LANGUAGE COMPETENCE AS AN UNDERLYING FACTOR OF FLIGHT SAFETY CULTURE

МОВНА КОМПЕТЕНТНІСТЬ ЯК ОСНОВНИЙ ФАКТОР КУЛЬТУРИ БЕЗПЕКИ ПОЛЬОТІВ

UDC 81:811.111-028.17:629.7 (045)
DOI https://doi.org/10.32843/2663-6085/2021/35.6

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In the era of high speeds and technological breakthroughs, the rapid development of civil aviation opens new windows of opportunity to economies around the world. Along with broadening horizons for the globalized society, the civil aviation industry is constantly undergoing some drastic changes, which are associated not only with the performance of flights and their air navigation services, but also with the language competence of aviation specialists in terms of its compliance with the language proficiency standards set by the International Civil Aviation Organization.In view of remarkable advances in the area, some issues of prior concern may arise, one of them being the necessity of improving civil aviation specialists' performance. Performance issues have always been closely related to language proficiency, which, in its turn, can have an immediate impact on flight safety. The issue of flight safety, which has always been inseparably linked to the human factor, has become significantly important in recent years. If risk factors at technical, psychological and language levels are managed effectively, the number of airborne accidents can be reduced noticeably. The article emphasizes the critical importance of pilots' and controllers' being competent in their professional communication in a foreign language. Bearing in mind that aviation English has its peculiarities when compared to spoken English, major effort must be applied when training both crews and ground staff. It should be mentioned that the requirements to the level of English language proficiency set by the International Civil Aviation Organization are rather strict, with six language proficiency indicators being assessed: fluency, interaction, vocabulary, grammatical structures, pronunciation, and comprehension. The importance of meeting these assessment criteria can hardly be overestimated. The two aspects, language proficiency and flight safety, are unquestionably complementary to each other and play a pivotal role in successful operations of the aviation industry as a whole. The article focuses on the relevance of improving professionally-oriented language training of civil aviation specialists and its impact on flight safety.

Key words: *language competence, language proficiency, professional communication, flight safety, professionally-oriented language training, aviation English.*

В епоху високих швидкостей і технологічних проривів стрімкий розвиток цивільної авіації відкриває нові можливості для економік світу. Разом із розширенням горизонтів для глобалізованого суспільства галузь цивільної авіації постійно зазнає кардинальних змін, які пов'язані не лише з виконанням польотів та їх аеронавігаційним обслуговуванням, але й з мовною компетентністю авіаційних фахівців щодо її відповідності стандартам володіння мовою, встановленим Міжнародною організацією цивільної авіації. Враховуючи значний прогрес у цій галузі, можуть виникнути деякі питання, що викликають занепокоєння, одним з яких є необхідність поліпшення роботи фахівців цивільної авіації. Питання ефективності діяльності завжди були тісно пов'язані з володінням мовою, що, відповідно, має безпосередній вплив на безпеку польотів. Питання безпеки польотів, яке завжди було нерозривно пов'язане з людським фактором, набуло суттєвого значення останніми роками. Якщо ефективно керувати факторами ризику на технічному, психологічному та мовному рівнях, кількість повітряних аварій можна помітно зменшити. Стаття вказує на надзвичайну важливість компетентності пілотів і диспетчерів у професійному спілкуванні іноземною мовою. Маючи на увазі, що авіаційна англійська має свої особливості порівняно з розмовною англійською, варто докласти значних зусиль під час навчання як екіпажів, так і наземного персоналу. Треба зазначити, що вимоги до рівня володіння англійською мовою, встановлені Міжнародною організацією цивільної авіації, є досить жорсткими, водночас оцінюється шість показників рівня володіння мовою: вільне володіння, спілкування, словниковий запас, граматичні структури, вимова та розуміння. Важливість відповідності цим критеріям оцінювання навряд чи можна переоцінити. Два аспекти, володіння мовою та безпека польотів, безперечно доповнюють один одного і відіграють ключову роль в успішних операціях авіаційної галузі загалом. У статті зосереджено увагу на актуальності вдосконалення професійно-орієнтованої мовної підготовки фахівців цивільної авіації та її впливі на безпеку польотів.

