

## The Teaching Reform and Exploration of Civil Aviation Flight Skills Courses Based on International Application-Oriented Talent Training

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**Supported by** the Ministry of Education Humanities and Social Sciences Special Task Project (Engineering Science and Technology Talent Training Research) “Research and Practice on the Mechanism of College-enterprise Cooperation in Training Civil Aviation Pilots” (17JDGC017).

Received 25 March 2020; accepted 3 May 2020  
Published online 26 June 2020

### Abstract

This paper aims at the needs of Shandong Airlines and other cooperative units for the training of our school's flight technology (driving direction) talents, combined with the needs of our school's flight training practice in aviation schools in the United States and Canada, and proposes to build a curriculum system under the work-oriented mode and teaching content. From the perspective of the cultivation of international application-oriented talents, with the vocational skills and quality training of students as the core, the teaching model reform of flight skills courses is carried out in many ways, which not only meets the requirements of civil aviation of China for airline transportation pilots, but also conforms to our school strives to build an application-oriented university with aviation as its main feature.

**Key words:** Flight skills courses; Work practice orientation; Teaching model; Applied talents

Li, M. J. (2020). The Teaching Reform and Exploration of Civil Aviation Flight Skills Courses Based on International Application-Oriented Talent Training. *Higher Education of Social Science*, 18(2), 38-41. Available from: URL: <http://www.cscanada.net/index.php/hess/article/view/11756>  
DOI: <http://dx.doi.org/10.3968/11756>

### INTRODUCTION

With the deepening of China's economic structure upgrade and the transformation of development methods,

and the continuous acceleration of the internationalization process, a large number of international innovative talents with a certain international vision are urgently needed. The Outline of the National Medium- and Long-Term Education Reform and Development Plan (2010-2020) clearly states that the higher education should train a large number of international talents with international perspectives, knowledge of international rules, and participation in international affairs and international competition to meet the requirements of the country's economic and social opening to the outside world. It can be seen that the cultivation of international talents should be an important direction for the development of China's higher education in the future. And also it is an important indicator for the education administration to determine the investment and performance evaluation of colleges and universities. According to the new goal of talent training, colleges and universities related courses ushered in a new wave of teaching reform. This round of reform focuses on the mission of serving international high-quality talents cultivation to meet the actual needs of national economic and social development.

Since its establishment in 2006, School of Flight Training of Binzhou University's has been committed to cultivating application-oriented civil aviation flight technicians for airlines. The unique “2.5 + 1.5” training model for the students in flight technology majors is exactly in line with the international talent training goals set out in the outline of the national mid- and long-term education reform and development plan. Based on the concept of international application-oriented talent training, this paper makes full use of its own advantages and characteristics to reform and practice the teaching content and teaching model of civil aviation flight skills courses of the flight technology, and strive to achieve the seamless connection between the teaching of civil aviation pilots of our school and the training of foreign aviation schools as soon as possible to makes efforts for

the training of applied professional technical talents with international vision in our civil aviation.

## 1. AN INTRODUCTION TO FLIGHT TECHNOLOGY COURSES GROUP

### 1.1 Principles and Process of Course Group Integration

The essence of curriculum integration is based on the teaching objectives identified by teachers based on the investigation and analysis conclusions of students' future job knowledge and skills needs. The curriculum is designed and organized to break through narrow disciplinary boundaries and stranded in the perspective of student self-realization and development to achieve the sustainable development of students' careers and promote the comprehensive integration of students and society. According to the theory of curriculum integration, the design of curriculum integration begins with the teaching objectives of the curriculum. And then we build related issues around the subject of the curriculum, reasonably distribute the knowledge points, and gradually launches the curriculum according to the teaching plan through the curriculum teaching activities.

The training goal of the flight technology major is to train comprehensive professional talents for the front line of the modern civil air transport industry, who can engage in domestic and international route transport aircraft driving in the civil aviation field. The students should master the multidisciplinary comprehensive knowledge required by the flight technology major and have the ability to solve complex problems in the field of flight operations and management. They should have a strong political quality, a reasonable knowledge structure, a solid theoretical foundation, and flight technology superb, excellent professionalism in flight style. They should have good communication skills, teamwork ability and be able to serve as team leader. They should possess innovative spirit and international vision and have strong international competitiveness. They can engage in aircraft driving in the field of civil aviation transportation, crew resource management and other work. And also, they should have the consciousness and ability of independent learning and lifelong learning to adapt to the changes in civil aviation technology and economic and social development needs. According to the teaching objectives, the different courses of "air navigation", "instrument flight procedures", "aeronautical charts", "aeronautical information science" and "flight performance and planning" are taught as a whole modules, and the contents selected to meet the students' basic knowledge system needs. The five courses in this course group are all important professional courses in flight technology. At present, the teaching resources are relatively rich and

