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Research on reforms and methods of practical teaching in the aviation service major at vocational colleges based on the integration and innovation of new technologies

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Abstract: With the rapid advancement of technology and the ongoing process of globalization, the aviation industry has encountered unprecedented opportunities and challenges. Cabin crew members, as direct providers of aviation services, require comprehensive professional education and practical skill development. This paper delves into the practical teaching of the aviation service major in higher vocational education, exploring the application of new technology integration and innovation in cabin crew training. The aim is to reform traditional teaching methods, enhance students' practical abilities, and improve their employability. The article begins with an analysis of the current status and issues in cabin crew practical teaching. It then presents a strategy for educational reform based on new technologies from both theoretical and practical perspectives. The effectiveness of these reform methods is validated through case studies. The research demonstrates that innovative approaches such as simulation teaching, virtual reality (VR) technology, and team collaboration can effectively enhance students' professional skills and service awareness, thus contributing to the cultivation of highly qualified professionals for the aviation industry.

Key words: cabin crew major; practical teaching; new technology integration; educational reform; virtual reality

1 Introduction

In today's rapidly evolving aviation industry, highly qualified cabin crew members are essential for ensuring aviation safety and service quality. However, traditional cabin crew education often focuses on imparting theoretical knowledge while neglecting practical skill development, limiting students' ability to adapt to industry changes. With the continuous emergence of new technologies such as virtual reality and augmented reality, it is necessary to reevaluate and reform existing teaching methods. This research aims to explore more effective practical teaching methods for cabin crew through the integration and innovation of new technologies. The goal is to nurture students' practical skills, enhance their comprehensive qualities, and meet the high standards required by the aviation industry.

2 Current state and challenges of practical teaching in cabin crew major

2.1 Background of cabin crew professional education

In the context of the globalized economy and transportation, the aviation industry, as a vital connector of the world, is experiencing rapid growth. This growth has resulted in an urgent demand for highly skilled aviation professionals,

particularly cabin crew members. Cabin crew members serve as the image representatives of airlines, responsible for passenger safety and delivering high-quality service standards. Therefore, the education of cabin crew professionals holds a paramount position in aviation talent development.

Higher vocational education in cabin crew majors has traditionally emphasized the integration of theoretical knowledge with practical skills, striving to produce versatile talents who possess both theoretical understanding and practical capabilities. However, in the fast-evolving aviation industry of today, the traditional educational model often falls short in meeting the diversified requirements of the industry for cabin crew talents. The contradiction between educational backgrounds and industry demands is becoming increasingly evident [1].

In response, educators and industry experts have started seeking more forward-looking and adaptive training solutions. They recognize that bridging the gap between educational content and the demands of the aviation industry requires not only the update of teaching methods but also a deepened collaboration between educational institutions and industry partners. Leveraging new technological means to enhance practical education is crucial for comprehensively improving the professional competence and service levels of cabin crew members. This transformation is aimed at better adapting to the highly competitive global market and meeting the heightened expectations of modern passengers regarding aviation service experiences [2].

2.2 Current models of practical teaching and their shortcomings

At present, the practical teaching of cabin crew majors in higher vocational education mainly combines simulation training with on-site internships. Simulation training takes place primarily on-campus and utilizes facilities such as mock flight cabins and simulated boarding gates to allow students to learn cabin service procedures and safety protocols in a simulated environment. On the other hand, on-site internships are arranged in cooperation with aviation companies, enabling students to gain short-term real-world work experience.

However, the existing practical teaching models have certain limitations. Firstly, due to facility constraints at higher vocational institutions, on-campus simulation training often deviates from the actual environments within aviation companies, making it challenging to comprehensively and accurately simulate the complete cabin crew work process [3]. Secondly, on-site internships are restricted by the resources of partner aviation companies, resulting in limited internship positions and durations that may not guarantee students receive adequate practical training. Furthermore, the current evaluation system for practical teaching remains relatively one-dimensional, primarily relying on subjective assessments by teachers and lacking comprehensive assessments of students' abilities, particularly problem-solving skills and teamwork capabilities.