Ключові слова: *мовна компетентність, володіння мовою, професійне спілкування, безпека польотів, професійно орієнтована мовна підготовка, авіаційна англійська.*

Formulation and justification of the problem. Today, English affects many professional fields of human activities. Aviation sphere is no exception. It can't be denied that air traffic development is bound to accompany global economic growth, which raises an issue of further improvement of professionally-oriented language training of civil aviation specialists in order to meet the new requirements to the quality of professional English. The International Civil Aviation Organization (ICAO) recommends pilots and air traffic controllers to conduct all negotiations in English, since historically English has been established as an international language. The relevance of this article is conditioned by the increasing role of civil aviation in world economies and, accordingly, tightened international requirements to language competence aviation personnel are expected to have. While the number of accidents due to mechanical malfunctions has been decreasing in recent years, increased attention has been paid to the human factor as one of the causes

of accidents and aircraft crashes. One of such factors, again evoking increased interest, is the problem of communication.

Analysis of recent research and publications. A huge number of scientific research in this area is carried out by both domestic and foreign scientists. To date, a fairly rich experience has been accumulated in methodological developments and methods of training English in the field of civil aviation. Among the authors dealing with these problems, one can note a number of Western experts such as M. Long, F. Robertson, S. Breul, A. Wang, A. Roberts, G. Emery, P. Shawcross. In Russia, these problems are investigated by A. Verbitsky, M. Petrenko, V. Avdoshina, V. Mariko, T. Sazanova, M. Morozova, L. Shavkunov and others. The above authors describe the main features of verbal communication in the flight control system, investigate the mechanisms of natural language interaction, the process of formation and development of language competence, identify the main directions in training aviation English, and also outline the main problems in the language training of aircraft personnel. New textbooks are being developed, which contain recommendations and specialized didactic material for aviation training courses. But it is still not possible to completely avoid the problem of having a special local accent, which causes some misunderstandings between the air traffic controller and the flight crew. And this, in turn, can lead to fatal consequences – crashes of aircraft.

Previously unsolved parts of general problem. The problem of training highly qualified specialists in the field of air traffic control (ATC) does not lose its primary importance, and its relevance is growing every year. The ICAO recommended working level of English is quite high. And learning English for an international pilot or air traffic controller is a priority, due primarily to the requirements of flight safety. However, since English is currently the most used among the international aviation community, improving spoken English is exactly what the community focuses on. Today, there have been significant changes in approaches to learning aviation language, including the definition of clear objectives presented in the ICAO language assessment scales.

The purpose of this article is to note that the quality of language training does not yet fully meet the requirements of the Standards. Proof of this is the sad statistics of accidents and catastrophes of aircraft. This circumstance necessitates the development of an effective method of training professional aviation specialists.

The main material study. In the context of the current globalization trends, English language competence is viewed as a generally accepted norm. Language competence of aviation specialists is a crucial factor in their successful career prospects, making them more competitive and less vulnerable in today's labor market.

Modern society is growing increasingly dependent on a highly dynamic labor market, continuous advent of new technologies, and change in requirements to labor activities and associated training. Given all these factors, traditional approaches to aviation specialists training, with major accent placed on technical disciplines, can no longer satisfy the requirements employers have to graduates' professional skills.

Learning aviation English for an international pilot or air traffic controller is unquestionably of prior importance stipulated primarily by the need to comply with flight safety requirements. What is aviation English and how does it differ from a spoken version of English? Aviation being a specific area of human activities, aviation language is a unique language, since it has a number of peculiarities that distinguish it noticeably from spoken English. Aviation industry specialists must have a fluent command of aviation English, which means that they must be confident users of extensive aviation terminology, know code signs, be well aware of pronunciation and intonation specifics as well as standard speech patterns. The term "aviation language" covers a relatively broad area. It includes a wide range of vocabulary related to different areas in aviation (e.g. aircraft construction, aircraft maintenance, flight operations, air traffic management, flight management, airfield operations, passenger services, flight crew performance). Being a language for specific purposes, aviation English is even more unique than that. Much of English for aviation can be classified as a code that is used in a very restricted context, known as standard phraseology [1].

