

CONSEQUENCES OF CHANGES IN THE STUDY PROGRAM TO THE LEVEL OF KNOWLEDGE OF AEROSPACE MILITARY STUDENTS

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Abstract: Educational programs of the Faculty of Military Technology at the University of Defence in Brno are continuously upgraded in accredited study programs. Changes have been brought about by the transformation of the defence sector as well as by the more frequent involvement of aeronautical services in foreign missions, particularly in the Baltic states and in Sinai. New study programs should reflect the requirements of aeronautical units in the training of military pilots, air traffic, air and missile technology and aerospace systems. In this context, the increasing dependence on the use of information systems and the implementation of new versions within the ICT Army of the Czech Republic is described as a response to changes in military and a new paradigm of logistics support for aeronautical services. The results of the analyses of knowledge of aeronautical module graduates and the use of acquired knowledge in practice, apart from those already mentioned, have been expanded with the expertise of radio engineering, air traffic control, engineering and aeronautical services, aeronautical technical and operational security, and airport security needs to be adapted to current military practice requirements. The multifactor leadership questionnaire for graduates from 2010 has been used to investigate the level of aeronautical module graduates' knowledge.

Keywords: air base; air force; multifactor leadership; flight simulator

1. INTRODUCTION

Knowledge organizations, as it is the case of universities, are found in the new position – enquiry requirements are changing quickly and they require reaction (Korecki, Z., Draghici, C. 2012). The experience of the aeronautical training process was analyzed for the 2015 - 2017 period, where accreditation for new Master's studies was gradually updated. The education process was significantly influenced by the requirements of the European Credit Transfer System and the specified requirements of the Czech Republic's Defense Department, in particular the Air Force Command. e analysis focused on graduates of aeronautical military expertise (military pilot, air traffic, aerospace, rocket technology and aerospace systems for academic years 2015/2016 to 2016/2017).

The Faculty of Military Technology was educated in 2015-2017 students in four training modules - Military Pilot, Flight Traffic, Aircraft and Rocket Technology and Air Electrical Systems. An important part of training pilots and their practical skills is training on an airplane simulator, where they acquire basic skills and can routinely repeat activities (Bořil & Čičmanec, 2016).

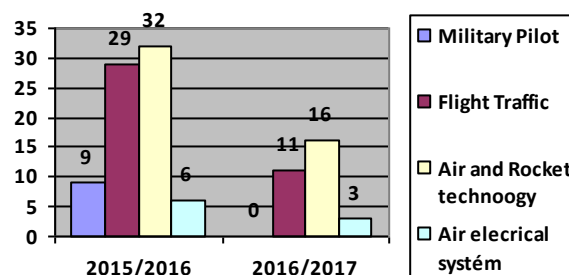


Fig. 1 Number of graduates in training modules - military pilot, flight operations, aircraft and rocket technology and aviation electrical systems.

1.1 Analysis of the new program study. The problem of harmony of student knowledge, performed function, needed knowledge and realization of foreign missions, was solved with the method of sources allocation (Korecki, Pomazalová, 2010). Education requirements in contemporary conditions are based on complex knowledge and focus on the logic of the thinking of the implementer of activities, which are influenced by the short reaction time and possible fatal consequences (Čičmanec & Nevrlý, 2012).

The training of military professionals is based not only on professional knowledge but also on the ability to communicate in a foreign language. For this reason, attention is paid to the University of Defense in Brno on the language skills and, above all, the professional terminology (Lopourová, Korecki, 2009). Current teaching of military expertise 21-29 (21 pilots, 22 - air force expertise 23 - Air Traffic Control, 26 - Radio Technical Assurance, 27 - Engineering - Air Service, 28 - Airport Technical and Operational Security, and 29 - Airport Security) take place in a continuous five-year Master's degree program. In the following text I will deal with the training of Military Pilot Expertise and Air Traffic Control.

The total study load of the study plan - Military pilot is 6252 teaching hours, which is 301 ECTS and Air Traffic Control is 6213 teaching hours, which is 301 ECTS.

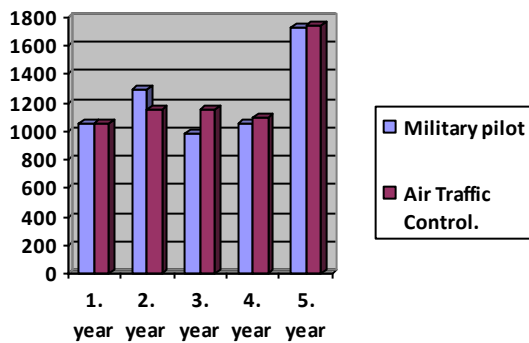


Fig.2 Number of teaching hours of the study plan - Military pilot

Subjects of basic theoretical profiling for pilots are a study load of 624 hours, which is converted to 30 ECTS. Subjects included here are Air Traffic Technologies, Aviation Technology and Technology, Airborne Operational Use and Applied Air Traffic Technology.

