SOCIOLINGUISTIC AND EDUCATIONAL ANALYSIS OF LANGUAGE PROFICIENCY OF ACTIVE OPERATIONAL PROFESSIONALS AND AB INITIO STUDENTS IN AVIATION

Abstract

Language proficiency is important for professionals of different fields. However, it is crucial when it comes to aviation professionals — pilots and air traffic controllers. Not only the success of human endeavors, but also the lives of communicators and travelling public depend on language proficiency of these professionals. The objective of the current study was to find out how representatives of different educational backgrounds and age groups (active operational professionals and ab initio students), united by professional interest (aviation) assessed their language proficiency and its role for efficient professional activity. Methods of the research. Two questionnaires were compiled to fulfil the objective of the research. The respondents to the first questionnaire were 200 undergraduates (ab initio students) of National Aviation University, Flight Academy of National Aviation University (Kirovohrad) and Kremenchug Flight College. Fifty active operational professionals (pilots of different Ukrainian airlines and air traffic control personnel of Boryspil International Airport) answered the second questionnaire. The respondents’ answers revealed sociolinguistic data about ab initio students and active operational professionals in Ukrainian aviation, clarified problems they encounter in professional communication, outlined their expectations from initial and refresh language training. Survey results served as basis for educational reflection. Collected data proved to be beneficial for designing a curriculum for Aviation English. Conclusions. It was found out that Aviation English training should have a predominantly communicative focus that enables involving trainees into various interactive activities that mirror pilots’ and air traffic controllers’ working environments.

Keywords: Aviation English; aviation professionals; educational reflection; questionnaire; sociolinguistic data.

Introduction. Nowadays professional communication is becoming increasingly important. The ability to communicate in a certain professional environment, mastery of a particular conceptual and categorical apparatus, knowledge of norms and rules of professional discourse are the distinctive features of professional competence in modern society (Мальковская, 2004). However, when it comes to the field of aviation, one must note that not only the success of human endeavors, but also the lives of communicators and travelling public depend on language proficiency of pilots and air traffic controllers (ATCOs) (Ковтун & Богуш, 2019; Barshi & Farriss, 2013; Kovtun et al., 2019; Kovtun & Simoncini, 2014; Morrow et al., 1993; Vieira & Santos, 2010).

According to the research, conducted by Institute of Aerospace Medicine, in extreme situations, when mental and emotional load of operators of complex control systems increases, 20% of them are not able to assess the situation and make a decision, 10% make wrong decisions, 22% fall into a stupor state and stop activity, 34% perform useless actions and worsen the situation. The need to handle radiotelephony communication in non-native language causes additional mental and emotional load on operators and prevents them from performing professional functions. Analysis of air accidents and preconditions to them shows that the main cause of tragedies is not just a low level of English proficiency of pilots and ATCOs, but also their inability to apply foreign language knowledge and skills in extreme situations (Тарнавська, 2008).

Radiotelephony (RTF) communication, being the key component of flight safety, plays an important role in the professional communication of pilots and ATCOs. In general, one can consider aviation RTF communication to be both a process and a product of dialogue communication. Dialogues between pilots and ATCOs are characterized by their purposefulness and fast pace due to communication time limit requirements. The linguistic features of RTF communication are unambiguousness, accuracy; typical “phraseology” aimed at maximum use of standard words and phrases, clear and understandable pronunciation; use of non-standard lexical units in non-standard situations (Manual, 2007).

In higher educational institutions of Ukraine, the Ukrainian language is a means of learning and mastering the profession. It also deepens the national identification ability of the students. Ukrainian is the state language that is used in official communication in all fields of state life and branches of economy. Aviation is not an exception. Ukrainian Aviation Authorities issue all standards, norms that regulate aviation industry in Ukrainian; Ukrainian airlines use this language as a means of official intercourse. Therefore, aviation professionals in Ukraine need a good command of Ukrainian to meet the requirements of the branch.

