Pedagogical Cluster- Journal of Pedagogical Developments
PCJPD: Volume 2 Issue 3, March 2024, online: ISSN 2956-896X

PEDAGOGICAL CLUSTER
JOURNAL OF PEDAGOGICAL DEVELOPMENTS

Website: https://euroasianjournals.org/index.php/pc/index

The Future of Pilots Training

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Abstract. The purpose of the article is to train future aviation specialists using fundamental concepts and technology development.
Keywords: *1) innovation,2) pilot training, 3) technical advancement, 4) pilot training environments.*

Introduction

A thorough evaluation of the current pilot profession reveals that the majority of the training provided meets safety requirements, as fatal accidents are relatively rare across all aviation sectors. However, recent airplane and business aviation fatalities indicate deficiencies in the training pilots receive. Present-day pilot training often involves outdated, noisy aircraft that are expensive to operate and use leaded fuel. Nevertheless, the future of pilot training in the next five years is poised to improve significantly through innovation, better strategies, and enhanced technology. While existing studies focus on current training methods, there is a lack of information on the anticipated changes in training practices that will help pilots stay current with evolving trends and ensure increased safety.

Influence of Innovation

The future of pilot training will indeed be shaped by innovation and divergent thinking, driven by advancements in aircraft technology such as those developed by Airbus. These novel airplanes will prioritize eco-effectiveness objectives, ensuring that air travel remains the safest and most eco-friendly mode of transportation.

As Airbus continues to lead the way in technical advancement and market responsiveness, the aviation industry as a whole will be pushed to embrace sustainable practices and prioritize environmental considerations. This will require pilots to undergo training programs that are anchored in the highest standards and constantly updated to reflect the latest developments in aircraft technology and industry best practices.

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Airbus's commitment to innovation and sustainability will influence not only pilot training programs but also operations in the sector as a whole, encouraging professionals and stakeholders to meet the demands of a more interconnected world and sustainable advancements in aviation. With a focus on data precision and continuous improvement, Airbus will play a key role in shaping the future of pilot training and ensuring that aviation remains at the forefront of technological innovation and environmental responsibility.

Attributable to the influence of the Airbus and other forms of innovation, trainee pilots will benefit from the expertise of trainers and their understanding of the fleet-wide operating skills. Airbus has created a competency-anchored training philosophy; concentration on the requirement will lead to increased comprehension and placing of pilots in practical situations to address actual threats and inaccuracies in daily functions. This perception will enable trainee pilots to gain knowledge both from the accomplishments and errors. Airbus and other novel aircraft that will be introduced in the future will boost piloting effectiveness developed from theory in class and practising on training devices. Such novel aircraft will facilitate the full extent of training, from fundamental and comprehensive training to programs for assessors and instructors alongside tailored services to satisfy the unique needs of airlines while underscoring possible strides to meet the future necessities.

Training For a Lifespan of Effective Piloting

One area where the aviation sector may be lacking proficiency in pilot training is in the realm of automation management and decision-making skills. As aircraft become increasingly automated and technologically advanced, pilots need to possess a deep understanding of how to effectively manage and interact with these systems, as well as the ability to make critical decisions in high-pressure situations.

To address this potential gap in training, future pilot training programs could focus on enhancing pilots' automation management skills through realistic simulations and scenarios that challenge their decision-making abilities. This could involve incorporating advanced simulation technology that replicates real-world scenarios and allows pilots to practice managing complex automation systems in a safe and controlled environment.

Additionally, training programs could emphasize the development of non-technical skills such as communication, teamwork, and situational awareness, which are essential for effective decision-making in the cockpit. By incorporating

these skills into pilot training, airlines can ensure that pilots are well-equipped to handle a wide range of scenarios and challenges throughout their careers.

In terms of replacing existing training approaches with novel techniques, incorporating more scenario-based training and interactive learning experiences could be beneficial. By moving away from repetitive practice of maneuvers and focusing on realistic scenarios that pilots are likely to encounter, training programs can better prepare pilots for the complexities of modern aviation.

Overall, by identifying and addressing potential gaps in pilot training, the aviation sector can ensure that pilots are equipped with the skills and knowledge needed to navigate the evolving landscape of aviation and continue to operate safely and effectively throughout their careers.

The training of pilots in the future is likely to present tremendous surprises where they will have to react appropriately to retain control of the aircraft. In this regard, the pilots will have to practice using simulators in the course of training. The standard outlay of initial pilot training is about $8,000. In the future, the cost of training to attain full qualification for commercial pilots is anticipated to rise to over $30,000. Though the training of pilots in the future will become easier and better, it will be more costly than the present situation. The great demand for pilots across the globe will call for increased funding by the government and other stakeholders in an effort of raising the number of trainers and training facilities.

