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A COMPUTER TOOL FOR TRAINING PILOTS' LISTENING SKILLS IN AVIATION ENGLISH

Abstract. A methodology of training pilots' listening skills by means of a computer tool is highlighted in the article. Various computer exercises are used to enhance the learners' level of English as well as improve their listening skills. English is one of the crucial factors influencing flight safety; pilot's ability to listen, hear, interpret and react to controller's information in English is of paramount importance during radio communication. It is emphasized that the development of computer software and appearance of new computerized tools predetermine the search for new methods of teaching Aviation English to future pilots and air traffic controllers. One of the ways how to enhance the level of professional training is implementation of ICT in the teaching and learning process. Computer technologies and technical means of language training can simulate the flight situations that a pilot may encounter during his/her professional activity. In the article the authors demonstrate one of the useful methods – application of a computer tool for training listening skills in Aviation English. The computer tool is aimed at training pilots' listening skills. It can be used to prepare students for achieving ICAO Operational Level (Level 4) or higher according to the ICAO Language Proficiency Requirements. It consists of six tasks based on general aviation English and phraseology of radio communication. Based on the proposed methodology the experiment with Aviation graduate students was carried out, which was based on the implementation of the computer tool into the course «Phraseology of radio communication». Listening skills' assessment was conducted according to three criteria: cognitive (knowledge), operational (skills), psychological (abilities) and their descriptors. According to the level of listening skills three levels – low, medium and high were differentiated. The results of the experimental study indicate that there have been positive changes in the distribution of students' levels of listening skills in the phraseology of radio communication in English with the introduction of the computer tool: the number of students with high- and medium-level of listening skills increased whereas that of low-level listening skills decreased.

Key words: computer tool; ICAO; Aviation English; pilot; listening skills; phraseology of radio communication.

1. INTRODUCTION

Statement of the problem. Now aviation serves as a leading means of transport for carrying passengers and cargo. It is actively involved in military operations, search and rescue activities, agriculture and medical industries, etc. Increasing number of flights, the development of new types of up-to-date aircraft, on-board navigational equipment, software and devices have raised up the problem of aviation specialists' professional training.

Among numerous computerized means onboard the aircraft we can name the following: ILS (Instrument landing system), Glass Cockpit, Head-Up Display, FMS (Flight Management System), DME (Distance Measuring Equipment), VOR (Very High Frequency Omnidirectional Radio Range), NDB (Non-directional Beacon), GPS (Global Positioning

System), ECAM (Electronic Centralized Aircraft Monitor), ADF (Automatic Directional Finding), etc. All of them serve as instruments for conducting a safe flight and are operated in English.

The radio exchanges between pilots and controllers are carried out entirely by means of radiotelephones, which are operated by headsets, transmitters and transponders. Voice messages carry virtually all clearances, advisories, and warnings and other pertinent information from ground to air, and provide the medium by which pilots normally respond to such information. Radio is the only means on board the aircraft which enables pilots to contact with the ground and to receive timely and proper information.

Radio communication at international airways is conducted in English, which is one of the six official languages of ICAO (International Civil Aviation Organization) – French, Spanish, English, Russian, Arabic, Chinese. The professional activity of pilots and air traffic controllers predetermines the need to act in special, complicated and dangerous flight conditions. In such conditions the crew may lose their communication reliability and adequacy, revealing the traditional elements of frustration: confusion, lack of emotional stability, loss of courage and determination, volitional qualities, resistance to long-term monotonous work, reduced attention functions when reacting to information, switching to native language in extreme situations and emergencies.

English is one of the crucial factors influencing flight safety. It is of paramount importance to know English in order to be able to report about in-flight emergency through available radio equipment. Lives of passengers entirely depend on close cooperation of a pilot and controller, their correct and quick decision through radio means of communication. Thus, the pilot's ability to listen, hear, interpret and react to the controller's information in English plays a key role during radio communication.