English is the most taught foreign language in Ukraine. However, as it plays a special role in aviation, it attracts additional attention of language trainers of all schools focused on aviation. The main professional function of pilots and ATCOs is ensuring safe, regular and orderly movement of aircraft, which is impossible without accurate and error-free radio communication between these aviation professionals. International
Civil Aviation Organization requires the mandatory use of English “on request from any aircraft station, at all stations on the ground serving designated airports and routes used by international air services” (Aeronautical, 2001). For this reason, Aviation English is viewed as an important tool of pilots’ and ATCOs’ professional activity and a critical component of aviation school curriculum. In this regard, the objective of the current study was to find out how representatives of different educational backgrounds and age groups (active operational professionals and ab initio students), united by professional interest (aviation) assessed their language proficiency and its role for efficient professional activity. Survey results served as basis for educational reflection.

**Methods.** The leading methods used for achieving the objective of the study were as follows: theoretical generalization of the problem of content based native and foreign language training of future and active aviation professionals; survey of ab initio students and pilots and ATCOs; quantitative and qualitative analysis of the collected data.

Two questionnaires were compiled to identify professional communication needs and make further adjustment for language proficiency of pilots and ATCOs. The respondents to the first questionnaire were 200 undergraduates (future pilots and air traffic controllers) enrolled at National Aviation University, Flight Academy of National Aviation University and Kremenchug Flight College. Fifty active operational professionals (pilots of WINDROSE airlines and air traffic control (ATC) personnel of Boryspil International Airport) answered the second questionnaire. The survey of students gave an independent assessment of the education process and thereby allowed reacting to emerging issues in a timely manner. The survey of active operational professionals aimed to evaluate the importance of language proficiency in English and Ukrainian and point out language-related challenges and issues faced by these professionals at different stages of their professional life (initial and current).

**Results of the conducted research**

**Students’ questionnaire: description, results, interpretation.** The questionnaire included some questions related to sociolinguistic data (language use), so let us start with their analysis. We found out that 86% of the responders admitted their language proficiency in Ukrainian, Russian and English. The rest of the students thought they were proficient in Ukrainian and English (9%) or Russian and English (5%) (see Figure 1).

![Figure 1. Students’ self-evaluation on the range of languages they are proficient](image)

The answers to the first questions “How do you understand a concept ‘language proficiency of pilots and ATCOs’?” and “How does the level of language proficiency impact professional activity?” allowed to gain such data: majority of respondents (57%) interpreted concept ‘language proficiency’ as “ability to communicate in order to solve professional tasks”; “ability to handle radio exchange” (29%), “knowledge of aviation terminology and RTF phraseology” (14%). All the respondents to these questions (100%) indicated the importance of language proficiency for professional activity of pilots and ATCOs, shaped by key factors, namely: “important for handling RTF communication” (56%), “necessary to successfully perform professional tasks” (29%), “ensures effective communication between aviation professionals” (15%).

The results of the answers to the question “What languages should pilots / ATCOs be proficient in to effectively perform professional functions?” were as follows: Ukrainian and English (71%), Ukrainian, Russian and English (16%), Russian and English (8%), English (5%) (see Figure 2).
Figure 2. Students’ answers to the question “What languages should pilots / ATCOs be proficient in to effectively perform professional functions?”

Through answers to the question, we aimed to find out whether students were aware of the language range that pilots and ATCOs should be proficient in to effectively perform professional functions. Kovtun (Ковтун, 2012) posits that pilots are mostly involved in three subtypes of professional communication: 1) specific radio voice communication in the mode “air traffic controllers – aircrew” while operating a flight (flight communication); 2) communication of aircrew with ground personnel (maintenance specialists, ground support crews, etc.) to ensure the organization of the flight and its safety (ground communication); 3) communication with passengers usually done indirectly as aircrew announcements or directly in certain flights, if there arise situations in the cabin that require cockpit crew intervention to ensure flight safety. We think that “flight communication” also encompasses face-to-face communication among members of cockpit crew and “cockpit crew – cabin crew communication”.