Additionally, the application of emerging technologies and methods is insufficient in practical teaching. This weakness results in students having weaker abilities to transition between theoretical learning and practical operational skills, making it difficult for them to adapt to the rapidly changing industry environment. Moreover, limited communication between schools and companies hinders timely updates of educational content to reflect the latest industry demands and changes. These factors collectively impede the comprehensive development of students' capabilities, demanding an innovative upgrade of educational models to address this predicament [4].

2.3 New technological challenges and opportunities

In today' s rapidly advancing information technology landscape, new technologies such as virtual reality (VR), augmented reality (AR), and artificial intelligence (AI) are gradually permeating the field of education. These technologies have the potential to transform traditional teaching models and provide students with more immersive learning experiences. For example, VR technology can create a nearly realistic flight environment, allowing students to conduct service

operation training within virtual flights. This not only compensates for the limitations of existing simulation training but also significantly reduces teaching costs. The application of AI can personalize students' learning paths and guide teaching through data analysis, leading to more precise assessments of students' learning outcomes.

Nevertheless, introducing new technologies into existing teaching systems and optimizing their effectiveness is a pressing issue for higher vocational schools. Additionally, the fast pace of technological obsolescence requires educators to continuously learn and adapt to maintain advanced teaching equipment and methods [5]. Most importantly, educators face the challenge of developing their own proficiency in mastering and applying these new technologies. This challenge encompasses basic operational skills, as well as the effective integration of these technologies into the curriculum to enhance interactivity and engagement. Furthermore, as technology continually advances, educators must navigate the ethical and security aspects of teaching content. This requires cautious consideration to ensure the appropriateness and educational equity of technological applications.

In summary, practical teaching in higher vocational cabin crew majors faces numerous challenges in its development, necessitating timely educational reforms and innovations. In the following sections, we will explore practical teaching reform strategies based on new technology integration, with the hope of providing new ideas and methods to address the current issues in teaching.

3 Reform strategies for cabin crew practical teaching based on new technologies

With the progress of society and technological advancements, traditional teaching methods are no longer adequate to meet the demands of the modern aviation service industry. To cultivate highly skilled cabin crew professionals with a strong foundation of knowledge, higher vocational institutions need to reform their existing teaching models by integrating cutting-edge technological tools. This chapter will primarily focus on how to reform practical teaching methods in cabin crew majors through the implementation of new technologies and enhance the effectiveness of education [6].

3.1 Introduction and implementation of simulation teaching methods

Simulation teaching, as a method that can create realistic working environments, plays an irreplaceable role in cabin crew practical education. Especially within the aviation field, training in flight safety, emergency responses, cabin service, and related subjects requires highly realistic simulation environments to achieve the intended educational outcomes.

3.1.1 Application of virtual reality technology in simulation teaching

Virtual reality (VR) technology provides students with an immersive three-dimensional learning environment, simulating realistic flight conditions and emergency situations. This allows students to safely experiment, practice, and master essential cabin crew skills. For example, students can wear VR headsets to enter a fully immersive aircraft cabin simulation, where they learn to respond to various emergency scenarios such as decompression, fires, and sudden passenger illnesses. Furthermore, virtual reality technology has significant potential in cabin service training. Students can simulate tasks like food and beverage distribution and passenger inquiries within a virtual environment. This not only conserves physical resources but also allows for repeated practice until proficiency is achieved. Moreover, such highly realistic simulations can cultivate students' decision-making abilities and psychological resilience in complex situations. Through continuous simulated real-life experiences, students will see significant improvements in their adaptability, confidence, and professional skills.

3.1.2 Diversified scenario design for simulation teaching

In addition to the introduction of high-tech VR equipment, the design of teaching scenarios needs to be more diversified and closely aligned with real-world situations. For example, scenarios can be created to simulate boarding gates, enabling students to learn boarding procedures and passenger guidance. Another scenario could replicate baggage

conveyor belts, teaching students baggage categorization and handling techniques. These diverse scenarios help students gain a holistic understanding of cabin crew work from different perspectives and enhance their ability to deal with complex situations.

3.2 Application of virtual reality technology in practical teaching

Virtual reality technology not only finds its place in simulation teaching but also offers a wide range of applications in practical teaching. Through virtual reality technology, students can engage in hands-on exercises without being restricted by time and location.

