

## DEVELOPMENT OF STUDENTS' ABILITY TO INDEPENDENTLY MASTER AVIATION ENGLISH WITHIN THE CONDITIONS OF COVID-19 PANDEMIC

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**Abstract:** The new millennium is characterized by an unprecedented breakthrough in knowledge and technology; consequently, the challenges of the XXI century require new paradigms of interaction in all life spheres. In light of the fact that safety in the aviation industry directly depends on the high-quality speech interaction between flight personnel and air traffic controllers, communication issues in aviation and the professional speech of aviators are the subject of close consideration not only by scientists and aviation operators-practitioners, but also by the world aviation organizations. The development of students' ability to independently master Aviation English within the conditions of the COVID-19 pandemic is a crucial role of education. The developers of curricula around the world are looking for methods through which they can qualitatively transfer the traditional education system. For this reason, the provision of quality education includes the expectation that educators will effectively use educational technologies and facilitate students' ability to learn aviation-related English on their own. The purpose of the research lies in determining the effectiveness of distance education for students' ability to independently master Aviation English within the conditions of the COVID-19 pandemic based on a survey of students in order to establish the key skills acquired by students as a result of studying the discipline "Aviation English". The research methods are as follows: comparative analysis; systematization; generalizations, surveys. Results. It has been determined that all pilots flying international flights and all air traffic controllers providing services on international flights should possess a minimum level of English proficiency – ICAO Operational Level 4. It has been established on the basis of a survey conducted that a particular amount of students learn Aviation English on their own (53,42%); the other part believes that distance education is better than traditional education in the process of self-study of Aviation English (38,16%); however, a smaller number (5,63%) were unsure of the quality of distance education. Along with this, the rest of the students have noted that distance education is worse than traditional education due to the inadequate level of development of communicative competence in Aviation English (2,79%). As a result of the research conducted, it has been revealed that the following training methods, namely: exercises for the formation of radio communication skills, tasks for analyzing aviation events, communication tasks, role-playing and business games, as well as the digital method will contribute to the development of students' ability to independently master Aviation English within the conditions of the COVID-19 pandemic. It has been established that the speech skills of students should be improved in a professional direction in order to form the ability to communicate in accordance with ICAO standards.

**Keywords:** Aviation English; self-instruction development; independent language learning; English for special purposes (ESP); COVID-19.

### 1 Introduction

The COVID-19 pandemic has caused changes in the educational process and affected the interaction of students and teachers (Sobaih, Hasanein, Abu Elnasr, 2020). The situation limiting traditional learning between teachers and students within the conditions of the COVID-19 pandemic inevitably forces the education system to be adapted in order to remain relevant in responding to students' needs for further study. The traditional education system, which relies on face-to-face interaction between teachers and students, cannot be implemented during a pandemic, considering the fact that there must be social distance for preventing the spread of COVID-19 (Demirdöken, 2021).

In countries around the world, national governments have introduced appropriate measures to avoid the spread of COVID-19 and ensure the implementation of a smooth educational process, in connection with which educational institutions use distance learning (Ali, 2020), which, due to modern conditions, is a substitute for the traditional educational process (Abou El-Seoud et al., 2014).

The inevitable necessity to implement distance learning, which is based on the application of computer technology and the Internet, helps establish interaction between teachers and students (Demirdöken, 2021). The use of innovative information technologies simplifies the process of transferring educational material in order to ensure the educational process simultaneously between a significant number of degree-seeking students (Suresh, Priya, Gayathri, 2018).

With a view to the continued growth of the aviation industry, there is a growing need for more qualified pilots and air traffic controllers who are proficient in Aviation English. Therefore,

ensuring the process of teaching English for special purposes (ESP) in educational institutions within the conditions of the COVID-19 pandemic is important for assecuration of high-quality training of future specialists (Demirdöken, 2021).

The purpose of mastering Aviation English lies in providing the participants of the educational process with an awareness of their responsibility for the safety of aircraft passengers, as well as giving an opportunity to communicate freely when using English in the aviation profession (Rosyydi 2020a; Rosyydi 2020b).

In response to modern challenges, in order to ensure the ability of students to independently learn Aviation English, the learning process is conducted through distance learning (Spector et al. 2014; Rosyydi, Masita, 2021).

In the prospect of maintaining a safe and stable aviation, the necessity for specialized training in Aviation English within the conditions of the COVID-19 pandemic is more urgent than ever in order to prepare students for gaining success in flight school and their future careers outside of school (Emery, 2021).

Clear and effective aviation-related communication in English between air traffic controllers and pilots is a crucial component for aviation safety (CAA, 2006). Consequently, uninterrupted and permanent communication is important, forasmuch as both parties should maintain a constant understanding of the circumstances in order to share the responsibility for efficient and safe air traffic control (Park, 2020).

