



Methods and Principles of Flight Training

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ABSTRACT

This article discusses in detail the process of preparing future pilots for practical flight training using advanced training technologies with the help of instructor pilots.

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The pilot-instructor must be well aware of and constantly apply in his activity the guiding rules that underlie modern teaching methods and represent a generalization of accumulated experience. Ignorance of such rules leads to serious mistakes. Strictly speaking, all kinds of shortcomings in flight training and measures to eliminate these shortcomings served as material for the development of correct principles.

The history of flight training has enough examples of how the neglect of training methodology had a negative effect.

Errors made themselves felt especially sharply in cases where the basic principles of flight training methodology were violated on a subunit scale. A slight deviation from the basic rules, allowed by the commander, always led to a decrease in the quality of flight training of the entire unit and led to flight accidents, as well as to massive deductions due to poor progress.

Let's look at some of the most important of these principles.

Pilot training comes down to instilling in him:

-knowledge,

- skill,

- skills.

a) Knowledge forms the basis of practical flight work,

The volume of necessary knowledge is determined each time by the goals and volume of practical flight training.

Before starting to practically teach a cadet to perform a flight, it is necessary to give him those theoretical foundations that will ensure a meaningful assimilation of all elements of the flight.

b) Skill is acquired in the process of practical application of knowledge. Piloting an aircraft is a very difficult activity. Mastering it requires a large number of practical actions, ranging from the simple ability to hold the aircraft control stick to the complex ability to land.

This is fundamentally wrong and in aviation often leads to serious misses, and sometimes to casualties.

c) A skill is the ability to perform some action, brought to a high degree of perfection through exercises and performed with a minimum expenditure of attention and effort.

The cadet must not only learn how to perform all actions in flight, but be able to do it clearly, quickly, naturally, accurately and firmly.

The instructor must develop any complex skill into a stable skill and reinforce it with exercises.

There are times when a cadet, flying alone, suddenly makes a gross mistake, which ends in a flight accident. The instructor is accused of not teaching the cadet this action. The instructor is perplexed: he taught the cadet, and he knew how to do what he did not do in this case. However, the instructor did not understand that during the training an important principle was violated, namely, the skill was not consolidated.

When teaching, it is necessary to use visualization as widely as possible, with the help of which a faster and more durable assimilation is achieved. The instructor must conduct any lesson on an airplane or accompany the lesson with explanations using aircraft models, start miniatures, simulators, diagrams, etc.

When teaching a cadet, the instructor must ensure that the cadet treats all knowledge and actions meaningfully, so that he develops independence and the ability to flexibly and widely apply the acquired knowledge, skills and abilities in practice.

For example, it is not enough if a cadet can only count on landing at his own airfield. Calculation training should be based on methods that make the calculation independent of local landmarks.

The instructor must follow the sequence in the presentation of the training material, as well as the principle of "from simple to complex" and "from known to unknown". All newly communicated knowledge and newly developed skills should reinforce what was learned earlier. It is possible to move on to mastering new actions and elements of flight only when all the previously studied actions and elements that form the basis for new ones have been mastered.

Jumping should not be allowed in training, i.e. skipping any elements of the program.

The presented knowledge, skills and abilities should form a coherent system in which all elements are interconnected, flow from one another or from previous experience, and the whole complex meets the general goal of training. The volume and content of training are determined by the profile and programs, which may be broader or narrower, but one should not allow single issues that are not organically and logically related to everything else to be snatched out of the general system of training.

The content and methods of presenting knowledge, skills and abilities should be accessible to the cadet, feasible for him, i.e. must correspond to the development, abilities and training of the cadet.

The great Russian teacher K.D. Ushinsky expressed the idea that overwhelming educational material can undermine the student's self-confidence, which is necessary for learning.

However, difficulties should not be avoided or circumvented. A big mistake is made by those instructors who try to depict each flight in the eyes of the cadet only as a pleasure, convince the cadet of the ease of mastering the piloting technique.

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The desire to make learning accessible does not contradict the fact that cadets are brought up to overcome the difficulties of learning. Comrade Stalin teaches, "... that only those cadres are good who are not afraid of difficulties, who do not hide from difficulties, "but, on the contrary, go towards difficulties in order to overcome and eliminate them."