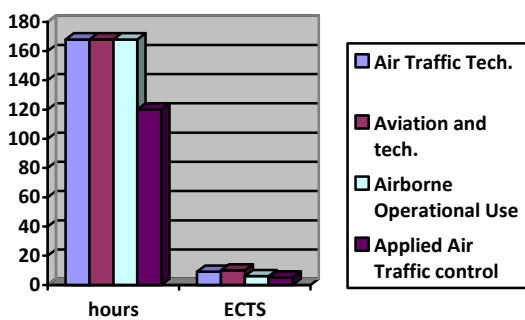


Fig.3: Basic theoretical profiling for pilots

The most important area of training for military pilots is specialized training. The area

consists of air training and practical training of military pilots. Flight training is planned for 1,050 teaching hours with a subsidy of 56 ECTS. Practical preparation has 180 teaching hours and 6 ECTS. Subjects of basic theoretical profiling for air traffic controllers are Air Traffic Engineering, Aircraft Techniques and Technology, Air Navigation and Radionavigation, and Airborne Operations.

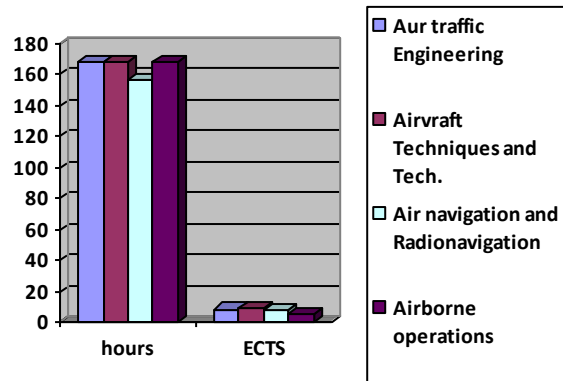


Fig.4 Basic theoretical profiling for air traffic controllers.

2. THE COURSE AND RESULTS OF THE RESEARCH

Main objective of the article is to find an immediate answer to the question whether the contents of study programs develops those qualities and abilities of the graduates, which are necessary to hold functions not only at the air bases of the Czech Air Force. The results obtained will make it possible to use the results obtained in order to change the routing of the study modules. The authors will use the lessons learned to alter the curriculum structure that will reflect not only the demand of the Air Force, but also reflect changes in the implementation of logistical support processes due to structural changes in the defense sector, including the development of information systems. Based on testing and assessing of students who participated in internships abroad an innovation was proposed, with regards to the capability and preparedness of students to work in international environment, was made (Korecki & Cabicarová, 2015).

3. FINDING RESULTS

The results achieved by the author during the first period under review stated that the flight and aeronautics flight program graduates achieved a

point rating ranging from 34,75 to 94,42 for the subject of Airport Technical Technology, a score of 38,45 to 92,15 in the subject of Airport Technology technical security, the range of points from 35,45 to 93,25 in the subject of the Organization of Logistic Support and Airport Technical Assurance for Air Traffic, and language skills showed a point rating ranging from 37,12 to 100,00 points. The results obtained in the graph represented the values $y = 14,133+6,461x$ and $R^2 = 0,3951$.

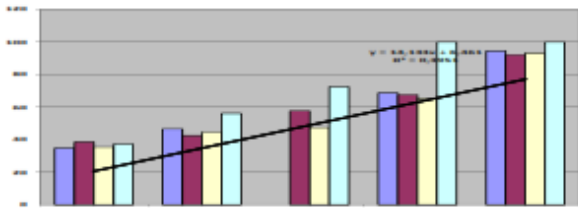


Fig.5 Knowledge of Masters Students - Growth (level) of knowledge in defined time periods for the period 2015-2017

Knowledge assessment milestones were defined for the period after the first short-term internship, then the second postgraduate period in the fifth year and especially after the practice of practicing flying in Pardubice. The first field training on the territory of the Vyškov Military Academy is realized in the first year and develops practical habits for students.

Knowledge level measurement periods were defined as follows: (1) completion of the first short-term placement - aviation specialization in Brno; (2) flight training in CLV Pardubice in second academic year; (3) flight training in CLV Pardubice in third academic year; (4) flight training in CLV Pardubice in fourth academic year; (5) flight training in CLV Pardubice in fifth academic year

The linear trend line represents the regular growth of professionally knowledge from the the third year of academic education until the fifth year.