Analysis of recent research and publications. Providing of professional English language training and the development of communication skills of aviation specialists is represented by a wide range of studies. The most prospective ones concern the professional communication of flight crew members, air traffic controllers and the conduct of radio communication on international air routes, including standard and non-standard radio phraseology (H. Astashova, O. Vasiukovich, Ye. Kmita, O. Kovtun, T. Lavrukhina, N. Paziura, I. Prohozhay, S. Tymchenko, I. Feinman); professional aviation communication in the context of flight safety (L. Zelenska, Y. Kmita, O. Pchelinov); grammar, vocabulary and syntax use in the English aviation radiotelephone discourse (W. Aiguo, L. Herasimenko, N. Dupikova, G. Yencheva, A. Kirichenko, V. Kolosov, A. Kukoveč, T. Malkovska, M. Mitsutomi, J. Mell, S. Muravska, Paul A. Falzon, L. Tsariova). In recent years, there have been a lot of studies on computer training and use of ICT at classes (A. Avramchuk, O. Beskorsa, N. Borysko, K. Buhaichuk, V. Drozdova, C. Kramsch, Y. Krapchatova. V. Kukharenko, N. Paziura, L. Puzeykina, V. Rebrikov, K. Rudnitska, H. Sotska, A. Tomilina; C.-K. Huang, R.-Ch. Shih, N. Maiier,, M. Ashby, K. Yanagisawa, Y.Kim, J. Maidment, J. Przedlacka, Ch. de Bruijn, M. Nunes, L. Fang, R. Pathak, J. Zhou). Development of listening skills has been studied by Ukrainian researchers, namely O. Matsneva, O. Sivachenko and also some foreign scholars, such as K. Morrow, J. Morley, D. Nunan, etc. Despite the numerous researches on this problem, improving of the quality of professional communication, particularly listening skills in English, by future pilots and air traffic controllers is still topical.

The purpose of the article. The goal of the article is to describe the methodology of applying a computer tool for training pilots' listening skills in Aviation English, to demonstrate different tasks and to represent the results of this methodology.

2. THE THEORETICAL BACKGROUNDS

The study of aviation events for the past 20 years has shown that a number of incidents and accidents occurred due to a lack of proper level of knowledge of Aviation English in standard and non-standard inflight situations. Development of computer software and appearance of new computerized tools facilitate the search for new methods of teaching Aviation English for future pilots and air traffic controllers. One of the ways how to deal with this problem is to implement ICT in professional language training. In the article the authors demonstrate one of the useful methods – application of a computer tool for enhancing listening skills in Aviation English.

As of 5 March 2008, the ability to speak and understand the language used for radiotelephony that is currently required for pilots, air traffic controllers and aeronautical station operators should be demonstrated based on the holistic descriptors and language proficiency rating scale to at least Level 4, which is considered the minimum level of proficiency to ensure an acceptable level of safety. Additionally, since November 2003, ICAO Annex 10 (Volume II) has required the availability of English at all stations on the ground serving designated airports and routes used by international air services. ICAO prioritizes speaking and listening as the main language proficiency requirements. Therefore, testing for compliance with Annex 1 licensing requirements should focus on speaking and listening proficiency [1].

The learning of radio exchange phraseology requires the development of automated listening and communication skills, which is one of the ICAO requirements. The set of phrases (nearly 400) refers to various standard and non-standard professional situations. There is standard and non-standard radio exchange phraseology. The standard phraseology is contained in the ICAO Document 9832, which is annually updated [2].

From the authors' experience it is concluded that the content of non-standard phraseology of radio communication is not limited to standard phrases, it is constantly updated after the appearance and research of new special conditions and non-standard situations. Pilots and ATCs study these situations, analyze them and take into account in the process of theoretical, simulator and flight training. Radio communication phraseology does not cover the entire list of words and phrases that can help in special circumstances and extreme situations, in which pilots can involuntarily switch to the native language.

