



# Discussion on the Ideological and Political Construction of Aviation Meteorology Courses Under the Background of Integration of Specialty and Innovation

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## Abstract

How to organically integrate ideological and political education, professional education and double-innovation education is an urgent subject to be explored in domestic universities. Taking aviation meteorology as an example, this paper discusses the reform of teaching team, teaching design, teaching content, teaching implementation, teaching requirements, teaching evaluation, etc., so as to meet the requirements of ideological and political education in the course and further improve the professional quality of future air traffic controllers.

## Keywords

Creation and integration; Curriculum ideological and political education; Aeronautical meteorology

## 1. Introduction

The spirit of the "Implementation Opinions of the General Office of the State Council on Deepening the Reform of Innovation and Entrepreneurship Education in Colleges and Universities" (Guobanfa [2015] No. 36), "Guidelines for the Construction of Ideological and Political Courses in Colleges and Universities" (Jiaogao [2020] No. 3), and other documents, colleges and universities in China have actively carried out ideological and political courses and the integration of professional and creative courses. In 2017, the Ministry of Education actively promoted the construction of new engineering disciplines to help build China into a strong country in higher education. Traditional engineering majors are facing the need to upgrade their production capacity to cultivate innovative and entrepreneurial talents (referred to as dual-innovation talents) that meet national needs. How to construct an educational model for ideological and political courses in the context of professional and creative integration is a topic that colleges and universities urgently need to explore. This article takes aviation meteorology, one of the core courses of the transportation major (air traffic management and dispatch direction), as an example. Through the study of this course, students can master the necessary basic theories of meteorology and have a preliminary grasp of the occurrence and change laws of weather phenomena; they can recognize the impact of important weather (especially dangerous weather) on flight safety, and have the awareness of seeking benefits and avoiding harm and safe flight; they can use aviation meteorological data to judge flight meteorological conditions.

## 2. Pre-course foundation

- (1) This course starts from the actual work of civil aviation, organizes the knowledge points that students need to master in limited class hours, and sorts out the teaching syllabus and related teaching materials that are in line with the characteristics of the professional direction.
- (2) Based on the needs of this course, the instructors deeply explored the formation mechanism of dangerous aviation weather that affects aviation activities. For example, they took the fog at Urumqi Airport as the research object and conducted research on the changing laws and generation and disappearance mechanism of advection fog. In class, the teachers taught the results of academic research to students as cases, which not only enriched the teaching cases but also broadened the students' horizons. In this way, a virtuous cycle development model of scientific research feeding back teaching was formed, which took the course as the starting point and organically combined the teaching knowledge with academic research.
- (3) As a compulsory course for transportation majors, this course actively integrates ideological and political elements into course teaching. Examples show that flight accidents caused by meteorological conditions account for more than 60% of all accidents. At the same time, flight delays or cancellations caused by weather factors will also cause negative social impacts such as unstable airport order and excessive passenger behavior, and will also cause trouble and economic losses to airports and aviation companies. Therefore, in this course, the "curriculum ideological and political education" education element is designed, starting from domestic and foreign flight accidents caused by meteorological factors, such as the Tenerife air crash (fog), Air China Busan air crash (fog), Yichun air crash (fog), etc., through sorting, organization, and refinement, to form a typical case of ideological and political education.

## 3. Curriculum Construction Plan

### 3.1 Construction goals

The construction of ideological and political courses should focus on comprehensively improving the ability to cultivate talents, and be guided by Marxism-Leninism, Mao Zedong Thought, Deng Xiaoping Theory, the important thought of "Three Represents", the Scientific Outlook on Development and Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, with the means of strengthening ideological education and value guidance in the process of education and teaching, and with the purpose of guiding students to shape a correct world view, outlook on life and values. Through targeted revision of talent training programs, research and innovation of education and teaching methods, enriching and exploring the connotation of courses, scientifically optimizing teaching design, improving and enhancing classroom management, etc., integrating education on socialist core values, education on China's excellent traditional culture, and education on the Chinese Dream, the ideological and political courses will be integrated into the entire process of classroom teaching construction.

The purpose of entrepreneurship and innovation education is to cultivate innovative and pioneering talents. It focuses on cultivating innovative spirit, training innovative ability, professional development of innovative practice, cultivating team spirit and building a demonstration platform for innovative practice. Entrepreneurial and innovative talents need to have a solid theoretical foundation, advanced innovative and entrepreneurial thinking, rich innovative and entrepreneurial knowledge, scientific innovative and entrepreneurial practice and other basic elements. At the same time, the success of innovation and entrepreneurship also requires strong spiritual power [1].

