

FEATURES OF THE FORMING READINESS OF FUTURE PILOTS TO SOLVE PROBLEM SITUATIONS IN HIGHER FLIGHT EDUCATION INSTITUTION IN THE PROCESS OF SPECIAL THEORETICAL TRAINING

Elena Zadkova

Flight academy of NAU, Ukraine

Olesia Brodova

Flight academy of NAU, Ukraine

As it is known, aviation equipment and methods of its operation are continuously improved in order to solve the problem of flight safety. Modern aircrafts are equipped with more sophisticated automated systems that assist the pilot in the implementation of piloting and navigation functions. At the same time, the introduction of such systems complicates the pilot's monitoring over the systems operation. Consequently, the breadth of professional erudition and the analytical abilities of the future pilot are of great importance. The issues of readiness to solve problem situations arising in the process of their professional activity, namely in flight are becoming increasingly important [6].

Keywords. *Aviation, flight safety, human factor, professional training, cadet-pilots, readiness to solve problem situations.*

Introduction. Statistics shows that most fatal accidents are caused by errors in decision-making - 51.6%, while errors in procedural and sensory-motor activities account for 4.6% and 43.8% of fatal accidents [2]. All this is the evidence that the current pilot, for the most part, does not comply with modern requirements for the operation of aircraft fully.

Researchers A. Vorona, D. Gander, V. Ponomarenko [8] note the fact that nowadays professional flight school graduates almost have no psychological readiness for the upcoming activities. And their too low professional reliability leads to deficiencies in work, incidents and accidents due to human factor.

Although the flying establishments, in general, carry out their functions in training pilots, the training system, mainly based on the experience of the flight methodological work of its developers, often has no scientific substantiation and is not optimal. As a result, the cadets have no sufficiently developed skills that contribute to their readiness to make a competent decision in a problem situation that arises in the process of the performing training flight.

The imperfection of the training technology is directly connected to the inability of the flight personnel to analyze the current situation correctly and make the right decision clearly and quickly, on the basis of the information received (pre-flight and instruments readings in flight), available knowledge, skills and abilities [4].

A brief analysis of relevant researches and publications that are connected to the problem. It should be noted that, thousands of studies considering a wide variety of aspects of flight work have been carried out over the past 40 years.

Certain studies of the psychophysiological training of specialists in military aviation and civil aviation were carried out (D. Gander, P. Korchemny, F. Karushin, P. Rudny, etc.). Conducted studies relate to the professional selection of pilots (K. Platonov, E. Mileryan, A. Vorona, etc.); formation of professional availability (V. Marishchuk, R. Makarov, etc.); pedagogical foundations of professional training of pilots of civil aviation (R. Makarov, P. Kartamyshv); professional activity of pilots and the mental characteristics of their flying activities (N. Zavalova, B. Lomov, K. Platonov, V. Ponomarenko, V. Kozlov, etc.).

In the context of our research, particular interest represents works related to arrange of the process of cadet-pilots training. Analysis of literary sources shows that a lot of works have been devoted to the problems of flight personnel training in order to increase their professional reliability. For example, in the course of researches conducted by A. Garnaev, R. Makarov, V. Marischuk, I. Rudny, F. Karushin, V. Kuznetsov, V. Shadrikov, it is found that simulator and theoretical training are important components of professional reliability formation.

Studies conducted by scientists R. Makarov, V. Ponomarenko, N. Zavalova show that the erroneous actions of the flight personnel are the most important characteristic of the causes of aviation accidents that are connected with the human factor. Recently, numerous studies have been carried out concerning the professional and applied training of future pilots in the higher educational institutions of Ukraine, among them the works of I. Smirnova, A. Reva, A. Kernitsky, N. Epikhina and others.

However, we have identified a small number of works concerned with the formation of the readiness of future civil aviation pilots for professional activities in general and solving problem situations arising in flight, in particular.

Among the abovementioned studies, special attention should be paid to works related to readiness assessment of future officers for professional activities (S. Kubitsky), the formation of psychological readiness of future military pilots (A. Kernitsky), and the development of theoretical models for choosing solutions by operators at risk (A. Bkmukhambetov).

At the same time, the insufficient development of the problem of the formation of the future pilots' readiness to solve problem situations in professional activities in indigenous researches motivated us to turn to the general methodology of professional education, the analysis of flight safety by the human factor, the requirements for a higher flying school graduates and outline the current starting points regarding organization of cadet-pilots theoretical training.

The goal of the research. The urgency of the research is to improve the system of vocational training of flight personnel through the development and implementation of

model for the formation of future pilots' readiness to solve problem situations in professional activities while studying special disciplines.

The scientific novelty. The psychological and pedagogical conditions that affect the effectiveness of the formation of future pilots' readiness to solve problematic situations in their professional activities, such as: ensuring the intellectual and creative development of future pilots based on the integration of modern technologies and training methods (personality-oriented training, problem-based training, game training), cadets engagement to creative educational activities as part of their self-study work, as well as the widespread use of computer programs and simulators in the process of training future pilots are stated.