The Federal Aviation Administration's focus on emphasizing the importance of lowering the angle of attack to prevent stalls and accidents is a crucial step in enhancing pilot training and safety. By highlighting this key concept, pilots will be better equipped to handle critical situations and make informed decisions in the cockpit.

The introduction of low-cost simulators to pilot training programs can provide valuable hands-on experience and enhance learning outcomes. However, the FAA's decision to impose strict evaluation requirements for these devices may pose challenges for their widespread adoption. It will be important for the FAA to strike a balance between ensuring the quality of training devices and promoting their accessibility to pilots.

The demand for full-motion simulators to meet new regulations requiring special training for pilots underscores the importance of incorporating advanced technology into training programs. While simulators can effectively replicate various flight scenarios and operations, the combination of simulator and

aircraft training is essential for comprehensive trouble avoidance and recovery training.

The use of jets in training programs to replicate real-world flight dynamics demonstrates a commitment to providing pilots with realistic and practical training experiences. This approach can help pilots develop the skills and proficiency needed to navigate complex situations and ensure safe operations.

Looking ahead, advancements in technology will continue to shape the future of pilot training, offering new opportunities for pilots to enhance their skills and knowledge throughout their careers. The integration of online learning platforms and low-cost simulators can provide pilots with flexible training options that complement traditional training methods and allow for continuous practice and improvement. By embracing these advancements, the aviation industry can further enhance pilot training and safety standards.

In the future, trainers will be completely conscious of the benefit of transforming the manner in which pilots obtain recurrent training and continued efforts will result in the Federal Aviation Agency endorsing more non-traditional training approaches. With improvements in the training practices, the outcome shall be ever-improving safety, particularly with the absorption of the new cohorts of pilots in the aviation sector. Frequent training will be offered to all the pilots at least two times each year and preferably after every four months. The pilot community will be progressively persuaded that the quantity of time devoted to training must be increased.

The incorporation of novel material in pilot training programs to combat complacency and enhance knowledge is a forward-thinking approach that can significantly benefit the aviation industry. By introducing new insights and challenging trainees, trainers can help pilots stay engaged, motivated, and continuously improve their skills.

Frequent training sessions and ongoing learning opportunities will be key components of future pilot training programs. This emphasis on regular practice and skill development will contribute to creating a more proficient and knowledgeable pilot workforce, ultimately ensuring the safety and well-being of passengers.

In this ideal scenario, pilots will have access to trainers who push them to their limits, challenge them to think critically, and provide feedback to help them grow and excel in their roles. This collaborative and dynamic training

environment will foster a culture of continuous improvement and excellence among pilots, leading to enhanced safety standards and operational efficiency.

Overall, the future of pilot training holds great promise for elevating the skills, knowledge, and professionalism of pilots, ultimately creating a safer and more reliable aviation industry. By embracing innovative training practices and a commitment to ongoing learning, pilots can continue to evolve and adapt to the ever-changing demands of the aviation landscape.

Frequent training and the manner in which it will be provided may hold the key to the improvement of operations for business aviation pilots in accordance with the National Business Aviation Association Training Advisory Committee, which has the task of boosting and modernizing the proficiency of pilots. This will result in the promotion of the aviation concerns of organizations making use of general airplanes for business objectives both in the US and across the globe. In the present times, training constitutes majorly of regulations and check rides devoid of enhanced opportunities for the acquisition of novel skills. Furthermore, regulations and checks do not tackle training requirements anchored in any evidence. There will be the need to reform such practices in the future and employ evidence-based training for the mitigation of risks. The Training Advisory Committee also anticipates that future pilot training will more broadly adopt safety management systems, which will assist in the provision of insights into evidence-based practices.

Fundamental Concepts

In the future, as pilot training environments become more ideal, the skills and outcomes of trainee pilots are expected to significantly improve. Training in an academy setting with ample time for learning and practice will lead to the development of highly professional pilots. In this conducive environment, trainee pilots will benefit from a lack of distractions and will be able to leverage a peer support system for mutual growth and learning.

The collaborative atmosphere where trainers, pilots, and trainees engage in discussions about flying-related issues will result in tangible benefits for all involved. The thorough evaluation process that trainee pilots undergo before starting their training will help identify their prior learning abilities, enabling trainers to tailor the training methods to meet the specific needs of each student. The initial phase of training will be crucial in laying the foundation for achieving the final objective of producing competent and skilled pilots.

