Research article

Training of Indonesian National Police Pilots to Improve Competence, Professionalism and Aviation Safety

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Abstract.

Training of police pilots is not currently carried out periodically and continuously, resulting in a lack of knowledge of the pilots, which has an impact on competence, professionalism and flight safety. This research aimed to understand the condition of the current training of the Indonesian National Police pilots, to understand obstacles and the forms of innovation needed to improve competence, professionalism and aviation safety. This was qualitative research with a case study approach. The key informants in this research were the Indonesian National Police Commander, flight instructors, active pilots, student pilots, the Director of the Indonesian Aviation Academy, Banyuwangi, and the Head of Garuda Indonesia Training Center. This study was conducted in the Professional Improvement Division, of the Marine and Air Police Corps, Security Maintenance Agency, Indonesian National Police. Data were collected through interviews conducted online. Further information and verification were obtained from key informants. We also used observations and document review. It was found that there were still some drawbacks in the implementation of education for the Indonesian National Police, according to a review of the eight education standards of the Indonesian National Police. These eight standards related to: graduates' competence, content, process, educators and education staff, infrastructure, management, financing, and evaluation. The researchers also identified obstacles to implementing training innovations. Based on the results, it is recommended that the Professional Improvement Division should find breakthroughs or innovations in education and training for Indonesian National Police pilots to improve their competence, professionalism and aviation safety, especially to meet the needs of updated knowledge on aviation with easy access that can be learned anywhere and anytime. This corresponds to the sixteen priority programs of the Chief of Indonesian National Police, Pol. Gen. Listyo Sigit Prabowo, with two important points of emphasis: to have excellent Indonesian National Police human resources and modern police technology.

Keywords: innovation, education and training, competence, professionalism, aviation safety

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Page 354

1. Introduction

Safety and security are essential things that cannot be negotiated in an aviation mission. In Article 1 number 48 of the Aviation Law of the Republic of Indonesia Number 1 of 2009, it is stated that Aviation Safety is a condition of meeting safety requirements in the use of air space, aircraft, airports, air transportation, flight navigation, as well as supporting facilities and other public facilities (Menkunham, 2009). Data obtained from Angkasa Magazine on April 11, 2008, stated that during the 20th century, aircraft accidents were recorded at close to 11,000 incidents (Purba, 2017). Based on statistical data on aircraft accidents, most of the accidents experienced by aircraft are caused by human error or human error. Other data obtained from the National Transportation Safety Committee (KNKT) which was submitted to the public as a final report on August 19, 2019, regarding the crash of the Lion Air PK-LQP plane stated that there was damage to the Maneuvering Characteristics Augmentation System (MCAS). MCAS is a new feature found on the Boeing 737-800 Max which is useful for increasing the plane's pitch motion in a manual position without autopilot. MCAS is a new invention or innovation that is installed on this aircraft but in its operation, there are no other features such as backup if the feature is damaged. After number 56 of the accident investigation report, it was stated that there was a lack of Safety Management System (SMS) training for flight crews to identify potential hazards, also number 74 stated that no information about MCAS was provided to flight crews. in manual form and no training. about MCAS. So, this makes the pilot not aware of the system and the impact of MCAS. A similar accident of the same cause occurred on the Ethiopian ETH 302 ET-AVJ. To achieve aviation safety and security, periodic and continuous education and training are needed for flight crews or pilots. According to Simanjuntak (2011), "one part of investment in human resources or human investment is education and training".

The key to success in providing human resources, especially pilots who are competent in the field of human resource development, is education and training that is well planned and implemented. There are five ways to improve education and training in the field of aviation, namely by changing the target results, reviewing the training that has been carried out, reviewing the teaching staff or instructors, teaching including in the profession, and changing the perspective of students. (Jensen, 2014). Changes in the aviation environment, especially in terms of technology, force flight operators to compete to innovate to find the right way in terms of education and training of flight crews, especially learning methods. The learning method has changed from classical learning to learning with the help of technological media in the form of Computer