The statement of basic materials. Pilot activity in abnormal situations requires an immediate analysis of all incoming information, making a decision relevant to actual conditions and its subsequent implementation in actions. Two stages of activity can be distinguished: the stage of information search, which includes the perception, analysis and evaluation of incoming information; and the service phase, which consists of making a decision and its execution at the required moment - immediately or delayed. The pilot's activity does not begin with an ordinary action, but with a rethinking of the situation on the basis of a situation that has changed, which requires the inclusion of productive creative forms of mental activity.

Information retrieval is controlled under normal circumstances. The operation of systems is controlled by the reading of relevant instruments and indicators in a certain sequence, depending on the stage of the flight, switching and distributing attention, in accordance with standard operating procedures. Such retrieval and monitoring is the only method if there are no abnormal features. But if the failure features are detected or parameters depart from Parameters recommended by Flight Manual it takes more active form. The goal is to find additional criteria, on the basis of which it is possible to determine the failure, evaluate the current situation, and make the decision recommended by the Flight Manual. If there are none, a new action plan that is unknown, or a new combination of previously known actions are created. In those cases, the way out of an emergency situation is provided not so only with automated skills but also the activation of intellectual processes, reflecting professional experience, acquired knowledge and willingness to act in such situations.

ICAO requirements for the training of future pilots, as set out in document No. 9868 "Training" [5] state the training goal to ensure that aviation specialists perform tasks at acceptable skill levels, which, in turn, are determined by duties analyzing.

In our research instructors found on well-defined goals during future pilots training in special disciplines (such as "Flight Principles", "Flight Operation of Aircraft", "Aircraft Technical Performance", etc.) in order to achieve this target, particularly, the goal of the training – cadets must master the profession of a pilot in general and professionally important qualities in particular; the goal of the discipline is to improve knowledge, skills,

and abilities during the operation of an aircraft; the goal of a class is to study methods and techniques of flight operation of aircraft. To interest the student, we used the productive teaching methods that require a creative approach to solving problems, and the content of theoretical material was based on examples from flight practice, that helps cadets to see the connection between theory and practice.

Engine fire occurred during the flight was played in the process of practical classes. The cadets got to know with the crew actions, operating procedures, analyzed the situation, designed various solutions to the problem, jointly searched for the right solution, simulated a way out of the situation. At the same time, their logical thinking was formed, which let them find ways to solve specific didactic tasks by themselves, as well as their willingness to solve such situations.

It is important to build the study of special disciplines by cadets on the principles of the activity approach, namely:

- the leading thing at the beginning of the study of the discipline is the theoretical knowledge acquired by cadets-pilots;
- the course of the discipline is studied with the active creative participation of cadets in the educational process, in order to realize the importance of its study;
- goal-directed and systematic work is carried out on the general development of all cadets, including the weakest.

The implementation of the activity approach in practice involves the problem-based learning. G. Selevko defines problem-based learning as the organization of training sessions, which involves the creation of problematic situations and the active independent activity of students to solve them under the guidance of instructor; as a result, there is a creative mastery of professional knowledge, skills and abilities and the development of mental abilities [5].

Then modern researchers note, that the use of problem-based training methods in the process of pilot training helps to solve the problems of forming their mental skills and knowledge acquisition through the activation of mental activity effectively. In order to intensify the mental activity of a cadet, it is not enough to set a task for him; it should be done so that he develops his own attitude towards it. It is important to create an environment in which personal interest in solving the problem arises. Moreover, the student is the most actively involved in the process of cognition in the event if he faces a contradiction. So, if the future pilot finds a contradiction between the conditions of the task and his knowledge, or a contradiction between theoretical knowledge and the practical way of completing a task, if his personal ideas differ from some views, provisions, that arise in the process of training, then there will be a natural desire to understand the substance of the issue. Thus, a motivation for learning activities appears.

The basis of all cadet's motivations are the needs, which are the source of activity and which cause the desire to meet them, as well as certain emotional states, desires, aspirations that force a person to be active, set goals and achieve them. On the basis of

needs, under the influence of a worldview, the motives are formed. They are the internal motivating forces that determine the content of goals and the nature of activities to achieve them. The leading motive of the future pilot is professional interest, that is, a positive conscious-emotional attitude to the profession, which has become fixed in practical activities [2]. An essential property of interest is that it is always aimed at one or another subject, one or another specific activity.

V. Ponomarenko notes that sustainable professional interest of the cadet-pilot, which is formed in the process of higher education institution studying, develops into a motive for mastering the flight profession. It is expressed in the ambition for professional activities, and the stronger is the interest in the profession, the higher are the cadets' indicators in studying and discipline, the more meaningful is the professional orientation [2].