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While a significant portion of pilot training in the future will focus on technical skills, pilots will also be trained to think creatively and adaptively. This ability to depart from linear thinking and quickly pivot to innovative solutions when faced with unexpected or undefined situations will be crucial in preventing accidents and ensuring safety in aviation operations. By fostering a culture of continuous learning, critical thinking, and adaptability, future pilot training programs will play a vital role in shaping the next generation of highly proficient and safety-conscious pilots.

In the future, pilots will require the capacity develop proficiencies that encompass core, fundamental, and administrative expertise. Though most of the pilots will embark on a set of skills that necessitates more core and fundamental expertise when judged against the administrative one (for instance, carrying out a hand-flown advance), others will seek to develop mainly the administrative proficiencies. In this regard, the future of pilots training will seek to draw together the required set of skills that will facilitate the adoption of the desired expertise. Developing the professionalism of pilots in the future will demand more specific skills and proficiencies than the current approaches. While some of the skills will be trained, others will not, which signifies that the students must naturally have them where thorough assessment will be vital in an effort of identifying the most gifted pilots.

In the future, the professionalism of pilot training will depend on comprehensive preparation and continuous development throughout their careers. It will be essential to distinguish between training, which enhances response capabilities, and knowledge acquisition, which improves airmanship, in order to devise a plan that optimizes a pilot's abilities. Pilot trainers of the future must prioritize quality training over cost efficiency, recognizing that pilots, as crucial safety influencers, will increasingly demand high-quality education. The evolving aviation landscape will require pilots to continuously enhance and maintain necessary skills. The current training system, heavily influenced by supervisors and trainers, will become obsolete, as the limited involvement of pilots has led to deficiencies. The advancement of resources will be pivotal in shaping the future of pilot training and improvement.

Competence and Fluency

In the future, training approaches will prioritize not only competence (the demonstrated capacity) but also fluency (the ability to perform when needed). Instead of merely ensuring that pilots are competent in essential maneuvers,

future training will aim to maintain a high level of fluency. The distinction lies in the fact that while competence may be achieved after multiple attempts, fluency is attained when a maneuver is consistently performed without errors over an extended period of time.

In cases where continued success is not achieved for a long durations, such pilots cannot be considered fluent though they could be competent following some successful repeats. An instance of daily life is where many people recall being trained the best way of riding a bicycle. Just like in the case of aircraft, it takes numerous attempts for one learning to ride a bicycle to maintain balance and stay upright (though still wobbling at the start). The initial time of riding a bicycle successfully feels wonderful, but after doing it repeatedly one can ride without regularly losing balance; this is competence. If a competent person has not ridden a bicycle for some time and once given it can ride without any difficulty; that is fluency. Despite fluency in novel aircraft appearing burdensome and a difficulty in the future of pilots training, it might not be necessarily the situation. Fluency in pilots training will just be employed to strictly vital manoeuvres in a non-procedural manner (if a condition entails airplanes being returned to a proper state of control irrespective of the crew omitting or committing a technical step, it is fluent).

Every non-critical tactic will keep on being trained to competence. Safety and competence in the future training of pilots will be crucial and will be employed in the assessment of the vital functions. Fluency will act as the training assessment standard of pilots since it could result in disastrous loss of control and accidents if not properly addressed. Fluency will be ensured through the provision of high quality training with the incorporation of critical occurrences and adequate repetitions for every pilot in an effort of offering sufficient detection and recovery proficiencies. There is a need for the future of pilots training to uphold enhanced training and minimal checking; this highlighting will shift from the assessment of the skills of learners to the inculcation of the necessary proficiencies. On this note, it is apparent that competence and fluency will be realized and retained through application and repetition for a long period and not through checking. Since pilots will identify the skills they require improving on in the course of training, they will be permitted to use simulators during their free time to promote their practice.

Conclusion

An evaluation of the current pilot profession reveals that the existing training meets safety requirements, resulting in rare fatal accidents. While most current literature focuses on pilot training approaches, there is inadequate information on the future needs, where ongoing training will be essential to keep pilots informed about emerging changes and ensure safety. Innovation and creative thinking will significantly impact the future of pilot training, as advanced aircraft designs will aim to achieve eco-efficient goals and uphold air travel's reputation as the safest and most environmentally friendly mode of transportation. It is clear that pilot competence and fluency will be achieved and sustained through extensive training and practice, rather than mere evaluation. As pilots identify areas for improvement during training, they will be able to use simulators to support their practice

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