Standardized phraseology should provide communication tools in the many routine situations encountered by Air Traffic Control (ATC) staff and flight crew on a regular basis. However, sometimes the unexpected may happen: an inexperienced pilot might find themselves at a loss, a technical problem may occur on board the aircraft, a passenger may have health problems, someone may provoke a bomb alert, ATC equipment may fail or some other emergencies may arise. In the above-mentioned cases, when phraseology provides no readymade form for communication, pilots and controllers must resort to simple language [2].

Flight safety is a major indicator of civil aviation reliability. When related to civil aviation, the term "safety" implies control and management of risk factors at technical, psychological and language levels.

In recent years, increased attention has been paid to the human factor as one of the causes of airborne accidents and crashes, some of these accidents being in the aftermath of pilots' and traffic controllers' poor language speaking skills. Thus, the most important component of the professional activity of aviation specialists is professional communication in a foreign language, through which the process of information exchange is enabled.

Airborne accidents have been found to occur frequently when there is some misunderstanding between pilots and controllers. Poor command of professional language may bring on accidents when:

– either crew or dispatcher do not use standard phraseology of radio exchange when performing routine procedures;

– pilots do not speak English well enough and, therefore, cannot explain the problem that may arise on board;

– either crew or air traffic controller switch from English to their native language during communication in the same airspace (ICAO, Doc 9835).

The analysis of aviation incidents related to the "human factor", which is inseparably connected with "Dispatcher – Crew – Aircraft – Environment" system using English in its operations, has become a valid argument for ICAO to classify aviation English as one of risk factors, along with piloting errors, failures of aviation equipment, adverse weather conditions, etc. Before ICAO introduced the requirements for proficiency in general English, flights and air traffic control used to be performed with very little English used. There were times when only one flight attendant in the whole crew could speak English, whereas dispatchers relied completely on an interpreter in their operations. One of the determining factors in ICAO's decision to develop standard rules for the use of the English language was the unprecedented multifatality accident occurred in 1977 in the Canary Islands, when in an attempt to take off at the Tenerife airport, Boeing-747 of Dutch airline KLM collided with Boeing-747 of PanAm in poor visibility conditions. As a result, the death toll was 578 people [3]. This collision of two planes is still considered most catastrophic in the history of world civil aviation in terms of the number of air crash victims. In the course of investigation of the accident it was established that the airliners collision was brought on by language barrier: the Dutch pilots did not understand the instructions in English given by the dispatcher with a strong Spanish accent. In 1978, the world saw another airborne "language" catastrophe, when the British Trident 38 and the Yugoslav DS-9 collided in the area of responsibility of the Zagreb Department of Internal Affairs. At the most critical moment, in conditions of heavy air traffic, being under a lot of stress, the dispatcher switched to Croatian instead of English [3]. It was then the largest airborne aircraft collision the history of civil aviation ever knew.

For the past 20 years, the "human factor" associated with interpersonal communication has accounted for about 80–90 % of all accidents, with over 80 % of the first 28,000 accidents reported to NASA Safety Reporting System (which allows pilots to report anonymously about incidents in aviation) resulting from communication problems, i.e. communicative failures stemming from poor command of professional English. On a global scope, there have been 107 fatal crashes over the last six years, in which 3,245 people died. There were cases when in the skies of Spain and France pilots switched from English to Spanish or French. At the same time, English-speaking pilots did not use the correct phraseology when communicating with air traffic controllers.

