PECULIARITIES OF GROUND TRAINING OF PILOT-CADETS IN HIGHER MILITARY EDUCATIONAL INSTITUTIONS FOR CARRYING OUT COMBAT MISSIONS

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Abstract. Based on the generalization of the scientific research results in the field of pilots’ primary professional training and the experience of combat training of line unit pilots, an analysis of the possibility to increase the level of efficiency of pilot-cadets’ training to act in conditions of combat flight is conducted by means of improving tactical training forms and techniques that lie the activization of cadets’ training, giving future pilots more freedom of action and autonomy during training. Such tactical training organization provides cadets with professional knowledge, abilities and skills, techniques of adaptation to extreme factors of combat sorties, immunity of emotional and volitional sphere.

Keywords: cadet, pilot, instructor, flight, higher military educational institutions, ground training of pilot-cadets, tactical aircraft simulator, combat mission, operational thinking, pilots’ tactical skills.

Introduction
Increasing tactical abilities of combat aircraft brings forward heightened demands towards autonomy of the decisions made by the pilot responsible for their fulfillment. Besides, extending aircraft weapons range, quickness of tactical situation change has resulted in decreasing the decision-making time. The experience of fighting air combats shows that situation changes have become more abrupt and unexpected, the enemy appears suddenly and applies weapons immediately. To achieve success in the airspace, one has to advance the enemy in thoughts and actions. This is the conclusion that is of great importance in the high tech age (Korchemny, 1986).

All this allows to speak about the intellectualisation of the military pilots’ activity the making of which is largely determined by the quality of professional education acquired at a pilots’ higher military educational institution. Thus, one of the key components in the cadets’ professional training should be the purposeful development of their intellectual abilities. Therefore, in the structure of the educational process of pilot-cadets professional knowledge do not become less significant than professional abilities and skills and this knowledge should be mastered by cadets not only at a reproductive but at a productive and heuristic levels making the search for principally new pedagogical approaches towards cadets’ tactical training realisation topical.

The theoretical development of the problem of improving the efficiency of pilot-cadets’ tactical training is of great interest for the researchers in terms of finding the solution to the problem. For example, psychological and pedagogical fundamentals of the organization of the process of military pilots’ professional training were laid as far back as (Platonov, 1957). The specificity of the principles, forms and methods of pilots’ professional training were studied by (Ponomarenko, 1992). The didactic ground of formation of the pilot-cadets’ readiness to act in the conditions of combat flights is stated in R. Makarov’s scientific researches (2005). But these works deal only with the ways of solving the above-mentioned problems and range of tasks aimed at by efforts of specialists of various professions.

Method
Thus, the aim of the article is to reveal the theoretical foundations of practical realization of improving the efficiency of pilot-cadets’ training for carrying out combat missions. In the process of training for carrying out a combat mission a pilot, first, in his mind and then on a simulator, in the cockpit, by the “simulating a route flight on foot” method works out all the future flight stages from take-off till landing. So, in a pilot’s memory the future flight is allegedly programmed with a different degree of its stages detailed elaboration.
depending on experience and available time for preparation. It is clear that such training for a combat flight is possible only under ideal conditions, though even under those conditions it is difficult to model all probable tactical situations in an air combat. Under particular, as a rule, extreme conditions of an combat flight a pilot has to change the program of actions modeled by him that results in breaking the stereotype of the activity on processing the flight information formed in the training process. The pilot’s attention is bifurcated between the programmed actions for performing the flight and the efforts to work out the new, most of all, unforeseen solution.

The described situation inevitably results in sensor and motoric failures in flying activity, that are manifested in coordination deterioration, reduction in movement accuracy, efforts discrepancy on the control stick and its gripping, retarding and mistakes in reading instrumentation data, unsatisfactory commands perception, losing control over the state of the surrounding airspace. It should be mentioned, that the situation gets more complicated because of the active enemy counteraction. That is why, in practice it often happens so that pilots are unable to complete tactical assumptions, original operational manoeuvres and the importance of the quality and thorough training for a combat flight, mastering the art of its performance is underestimated. These drawbacks, first of all, are stipulated by the methods of pilots’ primary professional training at an educational institution, which, unfortunately, comes to the methods of traditional (reproduction) education. The efficiency of such methods in terms of pilots’ training for making and realization of an appropriate decision in non-standard conditions and situations of a combat sortie is very low, which is caused by the reduction in the initiative, operation activity, pilots’ getting used to rather complying than thinking. In its turn, primary professional training builds up a base for pilots’ further qualification growth (Makarov and Furduj, 2007).