Aided Training (CAT), Video-Assisted and Computer Based Training (VACBI), Computer Based Training (CBT), and the use of virtual airplanes based on simulations and within the scope of technology. Although there are differences to varying degrees in the scope of virtual technology, there are still doubts, not only praise for what has been presented but the extent and influence and increasing use of it in aviation education and training environments (Kalbow, 2014). The Turkish Aviation Academy (TAA) also carries out innovations in education and training in the field of aviation. This is done by TAA to anticipate technological changes in the world of aviation and aircraft. The new teaching method has been implemented since 1998. The innovation is in the form of e-learning which is implemented to meet the needs of education and training and focuses on the core values of knowledge, skills, and attitudes. The main reason for using e-learning which is carried out in conjunction with blended training sessions is the presence of personnel in the aviation industry who are scattered everywhere. Therefore, the considerations are mobility, ease of access wherever and whenever, consistency of personnel quality standards, and avoiding fatigue in training due to long trips (Ugurlu & Yuksek, 2014). Innovations in the world of pilot education and training are also carried out by the Turkish Air Force. Modernization is carried out on training aircraft, changes to the training curriculum, the use of new simulators (ARISM), the use of Computer Based Training (CBT) for efficiency and compliance with training standards that meet the requirements, as well as the use of e-learning integrated with pilot training to assist the fulfillment of knowledge, skills, and abilities. With the use of the new system for pilot education and training innovation, it can reduce training time, costs and keep up with technological developments so that innovation is considered necessary in the Turkish Air Force (Canli, 2016).

Data obtained from the Directorate of Air Police regarding the number of aircraft and the number of existing pilots, with an ideal ratio of 1 airplane or helicopter that must be manned with 3 sets of the crew (6 pilots), then for 45 active aircraft or helicopters, the number of pilots must be available are 270 pilots. From this data, the National Police need 135 new pilots obtained from pilot schools in Indonesia, through independent pilot education and continued with further education to adjust to the type of aircraft or helicopter available. Police flight operations that cover all regions of the country, as well as the condition of pilots with a limited number and spread, make the National Police pilots often delay training or updating knowledge which is very important and useful for their competence. Coupled with the assignment period of 1-3 months for helicopter pilots, this is the reason the pilots cannot carry out the training. Data obtained from the Directorate of Air Police regarding accidents and incidents, both helicopters and

airplanes from 2004 to 2019 totaled approximately 15 incidents. The causative factor is indicated as 50% due to human error, 30% due to technical error, and 20% due to other factors. From the human error factor, the biggest contributor is the lack of periodic and continuous education and training, be it training in dealing with emergencies, training before the operational flight, training to maintain abilities or skills, education to increase knowledge or knowledge about aviation, especially updating regulations and aviation science. the new one. If the education and training are not carried out, it will result in the lack of trained pilots which will result in wrong decisions and result in the safety of the flight itself. A pilot must carry out training that is intended for initial (initial pilots), for recurring (updates) for advanced pilots which is useful for refreshing aviation science and its development, socializing the latest aviation regulations, and reminding about the use of Standard Operating Procedures (SOP) which apply. There is no increase in the budget to carry out education and training for pilots. In just one year, only 10-15 people carry out the training. While there are 135 active pilots who have to take part in the training, so the training is carried out alternately and not continuously. This study aims to determine the condition of the education and training of Indonesian National Police pilots that have been carried out so far, the inhibiting factors for innovation in the education and training of Indonesian National Police pilots, as well as forms of innovation in the education and training of Indonesian National Police pilots that need to be implemented in improving competence, professionalism and flight safety.

2. LITERATURE REVIEW

2.1. Innovation

Innovation is a Latin word, namely innovare which means changing into something new (Suwarno, 2016). According to Hamijoyo (Sa'ud, 2019), the word "innovation" is translated as anything that is renewable. In Indonesian, the word innovation is commonly heard as "innovation". The word innovation is often used to express an invention. The words "discovery" and "invention" are also interpreted as inventions. Innovation and modernization are sometimes linked because they talk about reform efforts. Innovation is an idea, idea, practice, or object that is consciously and accepted as something new by a group of people or groups to be adopted (Rogers, 1995). Innovation is "the ability to make significant organizational improvements in the areas of products, services, programs, processes, and implementation to create additional new values for stakeholders" (Simanjuntak, 2011). From the definition of innovation above and related to

this research, the researcher concludes that innovation is an effort in providing novelty value, benefits, and more value from a product or service and public service by using technology to improve performance.

2.2. Innovation Attributes

The attributes possessed by innovation are inherent in the innovation itself and can be applied. Attributes of innovation include (Rogers, 1995):

1. Relative advantage

2. Compatibility

3. Complexity

4. Triability

5. Observability

From the definition of innovation attributes above, the researcher concludes that innovation must have more value, suitability, and complexity with the previous innovation that is replaced. Innovation testing is needed to prove the added value of innovation and is easy to observe in the implementation process.

2.3. Educational Innovation

Educational innovation has meaning of new changes that are qualitatively different from the previous ones and are deliberately pursued to increase the ability to achieve certain goals, especially in the field of education (Sa'ud, 2019).

