleeping in class and playing with mobile phone. For homework evaluation, the average score was taken for multiple assignments, and each assignment was divided into four grades according to the completion situation: excellent (10 points), good (9 points), medium (8 points) and pass (7 points). If the assignment was not handed in or copied, the score is 0.

The team collaboration PBL evaluation was based on the group, and the average score was taken for multiple evaluations. Each group consisted of 7 to 8 students, and each group leader was responsible for the division of tasks and evaluation of the group members. The group leader had the right to add points to the outstanding students and deducted points to the poor students on the basis of the average score, and explained the reasons.

The appropriate mining of big data made teacher more convenient, comprehensive and scientific to grasp students' state of mind, learning attitude and the learning effect of ideological-political education. Big data enabled teacher to have a precise understanding of every link and teaching object of the course, and their evaluation no longer stay in a vague and general qualitative description.

4. CONCLUSIONS

The ideological-political construction of "Modern Climatology" course has actively promoted the education of professional ethics, professional quality and psychological quality of atmospheric science students in Guangdong Ocean University, and cultivated students' awareness and ability of autonomous learning and lifelong learning.

At the same time, it has fully stimulated students' enthusiasm in class, helping them to form a correct world outlook, outlook on life and values, and created a good atmosphere for active employment and entrepreneurship. It further enhances students' sense of political responsibility and mission, helps students firmly establish the people-centered thought, and stimulates their initiative to practice accurate forecasting and early warning skills, so as to fully protect the safety of people's lives and property in the future.

In short, "Modern Climatology", as a compulsory course for atmospheric science majors, have the flavor of "ideological-political". In the process of teaching, teachers used big data technology to integrate ideological-political resources, tracked and evaluated all aspects of the teaching process according to students' data feedback, and optimized the content of ideological-political education. While imparting professional knowledge of climate science, ideological-political education were strengthened, and the fundamental task of establishing moral integrity in cultivation has been well implemented.

AUTHORS' CONTRIBUTIONS

Lingli Fan is responsible for paper writing, Guangya Zhang is responsible for data analysis.

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