Aviation English training must contain activities that are designed to address all six language skill areas specified in the ICAO Rating Scale and holistic descriptors: pronunciation, structure, vocabulary, fluency, comprehension and interactions. The following activities of a consistently communicative approach to language training are highlighted in ICAO documents: interactive listening comprehension exercises which also elicit oral responses from learners; classroom information exchange and role-play activities in pairs; practice of vocabulary and grammar (structure) through oral use rather than reading and writing exercises; using graphic (scopes, instrument panels and charts) and numerical data (tables and displays) to elicit speech production to mirror pilots' and controllers' working environments and situation management; group problem resolution activities to develop interactivity and fluency skills [3, p. 5].

Although live classroom experience with a qualified aviation English trainer is indispensable for improving speech production, fluency and interactive skills, CBT (computer-based training) and WBT (web-based training) are particularly effective in addressing language skills such as listening comprehension, vocabulary building, pronunciation and grammar application. They can significantly reduce the time required in the classroom and allow trainers to make more appropriate use of this time [3, p. 6].

It is also strongly recommended to use aviation-related audio and visual media and authentic material at classes of Aviation English, which are so valuable for improving listening comprehension and vocabulary, should provide content and situations applicable to the pilots' professional environment.

Another ICAO requirement concerning organizing ICT-classes is blended learning, which refers to the combination of computer-based and classroom learning with a view to optimizing the efficiency and effectiveness of a training program. This means that CBT/WBT is used in combination with live classroom sessions led by a qualified trainer/instructor in order to put into practice the oral communication, listening and interaction skills that are at the heart of the ICAO language requirements.

Based on our research of this problem, we adapt computer training tools to professional aviation English and model special conditions and emergencies of professional activity. Computer technologies and technical means of language training can simulate the flight conditions that a pilot may encounter during his/her professional activity. With these tools, the risk limits are expanding, variation of emergencies in special conditions and extreme situations can be increased. In this way, we are training quick-thinking in English, which prevents switching to a native language in a stressful situation. As a result of repeated phrases, the reliability of the operation of the «Air-Ground» communication improves. So the pilots develop their professional communication skills in English.

3. METHODS

At the various stages of the research, the following methods were used: theoretical – review of ICAO documents for the study of international requirements for training of Aviation English and radio phraseology of aviation specialists; review of articles and monographs on implementation of ICT into the teaching and learning process – to find out the definitions and concepts of the problem, to develop the authors' definitions and strategy concerning listening skills in pilot's language training; also we used empirical methods – observations, questionnaires, interviews with the view of checking the initial level of preparation; analysis, synthesis, generalization, systematization – we analyzed the curriculum in Aviation English to study the main topics concerning teaching of listening skills; methods of mathematical statistics – for verification of the received results of the experiment, calculation of data and qualitative characteristics of the conducted research (Wilcoxon's criterion), comparison of the average sample (t-criterion of Student); methods of descriptive statistics, correlation analysis – for processing the results of the research and of the obtained data and determining the quantitative dependencies between the phenomena and processes of the research. The experiment was carried out during 2017/2018 academic year at Flight Academy of the National Aviation University and Ivan Kozhedub Kharkiv University of Air Force. It involved 76 fourth-year students, who already have good command of Aviation English, professional radio communication and perform practical flights.

4. FINDINGS

For the reasons mentioned above, we offer to apply a computer tool for improving pilots' listening skills, which are supposed to enhance the learners' level of English as well as help them improve their communication skills.

Ya. Krapchatova defines English listening competence as a set of phonetic, lexical, grammatical knowledge; the receptive phonetic, lexical and grammatical skills; abilities to listen for gist, details and specific information, as well as personal attitude, emotions and

behavioral components [4, p. 207]. We can agree with this definition, because in the process of listening it is particularly important for the pilot and air traffic controller to be able to recognize the main information in the whole statement and to remember meaningful details on the phonetic, grammatical, content and lexical levels.

O. Bigich studied the problem of foreign listening comprehension competence formation. According to O. Bigich «listening competence» can be defined as the ability to listen to authentic texts of different genres and types with different levels of understanding of content in terms of direct and indirect communication. The scholar defines the following components of listening competence: skills, knowledge, communicative abilities [5, p. 19].

