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The role of pedagogical principles in professional preparation of aviation specialists

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Abstract. The article is devoted to the description of pedagogical principles in functioning of the system of professional preparation of aviation specialists. In the article the author determines two groups of principles, which are necessary for studying, taking into account international aviation requirements and their implementation in Flight Educational Establishments; it is stressed on the importance of these principles in the professional career of future pilots and controllers.

Keywords: *professional preparation, principles, aviation specialist, aviation requirements.*

Introduction. Methodology of flight studying is a result of collective creative job performance, based on experience of teachers, pilot-instructors and controller-instructors. Their experience of flights is discussed at methodical seminars and implemented into the educational programs, aviation techniques, and general methodical strategies. Then the generalized experience, which is based on principles of studying, is checked up in practice and serves as the foundation of the methodical material for professional preparation of pilots and controllers. Principles of studying are fundamental ideas and regulations, which stipulate maintenance, forms and methods of educational work [3, p. 118].

Review of publications and researches. Much attention is devoted to the importance of principles of studying in the scientific works of specialists. It is interesting to focus on scientific thoughts of A. I. Kuz'minskiy (general pedagogical principles of studying), V. V. Yagupov (principles of studying of military specialists), O. P. Petraschuk (principles, which are necessary in the process of knowledge testing of foreign languages); E. A. Ivanchenko (principles of studying of future specialists of economy and finances); V. M. Klachko (principles of studying for forming of motivation of the students at military educational establishments); S. V. Scherbina (principles of the research work of future air traffic controllers); L. S. Gerasimenko (basic principles, which are used for the teachers at Flight Schools); B. L. Asriyan, I. L. Smirnova, I. D. Zverev and V. M. Maksimova (principles of intersubject connections in the process of studying of professional subjects at Flight educational establishments); R. N. Makarov (specific principles of flight studying).

Purpose of the article is to conduct the review of general pedagogical principles of professional preparation; to define priority principles for professional preparation of aviation specialists and to determine their role at Flight educational establishments.

Main material. Taking into account the construction of the system of professional preparation of future aviation specialists, and having studied the main provisions of researches in the aspect of development of principles of studying, we determine the main principles of professional preparation of aviation specialists; we have divided them into two groups: general didactical principles and specific professional principles, which are characteristic for flight activity. Let's briefly characterize these two groups of principles.

Principle of practical orientation of studying can be realized through the awareness of the role of flight educa-

tional establishment – preparation of a student to effective professional activity, active life orientation. Practice is derivative from a theory. It is therefore needed to connect theoretical knowledge to life. In the process of doing practical tasks a student gets the ability to use the received knowledge in life situations. Making decisions in educational situations forms a strong desire to get knowledge, facilitates educational activity. Therefore this principle mostly reflects in the use of problem tasks, taken from the real aviation environment.

Effective flight studying is possible on terms of using the principle of systemacy and sequence. Breaking of this principle in studying leads to fragmentary and abrupt knowledge of students. With the purpose of structuring of educational material teachers and instructors create educational guides, in which material is systematized in accordance with the certain system. The educational material is broken up into parts, selecting main and substantial issues, explaining mechanisms. The studying of English also takes place according to certain stages: at first student study the general English language, then aviation English and the phraseology of radio communication. Thus there is interconnection with other subjects: for example, at first students study meteorology, navigation, and then the teacher can apply methods of training of professional examples and situations at English classes. This systemacy and sequence in teaching of educational material is more effective in educational process.

Principle of optimization of studying also contributes to the increase of level of educational process by using the most effective facilities, which would be suitable exactly for this industry, direction and subject. Speaking about Flight educational establishments, principle of optimization can be realized in effective combination of theoretical, simulator and practical types of preparation. It is reasonable to define correctly the content of studying, which implies structuring of educational material, taking into account the intersubject connections, analysis of the received results, selection of effective methods of studying. Application of principle of optimization needs a complex approach. For example, with the purpose of the gradual changing of the national educational system to European standards, credit-module system (ECTS) and accordingly its scale of evaluation have been implemented. It can be considered as optimization of studying, because credit-module system enables every separate theme to be explained in detail.

Principle of simplicity of studying is based on mutual activity of a teacher and students. On one hand, educational material for students-pilots and students-controllers

is difficult enough. A teacher (instructor) must inform the material to the students in a definite structure, in feasible tasks, which is the main requirement of carrying out this principle. First of all, studying is oriented at receiving necessary professional knowledge, skills and proficiency. If during a long period a student does not understand the material, although he visits all classes, and he does not get positive marks, his confidence in achievement of success will disappear. Reason of this can be in non-understanding of studying and complexity of material. On the other hand, students must also demonstrate persistence, patience and self-control, put questions to a teacher, be interested in nature of phenomena, processes and be not afraid of negative reaction.