2.4. Purpose of Educational Innovation

Educational innovation has the aim of increasing the effectiveness, efficiency, relevance, and quality of facilities as well as many students and obtaining the maximum possible educational results (when viewed from the criteria for community, development, and student needs) by using budget, equipment and time and energy. to a minimum (Sa'ud, 2019).

2.5. Inhibitting Factors in Educational Innovation

In innovation and especially educational innovation, obstacles are often found. In the opinion of Geoff Mulgan and David Albury (Utomo, 2017) stated that there are eight inhibiting factors for innovation, including:

1. Reluctance to closedown failing program or organization

2. Over reliance on high performers as source of innovation

3. Technologies available but constraining cultural or organization arrangement

4. No rewards or incentives to innovate or adopt innovations

5. Poor skills in active risk or change management

6. Short term budget and planning horizons

7. Delivery pressures and administratives burden

8. Culture of risk aversion

2.6. Police Education System

In the Regulation of Chief of the Indonesian National Police Number 14 of 2015, there is a Police Education System, namely by looking at the development of science and technology as well as the demands of the community on the performance of the National Police which requires professional, moral, modern, and superior personnel, and is carried out with a systematic system, programmed, integrated and sustainable. Police education is carried out by adhering to eight standard components of education which are the minimum criteria that must be implemented in all Indonesian National Police education units. The eight standards of the National Police education component include (1) Graduate competency standards, (2) Content standards, (3) Process standards, (4) Educators and education personnel standards, (5) Assessment standards, (6) Facilities and infrastructure standards, (7) Management standards and (8) Financing standards.

2.7. Profesionalism

Professionalism is defined as "reliability and expertise in carrying out tasks so that they are carried out with high quality, on-time, carefully, and with procedures that are

easily understood and followed by customers" (Siagian, 2009). Professional in the Big Indonesian Dictionary has an understanding that requires a certain intelligence to do something. Professional is a set of skills as a requirement to carry out a job effectively and efficiently in accordance with a high level of expertise in order to obtain optimal work goals.

2.8. Competence

According to Simanjuntak (2011), competence is "the ability and skills to do work. The factors that affect the competence of each person are grouped into two groups, including: (a) Skills or abilities and work skills, (b) Drive or motivation and work ethic". Another opinion about competence is "the ability to do a job or task based on knowledge, skills, and support from the work attitude required of the job" (Wibowo, 2015). The researcher concludes that competence is the ability to do the work of an employee which is influenced by his knowledge, skills, and work experience so that he can do the tasks assigned to him.

2.9. Aviation safety

In article 1 number 48 of the aviation law of the Republic of Indonesia, it is stated that aviation safety is a condition of meeting safety requirements in the use of airspace, aircraft, airports, air transportation, flight navigation, and other supporting facilities for public facilities (Menkunham, 2009). Therefore, safety in a flight mission is a standard and absolute thing. SHELL theory (Reason, 1990) which was refined into SHELL (Hawkins, 1993), states that aviation safety aspects need to pay attention to the following elements:

1. Software

2. Hardware

3. Environment

4. Liveware

5. Liveware

In this theory, it is stated that humans are the dominant factor in aviation safety, this is because humans are considered to have many limitations that allow them to always have a problem in all conditions.

3. Method

3.1. Research Method

In this study, the research method used is qualitative, namely, research that does not use calculations also called scientific research that emphasizes the natural characteristics of data sources (Moleong, 2002). Another understanding is research aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, perceptions, thoughts either individually or in groups (Sukmadinata, 2007). The results of the research are in the form of descriptive analysis, namely the observed behavior or phenomena are conveyed in written words or narratives, especially concerning the current conditions of the implementation of education and training, the inhibiting factors in education innovation and training of Indonesian National Police pilots as well as other forms of innovation that can be applied in the Professional Improvement Section, Air and Marine Police Corps, National Police Security Maintenance Agency.

3.2. Research Subject

The subjects in this study are called key informants. The participant is used, especially if the subject represents a certain group and the relationship between the researcher and the research subject is considered to have meaning for the subject. The terms key informant and participant above are substantially considered as the main instruments in qualitative research (Afifuddin, 2009). The research was carried out by taking data to see the education carried out at the Professional Improvement Section, the Water, and Air Police Corps, the National Police Security Maintenance Agency and the subjects of this research were:

TABLE 1: List of Research Key Informants.