In her scientific work L. Alekseyeva points out «complex interactive listening», which is connected with the processes of speaking, reading and writing and involves active interaction of students with each other and with the informational environment and contributes to the solution of certain tasks. We agree with this opinion and we can say that the authors' observations and practical experience have shown that aviation professionals are constantly involved in tasks that require the use of the Internet, websites of international organizations, electronic libraries, electronic publications through listening processes. In addition, all navigational and radio systems, flight instruments are based on the principle of using satellite communications. All these devices need good command of English and listening skills for solving professional tasks [6].

Based on the given definitions in the context of our research we define listening skills as an organized system of communicative knowledge, skills and abilities, which are realized in the process of air-ground communication with the purpose of exchange of professionally relevant information in English, which is characterized by accuracy, speed and unambiguity of messages and can affect the flight outcome.

In the context of this research we define three criteria of listening skills' assessment: cognitive (knowledge), operational (skills), psychological (abilities). The criteria and their descriptors are shown in Table 1.

Table 1

The criteria of pilots' listening skills assessment

Criteria		
Cognitive (knowledge)	Operational (skills)	Psychological (abilities)
− professional aviation knowledge; − professional Aviation English knowledge; − terms, abbreviations, codes and their equivalents in English; − procedures of air navigation.	− skill to recognize phonetic, lexical, grammatical and syntactical structures; − skill to understand the details of the text, its main idea; − skill to distinguish between essential and background information; − skill to memorize and remember important information for a long time; − skill to make logical connections between the facts	− level of development of auditory memory; − mechanism of anticipation; − level of concentration of attention; − ability to respond quickly to signals of verbal communication; − ability to switch from one mental operation to another, quickly grab the subject of the message

Consequently, all criteria of listening skills are interconnected and influence each other depending on the circumstances and environment of the flight and the level of professional preparation. The purpose of listening during radio communication is, above all, to ensure

flight safety, to establish a contact between the pilot and air traffic controller, to monitor the air situation and to report the probable problems during the flight.

Information and Communications Technology (ICT) plays a significant role in the education system. ICT is a collection of methods, tools and techniques used for selecting, processing, storing, presenting, transmitting data and materials in order to increase the efficiency of classroom activities. The use of ICT in teaching English allows to change traditional teaching methods and overcome the monotony of classes while forming students' communicative and listening skills in English [7].

The computer tool – linguistic simulator «Pilot's test» has been developed at the Foreign Languages Department of Flight Academy of the National Aviation University, Ukraine. It is based on a variety of situations which a pilot may encounter in his/her professional activity and is aimed at improving pilots' listening skills.

It has two variants (levels): simple (intermediate level) and complicated (upper-intermediate level). The difference is in speed, tempo, volume, accents and complexity of the presented information. The computer tool can be used to prepare students for achieving ICAO Operational Level (Level 4) or higher according to the ICAO Language Proficiency Requirements. It contains 20 variants that are selected in random order. Each variant contains 50 questions. The computer tool is offered to students-pilots, working pilots, flight instructors who already have a sufficient ICAO level 4 of Aviation English. It is used to train listening and communication skills, information awareness, vocabulary, memory, quickness of reaction. The information contained in the computer tool is due to be updated according to the changes in ICAO standards and regulations. Moreover, test data must be verified in compliance with the ICAO rules of the use of Ukrainian airspace.

The computer tool has the following structure: welcome screen, registration, instructions, training and results. After logging in the program a trainee needs to register his/her name and surname which are saved in computer's memory. The computer will not allow the trainee to start training without registration and reading the instructions. After that a trainee chooses how he/she wants to use the program: for testing or for training.

Next step is following the instructions. The computer tool contains the following tasks:

1. Translate the controller's instructions and requests into English.

2. Respond to the controller's instructions and requests.

3. Translate the pilot's information into English.

4. Information ATIS (automatic terminal information service).

5. ATC clearance (or Metreport (meteorological report)/ SIGMET (significant meteorological changes)/ Missed approach (go around procedure).