In this connection appears the problem of pilots’ such psychological and pedagogical training which, in the conditions of an educational institution, would provide for:
- pilots’ future psychological readiness to act under combat sortie extreme conditions;
- fast reformation of flying activity in unexpected, unfamiliar tactical situations in a combat sortie;
- ability to estimate air and ground situation quickly and make the right decision against the main activity in the flight.

The process of making a decision during a combat flight presents the selection of an optimum variant out of the obtained earlier sum of operational and tactical as well as military and technical knowledge and their creative adaptation for the real tactical situation conditions. It should be mentioned, that under the combat flight conditions the following variants of running the decision-making process are possible: immediate identification of an unforeseen tactical situation; comparison of alternatives and making a decision which doesn’t allow for all the elements of the situation assessment; acting by ‘cut and try’ method; refusing to make a decision, confusion. Whereas the first variant shows the high class of pilots’ tactical skills, the second variant cannot always be accepted, the third and the fourth show pilots’ low level of tactical training, his inability to carry out a combat mission.

Taking into account the above-mentioned variants of pilots’ actions in the process of making a decision, one should determine recommendations concerning formation of pilots’ readiness for carrying out combat missions:

1) in the process of training it is essential to cultivate operational thinking that “neutralises” incompleteness of the information obtained in a combat sortie;
2) it is necessary to train not only motoric automatism, but also intellectual functions as well as the mechanisms of transformation of indefinite signals into definite, i.e. the ability to imagine the development of an air situation, mutual position of own plane and enemy plane or a ground target according to on-board displays, calculation results, pilots’ reports, information from ground;
3) the method of preparation has to be modelling of combat flights and during simulation of the most crucial stressful stages of a combat sortie (manoeuvrable air combat, engagement of a ground target) it is necessary to cultivate such professionally important flying qualities as emotional immunity, persistence, courage, military stratagem, discretion; during modeling stages of ground or aerial targets search it is essential to cultivate among cadets perceptive processes (detection, recognition, identification) and attentiveness; during modeling the process of estimating the situation in the air and selection of a tactical method – to calculate operational memory and thinking, heuristic thinking;
4) while training cadets in working out a combat sortie plan, an air combat plan, it is essential to apply a special type of training of flying personnel by means of methods of alternative-searching activity under specified conditions of a combat sortie.

The realization of the above-mentioned suggestions supposes the transformation of the work of teachers and aircraft simulators instructors from compulsory-manipulating influence on cadets to joint search for optimum tactical solutions with them. For example, rather complicated mastering design of airplane and operation of aircraft weapons control systems should be demonstrated to cadets by changing the research paradigm of the analysis of the ways of on-board weapons system combat use under various conditions of the tactical situation. The above-mentioned approach towards the organization of tactical training of future pilots livens up cadets’ research activity, ability to foresee probable problem situations, their classification and generalization, search for and prognostication of their variants solution efficiency. Thus, the abilities of autonomous tactical thinking extremely essential in a complicated tactical situation are formed among cadets.

To achieve such level of skillfulness it is rational to organize the theoretical part of tactical training according to the following stages with approximate learning time distribution:

- information stage (30-40% of learning time) – cadets acquire a primary level of mastering the content of special academic subjects: distinguishing, memorizing, understanding;
- heuristic stage (20-30% of learning time) – cadets improve abilities, acquire skills on modeling flying activity. The characteristics of cadets’ skillfulness at this stage are: the level of understanding new learning material, formation of abilities to apply scientific laws, principles and practical methods for solving a problem situation or making models of flying activity;
- research stage (30-50% of learning time) – the ability of autonomous accumulation of new knowledge and skills as well as creative application of the entire volume of acquired knowledge and skills in carrying out non-standard tactical tasks is developing (Nevzorov and Marchenko, 2011).