In order to efficiently perform all communicative functions pilots and AICOs should be proficient in English because radio voice communication between ATC and aircrew is always handled in this language on international airlines. Most flights, operated by Ukrainian airlines, are international due to several reasons: infrastructure for domestic flights is not properly developed; the territory of Ukraine is not very large, so when travelling within the country Ukrainians often prefer railway or automobile transport; domestic flights are still too costly for majority of Ukrainian citizens. In this regard, although according to Ukrainian legislation “radio exchange between aircrew, ATC bodies and corresponding ground services on the territory and airspace of Ukraine …is conducted in English or Russian” (Повітряний, 2011), it is not a usual practice to hear Ukrainian pilots and ATCOs to communicate Russian in radio exchange. Both Ukrainian and English may be used in cockpit crew communication, and cockpit crew – cabin crew communication. The choice of the language for ground communication usually depends on the location of participants. If on the territory of Ukraine, pilots use Ukrainian, if the aircraft is abroad, they communicate in English. Sometimes Russian is used in cockpit crew communication and cockpit crew – cabin crew communication or ground communication instead of Ukrainian. It depends on speaking preferences of interlocutors. In official situations, the use of Ukrainian is expected, as it is the state language in Ukraine.

When asked “What communicative skills are the most important for pilots / ATCOs to ensure efficient performance of professional functions?” (choose three or four most important options from the list) students answered as follows: skills to ensure unambiguous pilots – ATCOs radio exchange (100 %); speak on professional topics (debriefing the flight instructor; requesting a weather briefing; reporting a technical problem, etc.) (85 %); write professional papers and business letters (62 %); perceive and analyze information aurally and when reading (52 %); establish contact and transfer information (44 %); handle business negotiations (14 %); write scientific essays (6 %) (see Figure 3).

Answers to the question “Do you think your native language proficiency may somehow influence (speed up or slow down) the process of mastering your foreign language proficiency?” demonstrated that most of the respondents (56 %) agreed to this correlation, indicating that it was easier for them to form some communicative skills in English if these skills had been previously formed in Ukrainian (e.g., skills to differentiate the style of communication (formal / informal) and select appropriate lexical means, skills to initiate, keep up and finish a conversation, skills to plan speech in accordance with the speech intention and conditions of communication, skills to provide feedback, etc.); 40 % of respondents thought that native language proficiency and the process of mastering foreign language proficiency did not correlate; 6 % of respondents failed to reply.
The next question aimed to clarify what professional speech skills students gained through disciplines such as “English for specific purposes” and “Aviation English”. The answers of students were as follows: “read and translate aviation texts” – 39% of respondents, “handle radio exchange” – 31% of respondents, “communicate on professional topics” – 24% of respondents, “make use of aviation terminology” – 6% of respondents.

In answer to the question, “Do you plan to master your language proficiency after university / college graduation?” majority of respondents (94%) answered in the affirmative and 6% in the negative way.

The final question was designed to find out what training methods and activities students found the most appropriate for professional speech formation. The respondents rated results as follows: exercises on handling radio exchange (86%); analysis and discussion of aviation events (59%), exercises based on aviation texts (reading, comprehending, discussion, summarizing, etc.) (48%); classroom information exchange and role-play activities in pairs (41%); exercises on operational memory development (36%); project method (14%); brainstorming (7%); creative tasks (3%) (see Figure 4).

The survey results proved to be encouraging, demonstrating that all the students understood the importance of language proficiency of pilots / ATCOs for efficient professional functions performance; however, 29% of the survey respondents viewed language proficiency as skills to handle radio exchange. 94% of respondents believed that for effective performing professional communication pilots and ATCOs have to be proficient in more than one language. The majority of students (59%) noted that formation of pilots’ and ATCOs’ proficiency was achieved through a set of disciplines of language and professional training. More than half (56%) of students appeared to believe that native language proficiency influenced the process of mastering a foreign language proficiency, therefore greater attention should be paid to ab initio students’ native language training. Aviation English trainers should use communicative approach methods to language teaching involving students into various interactive activities that mirror pilots’ and air traffic controllers’ working environments.

Active operational professionals’ questionnaire: description, results, interpretation. Experienced specialists were mainly involved in the survey, their experience in aviation, on average, was 15 years (ranged from 3 to 30 years).
The majority of respondents (78%) indicated that they were proficient in Ukrainian, Russian and English; 18% of them admitted their proficiency in Russian and English and, partially, Ukrainian (they were good at receptive speech activities, could understand Ukrainian speech by ear and when reading, but felt significant difficulties in speaking and writing); 4% of respondents noted that they were competent only in Ukrainian and English (see Figure 5).