the digital management of learning resources has been realized, which can provide students with a convenient and fast independent learning platform. The learning platform has a large amount of information updated in a timely manner. And it has sufficient expansion space and openness to meet the needs of students for independent learning. In addition, teaching resources can be shared among the courses in the course group. The integration of this course group breaks the original structural form of different courses and organically combines five courses in the same module to connect and complement each other. The capability-centered talent training model is the key to cultivate technology-applied talents. The integration of multiple integrated courses is an all-round integration. Both basic and professional courses should be all integrated. The integration of courses should not be simply to piece together or merge the contents of two or more subject courses, but should create a "new course" when the ability target is determined and the vocational knowledge and skill system is constructed according to the ability analysis. The content of comprehensive courses should also include how to dynamically learn professional knowledge, find and obtain professional-related information, methods and methods of thinking training and method training.

### 1.2 The Effect of Course Integration Optimization

The flight skills courses are interrelated and complementary in content, forming a complete chain of students' knowledge system. And also, the content of the different courses are interlinked and resources are shared, which is in line with the laws of students' learning and development. After the course is integrated and optimized, it reflects the distinctive course characteristics, exerts the potential of teachers, and more importantly, stimulates students' interest in learning, mobilizes students' enthusiasm for learning, improves the teaching effect, and can better meet airline's requirements for flight technology talents.

Through the integration and optimization of the five different courses, the design results of the different courses can be shared, saving the time to design and develop and costs of each course. The flexibility and mobility are large, which is conducive to students' independent learning. It is conducive to multiple integration. It is also conducive to the communication and connection between various levels of vocational education and other education, and avoids repeated learning. It is helpful to the formation of comprehensive professional abilities and the development of various abilities of students. It is conducive to the formation of a reasonable knowledge structure for students. Through the integrated and optimized course teaching, students have also demonstrated good teaching results in aviation theory learning achievements and have simulated flight training in foreign aviation schools. And also, the behavior entering the airline is getting better.

## 2. REFORM AND PRACTICE OF TEACHING MODEL FOR FLIGHT SKILLS COURSES

### 2.1 Construction of Flight Skill Course System

From the perspective of talents with an international perspective, according to the provisions of Articles 185 and 187 of the “Certification Rules for Civil Aircraft Pilots, Flight Instructors and Ground Instructors” of the Civil Aviation Administration of China, combining with the requirements of airline personnel training and the students’ feedback information in foreign aviation school, The course focuses on the cultivation of professional abilities and qualities, and shifts from focusing on basic and professional theoretical knowledge to focusing on the training goals of professional skills and ability development. The purpose is to enable students to acquire certain professional abilities. According to the requirements of partner airlines for the training of flight technology professionals in our school, combined with the practical needs of students for flight training in foreign aviation schools, it is proposed to build a curriculum system and teaching contents based on the work practice-oriented model.

According to the relevant industry standards of the Civil Aviation Administration of China, the knowledge that pilots should master is mainly the practical knowledge required to engage in the flight profession. Based on this standard, We have constructed a teaching system and teaching content that focuses on the cultivation of skills and qualities. We also pay attention to the consistency of learning in our school and flight training in foreign aviation schools and break the barriers between the courses. And also, we organize and coordinate the exchange and cooperation of teachers in various courses, adjust and reorganize professional courses to achieve resource sharing, continuously enriching the teaching content of the international application and effectively realizing the seamless connection between the theoretical learning of students in our school and the training of foreign aviation schools. Based on these, a series of high-quality teaching materials such as new curriculum standards, lesson plans, and multimedia courseware are also formed.

### 2.2 Integrating Theory With Practice, Building Application Specific Textbooks

The introduction of original textbooks and flight materials from foreign aviation schools, combined with the needs of students’ flight training practice, our curriculum group brainstormed, and cooperated to compile and publish a series of special textbooks for civil aviation application-oriented talent training. For example, the textbook “Jeppesen Aeronautical Charts and Applications” starts from the perspective of student flight training, combined

with the students’ flight training practice in the United States and other aviation schools ,focusing on illustrating the application of various types of aeronautical charts.