An increasing demand for international travel made aviation community realize the importance of cultural awareness, which if underestimated, along with misinterpretation caused by poor knowledge of English is most likely to dramatically reduce the effectiveness of crew performance, or in case of the worst scenario may lead to an accident. Given the fact that aviation staff belonging to different cultures may view one and the same thing from different perspectives, it is only a high level of standardized training that can resolve cultural differences, which is undoubtedly of critical importance to flight safety. Therefore, the highest level of flight safety can be reached when in a joint effort both flight crew and ground personnel do their best to ensure safety.

In 1998, considering the sad experience of a number of accidents and incidents directly or indirectly related to the lack of language competence of pilots and air traffic controllers, the ICAO Assembly formulated Resolution A32-16, urging the ICAO Council to instruct the Air Navigation Commission to prioritize the problem of English language proficiency and oblige Contracting States to take measures to ensure that flight controllers and flight crew members involved in the provision and performance of flights in airspace, where the use of English is required, should have sufficient skills to conduct radiotelephone communication in English.

In 1951, for the first time in history, ICAO proposed that English be de facto the language of world civil aviation. In 2003, the ICAO Council approved the "Guide for the Implementation of ICAO Language Proficiency Requirements" to assess the knowledge of aviation English of pilots and dispatchers working on international airlines. The introduction of ICAO language proficiency requirements (LPR) and subsequent measures to promote compliance has significantly changed the environment in which aviation English is taught. Now the International Civil Aviation Organization emphasizes that all pilots and dispatchers serving international flights are obliged to have a good command of English. Therefore, in 2003, a panel of experts prepared the relevant Annexes to the documents of 1951, according to which English became the standard language of ICAO, and on the basis of which the English language proficiency assessment system was developed, the qualification scale for the assessment of linguistic knowledge, which is called the "ICAO Scale".

The level of English language proficiency recommended by ICAO is quite high. Aviation industry developing at a fast pace, tough specific requirements to the level of language training on the basis

of mandatory testing and certification have become an indispensable condition for flight safety implementation. ICAO has introduced a six-level scale for assessing English proficiency level: Level 6 (Expert) – expert; Level 5 (Extended) – advanced; Level 4 (Operational) – working; Levels 1-3 (Non-operational) – non-operational levels. When passing ICAO compliance test, six language proficiency indicators are assessed:

(1) Fluency. With view to aviation English, this indicator implies being coherent for dispatcher to be able to communicate with several flight crews simultaneously without delays. Pilots must be capable of receiving information and instructions to respond to them in most adequate and timely manner.

(2) Interaction. Pilots and controllers are expected to interact in the most efficient way, with both parties checking, confirming and clarifying the information received.

(3) Vocabulary. As far as vocabulary is concerned, it is supposed to be sufficient for effective routine communication as well as communication in non-standard situations.

(4) Grammatical structures. The importance of grammatical accuracy can hardly be overestimated, since grammatical structures used must help pilots and controllers to clearly communicate information.

(5) Pronunciation. In order to avoid misunderstanding, pilots' and controllers' pronunciation must be distinct enough to be understandable for the international aviation community.

(6) Comprehension. This indicator shows the ability of dispatchers and pilots to communicate adequately in routine situations being able to specify information in case of emergency [4].

All the above-mentioned indicators can be rated according to a six-point scale. As a common mark, the indicator with the lowest result is taken. Working Level 4 (out of the existing six on a rating scale) is reached in each aspect of language proficiency, namely: pronunciation, grammatical structure, vocabulary, speaking skills, comprehension and communication. That is, according to Level 4 on ICAO scale a speaker must:

– have an accent that does not complicate understanding;

– use such grammatical constructions that eliminate the distortion of a message should some errors occur;

– be able to rephrase if they fail to give explanations due to scarce vocabulary;

– speak at a pace in compliance with the ICAO scale;

– understand their interlocutor, being able to determine the accuracy of understanding by checking, confirming or clarifying.