One of leading principles discussed in the article is the principle of motivation of educational-cognitive activity. Motivation is the qualification standard which must be constantly raised during years of studying. This principle is connected with the previous one – the principle of simplicity, as a student, having a positive mark for his knowledge, wants to learn more informative and interesting material. For pilots and controllers motivation is especially important. The teacher must support the high inner self-approval of students, praise for success; develop the outlook of interests in relation to Ukraine, its position in the world society and aviation. The leading idea of forming and developing of motivation, to our opinion, is in collaboration of a teacher and students, which has two paths within the limits of the class time, united into one purpose, – to teach and to learn.

Principle of individual approach plays an important role among principles of studying. This principle means understanding of psychological features of every student and their use as the basis of studying and education of future aviation specialist [6]. In the process of flight activity an individual approach is of special significance. Pilots and controllers must demonstrate more independence, initiative, responsibility in the process of studying, orientate in dangerous situations and extreme conditions of flight. Implementation of this activity needs the development of natural abilities such as: level of attention, memory, quickness, persistence, will-power, ability to orientate quickly and make decisions. That's why the instructor should be interested in the level of knowledge in theoretical subjects before the beginning of flights, the level of physical preparation, the cultural level of a student, with the purpose of discovering his personality, inner world, correct evaluation of the behavior and professional actions.

The efficiency of flight preparation is also provided by the use of principle of variation in studying. It can be achieved by changing the conditions of studying. For example, training of skills by changing from one type of an aircraft to another. Each type of aircraft has its individual operational features and peculiarities, which students must know. Variation of studying also widens the number of problem situations in the air, which appear suddenly and must be coped with very quickly. With the purpose of training these skills an instructor may switch off navigation instruments on the panel, taking into account the level of preparation of the student-pilot. A student-pilot must be always ready for such situations. The use of principle of variation implies not only the use of

different educational tasks, outside factors, presence of dangerous situations, but also the reaction of mental abilities, adequate to the given conditions. But the maintaining of steady psychological condition of readiness is impossible during the whole flight. Therefore it must be combined with the periods of partial relaxation, but not the complete one. The student must be ready to return to the condition of readiness in the case of sudden change of the situation.

Principle of compliance of teachers' professional level with the requirements of the system of professional preparation of future aviation specialists means the competence and knowledge in aviation industry, processes, which take place in a world aviation, role of Flight educational establishment. Teachers must constantly increase the level of knowledge, study professional subjects. To our opinion, such studying must take place in complex. In ICAO Circular 323 «Guidelines for Aviation English Language Program» the requirements to Aviation English teachers are the following [4]: the ability to improve linguistic conditions of students; the ability to induce interest among students; orientation on communicative efficiency, rather than on grammar or pronunciation structure of the language; wish to help, observe, coordinate and teach. We think, that general recommendation for the teachers of Flight educational establishments is studying of professional documents of ICAO and JAR, taking part in professional seminars, which are organized at aviation companies, teaching practice at workplaces, socializing with the colleagues-teachers of professional subjects, flight instructors and controller instructors, instructors of the simulator training centers.

There is no doubt in the efficiency of the principle of intersubject connections in the studying of future pilots and controllers. This principle is one of the leading one, modern and effective. Intersubject connections imply coordination between professional subjects that makes possible the understanding of facts and phenomena of the surrounding reality through different subjects, from the different points of view [7]. Research of I. L. Smirnova [5] is aimed at forming of integrative theoretical knowledge by means of intersubject connections in the process of studying of professional subjects at Flight educational establishments. Her scientific work offers the optimization of studying of the professional subject «Aviation instruments», which is carried out in three stages: first is theoretical preparation; second is professional practical preparation (according to the standard program); third is practical preparation of professional subjects with the application of intersubject connections (work out of problem situations, related to failures of aviation devices and instruments on board the aircraft). In the article the realization of the principle of intersubject connections is offered in counter direction: studying of the professional subjects in English, rather than simple studying of basic concepts and terms at English classes. To our opinion, this approach may be effective for achieving of two aims: increase of level of English and basic knowledge in professional subjects.

We have also chosen the principle of context approach, developed by A. A. Verbitsky [2]. In order to get professional knowledge, the information from the beginning of studying must be mastered by a student in the context of

his future professional activity. Therefore, educational actions must be problematic and close to the working situations (contexts) of future professional activity. Due to the context pilots and controllers know what to expect and are able to interpret the given context in a proper way. Before operation a student collects all the necessary relevant context information: meteorological situation, nature of the problem, radio communication with a controller, level of threat of passengers' life. The content of context studying is not the portion of information, but a problem situation in a professional context.

Implementation of the teaching tasks is also provided by the application of specific principles, which demonstrate the nature of professional activity of future pilots and controllers.