No.	Key Informant	Quantity (person)
1.	Police Commander	2
2.	Flight instructor	7
3.	Active pilot	4
4.	Pilot student	10
5.	Director of the Indonesian Aviation Academy Banyuwangi	1
6.	Head of Garuda Indonesia Training Center	1

3.3. Research Scope

This research was conducted at the Professional Improvement Section, the Air and Marine Police Corps, the National Police Security Maintenance Agency which is located within the area of the Air Police Directorate at Pondok Cabe Airport, Tangerang Banten on Jalan Cirendeu Raya, South Tangerang with leaders, pilot instructors, active pilots, and pilot students as keys. informants are also external parties who are used as comparison materials to avoid subjectivity. This is because the study with 135 pilots spread throughout Indonesia, not only in Pondok Cabe, took a long time.

3.4. Data Collection Techniques

3.4.1. Interview

Due to the current covid pandemic, interviewers use information technology to conduct interviews with key informants by going through zoom meetings, bitly, google forms to collect data.

3.4.2. Observation

Observation is a method or data collection technique to collect research data by means of observation or sensing (Bungin, 2010). A scientific method of observation or observation is defined as the observation of systematic recording of the phenomena being investigated (Lubis, 1987)

In this study, researchers conducted observations to obtain data by:

1. Observing the condition of Specialization Development Education (Dikbangspes) students who carry out the learning process in the classroom as well as activities outside the classroom or field practice.

2. Observing how to teach flying instructors and instructors, how an instructor conveys material, methods, and so on.

3. List the inhibiting factors in the learning process.

4. Observing the research location and work environment.

5. Observing the output of pilot education and training.

Researchers make direct observations or observations on Bagkatprof to get a complete picture regarding the focus of research, as well as to observe educational innovations that are developed and desired by pilot students and Indonesian National Police pilots who are already actively serving in the region and see supporting facilities belonging to the Air Police Directorate. Observations are carried out with non-participants, where the researcher only acts as an observer of the phenomenon being studied. The results of the observations are then compiled in the form of field notes containing routine, temporal events, interactions, and their interpretations.

3.4.3. Review Documents

The documents needed to complete this research are:

Law No. 2 of 2002 concerning the Indonesian National Police

Law No.1 of 2009 concerning Aviation.

Regulation of the Head of the State Police of the Republic of Indonesia or Perkap Number 14 of 2015 concerning the Education System of the State Police of the Republic of Indonesia.

Regulation of the Head of the State Police of the Republic of Indonesia or Perkap Number 6 of 2017, concerning the Organizational Structure and Work Procedure of Organizational Units at the Headquarters of the Indonesian National Police.

Indonesian National Police Regulation or Perkap Number 5 of 2019, concerning Amendments to the Regulation of the Head of the Indonesian National Police or Perkap Number 6 of 2017 concerning Organizational Structure and Work Procedures of Organizational Units at the Headquarters of the Indonesian National Police.

Regulation of the Head of the Water and Air Police Corps Number 1 of 2018 concerning the Delay of Duty in the Korpolairud Baharkam Indonesian National Police.

The Strategic Plan of the Marine and Air Police of the Indonesian National Police Baharkam for 2020-2024, No Kep/53/VI/2020, June 16, 2020.

3.5. Research Instrument

Researchers will use guidelines in interviews with the Police Chief, instructors, active pilots, student pilots, the Director of the Indonesian Aviation Academy, and the Head of the Garuda Indonesia Education and Training Center so that the interviews can be directed.

3.6. Data Analysis Techniques

According to Miles and Huberman (Sugiyono, 2017) stated that the research data will be analyzed continuously from the beginning to the end of the research, both in the field and outside by using the following methods:

Data collection

Data presentation

Data reduction

Drawing conclusions or verification

4. Results and Discussion

The results of this study are data that is processed based on data collection techniques with interviews from several key informants, including Police Leaders, Director of the Indonesian Aviation Academy Banyuwangi, Head of Garuda Indonesia Training Center, pilot instructors, active pilots, and pilot students who are considered competent and can provide information related to the research title. Data collection was also carried out by reviewing documents from several Regulations of the Indonesian National Police Chief, Regulations of the Kakorpolairud Baharkam of the Police, and the Law on Aviation. This research is divided into several aspects, including the implementation of education and training for Indonesian National Police pilots in terms of eight educational standards. The next aspect is the inhibiting factors for innovation in education and training of Indonesian National Police pilots, which include reluctance to stop programs that are considered failed or unsuccessful, excessive dependence on high performers, hampered culture and organizational structuring even though the technology is available, lack of rewards or incentives for people or groups who find innovation, low skill level resulting in innovation, long term budget and planning, administrative pressures and barriers, culture unwilling to accept change. The next aspect is the form of innovation in the education and training of Indonesian National Police pilots to improve competence, professionalism, and flight safety in terms of the attributes of innovation in the use of information technology in pilot education and training in its implementation, seen from the attributes of relative advantage, suitability, complexity, possibility to try, ease of viewing. or observability.

