

Research on Teaching Innovation of "Flight Principles" Course in Flight Technology Major

Xiujuan Liu^{1,a,*}, Xiaoping Luo^{1,b}, Chunguang Wang^{1,c}, Lan Luo^{1,d}

¹Beijing Institute of Technology, Zhuhai, China

^a723704537@qq.com, ^baidong67@163.com, ^c2490079046@qq.com, ^d19030@zhit.com

*Corresponding author

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Abstract: The Flight Technology major is a national deployment and control major, and the "Flight Principles" course is the primary core course of the Flight Technology major. Improving teaching quality is of great significance. This article focuses on the training objectives of aviation technology professionals, explores the most direct and effective ways to enable students to meet the teaching objectives. In response to the "pain points" existing in course teaching, based on the current situation of students' abilities and qualities, the course teaching content system is reconstructed, aviation English listening and speaking situations are created, The practice of "bilingual" teaching reform and course ideological and political reform is furthered, and the evaluation method of course teaching quality is improved, which will consequently enhance the curriculum construction level, advance the cultivation of students' innovative ability and personalized development.

1. Analysis of "Pain Points" in Teaching

From the perspective of the training objectives of "international airline pilots", there are the following pain points in the teaching of "flight principles" course.

Firstly, the teaching content of the "Flight Principles" course is difficult to learn, and students' cognitive and learning abilities are generally not high. There is an urgent need to standardize students' learning habits, improve learning methods, and stimulate their enthusiasm for learning.

Secondly, the import of mainstream aircraft and the internationalization of flight tasks, which require high proficiency in aviation English reading and speaking for flight students. However, currently, students' aviation English proficiency is generally not high. There is an urgent need to improve students' ability to read and understand aviation professional English vocabulary and abbreviations for cockpit instrument equipment and display information, as well as aviation technology literature, and improve their English communication skills with foreign pilots, controllers, and service support personnel^[1].

Thirdly, theoretical teaching and flight training are carried out in stages, making it difficult to closely connect, resulting in a low level of recognition among students of the importance of course teaching content and the necessity of learning. There is an urgent need to create a simulated flight environment, construct simulated flight facilities, and organize flight experience activities to enhance understanding and understanding of flight principles.

2. Teaching Innovation Practice Paths and Methods

The course of "Flight Principles" should focus on the training objectives of "international airline pilots" in the field of flight technology, explore the most direct and effective ways to enable students to meet the teaching objectives, focus on reflecting the role of the course, adhere to student-centered, integrate bilingual teaching, integrate course ideology, and achieve the "five in one" of knowledge transfer, skill training, value guidance, simulated flight, and job qualifications, in order to cultivate outstanding flight talents, Make them qualified socialist builders and successors.

2.1. Taking improving students' comprehensive quality as the foundation and optimizing the key links of teaching management

In response to the contradiction between the difficulty of learning course content and the low learning ability of students, the following measures can be taken:

Firstly, small-scale teaching mode can be carried out to solve the problems of difficult classroom management and insufficient attention to students. To reduce the difficulty of teaching management and facilitate learning guidance for students, the number of classes should not exceed 30. Small class teaching makes it easier for teachers to pay attention to each student, understand their learning ability and mastery of knowledge, provide more precise and detailed learning guidance to students, and achieve individualized teaching. The emotional world between teachers and students is closer, which is more conducive to students' physical and mental health, cultivating their collective sense of honor, and facilitating their integration into the classroom^[2].

Secondly, "mobile phone bag" management can be applied to the classroom to root out "mobile phone disease". Before class, putting students' mobile phones into the bag for centralized management can effectively regulate students' classroom learning status, root out the "mobile phone disease" in the classroom, promote students to concentrate on listening, prevent deviation, and also help cultivate students' learning habits.

Thirdly, taking the license exam as a rigid goal in course learning can solve the problem of unclear learning objectives for students. Obtaining various levels of flight theory licenses from the Civil Aviation Administration is a rigid requirement for academic management of flight students. The teaching content of the "Flight Principles" course accounts for a large proportion of all flight level license exams. Taking the license exam as a rigid goal of course learning, replacing teaching with exams, promoting learning with exams, reshaping teaching content, focusing on learning objectives, and solving the tutoring problems of license theory exams in class effectively enhance students' interest in learning and attention to the course, and continuously strengthen their self-awareness and initiative in learning.

Fourthly, teachers can utilize various teaching resources and information technology to carry out teaching and solve the spatio-temporal problems of education. For the Civil Aviation Administration exam, a theoretical learning system for flight student licenses can be developed based on information platforms such as "Learning Pass", and bilingual teaching videos for the "Flight Principles" course can be recorded (accessed in the form of MOOC or online courses) to enrich teaching resources and methods. Fully utilizing various teaching resources, broadening teaching channels and helping to develop students' good learning habits will lead to achieve full time and full space learning.

Fifth, it is also important to strengthen humanistic care and solve the problem of emotional communication between teachers and students in the new era. In the new era, mobile phones are students' "best friends", and they are the emotional confidants of students, whether in class or in the classroom or dormitory. Teachers should pay attention to students' thoughts and emotional states, pay attention to emotional communication with them, and pour love into students. When students

achieve results, they should not hesitate to give praise. When students encounter difficulties and setbacks, they should extend a helping hand in a timely manner, and be a happy and emotional confidant for students' academic growth. Many times, students fall in love with a certain course because they like a certain teacher. Teachers should be both good teachers and helpful friends to students. Whether in or out of class, they can make students feel the power of care and love, feel the warmth of home, promote learning with emotions, manage with emotions, and continuously enhance students' enthusiasm for learning^[3].