Professional education is combined with the standards of physical and mental qualities, occupational requirements, teamwork, etc. in engineering education certification, and actively thinks about the integration points of ideological and political education in the teaching of this course, so as to achieve the effect of comprehensive education and lay a solid foundation for cultivating high-quality civil aviation professionals who are "politically strong, disciplined, behaviorally standardized, solid in theory, and skilled in technology."

The above three premises, the ideological and political teaching objectives and requirements of this course are as follows: First, to cultivate engineering application talents with civil aviation professional qualities, the concept of building a strong civil aviation country, and the awareness of responding to atmospheric environmental changes in the new era. Second, to cultivate civil aviation professionals with theoretical knowledge of environment and meteorology, and the ability to analyze and solve complex problems in aviation operations and traffic control, to adapt to the development needs of socialism with Chinese characteristics in the new era. Third, to cultivate engineering

application talents in the new era with a sense of social responsibility, mission, and courageous pioneering and innovative spirit in the new era.

### 3.2 Construction approach

To implement the fundamental task of cultivating morality and cultivating people, we must integrate value shaping, knowledge imparting and ability cultivation into one, which is inseparable. The teaching team is the key to comprehensively promoting the construction of ideological and political courses. For a course, teaching design, teaching content, teaching implementation, teaching requirements and teaching evaluation are important bases for the development of the course. Teaching implementation should highlight the overall goal of ideological and political courses, teaching content should reflect the specific elements of ideological and political courses, teaching requirements are the specific embodiment of teaching implementation, and teaching methods are the main way to achieve ideological and political courses [2].

(1) **Teaching team.** Strengthen the construction of the teaching team, continue to promote the teaching and research activities of ideological and political education in courses, improve the collective lesson preparation system, select teaching materials, content and cases according to different courses, strengthen the teaching ability of teachers and teams in ideological and political education in courses, and implement the main responsibility of teachers in ideological and political education in courses. Taking the transportation major as an example, collective lesson preparation, through the effective integration of civil aviation enterprise resources, pull the connection between off-campus enterprises and on-campus course teaching, and actively promote the development of ideological and political education in courses and professional course teaching. Establish a team of part-time teachers, including pilots and aviation meteorology experts, to give lectures and lectures on campus from time to time. Actively explore the typical deeds of the part-time teaching team and those around them to form a rich ideological and political education case library.

(2) **Teaching design.** According to the characteristics of the dual innovation course, we should fully explore and apply the "ideological and political" elements contained in the course, deeply explore the ideological and political education elements contained in the aviation spirit of serving the country and its contemporary value, reasonably integrate them into the course outline, and improve the course lesson plan; design a variety of teaching methods such as thematic and case-based teaching methods, integrate value guidance with knowledge transfer, and explore effective and diversified course ideological and political teaching method designs [3]. Students will face various problems and setbacks in the process of innovation and entrepreneurship. The transportation major (air traffic management and dispatch direction) cultivates students' courage to explore and innovate through ideological and political case teaching. In the teaching design, the connotation of ideological and political education is displayed, and the core contents such as national consciousness, political identity and cultural confidence, and citizen personality are integrated into classroom teaching. The embodiment of ideological and political elements can start from actual cases, such as the history of aviation meteorology development, typical figures/outstanding figures, air crash /flight accident signs, etc. By integrating with the teaching course content, enriching the case library, not only enriching the teaching content, but also achieving the purpose of ideological and political education. Through ideological and political education in the process of dual innovation education, students have improved their enthusiasm for innovation and entrepreneurship activities.

(3) **Teaching content.** The course objectives should be transformed from a single professional objective to a co-existence of professional objectives and ideological and political objectives. The course content structure should not only conform to the cognitive laws of students in the new era, but also reflect the new educational concept of aviation courses and the practical teaching plan. The textbooks should also reflect the "ideological and political connotation" and integrate the latest research results and cutting-edge knowledge in the field of aviation meteorology at home and abroad. The transportation major of Changji University is project-driven and is taught in accordance with the process and requirements of professional project practice, so that students can improve their ability to use multi-course knowledge to systematically solve practical aviation operations and traffic control problems in practical activities. The project relies on the scientific research projects of transportation major teachers, the innovation and entrepreneurship training projects for college students, and the public welfare practice activities of civil aviation. It not only gives full play to the scientific research advantages of professional teachers and promotes teaching through scientific research, but also fully mobilizes students' enthusiasm to participate in dual innovation projects, and enables students to give full play to their own professional advantages and creative thinking to start their own businesses. Optimize

the practical teaching methods. First, use the case teaching method to explain, discuss, analyze and summarize typical cases to help students understand and master theoretical knowledge and enrich the practical teaching content [4]. Second, use the role-playing teaching method to replace students with jobs such as dispatchers in the civil aviation system, so that students can take on the responsibilities of the job and achieve the purpose of teaching students in accordance with their aptitude and needs. In addition, incorporate civil aviation public welfare practice into practical activities, which can combine ideological and political education, professional education and social service awareness and ability training, so that students can actively participate in the construction of a strong civil aviation country with their professional knowledge.