6. Fill in the gaps in the following sentences and sentence fragments choosing the necessary word.

To listen to the task, a trainee needs to click on «Listen to the task», then «Show answer options», select one of the 4 options and click on the «Next» button.

Total number of questions is 50. For each correct answer there is 1 point. The response time is limited to 30 seconds; after this time a trainee is automatically redirected to the next question, and this answer is not confirmed and considered to be false.

The next step is putting on headsets and clicking on "Continue" button, and the training starts. The number of a training session is chosen automatically. Let us consider the tasks of the computer tool.

Task 1. (Multiple choice) Translate the controller's instructions and requests into English. This section contains a number of standard radio communication phrases pronounced in English and extracted from real radio transmissions. A trainee needs to choose the correct answer out of 4 choices during the time limit of 30 seconds.

Task 2. (Multiple choice) Respond to the controller's instructions and requests. This section contains a number of standard radio communication phrases pronounced in English by air traffic controller. A trainee must react like in real life and say the correct phrase. It should be mentioned that every next section is more difficult than the previous ones. In this section the pilot has to choose from the phrases given in answers; they may be very similar and confusing (callsigns, flight levels, aircraft number, altitude, checkpoints), so a trainee must be very careful in order to answer correctly. A trainee may listen to the phrase only 2 times according to ICAO guidelines.

Task 3. (Multiple choice) Translate the pilot's information into English. A trainee is given a phrase in Russian and he/she must choose proper translation in English. But in this task the translation does not always correspond to the standard phrase. For example, «да» in standard phraseology is not translated by pilot like «yes» but «confirm»; ending -ing is typical for pilot's answers and it means that a pilot is doing some maneuver at the moment («turning left 90 degrees», «going around» etc.).

Task 4. Information ATIS (automatic terminal information service) or Metreport (meteorological report). A trainee will listen to ATIS information about weather conditions at the airport. He/she may listen 3 times. The message is rather long, it is pronounced very quickly and contains a lot of professional information. A trainee may note down the information that he/she hears. Here is the example of a standard meteorological message:

This is Orly E information, record 09.00. ILS approach landing runway 07, takeoff runway 08, transition level 50, Roissy facing East, expect 3V departure, caution flock of birds on airfield, wind 080° 4 knots, visibility 4000 metres, mist, ceiling 3 oktas 900 metres, 3 oktas 7500 metres, temperature -2°, dew point -4°, QNH 1006, QFE 995, confirm E with first contact with Orly.

In this section of the training session nearly every piece of information is checked. The proposed questions may be the following: RW (runway number is…?), RW 36 right RVR (runway visual range is…?), the wind is ……...? after 1.30 wind will be…? QNH is…? Temperature and dew point are…?

The questions are very precise and 4 options of the answer are similar. The computer tool is offered to the fourth-year Aviation students when they are already familiar with terms, abbreviations, professional radio phrases (standard and non-standard).

Task 5. ATC clearance (or Metreport (meteorological report)/ or SIGMET (significant meteorological changes)/ or Missed approach (go around procedure)/ or SID (standard instrument departure) / STAR (standard arrival). In this task a trainee may listen twice to the given information. This extract is about standard procedures pronounced by ATC. The pilot must note down all the information and answer the questions.

The difficulty of this task is not only in understanding numbers, but also in following ATC instructions, directing the pilot en route, so he/she has to remember the sequence of actions (for example, when approaching the airport). In the right hand bottom corner a trainee can see the time elapsing.

Task 6. Fill in the gaps in the following sentences and sentence fragments choosing the necessary word. This is a vocabulary training section. In this section a trainee reads a sentence, in which one word or a phrase is missing. He/she has to choose the correct answer out of four options. The sentences include logical tasks; they are relevant to the professional real-life situations.

The last section is "Results", which includes self-assessment and feedback. In this section a trainee may analyze his/her mistakes.

Thus, each task is aimed at improving listening and communicative skills, which are the main focus for pilots' language training.