As Figures 1 and 5 show, the share of those who recognized their insufficient Ukrainian language proficiency was higher among active operational professionals than among students. Moreover, this share was much higher among professionals with extensive experience because they received their education in aviation schools with Russian as the language of instruction. In contrast to this, the percentage of those who recognized proficiency in Ukrainian and English only was higher among younger professionals.

The first question aimed to find out what pilots and ATCOs understood by “language proficiency”. Since this category of specialists belongs to the category of “technicians” who work in the system “man – machine”, they are not characterized by verbosity or a tendency to abstract reasoning. Thus, their answers were concise: “it is necessary for communication in flight” (48%), “communication during flight and while preparing for it” (35%), “ability to communicate thoughts to solve professional tasks and make decisions” (17%). All the respondents (100%) noted that language proficiency affected their professional activities; its low level could be one of the contributing factors in aviation incidents and accidents.
Pilots’ and ATCOs’ answers to the question “Name some of your professional functions that require language proficiency” allowed us to make the following list: “handling radio exchange” (100 %), “communication with cockpit and cabin crew, administrative and ground services” (76 %), “handling briefings” (46 %), “reading manuals and reference literature” (22 %), “writing reports, filling in Technical Log Book” (8 %).

Answers to the question “How do you assess the level of language proficiency you obtained in aviation school?” revealed the following: “sufficient” – 32% of respondents, “satisfactory” – 46% of respondents, “low” – 22% of respondents.

The question, “What difficulties did you experience in performing professional communication functions in the initial period of professional activity?” evoked the following answers: “lack of practical experience in communicating English in professional settings” (44 %), “difficulties in handling radio exchange in English” (31 %), “inability to produce correct utterances due to poor English grammar mastery” (26 %), “difficulties in perceiving and processing professional information from reference books in English and Ukrainian” (14 %), “difficulties in initiating / keeping up dialogues in English and Ukrainian” (12 %), “difficulties in writing professional papers in English and Ukrainian” (9 %).

The next question intended to find out how long it took respondents to become competent in handling radio exchange and performing other professional communication tasks after aviation school completing. The answers of pilots and ATCOs varied: “from 3 to 6 months” – 48% of respondents, “from 6 months to 1 year” – 36% of respondents, “up to 2 years” – 14% of respondents, “over 2 years” – 2% of respondents.

![Figure 6. Pilots’ and ATCOs’ answers to the question “What difficulties did you experience in performing professional communication functions in the initial period of professional activity?”](image)

To the question, “What aspects of your language proficiency would you like to improve at your next English language refresh training?” we received the following answers: “skills to communicate on professionally related topics” (56 %), “skills to communicate on general topics (Plain English)”, “skills to handle radio exchange” (39 %), “grammar skills” (34 %), “skills to process professional information perceived aurally and when reading” (44 %), ”written skills” (16 %), “vocabulary competence” (6 %).

Thus, the results of the survey showed that active operational professionals required Ukrainian and English language proficiency. Main communication difficulties they encountered in professional activity at the beginning of their career were related to inconsistency of their theoretical knowledge to practical needs of the workplace, lack of practical experience in communicating English in professional settings, incompetence of handling radio exchange, etc. Most pilots and ATCOs admitted that it had taken them
considerable time to adapt to the requirements of the workplace after aviation school completing. Answers of active operational professionals allowed compiling a list of problem points in language proficiency they wanted to improve at refresh training.