2.2. Carry out bilingual teaching practice activities with the goal of improving students' English proficiency

To address the contradiction between high English proficiency requirements for aviation majors and the current level of students, the following measures can be taken:

Firstly, project research on bilingual teaching reform should be carried out to consolidate the foundation of bilingual teaching in the curriculum. According to the requirements for cultivating pilots' professional English proficiency, teachers are supposed to revise and improve the "Teaching Outline of Flight Principles Course" in a targeted manner and establish a bilingual teaching content system; scientifically design teaching content, conduct bilingual teaching in English for important knowledge points and professional terms, create bilingual teaching courseware for courses, record bilingual teaching videos for courses, collect, organize, and improve bilingual teaching resources.

Secondly, bilingual classroom teaching should be implemented to create listening and speaking scenarios for aviation professional English. Implementing bilingual teaching can effectively strengthen and improve students' English proficiency, and the application of aviation English vocabulary in course teaching practice is more targeted and situational. Recording bilingual teaching videos, forming video teaching resources, and sharing them with students, becomes an important carrier for students to reproduce the teaching process of the course after class, especially becoming valuable information for students who are absent due to reasons.

Thirdly, hiring pilots into the classroom can stimulate students' motivation to learn aviation professional English well. The pilot and the course lecturer work together, and the pilot's fluent English expression can become a role model for students. The pilot emphasizes the importance of learning aviation professional English better than the preaching effect of the course lecturer, making students more convinced.

2.3. Carry out activities to integrate theory with practice with the goal of improving students' practical abilities

In response to the contradiction between the difficulty of closely connecting theory with practice and the difficulty of students' autonomous learning, the following measures can be taken:

Firstly, practical teaching activities can be implemented with the help of cooperative enterprise resources. Schools should strengthen deep integration with aviation enterprises so as to build flight technology majors jointly. Utilizing cooperative enterprise aircraft equipment and flight simulation training resources can provide practical teaching conditions for students.

Secondly, professional teaching resources can be used to strengthen classroom demonstration analysis. In order to better understand flight theory, all flight students should be equipped with a teaching aircraft model, which should be used in the classroom to simulate flight movements and conduct aerodynamic and flight mechanics analysis. If conditions permit, flight training equipment can also be used for teaching.

Thirdly, students are encouraged to participate in aviation professional knowledge competitions. Schools can organize second classroom activities such as aviation knowledge competitions,

simulated flight competitions, aircraft model design and flight performances, guiding and encouraging students to apply their knowledge of flight principles for aircraft design, aircraft model production, and control performances, mobilizing students' enthusiasm and motivation for independent learning and innovation, and promoting students' understanding and application of flight theory knowledge.

2.4. Integrating ideological and political elements into course teaching, using aviation spirit to guide course teaching

Firstly, a case library of curriculum ideological and political education should be established to promote the construction of "curriculum ideological and political education". The ideological and political elements that are highly compatible with the knowledge of this course should be deeply explored and refined, and the classroom ideological and political case library should be established. The core socialist values, contemporary aviation spirit, craftsmanship spirit, aviation power spirit, and knowledge should be organically coupled and naturally permeated to form the curriculum ideological and political case library. Finally, the organic unity of multi-dimensional education goals of value guidance, knowledge transmission, and ability cultivation will be realized.

Secondly, it's also necessary to establish a "course ideological and political" platform to achieve three-dimensional infiltration. Building a three-dimensional platform for ideological and political education in the "Flight Principles" course, strengthening the integration of ideological and political elements into course teaching, and further extending the development of ideological and political education to college students' practical teaching and campus cultural activities, can sublimate the moral education effect of students, enrich the connotation of campus cultural activities, and form a comprehensive pattern of education^[4].

3. Reform of Curriculum Evaluation Mechanism

To objectively evaluate the level of course construction, a three-dimensional evaluation system can be used for the evaluation of the "Flight Principles" course. The first dimension is horizontal evaluation, which is a multiple evaluation of the sum of evaluation from top and bottom families, student evaluation, and self-evaluation; The second dimension is vertical evaluation, which is a process evaluation based on students' daily attendance, homework, group discussions in class, answering questions, and extracurricular exploration; Dimension three is summative evaluation, which mainly draws conclusions based on the final exam scores.

In multiple evaluations, students' satisfaction with course teaching is the core evaluation indicator with veto power; The evaluation of students' course learning by the previous home (i.e. Civil Aviation Administration) based on the theoretical exam scores of each level of license is an important evaluation indicator with veto power; Going home (i.e. flight training aviation school) is an important basis for evaluating students' satisfaction and improving course construction; Self evaluation is the self-evaluation of curriculum construction projects and levels^[5].

4. Conclusions

The author has been engaged in teaching aviation theory to flight students for a long time, and has taught multiple courses on "Flight Principles". The above research is a summary of practical practices and experiences in long-term teaching practice. Practice has proven that flight students have consistently achieved excellent satisfaction with themselves, ranking among the top in the school. Since teaching students to participate in various levels of flight theory license exams at the Civil Aviation Administration, their average level of preparation training has generally exceeded 95

points, and their exam scores have generally reached an excellent level, with an average score above 90 points. Some students have achieved good results with a maximum score of 100 points, which have been highly praised by the examiners at the examination center and similar sister colleges. At the same time, students have a strong ability to integrate theory with practice, which has been widely recognized and praised by flight training schools.

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