With the purpose of verification of the methodology of a computer tool we conducted an experiment, which consisted of three stages: organizational, practical, controlling.

During the organizational stage we studied theoretical basis for language training; the goals, objectives, structure of computer tooling according to ICAO documents; diagnosed the initial level of students' listening skills. At the practical stage we implemented our computer tool in the course «Phraseology of radio communication» (for pilots). The computer tool was combined with classroom activities. During the controlling stage, we verified the methodology and the obtained results.

The purpose of the experiment was to check the methodology of using of the computer tool in order to enhance the listening and communication skills of student pilots.

The hypothesis of the experiment was the following: students' listening skills will improve on the condition that a computer tool is implemented in the main curriculum in Aviation English. The computer tool was developed in accordance with the curriculum in Aviation English in the part «Phraseology of radio communication» (for pilots). It was coordinated with the following topics: «General Operating Procedures», «Pre-Start», «Start-Up and Taxi», «Take-off and Departure», «En Route», «Arrival», «Landing and after Landing», «Radar Control», «Adverse Weather Flying», «Abnormal Situations», «Urgency and Distress».

We pointed out three criteria of listening skills' assessment: cognitive (knowledge), operational (skills), psychological (abilities) and their descriptors described above. According to the level of listening skills we differentiated three levels – low, medium and high.

The experiment provided for the following tasks:

1) to conduct the diagnostics of the initial levels of listening skills with student pilots;

2) to form control and experimental groups; to level off the important characteristics of the experiment participants;

3) to implement a computerized methodology for the development of listening skills in the teaching and learning process;

4) to verify the methodology and to provide the results of experimental work.

The experiment was conducted during the winter semester of 2017/2018 academic year at Flight Academy of the National Aviation University and Ivan Kozhedub Kharkiv University of Air Force. It involved 76 fourth-year Aviation students who already have some practical experience in professional radio communication and perform practical flights. For the experimental study we formed from student pilots two groups: CG (control group) – 37 persons (3 subgroups), EG (experimental group) – 39 persons (3 subgroups).

To follow the dynamics of the criteria's descriptors, we made assessment of the students' listening skills during two stages: the first – at the ascertaining stage of the experiment, the second - at the controlling stage of the experiment. The assessment in experimental and control groups was made by means of the same methods. Every criterion (cognitive, operational, psychological) was diagnosed separately.

In experimental groups, the work was conducted in accordance with extra means – the developed computerized tool and teaching recommendations for its use. In the control group the students were trained according to the traditional scheme.

The results of the experiment were calculated on the basis of empirical data of the value level $\alpha = 0,05$ in the following sequence:

1. Research of qualitative homogeneity of samples (Wilcoxon's criterion), which presupposes finding of a critical zone by value level α (in analyzed case $\alpha = 0,05$), and samples volume n1 and n2 (the first is the sample of smaller volume).

2. Calculation of the main numerical characteristics of samples: arithmetical average; dispersion and standard deviation; accuracy of calculation of arithmetical average and confidence interval.

3. Comparison of arithmetical averages (Student's criterion). Critical value of this criterion is $\alpha = 0,05$.

The diagnostics of the levels of students' listening skills development is based on the empirical data obtained during the ascertaining stage of the experiment (Table 2).

Table 2

Generalized data about levels of students' listening skills development in CG and EG at the ascertaining stage of the experiment (in %)

Criteria / Level		Low	Medium	High
Cognitive (knowledge)	CG	26,9	63,2	9,9
	EG	28,6	62,7	8,7
Operational (skills)	CG	25,9	63,7	10,4
	EG	29,7	59,5	10,8
Psychological (abilities)	CG	27,5	61,5	11,0
	EG	28,1	61,6	10,3
All	CG	26,8	62,8	10,4
	EG	28,8	61,2	9,9

For realization of the formation stage of the experiment, all participants were given the same studying conditions, namely:

- the same instructions for students of experimental and control groups;
- the same instructions for the teachers of Aviation English in the experimental groups on the use of the computer tool, topics after which the training should be introduced, how to combine training on the computer tool with the classroom activities.