(4) **Teaching implementation.** Taking the integration of professional and creative education, the construction of new engineering disciplines, and the certification of engineering education as opportunities, we will incorporate the new era of innovative education and value guidance into the professional talent training goals. We will form a course ideological and political teaching reform model that is guided by the training program, driven by the course objectives, and implemented in detail in the syllabus. We will inherit and carry forward the characteristics of the aviation spirit of serving the country, realize the organic unity of value shaping, knowledge imparting, and ability cultivation, and achieve the effect of transforming "course teaching" into "course education" and "professional education" into "professional education". Innovation and entrepreneurship education courses should focus on enabling students to "dare to take risks and be creative", and enhance their innovative spirit, creative consciousness, and entrepreneurial ability through personal participation. According to the characteristics of the dual innovation courses, we will clarify the ideas, content, and methods of course ideological and political construction, give full play to the main role of teachers in course education and professional education, stimulate students' professional interests and curiosity, and create an environment for students to experience themselves and create independently. In the process of training college students' innovation and entrepreneurship projects, we will implement the mentor system, follow the principle of "interest-driven, independent topic selection, and process-oriented", and focus on the application and gains of college students in dual innovation thinking and dual innovation practice. During the implementation process, according to the students' innovation and entrepreneurship needs and effects, the tutors will introduce course ideological and political cases in a timely manner to promote project implementation.

(5) **Teaching requirements.** This course formulates corresponding ideological and political requirements for specific teaching content. The ideological and political teaching requirements for dangerous aviation weather can be set as follows: by analyzing the causes, conditions, hazards and measures of various types of dangerous weather, students will be strengthened in the importance of having solid professional theoretical knowledge, facing dangerous weather, not being afraid of danger, facing difficulties head-on, and using professional knowledge to solve difficulties. Through the analysis of flight accidents, students' sense of professional ethics and social responsibility will be strengthened.

(6) **Teaching evaluation.** Adhere to the course quality orientation, establish a course ideological and political assessment and evaluation mechanism, focus on the achievement of course and professional creative education goals and student satisfaction, strictly implement the class attendance system, form a normalized course ideological and political teaching supervision mechanism, and ensure the quality of course ideological and political implementation. The evaluation content of the dual innovation education in the transportation major is reflected in multiple aspects such as classroom discussion, participation activity, practical results, problem analysis, scientific and technological works, academic papers, research reports, experimental reports, program development, public welfare project reports, and innovation and entrepreneurship competitions, and the output of research reports, papers and other results is used as evaluation indicators. Students are encouraged to carry out aviation public welfare innovation and entrepreneurship projects, and support students to participate in the "Youth Red Dream Journey" track in the "Internet +" College Student Innovation and Entrepreneurship Competition. The "Red Journey" track requires public welfare projects to be oriented to social values and have good creativity, products or service models in the field of public welfare services. When selecting topics for aviation public welfare dual innovation projects, guide students to promote the deeds of outstanding/typical figures in aviation in communities and villages to enhance people's sense of pride and responsibility.

## 4. Conclusion

Under the background of the integration of professional and creative education, through the practice of ideological and political education in courses, students' patriotism and innovation and entrepreneurship awareness are cultivated,

and their sense of responsibility and mission to strive for the construction of a strong civil aviation country in China is enhanced. Ideological and political education in courses will actively promote the improvement of students' professional ethics education, professional quality and psychological quality. The integration of ideological and political education, professional education and creative education is more conducive to the urgent need to cultivate talents of creative air traffic controllers with Chinese characteristics in the new era.

## References

- [1] Yuan Ruixia, Liu Zhanjian, et al. Exploration of the education model of professional and creative integration in colleges and universities under the perspective of curriculum ideological and political education [J]. Industry and Technology Forum, 2021, 21(2): 175-176.
- [2] Gu Ying, Wang Zhiqiang. Thoughts on the ideological and political construction of aviation meteorology courses under the background of new engineering [J]. Science and Education Forum, 2020, 03:43.
- [3] Yang Mei, Wang Ping, Huang Zhiyu, Wang Bin, Zhang Xianju, Wang Xiaohong. Course construction and practice of material mechanical properties based on "integration of expertise and innovation" [J]. Education and Teaching Forum, 2020, 43: 242-243.
- [4] Wang Ye. Research on students' active learning mechanism in case teaching of aviation meteorology [J]. Intelligence, 2018(02): 120.