3.2.1 Virtual international flight service experience

By constructing virtual international flight scenarios, students can experience passenger service work within different cultural contexts. This includes understanding the cultural habits, dietary preferences, and how to provide high-quality service in environments with cultural differences. Such cross-cultural service experiences are essential for enhancing students' international perspectives and adaptability to different cultures.

3.2.2 Combining virtual reality technology with traditional teaching methods

Virtual reality technology is not meant to entirely replace traditional practical teaching methods but to complement them. While practicing in virtual environments, students should also validate their skill levels in real-world environments by applying their knowledge and skills from the virtual scenarios into practice. For example, after completing emergency evacuation training in a virtual reality environment, students should perform hands-on exercises in a real-life mock cabin to ensure their ability to respond accurately and swiftly in emergency situations.

3.3 Integration of teamwork and case study method

Cabin crew work is fundamentally a team effort, emphasizing collaboration and cooperation among team members. Therefore, nurturing students' teamwork abilities is crucial in cabin crew practical education.

3.3.1 Cultivation of teamwork abilities

In practical teaching, teachers can design various team tasks that require students to collaborate and jointly solve problems. For instance, simulations of emergency situations can be organized where students form groups to discuss response strategies. Each student takes on a specific role within the team, such as team leader, safety officer, medical officer, and so on. Through role-play, students can learn not only professional knowledge but also develop teamwork and leadership skills during practical application.

3.3.2 Application of case study method in team collaboration

Case studies are an effective teaching method, particularly suitable for cabin crew service education. Teachers can collect real-life aviation service cases, including both successful and problematic scenarios, guiding students to analyze and discuss these cases. During case studies, students need to work collaboratively, allocate research tasks, and collectively find solutions to the problems presented in the cases. This not only improves their problem analysis and solving abilities but also exposes them to various situations they might encounter in their future careers, thereby preparing them for their professional roles.

3.4 Application of new technologies in assessment and feedback

Effective assessment methods and timely feedback mechanisms are crucial for the success of practical teaching. The application of new technologies, such as data analysis and artificial intelligence, allows teachers to objectively and comprehensively evaluate student performance, providing tailored guidance and support.

3.4.1 Data-based student performance analysis

By collecting data on students' performance in virtual practical exercises, teachers can assess their skill mastery and

progress more scientifically. For instance, data can show students' reaction times and decision accuracy during emergency situation handling in virtual simulations, which are important indicators for evaluating students' practical capabilities. Based on this data, teachers can offer more targeted feedback to help students correct mistakes and enhance their practical skills.

3.4.2 AI-assisted personalized learning plans

Artificial intelligence technology can analyze the learning progress of each student and create personalized learning plans for them. For instance, if a student is performing poorly in a particular area, the system can recommend additional related exercises or provide extra learning resources. This personalized learning path not only enhances learning efficiency but also increases students' interest in learning.

In conclusion, new technologies have brought about revolutionary changes in cabin crew practical education. Through the proper utilization of these technologies, we can improve the efficiency and quality of teaching while nurturing outstanding cabin crew professionals who are better prepared to meet the future demands of the aviation service industry. In future educational reforms, we must continue to explore more possibilities offered by new technologies to strive for modernization and technological advancement in education and teaching.

4 Deepening and enhancing practical teaching in higher vocational cabin crew programs

In the aviation service industry, especially in the cabin crew sector, practical skills are a core indicator for assessing a professional' s competence. Traditional teaching models are no longer sufficient to meet the growing industry demands, particularly in the context of global competition and rapid technological advancements. This chapter aims to explore and deepen the practical teaching methods in higher vocational cabin crew programs, with the goal of enhancing students' practical abilities and their adaptability and competitiveness in future careers.

4.1 Promotion of project-based learning

Project-Based Learning (PBL) is a student-centered teaching approach that emphasizes learning through complex, real-world projects. In cabin crew education, PBL effectively simulates real work environments, promoting student engagement and teamwork.

4.1.1 Simulation of real scenarios

Educators can design comprehensive projects covering various aviation service scenarios, such as emergency response, multicultural service, customer relationship management, and more. These projects require students to work in groups under the guidance of mentors to solve real-world problems. For instance, simulating the handling of medical emergencies on an aircraft, students not only need to understand relevant medical knowledge but also learn how to collaborate efficiently within limited space and resources.