In view of the actual needs of flight students to go to foreign aviation schools for training, the textbook mainly combined with the airport charts, departure charts, arrival charts and approach chart of flight training airports in the United States and other aviation schools. The implementation process and method of the corresponding departure procedures, approach procedures and instrument approach procedures in the charts to achieve the purpose of skilled application of Jeppesen charts. The purpose of this book is to help aviation personnel, especially flight students deeply and specifically understand the contents of Jeppesen aeronautical charts to achieve proficiency, flexible use of aeronautical charts, and a deep understanding of instrument flight procedures. From the textbook level, the theoretical knowledge is effectively connected with the flight training practice of foreign aviation schools, thus laying a good foundation for the students’ flight training abroad in the future.

### 2.3 Integrating High-Quality Teaching Resources of Foreign Aviation Schools into Classroom Teaching

We keep introducing high-quality foreign teaching resources including original textbooks, navigation software and flight service websites used in flight training in foreign aviation schools for students. And then, teachers have applied these teaching resources to the classroom teaching process of different courses such as aeronautical charts, air navigation, aeronautical meteorology, flight performance and planning and achieve a good connection between theoretical learning and simulated flight practice. In addition, when the students return to China after flight training of foreign aviation schools finished, they are encouraged to choose their graduation thesis topics based on their practical experience in flight training of foreign aviation schools. According to the problems encountered in their own flight training, they will conduct multifaceted analysis and summary and propose corresponding solutions. This can provide an effective reference for teachers’ theoretical teaching.

### 2.4 Infiltrating Bilingual and Full English Teaching Models, Gradually Realize the International Training of Pilots

At present, most flight students in aviation schools need to go abroad to receive flight practice training, which requires students to lay a solid professional English foundation in their theoretical learning process and prepare for further study entering a foreign aviation school. The flight skills courses are integrated and optimized into a more comprehensive and practical subject. The use of bilingual teaching and full English teaching mode can effectively improve the enthusiasm of students to learn

and cultivate the language sense of professional courses, which is very helpful for flight students to study abroad. We change the traditional Chinese textbooks of the course, by using the original English textbooks and materials used in foreign aviation schools for students' training, and the self-made full English PPT courseware based on the English version of the textbook so that the course content is updated in time, and maintain the consistency with the training program in Foreign aviation school. On this basis, according to the characteristics of the course and the actual situation of the students, the teachers adopt bilingual or full English teaching mode to mobilize the enthusiasm of the students. And the students' language process and thinking process are gradually integrated and then the international training of flight students are gradually realized.

### 3. REFORM OF ASSESSMENT MODEL

Assessment is the last link of teacher teaching and student learning and it is also a very important process. Examination is the basic way to evaluate and improve teaching and make it beneficial to cultivate innovative talents. Examination is an important way to guide students to study actively and creatively. Examination is an important link to detect and improve students' innovative thinking and ability. We change the traditional closed-book assessment form and select flexible and diverse assessment forms according to the characteristics of the course itself. Flight skills courses, as a highly applicable subject, should be based on practical application in the assessment process to create conditions for students to simulate actual flight scenarios. For example, the flight scene is designed by teachers; the students choose the appropriate aeronautical chart type and formulate the corresponding flight plan. We encourage the students to use bilingual or even full English descriptions for descriptions or demonstrations on simulated machines, which can not only investigate and train students' comprehensive ability to master aeronautical chart information, but also check whether the students really use the tool of aeronautical chart to truly understand the purpose of instrument flight procedures. In short, we are focusing on the correct reading of aeronautical chart information and the specific description of the flight process implementation and method and Focusing on

examining the application of flight skills courses in flight training practice to reflect the concept of international application-oriented talent training that combines flight theory and practical training.

### CONCLUSION

Through the construction of the curriculum teaching system and teaching content with vocational skills and quality training as the main lines, the docking of the curriculum content with the industry standards for pilot training is better achieved. The application of foreign high-quality flight navigation software in flight skills courses and the implementation of bilingual teaching and even full English teaching mode in flight skills courses have stimulated students' interest in learning and their enthusiasm to participate in learning. Combined the theoretical knowledge learned with flight practice and being close to the actual flight, thus we enhanced the effect of classroom teaching and improving the quality of teaching. In addition, it can be further applied to the aviation theory teaching or training process of other brother schools and airlines to jointly improve the training quality of airline transportation pilots, and fundamentally improve the professional quality and the level of safety, which has laid a solid human resource foundation for China to move from a major civil aviation country to a strong civil aviation country.

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