The issue of aviation specialists' language training has become extremely pressing since the strengthened ICAO language proficiency requirements to flight crew and air traffic controllers were established in March 5, 2008. The requirements helped to reveal a low level of English proficiency of aviation specialists. For various reasons, language training of pilots and air traffic controllers in the post-USSR territory had many shortcomings, the major reason beingordinary negligence inimplementing research methods and approaches to teaching English for Specific Purposes (ESP).

According to the new requirements, pilots performing international flights and air traffic controllers serving international routes must meet the operational Level 4 of the rating scale of the Language Proficiency Requirements (Doc. 9835, Manual on the Implementation of Language Proficiency Requirements). [5] Pilots, air traffic controllers are expected to demonstrate fluent command of the language used in radiotelephony communications. Their knowledge of language is supposed to correspond to Level 4, which is considered the lowest acceptable level of language proficiency when it comes to flight safety. Moreover, since November 2003, the provisions stipulated in Volume II of Annex 10 have been put into effect. These provisions specify that all ground staff engaged in serving airports handling international air transportations are obliged to effectively communicate in English. [6]

In 2006, the Lancaster Language Testing Research Group was commissioned by the European Organization for the Safety of Air Navigation (Eurocontrol) to carry out a study of the development of the test called ELPAC (English Language Proficiency for Aeronautical Communication), designed to assess the language proficiency of air traffic controllers. As a result of this study two reports were released: an Interim Report containing recommendations for the improvement of the tests and relevant quality control procedures, and a Final Report, which provided a commentary on the quality of the ELPAC test, with a series of recommendations developed for further quality control procedures.

Basically, the ELPAC test includes three tests: ELPAC ATC, ELPAC Pilots, and ELPAC Level 6. The ELPAC Test Suite is intended to assess the training level of air traffic controllers and pilots in terms of radiotelephony communications and in compliance with the ICAO language qualification requirements introduced in 2011.

The ELPAC ATC test covers the whole range of communication tasks at ICAO Levels 4 and 5 that an air traffic controller may have to perform in an OPS room or AT control tower. AT controllers are dependent on ICAO standard phraseology when it comes to routine situations. However, should emergency situation occur, they may need to deliver their message in simple spoken English being able to switch from standard phraseology to spoken English to effectively interact with flight crews.

The ELPAC pilot test is meant to assess pilots' ability to interact with air traffic controllers as stipulated by Levels 4 and 5. This means that when doing the test, pilots must demonstrate their ability to make inquiries, report emergency situations, negotiate and resolve conflicts.

However, Level 6 of the ELPAC test aims to assess the ability of pilots and air traffic controllers to carry out radiotelephone communication. Effective communication is achieved by demonstrating the ability to adjust to a less experienced speaker or a speaker having a different cultural background. It also implies being capable of adequately settling differences as well as identifying and resolving ambiguities [7].

As a result, it has been revealed that out of work, it is easier for pilots to understand a foreigner than to speak themselves, and on the contrary, when in flight, pilots find it easier to speak since they can confidently use standard radio exchange phrases they have memorized. Pilots cannot always be spontaneous in what they need to say for their command of a foreign language is not fluent. Knowing radio exchange in English, a pilot can successfully cope with the assigned tasks in standard situations. In a non-standard situation, when the controller's commands go well beyond the usual, limited set of commands, some misunderstanding may arise. Pilots are not always able to immediately respond to the controller's instruction and for the majority it is difficult to explain a non-standard situation on board. Perhaps this is due to a psychological rather than linguistic factor: strict ordering of the pilot training process leads to the fact that they are afraid to deviate from the learned formulas, including those used in a language [8].

In the age of high speeds, when a decision is made in seconds, it is often impossible to turn to a dictionary or other reference literature. Thus, flight safety can only be ensured if you can professionally speak English as an international radiotelephone language.

We support the opinion that the monumental task of modern higher aviation educational institutions is to enable their graduates to master the system of key skills, abilities and relevant competencies to work with information in order to take up formidable challenges involved in professional activities. This implies their willingness and ability to reproduce the structure and interpret all types of information, act in non-standard and emergency situations, adapt to the rapidly changing conditions of the physical and social environment as well as work in critical conditions of remote collaboration in international groups.