The most efficient cadets’ training on the ground for work in conditions of a combat sortie can be provided only by the unity of theoretical and simulator training. Therefore, in addition to theoretical training significant attention should be paid to cadets’ simulator training. The syllabus of simulator training is expedient to be composed of theoretical and practical problem tasks, made up according to the principle of increasing complexity (Onipchenko, 2011).

A tactical aircraft simulator simulates a real situation of a combat sortie where a cadet is able to find optimum ways of carrying out a combat mission in unforeseen situations applying the acquired earlier knowledge and skills as well as the experience of flying an airplane. The task of a simulator instructor is to help a cadet to transform available knowledge and skills to carry out a specific combat mission taking into account the pre-set tactical situation. The methods of simulator training in this case should change significantly. Demonstration can be used only in exceptional cases when teaching a new operation manoeuvre or its separate elements is performed. A cadet should be given a chance to demonstrate his initiative, self-dependence in making solutions and actions. In the process of mastering the program of simulator training it is important to use such methodological teaching techniques as prompting the next action – during first trainings, warning about possible mistakes and pointing out the mistake – during further trainings.

There is a suggestion to consider two levels of cadets’ skillfulness as a result of their simulator training. Thus, the first level skillfulness is provided by training the skills and abilities to perform flights in a testing area in order to practise combat application against aerial and ground (surface) targets solo and as a part of a pair under standard and emergency conditions. This skillfulness level corresponds to such a stage of tactical training as practicing and consolidation of activity algorithms found in manuals of airplane combat application. The second level skillfulness is determined by acquiring the abilities to act successfully in any unfamiliar or unusual situation of an operation flight. Such training should provide the formation of the ability to concentrate on overcoming the critical factor of a combat sortie, handling one’s emotional state at any moment. The training program on a tactical aircraft simulator should allow for practicing the following operational and tactical tasks:

- taking off, building and keeping the combat formation;
- a flight en route over friendly territory;
- overflying enemy air defences at low altitude and with the use of on-board defence system;
- rational navigation conditions while flying en route;
- ways of approaching the assigned targets;
- manoeuvring in the target area and aiming;
- rational conditions of combat use of aircraft weapons and ammunition, positions of aiming points and configuration of areas of probable attacks (launches, firing);
- attacking ground (sea) and aerial targets;
- combat manoeuvring;
- group strike (short-range manoeuvring and long-range manoeuvring engagement) in the restricted air space;
- air reconnaissance;
- heading towards alternative targets, landing airfields, disbanding of flight formation and approaching;
- interaction with units of ground, antiaircraft-missile and radar forces and units of electronic warfare;
- actions in special flight cases connected with the use of combat aircraft weapons and ammunition.

Results

Therefore, the realization of the suggested pedagogical approach towards cadets-pilots’ tactical training lies in the activization of cadets’ training, giving future pilots more freedom of action and autonomy during training. This allows to involve cadets in developing own variants of carrying out combat sorties, make changes and additions to the modeled standard and non-standard situations in combat sorties, grounding and substantiating their works in the process of tactical training. Such tactical training organization provides cadets with professional knowledge, abilities and skills, techniques of adaptation to extreme factors of combat sorties, immunity of emotional and volitional sphere, high development of research activity components, capability to correct solution realization depending on current tactical situation. That is, it is expedient to consider the training fields of priority of cadets-pilots to carry out combat missions in conditions of higher military educational institution to be the following:

- acquisition and improvement of the skills and knowledge of general scientific, military technical, special tactical subjects that provide accumulation of information fundamental for theoretical training and solution of a specific combat mission (flight);
- priority of formation of mental activities and necessity to form pilots’ mental sphere at an advance pace compared with other components of his professional reliability;
- systemic and complex psychological and pedagogical influences that determine the logic of formation of structural-logical connectivity of separate elements of professionally important qualities alongside with knowledge and mental skills;
- orientation at formation of the whole professionally important qualities totality within the entire range of combat tasks taking into account combat sortie conditions that reduce efficiency and reliability of pilots’ activities;
- development of tactical thinking, formation of spatial awareness about the airplane position in relation to the enemy airplane (ground target);
- bringing the preparation for combat sorties into the field of autonomous work at oneself, self-control and self-assessment of one’s readiness for the flight.

References