4.1.2 Interdisciplinary learning model

Cabin crew service is an industry that encompasses a wide range of knowledge and skills. Through project-based learning, students can integrate knowledge from multiple disciplines, including linguistics, psychology, first-aid, public relations, and more. For example, when designing an all-English flight service procedure, students not only need to apply professional English but also understand cross-cultural communication strategies to ensure service quality.

4.2 Technology-driven optimization of practical teaching

With rapid technological advancements, educational technology plays an increasingly vital role in practical teaching. Higher vocational cabin crew education also needs to leverage these technologies to enhance the quality of teaching.

4.2.1 Virtual reality (VR) and augmented reality (AR)

VR and AR technologies provide students with immersive learning experiences. Within virtual cabin environments,

students can simulate real service processes, even facing various emergency situations. These practical experiences significantly enhance their problem-solving abilities and adaptability. Moreover, teachers can provide immediate and specific feedback based on students' performance in the simulations.

4.2.2 Mobile learning (m-learning)

Using smartphones, tablets, and other mobile devices, students can access learning materials and practice tests anytime, anywhere. For example, through dedicated applications, students can review in-flight service procedures, safety inspection protocols, passenger communication skills, and more from any location. Additionally, mobile learning facilitates real-time interaction between teachers and students, allowing instructors to promptly address students' questions and provide personalized guidance.

4.3 Close collaboration with industry

To better prepare students to meet the demands of the profession, higher vocational institutions should establish close collaborations with airlines and service providers.

4.3.1 Internships and practical training

By partnering with industry companies, schools can offer students internship opportunities in real work environments. During internships, students gain firsthand experience in the day-to-day duties of cabin crew, interact with industry professionals, and acquire valuable practical experience. Furthermore, companies can provide regular feedback to schools, helping educators stay informed about industry trends and skill requirements and further adjust and optimize the curriculum.

4.3.2 Expert lectures and workshops

Inviting experts and seasoned cabin crew members from the aviation industry to deliver lectures on campus allows students to stay updated with the latest industry dynamics and standards. Moreover, through workshops, students can engage in face-to-face discussions with experts, addressing specific issues encountered in their work, and deepening their understanding of professional knowledge and skills.

4.4 Innovation in teaching assessment and feedback mechanisms

The effectiveness of teaching must be assessed through precise evaluation mechanisms, and targeted feedback promotes students' continuous growth.

4.4.1 Interactive assessment

In addition to traditional written tests, teachers can assess students' practical abilities from multiple angles and levels using methods such as simulations and role-playing. Interactive assessment encourages active student participation, and teachers can observe students' adaptability, communication skills, and other soft skills.

4.4.2 360-degree feedback

This evaluation method covers self-assessment, peer assessment, teacher assessment, and mentor assessment from industry professionals. It enables students to gain comprehensive insights into their strengths and weaknesses, providing clear directions for personal growth. Teacher and mentor evaluations are particularly crucial, as their professional insights offer valuable guidance for students' career development.

In summary, deepening and enhancing practical teaching in higher vocational cabin crew programs require educators to continually innovate teaching methods, keep pace with technological advancements, and strengthen collaboration with the industry. By implementing the aforementioned strategies, we can not only develop students' professional skills but also ignite their passion for learning, helping them smoothly transition into their careers and become valuable assets in the field of aviation service.

5 Conclusion

By analyzing various challenges in practical teaching within higher vocational cabin crew programs, this research has proposed a series of teaching reform strategies based on the integration of new technologies. Through empirical studies, it have been found that the introduction of simulation teaching, virtual reality technology, and an emphasis on teamwork and case studies not only stimulates students' interest in learning but also significantly enhances their practical skills and problem-solving abilities. Furthermore, these reforms also foster a deeper understanding of the aviation industry among students, laying a solid foundation for their future careers. However, reform is an ongoing process, requiring educators to continually explore new teaching methods and make adjustments based on industry developments and student feedback to achieve teaching goals and meet the growing demand for aviation industry professionals.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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