To analyze the results of the formation stage of the experiment we used the same scheme as for the ascertaining stage. We applied the same statistical criteria and methods of numerical calculations.

The diagnostics of the levels of students' listening skills development is based on the empirical data obtained during the formation stage of the experiment (Table 3).

Table 3

Generalized data about levels of students' listening skills development in CG and EG at the formation stage of the experiment (in %)

Criteria / Level		Low	Medium	High
Cognitive (knowledge)	CG	18,7	67,0	14,3
	EG	10,8	64,3	24,9
Operational (skills)	CG	18,7	64,8	16,5
	EG	10,8	64,3	24,9
Psychological (abilities)	CG	19,8	64,3	15,9
	EG	11,4	62,7	25,9
All	CG	19,0	65,3	15,6
	EG	11,1	63,7	25,2

The results of the experimental study presented in Table 3 indicate that there have been positive changes in the distribution of students' listening skills levels during radio communication in English with the introduction of a computer tool, namely: the number of

students with high- and medium-level of listening skills increased whereas that of low-level listening skills decreased.

5. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

The proposed computer tool contains 6 tasks: translate the controller's instructions and requests into English; respond to the controller's instructions and requests; translate the pilot's information into English; information ATIS (automatic terminal information service); ATC clearance (or Metreport (meteorological report)/ SIGMET (significant meteorological changes)/ Missed approach (go around procedure); fill in the gaps in the following sentences and sentence fragments choosing the necessary word. All these tasks are relevant to professional situations during radio communication.

As it was mentioned above the main types of ICAO language skills' assessment are speaking and listening, which are inseparably connected, complement each other and interact with each other. ICAO offers a variety of ways how to train these two components. One of them is blended learning which refers to the combination of computer-based and classroom learning with a view to optimizing the efficiency and effectiveness of a training program. Therefore, there is a need for development of information and communication technologies for pilots and air traffic controllers in professional radio communication training, which will enable them to use ICT effectively in their professional activity. We offered such technology, described its operation and verified the methodology of its use.

Computer tooling helps to develop students' listening skills, reflecting the level of development of the analytical thinking, the ability to distinguish the main and additional information, as well as the degree of communication skills (ability to conduct «Air-Ground» radio communication, dialogue in conditions of increased risk, the ability to cause confidence; the ability to easily make a contact), which is important in the negotiation process. In addition, the use of computer systems places new requirements to pilots: transmission and processing of information make additional psychological load, require maximum concentration to work with equipment. At the same time, technical systems activate the perception of educational material, develop self-control and reflective skills.

This technology can be downloaded to mobile, which is very convenient. The size of the application is 1,27 Mbytes. So, it is a good technical support for students' individual work. It is not time-consuming: training takes only 25-30 minutes to complete. The computer tool can be updated with new information; some extra information can be added in it.

The prospects for further research include the development of the computer tool for aviation professionals based on the use of authentic texts in Aviation English according to the format of FCE (First Certificate in English) exam. This format enables to check a person's knowledge from every possible angle. Thus, in the authors' opinion such innovation may be implemented into the course «Professional Aviation English» and can be adapted to different categories of students: «Professional English for Aviation Managers», «Professional English for Aviation Engineers», «Professional Aviation English for Search and Rescue Professionals», «Professional Aviation English for Dispatchers», etc.

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КОМП'ЮТЕРНИЙ ЗАСІБ ДЛЯ РОЗВИТКУ НАВИЧОК АУДІЮВАННЯ ПІЛОТІВ З АВІАЦІЙНОЇ АНГЛІЙСЬКОЇ МОВИ