A. Vorona and D. Gander summarize that human abilities are formed and developed in the process of professional activity. And development of the abilities depends on the diligence and perseverance of the cadet-pilot in training, his professional focus. Also, the abilities, ensuring the achievement of success in future pilot training, directly affect the formation of his inclination and professional orientation as a whole [8, p. 153].

Professional orientation develops under the influence of various factors and forms a professional orientation as a personal orientation in application of knowledge skills and experience in the area of the chosen profession during the training of cadets-pilots. It provides for the understanding and internal acceptance by the cadet of the goals and objectives of the flight activities, which, in turn, provides for the availability of interests, ideals, attitudes, beliefs, views that encourage successful and productive studying in flight higher education institution. The formation of the professional orientation of cadets, which appears in a positive attitude to future activities, interest, propensity for it, the desire to improve own professionalism in the framework of solving complex tasks of activity, is a logical continuation of professional selection and is the basis for development of professional readiness for activities in general, as well as readiness for solving problem situations in professional activities, in particular [8].

The analysis of aviation accidents and air crashes [3] suggests that the level of skills and abilities to solve problem situations in professional activities that acquired by cadet-pilots in the learning process, often turns out to be insufficient to ensure flight safety. Then psychological and pedagogical aspects of our research will proceed from the following ideas:

- the pilot in the process of professional activity often fall in quandary when making the decision in abnormal situation due to the lack of an optimal scientifically based structure and content of special disciplines in the context of the formation of cadets' readiness to solve problem situations, that entails delays, incorrect crew actions and, as a result, incidents and accidents;

- problem-search training methods which form the skills of future pilots readiness for solving problem situations in professional activities are insufficiently used in the process of training for special disciplines, and they, in their turn, ensure their reliability characteristics;

- the uncertainty of the levels and indicators of the readiness of future pilots to solve problem situations in professional activities, as the backbone of training keeps out of the desired result – formed reliability characteristics of the aviation specialist.

The conclusions, prospects for further research, suggestions. The process of pilots training in a higher flight education institution is built mainly on the basis of many years of experience in the flight and flight methodological work of its developers, therefore, although it helps to obtain positive training results, but it isn't optimal, as evidenced by safety statistics. In view of this, training of future pilots needs to be reviewed in basic framework. Particularly special noteworthy takes on the formation process of future pilots' readiness to solve problem situations in professional activities. That is expressed, first of all, in the need to improve the organization model of the educational process of special theoretical disciplines in the process of future pilots' integrative knowledge formation in the context of their readiness to solve problem situations in professional activity, namely: its substantive part (knowledge, skills), methods of formation of appropriate readiness, technical means, forms of training organization, assessment of the results.

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ОСОБЕННОСТИ ФОРМИРОВАНИЯ ГОТОВНОСТИ БУДУЩИХ ПИЛОТОВ К РЕШЕНИЮ ПРОБЛЕМНЫХ СИТУАЦИЙ В ЛЕТНОМ ВЫСШЕМ УЧЕБНОМ ЗАВЕДЕНИИ В ПРОЦЕССЕ СПЕЦИАЛЬНОЙ ТЕОРЕТИЧЕСКОЙ ПОДГОТОВКИ

Задкова Елена

Летная академия НАУ, Украина

Бродова Олеся

Летная академия НАУ, Украина

Аннотация

В данной статье рассмотрены особенности формирования готовности будущих пилотов к решению проблемных ситуаций в летном высшем учебном заведении в процессе специальной теоретической подготовки. Статистика показывает, что именно по причине ошибок в деятельности, связанной с принятием решения, происходит наибольшее количество катастроф и авиационных происшествий. Это является свидетельством того, что нынешний пилот, в большинстве своем, не в полной мере соответствует современным требованиям, предъявляемым к эксплуатации воздушных судов нового поколения. В связи с этим, профессиональная подготовка будущих пилотов нуждается в пересмотре ряда основных положений.

Особого внимания заслуживает процесс формирования готовности будущих пилотов к решению проблемных ситуаций в профессиональной деятельности, что выражается, прежде всего, в необходимости усовершенствования модели организации учебного процесса специальных теоретических дисциплин при формировании интегративных знаний будущих пилотов в контексте их готовности к решению проблемных ситуаций в профессиональной деятельности, а именно: ее содержательной части (знания, умения, навыки), методов формирования соответствующей готовности, технических средств, форм организации обучения, оценивания полученных результатов.

Авторами определены психолого-педагогические условия, влияющие на эффективность формирования готовности будущих пилотов к решению проблемных ситуаций в профессиональной деятельности, а именно: обеспечение интеллектуального и творческого развития будущих пилотов на основе интеграции современных технологий и методик обучения (лично-ориентированное, проблемное и игровое обучение), привлечение курсантов к творческой учебной деятельности в рамках их самостоятельной работы, а также широкое использование компьютерных программ и тренажеров в процессе профессиональной подготовки будущих пилотов.

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