When teaching a flight, the instructor should be guided in loading the cadet so that in each flight he overcomes some difficulty, but so that it is within his power, and in general the flight would give the greatest training effect. This is all the more necessary since the organization and execution of each flight is very expensive, and each flight must not be allowed to be fully used for training purposes.

The instructor should require the trainee to always try to do his best. It is necessary to resolutely fight against the slightest negligence in piloting technique.

Successful flight training is possible only under the condition of a strict, differentiated, individual approach to each cadet, based on careful consideration of his development and previous life experience, his abilities, psychological characteristics and training.

The work of the instructor must always be purposeful. It is important for him to have a clear idea of what and why certain exercises, certain teaching methods are used, what results and in what time frame should be achieved.

Only in this case it is possible to firmly consolidate the training material, whether it is theoretical knowledge or practical flight skills.

Some instructors mistakenly think that the teaching methodology does not concern the cadet and it is better if he knows less about it. "The cadet's business is to do what he is told, and not to argue whether it is right or not," these instructors say. Such statements are wrong.

Flight training is a process in which two people participate - an instructor and a cadet, and their actions must be coordinated. However, coordination is impossible if the cadet for some reason opposes the actions of the instructor or is passive (that is, he will formally, without internal orientation, follow the instructions of the instructor).

And, conversely, coordination will be complete and interaction productive if the cadet willingly and purposefully does what the instructor requires of him; and such an attitude arises in the event that the cadet understands the meaning of the requirements.

Consider, for example, such a case. The instructor, imitating the failure of the engine, suddenly removed the gas, the cadet was at a loss from surprise and acted incorrectly. The instructor made a sharp remark to the cadet: "You will never be a pilot, because you are lost when the engine fails; it's good that I was there, otherwise you would have crashed."

Such a phrase will be remembered by the cadet, and the educational goal that the instructor set for himself - to draw his attention to the inadmissibility of getting lost when the engine fails - seems to be achieved. But at the same time, it will negatively affect the cadet: it will lower his faith in his own strength and may even cause a feeling of resentment - he not only did not expect imitation, but also did not know if he had the right to do anything, since there were no previous indications of such a case did not receive.

The same learning outcome can be achieved by another method. For example, say to a cadet: "I deliberately did not warn you that I would simulate an engine failure in this flight. You were reacting to it incorrectly now, because you did not know how to act in such a case. You are confused - it's natural. Remember your feelings and impressions, which were the result of surprise and unpreparedness for engine failure.

Try to always set yourself up in flight so that no surprise can take you by surprise. In the future, we will practice with you in actions in case of engine failure, but they will no longer be a complete surprise to you.

Explaining methodical techniques to a cadet does not mean reporting why the instructor does it this way. However, it is necessary that the instructor explain to the cadets his actions, which may cause bewilderment or fear in flight.

When teaching piloting techniques, it is necessary to observe uniformity in the performance of the same flight elements.

Instructors should not be allowed to perform the same flight elements in different ways and train cadets in different ways. At present, the technique for performing each element of the flight is justified by firmly established requirements and conditions.

These requirements and conditions are as follows: the greatest ease of implementation, safety, compliance with the requirements of practical application (in civil aviation - special, in military - tactical, etc.) and, finally, the opportunity to get everything that it can give from aviation technology.

"Cool" piloting technique, i.e. the highest quality, allows you to get the highest technical results from the aircraft, which are inherent in the design, and hence to extract the maximum benefit in the practical use of the aircraft (tactical, transport, special).

In this case, the pilot must expend a minimum of energy to perform the flight, saving the movement of the rudders to the limit.

It is in this direction that cadets should be trained.

To assess the piloting technique of a cadet during the training process, the instructor must apply the established standards, which express the state requirements for the quality of piloting. These requirements ultimately determine the quality of the training of Soviet pilots.

Evaluation standards in the hands of an instructor are an excellent methodological weapon. With their help, the instructor determines exactly to what level to develop various skills at each stage of training.