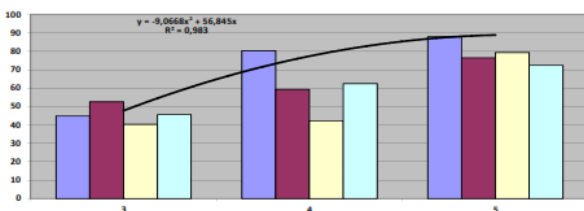


Fig.6 Level of Knowledge Growth Bachelor Students Study - Growth (Level) of Knowledge in 1st, 2nd and 5th Period

The polynomial trend curve represents an increase in military logistics knowledge. The Air Force of the Czech Republic Army for the training of its pilots is using the Air Training Center (CLV) at the Pardubice Military Air Force. Part of the center is also the unique Tactical Simulation Center (TSC), where not only pilots are trained but also air guides and guiding combat guides. Training is conducted in four areas as follows: theoretical retraining, purpose training, basic pilot training and flight test training. The evaluation of the students in CLV Pardubice is shown in fig. 2.

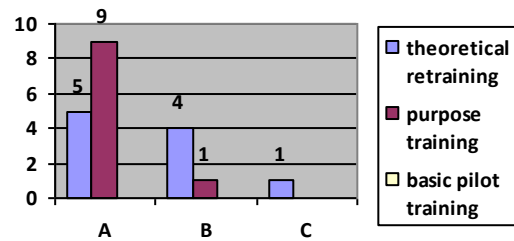


Fig.7 Evaluation of training at the Pardubice Center for Air Training

3.1 Multifactor leadership questionnaire.

Transformational Leadership in analyzed study groups demonstrated that students are able to work and vest their subordinates without major deficiencies and demonstrate a growing level of knowledge based on practical examples. Air task order (ATO), AirSpaceControl Order, Airspace Coordination Order and Air Operations Directive were analyzed. The groups worked on Standard Operating Procedures and demonstrated the ability to work independently. The level of knowledge of pilots and air traffic controllers was very similar and testifies to good theoretical knowledge that was subsequently used in case studies. Passive Management would only result in a time lag.

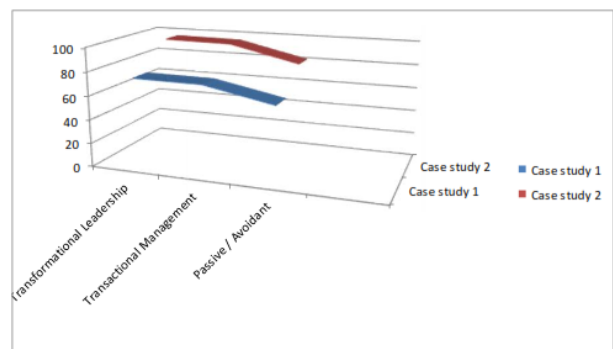


Fig.8 Changes in Transformational Leadership, Transactional Management and Passive / Avoidant by the number of case studies solved in Command and Control in the Air Force

The subject of Command and Control in the Air Force is based on knowledges in different areas, such as command and control, combat documents and be familiar with STANAG 2014, ED 9. Students have proven good knowledge and orientation in documents and have been able to use all available means to achieve the goal.

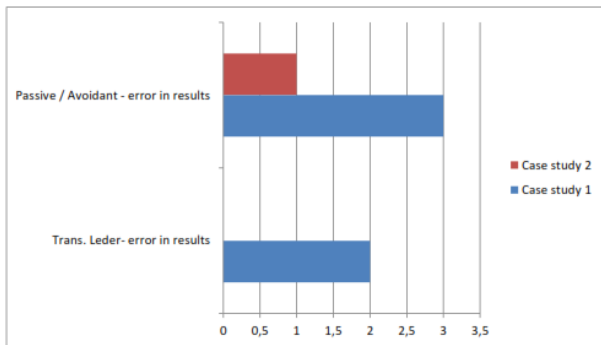


Fig.8 Changes the number of errors

4. CONCLUSIONS & ACKNOWLEDGMENT

The investigations carried out by aeronautical graduates and the analysis of exit levels and their reasons have led to several conclusions that will be gradually implemented in the preparation of students. Students of aeronautical expertise are very well prepared for the first systemised places after graduation. Graduates have a realistic overview of the current military engineering of aviation bases, with a significant share of this fact in practical internships in troops. In general, graduates of aeronautical military expertise have been prepared and, above all, motivated to work on their own.

A good level of knowledge of information systems, knowledge of laws, regulations and other internal regulations needed to hold functions was established. It is clear that feedback from departments and facilities should result in better cooperation between the University of Defense in Brno and aeronautical bases, for example by passing on real life experience at the department or missions to students.

An important change could also be to start redistributing students in the third semester, thus avoiding loss of motivation. The University of Defense in Brno accredited a new continuous five-year program in 2015. The new accreditation is

made up of two blocks, the first three years of which are based on a common foundation and the students are then divided into modules. The practice of field training as well as the number of flight days at the base in Pardubice was greatly increased. It was confirmed that the change in accreditation had positive impacts and reflected a higher level of knowledge.

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