**Discussion.** Analysis of survey results made us think about educational aspects of the problem researched; clarify certain theoretical and practical issues in language training of future and active aviation professionals. The first thing to consider when compiling curriculum is that the transfer of communication skills formed because of native language training should be taken into account. This makes the process of foreign language training less time and effort consuming. The goal of Aviation English training is operational efficiency, rather than pure grammatical correctness. Training should have a communicative focus and be content-based. We support the idea that the courseware should be based on ample students’ conversational practice, minimal correction of errors that do not affect comprehension, and materials that attract learners’ attention because of their professional relevance. Professional relevance we view as a combination of two factors: content and function. Content includes subjects such as departure, bird strike, adverse weather conditions, sick passengers, engine failure or runway incursions, etc. No less relevant for aviation professionals are the specific language functions necessary to cope with these situations, such as describing, requesting, clarifying and confirming (Kovtun & Simoncini, 2014). For ab initio students extensive listening practice aimed to improve trainers’ ability to comprehend voice information in the professional context is very important. By using a blended learning approach, with computer based training and classroom activities that are based on language functions, events, domains and tasks association with flight training, students may make good progress in comprehension and communication. For active operational professionals refresh language training can be especially beneficial if it is safety focused: “it enhances the value of required language learning time by pairing language lessons with important safety content” (Mathews, 2007).

**Conclusions.** Language proficiency of pilots and air traffic controllers is crucial for safe flight operation. Sociolinguistic survey was aimed to show how representatives of different educational backgrounds and age groups (active operational professionals and ab initio students), united by professional interest (aviation) assessed their language proficiency and its role in the efficient professional activity. Survey results served us as a basis for educational reflection. Distinction between active operational professionals and ab initio students was important from language training perspective because different elements of language proficiency mastering dominate within initial and refresh training.

The survey results demonstrated that ab initio students understood importance of language proficiency for efficient professional activity; however, 29% of survey respondents limited language proficiency to skills of handling radio exchange. More than half of students (56%) appeared to believe that native language proficiency influenced the process of mastering a foreign language proficiency. It meant that more attention should be dedicated to ab initio students’ native language training. The results of the survey showed that active operational professionals required Ukrainian and English language proficiency. Main communication difficulties they encountered in professional activity at the beginning of their career were related to
inconsistency of their theoretical knowledge to practical needs of the workplace, lack of practical experience in communicating English in professional settings, incompetence of handling radio exchange, etc.

Aviation English training has very specific characteristics, which set it apart from general English teaching and even English for specific purposes in other fields. Training should have a predominantly communicative focus that enables involving trainees into various interactive activities that mirror pilots’ and air traffic controllers’ working environments. Appropriate content-based language training is a more efficient, motivating and cost-effective form of Aviation English training.

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Володіння мовленнєвою компетентністю важливе для фахівців різних галузей. Однак воно має вирішальне значення в тих випадках, коли йдеться про авіаційних фахівців – пілотів та авіадиспетчерів. Від рівня володіння мовою саме цими професіоналами залежить не тільки успіх людської діяльності, але й життя комунікацій та їхніх пасажирів. Метою дослідження було з’ясувати, як представники різних вікових груп, що мають різні досвід активної професійної діяльності (професійні пілоти та авіадиспетчери та студенти авіаційних закладів освіти), проте об’єднані спільним професійним інтересом (авіація), оцінюють власний рівень мовленньої компетентності та її роль для ефективної професійної діяльності. Основним методом дослідження було анкетування. Респондентами першого анкетування були 200 студентів (Національного авіаційного університету, Львівської академії Національного авіаційного університету (Київ) і Кременчуцького льотного коледжу). П’ятдесят досліджених авіаційних фахівців (пілоти українських авіакомпаній та персонал з управління повітряним рухом Міжнародного аеропорту "Бориспіль") відповідати на другу анкету. Відповіді респондентів дали можливість зібрати соціолінгвістичні дані про студентів авіаційних закладів освіти та активних оперативних фахівців в українській авіації, появились проблеми, з якими вони стикаються у професійному спілкуванні, окреслили їхні очікування від мовної підготовки у заклади освіти та під час курсів підвищення кваліфікації. Результати оцінювання стали основою для освітньої рефлексії. Зібрані дані виявилися корисними для розробки навчальних програм з авіаційної англійської мови. Висновки. Було з’ясовано, що навчання авіаційної англійської мови повинно мати комунікативну спрямованість, що дозволяє слухачам луччих до різних інтерактивних заходів, які відображають у навчальних умовах реальне середовище, у якому виконують професійні комунікативні функції пілоти та авіадиспетчери.