The standards allow an instructor, especially a young one, to accurately determine whether he has sufficiently worked out one or another element of flight with his cadets and whether it is possible to proceed to the next stage of training.

During the training, the cadet must learn to perform all the care and maintenance of his aircraft and engine and make simple airfield repairs. Is the pilot obliged to supervise the subordinate aircraft mechanic not only as a crew commander, but also in a special respect? To do this, he himself must be able to do what an aircraft mechanic does on a daily basis. It is necessary not only to know the aircraft and the engine, but also to be able to find the defect and give instructions on how to fix it.

During training, a clearly regulated organization of the flight service, covering all aspects of flight work to the smallest detail, must be strictly observed. At the same time, high exactingness is required to comply with the rules of this service.

Individual instructors sometimes reduced their demands on cadets under the following two pretexts:

- a cadet learns and, naturally, makes mistakes in the learning process; if you do not make mistakes and do not give him the opportunity to correct them himself, then the cadet will never learn to fly.
- Mistakes can be both in the aircraft control technique and in the observance of flight rules, especially in route planning.
- Therefore, some violations of the rules of flight should be allowed for training purposes in the same way as errors in piloting technique;
- the cadet is not yet sufficiently prepared to be required from him, as from a completed pilot. It is difficult for a cadet to fully observe the rules of flight service, especially in the early days of solo flights, when his attention is mainly absorbed by the piloting technique.

Hence the conclusion: some violations of flight rules are permissible as a discount for the inexperience of the cadet.

Both of these arguments are fundamentally wrong.

It is wrong to allow violations of flight rules, considering them inevitable mistakes of a cadet, because for educational and methodological purposes only such deviations are allowed that do not constitute violations. If, for example, a cadet is given a flight altitude of 300 meters in a circle and he has lost 50 meters, this will not be a violation.

But if a cadet instead of 300 meters' flies at an altitude of 100 meters, this will be a violation. Deviation from the route line by 25° is also not a violation if after some time the instructor corrects the cadet and forces him to turn the aircraft to the specified direction.

But if a cadet flies for a long time with such a deviation, this is already a violation (especially when another plane flies behind). In short, errors in the observance of flight rules, as well as in piloting technique, are permissible only within the limits of safety, i.e. if the possibility of a flight accident or interference with other aircraft is excluded.

When teaching landing, the instructor intentionally creates errors for the cadet for training purposes, but their size does not go beyond the safety limits; it is impossible to make exceptions in this sense and for flight rules.

Violations of flight rules based on the inexperience of a cadet are also completely unacceptable.

Precisely because the cadet is inexperienced, a more stringent exactingness is needed in the flight training organization to comply with flight rules. If an experienced pilot still has the opportunity to get out of the dangerous situation that has arisen in connection with the violation, then the cadet has very little

chance of doing so. Such a task is the high quality of training that ensures the performance of flights without incident.

The success of this largely depends on the precise and accurate implementation by all flight and technical personnel of the established procedures and training rules.

Discipline is one of the most important conditions for the successful operation of aviation. Strict observance of discipline reduces to zero flight accidents and, conversely, insufficient discipline causes an ever-increasing number of flight accidents.

Therefore, in all flight training organizations, regardless of their departmental affiliation, including sports public organizations, strict and clear discipline for the entire staff must be stopped, the model of which can be military discipline.

List Of Used Literature:

1. М. А. Черный, В. И. Кораблин Воздушная навигация. Транспорт.: 1983- 384с.
2. Б.А. Аверин. «Динамика полета и безопасное пилотирование самолетов с поршневыми двигателями». М.:2007-367с.
3. А.Е. Селезнев. Основы навигации. Практический опыт капитана. Новороссийск:2008-174с.
4. М.А. Черный. Самолетовождение.КДУ:2010-368с.
- 5. М.А. Черный. Воздушная навигация. Альянс:2015-432с.**
6. Техника пилотирования вертолета и выполнения вертолетных операций в холмистой и горной местности. компания Airbus Helicopters 2019-26с.
7. Техника пилотирования вертолетовождение вертолета Ми-8МТ. М.: военное издательства 1987-215с.