Principle of strict regulation and time limitation of actions which are mastered connected with the specifics of flight. This activity is provided in accordance with the standards and criteria of implementation of professional operations. Therefore it is important to form the abilities of doing professional actions within limits of time. It is also needed to form the high level of professional resistance, in order that a pilot and controller were ready to work in stress (extreme) situations. So, during studying process the students are brought to such conditions, in which they must memorize and do the professional actions very quickly. It can be achieved by means of [1]: 1) the gradual decreasing of time during the implementation of operation; 2) the increase of level of complication of exercises.

However, it is important to remember that time and level of complication of the tasks also have certain limits. Loading must be feasible. During the imitation of emergency situations the tasks for students must be as follows: correct identification of the problem; estimation of the whole situation; taking of timely and correct decision; successful completion of the flight. For the high level of complication of exercises it is possible to introduce failures of navigation instruments combined with adverse meteorological conditions. Thus it is possible to work out the skills in accordance with the principle of strict regulation and time limitation of actions, which are mastered.

Principle of additional psycho-physiological loading of basic activity is in the necessity of the additional processing of information by an organism of a student, which takes place in such cases [1]: at doing complex task; at complication of flight conditions (for a controller – at complication of control conditions in airspace); at failure of instruments and systems of airplane; at switching from the automatic to manual mode of operating an airplane. The psycho-physiological loading means equal distribution of attention. The level of professional reliability is determined by the concentration of attention of a pilot on integral flight picture, but not only on certain instruments. It also concerns a controller – he must concentrate attention on the integral picture of air situation on the radar screen, but not on one aircraft in the control area. Thus, training of professional skills with correct distributing of attention and additional psycho-physiological loading is the sign of professional readiness, which results in less time needed for operations, and therefore the reserves of organism are saved. But the

additional loading must not be harmful for doing of basic activity.

Principle of rhythmic increase of the psycho-physiological loading is stipulated by implementation of the following rules [1]: 1) periodic changing of the psycho-physiological and physical loading; 2) to provide the gradual decrease of the psycho-physiological loading after the task, which needs high level of concentration of attention and nervous-emotional state; 3) professional activity must consist of simple, familiar, well trained simulator training operations; 4) to increase the psycho-physiological loading after the period of relax, thus it must exceed the previous loading; 5) the level of psycho-physiological loading is regulated by novelty and volume of material, complication of tasks. To our opinion, this principle plays an important role in the process of studying of all subjects. From own experience we can notice that introduction of difficult tasks for training of linguistic skills of pilots / controllers (for example, listening of radio transmissions with interferences, in adverse meteorological conditions or in emergency situations) causes the increase of psycho-physiological loading and fatigue of students. After 30 minutes of such intensive work they need rest. It is therefore possible to enter the gradual decrease of loading by more simple tasks (reading of a dialog in pairs, play the game "Guess an instrument"). Therefore, changing of tasks is the effective mean of saving of mental resources of students and does not cause organism to "wear".

Principle of complex forming of professional qualities and mechanisms of adaptation means the accommodation of organism of an aviation specialist to professional activity which can be provided in various conditions: overloading, rocking, fatigue and hypoxia. Therefore, professional preparation consists in the complex training of qualities of pilots and controllers, which then unite in integral basis for professional readiness.

The results and their discussion. To build the system of a continuous professional preparation of aviation specialists, it is necessary to realize the role of the above mentioned general didactical and specific flight principles; each of them has the content, formulated according to the purpose and tasks of professional aviation studying. The analysis of research works enabled the author of the article to explain the concept «principles of professional preparation of aviation specialists» as the guidelines, according to which an educational activity of aviation specialists will be realized, with the purpose of forming of professional knowledge, skills and proficiency.

Conclusion. So, in the article much attention is devoted to general didactical and specific flight principles of professional preparation of aviation specialists for training of professional actions in standard and extreme situations. Following the principles of studying is effective in the complex forming of psycho-physiological qualities of specialists. These principles are the important component of educational process on all stages of professional preparation: theoretical, simulator training, practical flights and working at the controller's radar screen. It is thus important to follow complex implementation of pedagogical principles on every stage of studying.

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Москаленко Е.И. Роль педагогических принципов в профессиональной подготовке авиационных специалистов

Аннотация. Статья посвящена обоснованию педагогических принципов в функционировании системы профессиональной подготовки авиационных специалистов. В статье автор определяет две группы принципов, необходимых для обучения, исходя из международных авиационных требований и их имплементацию в высшие летные учебные заведения, а также обосновывает важность этих принципов в профессиональном становлении будущих пилотов и диспетчеров.

Ключевые слова: профессиональная подготовка, принципы, авиационный специалист, авиационные требования.