In this context, it is important to consider teaching methods and techniques, with major accent placed on innovative solutions to attract, train and consolidate knowledge in the next generation of aviation specialists, in accordance with the ICAO program launched in 2009. The mission of the university according to the Next Generation Aviation Specialists Program (NGAP) lies in the development of innovative educative strategies, best practices, tools, standards and guidelines as applicable along with facilitation of information sharing activities that could assist in attracting, educating, and retaining next generation aviation specialists. NGAP proceeds from the premise that it is possible to solve the problem of teaching "new generation", which is hardly attainable with outdated methods used. It's only by using top-notch electronic devices with advanced information technologies, distance learning, interactive, virtual reality, visualization tools that this goal can be achieved.

In view of what was said above, the issue of e-learning may arise. As it can be seen from the recent experience most educational institutions have had e-learning, is gaining prior importance. There can be considered a number of reasons behind a growing popularity of e-learning with trainees and organizations. In the first place, it is mobile and easy-to-access for aviation industry staff on a global scale. The benefits that effective online educational platforms may bring both trainees and aviation industry can hardly be overestimated. Through the use of e-learning trainees save their time and effort, at the same improving their language competence. As far as organizations are concerned, they benefit substantially from the improved performance of their employees.

In participation of this challenge the competency-based training (CBT), also called 'evidence-based training (EBT), has been promoted to identify and organize profession-oriented skills, knowledge and attitudes into a series of 'competency statements', which become training objectives and focus language training on what students really need to know to show professional performance in future.[9] Being operationally-relevant, this approach is aimed at teaching students how to apply obtained knowledge, skills, and attitudes to the professional context. Among evident advantages of CBT over traditional teaching methods are its adaptability and flexibility, which enable the tutor to develop both flexible and adaptive lessons based on real-world scenarios. Teaching methods available to implement this approach include case-study analyses, strategic games, e-learning scenarios, quizzing, etc. The correct presentation of phonetic, lexical and grammatical material will become not a routine, tedious process, but a creative problem-solving learning, which will result in longer retention. The optimum set of scenario-based training exercises will provide a problem-solving environment with real-life situations, increasing critical thinking and facilitating decision-making in a safe mode to practice. The back and forth language training in scenario-based training challenges the students to link their new knowledge with previous experience, which hones their skills and will increase their proficiency levels.

It is obvious, that we need to reconsider the role of a tutor, who is more of a mentor, in the formation

of adequate psychological attitudes among students, which are revealed in the motivational, value-semantic and emotional-volitional aspects. In order for this approach to give full-fledged results, the tutor must not be just be a Higher School tutor, but a facilitator who can interest the audience and, if classroom practical work properly structured, can easily immerse it in the cognitive language process. The involvement of acting in explaining sound articulation, word stress and intonation could lead to language barrier removal.

Traditional classroom environment should organize training, on one hand, in correspondence with the students' language competence, which means that some students could be given more instructing while others with good knowledge of English could benefit from the ability to solve more complicated tasks, and on the other hand, with instructional objectives as different goals imply different teaching strategies. Among such are memory strategies (memorizing new material); cognitive strategies (learning new procedures); developing knowledge (organization of new ideas and elaboration of what has been learnt); compensation strategies (practicing the ability to compensate for emerging knowledge gaps); teaching the ability to problem solve; affective strategies (management and control over emotions), social strategies (teaching appropriate attitudes) and others [9; 10]. The combination and effective use of all these strategies will increase students' learning activity, facilitate their cognitive activity for self-learning, provide an optimal environment that removes psychological barriers and encourage learners to communicative in a language they are studying.

Conclusions. All things considered, rethinking of traditional teaching methods, a turn to competency-based training with real life challenges, and development of up-to-date teaching resources aligning with demands of the digital time we live in, will make learning of a foreign language much more effective while fostering students' motivation to grow, succeed and retain in their future profession taking aviation industry to new heights.

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