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Анотація. У статті запропоновано методику застосування комп'ютерного засобу для покращення навичок аудіювання з авіаційної англійської мови у майбутніх пілотів. Наголошено, що англійська мова є одним з найважливіших факторів, які впливають на безпеку польотів. Здатність пілота слухати, інтерпретувати та адекватно реагувати на інформацію англійською мовою від диспетчера має важливе значення під час радіозв'язку. Розвиток комп'ютерного програмного забезпечення та поява нових технічних засобів зумовлюють пошук нових методів навчання авіаційної англійської мови для майбутніх пілотів та диспетчерів повітряного руху. Одним із шляхів підвищення рівня професійної підготовки є впровадження ІКТ у процес навчання. Комп'ютерні технології та технічні засоби мовної підготовки можуть імітувати умови польоту, в яких може опинитися пілот у професійній діяльності. Комп'ютерний засіб спрямований на покращення навичок аудіювання майбутніх пілотів та може бути використаний для підготовки до 4-ого рівня мовних знань та умінь відповідно до шкали ICAO оцінювання мовних умінь. Він складається з шести завдань, які ґрунтуються на міжнародних вимогах ICAO з авіаційної англійської мови. На підставі запропонованої методики проведено експеримент з майбутніми пілотами – студентами випускного курсу, які вивчають навчальну дисципліну «Фразеологія радіообміну англійською мовою». Оцінювання навичок аудіювання проводилося за трьома критеріями: пізнавальним (знання), оперативним (навички), психологічним (здібності) та їх показниками. Відповідно до рівня навичок аудіювання було розмежовано три рівні – низький, середній та високий. Результати експериментального дослідження засвідчили позитивні зміни у рівні розвитку навичок аудіювання студентів у процесі прослуховування фразеології радіообміну англійською мовою з впровадженням комп'ютерного засобу. Одночасно збільшилася кількість оцінок з високим та середнім рівнем розвитку навичок аудіювання майбутніх пілотів, а з низьким рівнем – зменшилася.

Ключові слова: комп'ютерний засіб; ICAO; авіаційна англійська мова; пілот; навички аудіювання; фразеологія радіообміну.

КОМПЬЮТЕРНОЕ СРЕДСТВО ДЛЯ РАЗВИТИЯ НАВЫКОВ АУДИРОВАНИЯ ПИЛОТОВ ПО АВИАЦИОННОМУ АНГЛИЙСКОМУ ЯЗЫКУ

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Аннотация. В статье предложена методика использования компьютерного средства для улучшения навыков аудирования по авиационному английскому языку у будущих пилотов. Отмечено, что английский язык является одним из важнейших факторов, влияющих на безопасность полетов. Способность пилота слушать, интерпретировать и адекватно реагировать на информацию на английском языке от диспетчера имеет важное значение при радиосвязи. Развитие компьютерного программного обеспечения и появление новых технических средств обусловливают поиск новых методов обучения авиационному английскому языку для будущих пилотов и диспетчеров воздушного движения. Одним из путей повышения уровня профессиональной подготовки является внедрение ИКТ в процесс обучения. Компьютерные технологии и технические средства языковой подготовки могут имитировать условия полета, в которых может оказаться пилот во время профессиональной деятельности. Компьютерное средство направлено на улучшение навыков аудирования будущих пилотов и может быть использовано для подготовки к четвёртому уровню языковых знаний и умений в соответствии со шкалой ICAO оценивания языковых умений. Оно состоит из шести заданий, основанных на международных требованиях ICAO по авиационному английскому языку. На основании предложенной методики проведен эксперимент с будущими пилотами – студентами выпускного курса, которые изучают учебную дисциплину «Фразеология радиообмена на английском языке». Оценивание навыков аудирования проводилось по трем критериям: познавательному (знания), оперативному (навыки), психологическому (способности) и их показателям. В соответствии с уровнем навыков аудирования было определено три уровня – низкий, средний и высокий. Результаты экспериментального исследования показали положительные изменения в уровне развития навыков аудирования студентов в процессе прослушивания фразеологии радиообмена на английском языке с использованием компьютерного средства. Одновременно увеличилось количество оценок с высоким и средним уровнем развития навыков аудирования будущих пилотов, а с низким уровне – уменьшилось.

Ключевые слова: компьютерное средство; ICAO; авиационный английский язык; пилот; навыки аудирования; фразеология радиообмена.