1.1 The current implementation of the education and training of Indonesian National Police pilots in terms of eight educational standards (Perkap Number 14 of 2015 article 24), obtained the following results:

Mastery of aviation science is felt to be lacking due to limited technological means for sharing knowledge.

Some pilots do not understand and are aware of the benefits of simulator training.

The curriculum used is not in accordance with existing aviation technology.

Virtual learning method found many obstacles with the internet network.

Instructors who have an academic education, at least a bachelor's degree, are very few. This is important to add to the knowledge of pilot students.

Instructors are selected on the basis of experience and seniority only.

Training for pilot instructors is very poor.

There are less than ten instructors who have state-recognized certifications out of a total of 30 instructors.

There is no Computer Base Training (CBT) and language laboratory to prepare pilot students before entering the flight phase.

Limited instructional tools and instructional aids.

Server for data storage is not yet available.

The type of simulator owned does not match the type of aircraft or helicopter used for operations.

The absence of a Quality Assurance Agency.

Limited education budget.

1.2 The inhibiting factors for innovation in the education and training of Indonesia National Police Pilots are viewed from the theory of Mulgan and Albury.

Face-to-face programs are still carried out in class even during the covid pandemic.

Dependence on high performers in terms of education policy by the National Police Education and Training Institute is still strong.

There is still leadership opinion stating that innovations made by members, or their subordinates are a natural thing so that members are less motivated to innovate.

Mastery of skills through education and training has not been carried out regularly and continuously.

Limited budget support for innovation so that innovation is carried out in stages, not totality even though it is very useful for progress and is beneficial for the organization.

1.3 Innovative forms of education and training for Indonesian National Police Pilots that need to be implemented to improve the competence and professionalism of Indonesian National Police Pilots as well as aviation safety, in terms of Rogers' theory of Innovation Attributes.

Web learning provides benefits for Indonesia National Police Pilots who are carrying out assignments and saves the budget in implementation.

The use of web learning is considered the most effective during the current and future pandemic.

The use of web learning will raise the name of the institution because it will be increasingly recognized in the learning process.

The use of web learning is in accordance with the National Police Chief's Priority program to increase knowledge to create superior Indonesian Police Pilots human resources with technological changes in modern police in the Police 4.0 era.

This web learning innovation does not conflict with previous innovations.

Access can be done anytime and anywhere.

There are complexities in the application of web learning innovations in learning, namely at the discussion and communication stage between students and instructors.

Other complications are operational costs, human resources, and inadequate internet network.

5. Conclusions

The current implementation of the education and training of Indonesian National Police pilots, when viewed from the eight components of education, has several shortcomings. The shortcomings include the level of mastery of science that is lacking due to limited information technology facilities, the use of simulators that are less than optimal, the curriculum that must adapt to the development of aviation technology today. In addition, from the instructor side, there were also deficiencies, namely instructors with a minimum academic education of a very low degree, no training for instructors, and no certification for instructors. In terms of infrastructure, there are limited instructional tools, the type of simulator that is not suitable for operational aircraft, the absence of Computer Base Training (CBT) and language laboratories, as well as the absence of a quality assurance institution. Another key issue is the limited budget for education so that only 10-15 Indonesian National Police pilots attend training each year.

There are inhibiting factors in the implementation of education and training for Indonesian National Police pilots, namely the existence of face-to-face learning in classes that are not appropriate during the current pandemic, the dependence on high performers in terms of educational policies, namely the National Police Education and Training Institute, there is still an assessment from the Police leader regarding innovation is considered as a matter of course. In addition, education and training have not been carried out regularly and continuously and there are limited budgets for innovation.

The Profession Improvement Section, the Air and Marine Police Corps, the Indonesian National Police Security Maintenance Agency must innovate by looking at the current shortcomings in the implementation of pilot education and training as well as trying to reduce them and even eliminate the existing inhibiting factors. The innovation suggested by the researcher is the use of web learning or e-learning as a learning method for Indonesian National Police pilots. This innovation is very useful in increasing understanding and enriching knowledge and aviation regulations. The advantage gained by web learning or e-learning innovation is that access by pilots can be done anywhere and anytime and saves budget. The use of web learning is considered the most effective during the pandemic and in the future and raises the name of pilot education institutions because it is in accordance with the National Police Chief's priority program to realize superior Indonesian Police Pilot human resources with technological changes in modern police in the Police 4.0 era. Researchers assess that the success of this innovation will increase the competence of pilots in aviation science and regulations which will affect the level of professionalism so that it will have an impact on the safety of the Indonesian National Police's flight itself.

Acknowledgment

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