The purpose of the research lies in determining the effectiveness of distance education for students' ability to independently master Aviation English within the conditions of the COVID-19 pandemic based on a survey of students in order to establish the key skills acquired by students as a result of studying the discipline "Aviation English".

The research objectives of the academic paper are as follows:

1. To analyze the structural components of the ICAO language proficiency rating scale (the 4th operational level).
2. To conduct an analysis of the major ICAO directives and normative legal acts of Ukraine for the organization of foreign language training for students-aviators.
3. To identify how the COVID-19 pandemic affected learning process in all educational institutions.
4. To differentiate the goals and objectives of the principal discipline "Foreign Language (English)" and the professional discipline "Aviation English" in the process of language training of future specialists of the aviation industry.
5. To conduct a survey among students in order to assess the effectiveness and ability of students to independently learn Aviation English within the conditions of the COVID-19 pandemic.
6. To determine the key skills of students' communicative competence formation, which will be obtained by the latter as a result of mastering the academic discipline "Aviation English".

### 2 Literature Review

Distance education is defined as "an educational process in which all or most of the teaching and learning activities are carried out by a teacher in remote mode in space and / or time from students, with the consequence that all or most of the communication in the learning process between teachers and students is carried out for using an artificial medium" (UNESCO, 2002). As a result of the investigations conducted, it has been revealed that distance education has proven its validity and value (Xiao, 2018; Babu, Sridevi, 2018), and it has been determined that there is no significant difference between

distance and full-time education (Bozkurt, 2019a; Jung, 2019). The pragmatic nature of distance education allows applying working solutions to students' learning in the education sphere, and it has been established that the education sphere should provide training opportunities for students with disabilities (Bozkurt, 2019b; Coman et al., 2020).

The virtual classroom is used for conducting classes in distance learning mode, and it is considered as a generalized channel of hybrid learning. The investigations of scientists show that the introduction of a virtual classroom has a positive impact on the learning process (Radovan, Kristl, 2017; Martin, 2019; Blaine, 2019; Aditya et al. 2019; Nugroho, Atmojo, 2020). It is important to emphasize that the implementation of a virtual classroom may vary depending on the context and the students' needs (Masita et al. 2020; Masita, 2020). The focus of attention of the present research will be the integration of virtual classrooms in order to develop students' ability to learn Aviation English independently (Rossydi, Masita, 2021).

Aviation English is considered as a language that is specifically used by pilots and air traffic controllers for communication purposes during air traffic in the air as well as on the ground. Crystal (1997) has designated Aviation English as "Airspeak" and defined it as a limited vocabulary containing a fixed set of sentences that are used to unambiguously express all situations that may occur during air traffic. In addition, Aviation English covers a wide range of language use situations (Mede et al., 2018), including both aviation phraseology and simple aviation-related language. Such differences in the ways pilots and air traffic controllers communicate with each other imply as follows: on the one hand, this means the correct and standard application of terminology or phraseology during air traffic both in the air and on the ground, the manufacture of aircraft and its specifications, as well as the use of legal terms in aviation law; on the other hand, it concerns the general use of English among aviation personnel in everyday communication, regardless of their nationality, race and cultural background (Demirdöken, 2021).

With the expansion of air travel in the XX century, safety concerns have arisen concerning the ability of pilots and air traffic controllers to communicate. In 1951, the International Civil Aviation Organization (ICAO) recommended in ICAO Appendix 10 to the International Chicago Convention to use English everywhere for "international aeronautical radiotelephony" Although this was only a recommendation, ICAO Aviation English has been widely accepted (Kankaras, 2020).

By the way, ICAO (2004) has further developed a set of Language Proficiency Requirements (LPR), consisting of six skill levels in six areas of applying Aviation English as follows: pronunciation, structure, vocabulary, fluency, comprehension and communication. The outlined standardization in assessing Aviation English lays a solid basis for improving Aviation English. However, it is not ICAO but training institutions in the aviation industry that are responsible for ensuring effective coverage of all six ICAO Aviation English skills at the operational level (ICAO, 2009).

According to ICAO's guidelines, regardless of the mother tongue of air traffic controllers, pilots, navigators and station operators, they should demonstrate their ability to speak and understand Aviation English used for radiotelephone communication. However, despite the use of LPR, language and comprehension issues remain a major cause of airspace incidents (Tiewtrakul, Fletcher, 2010). Recently, covering training and assessment based on the competence of the air traffic controller, ICAO (2016) has adopted a five-phase model of instructions called ADDIE as follows: 1) analysis, 2) design, 3) development, 4) implementation and 5) assessment. The ADDIE model has become one of the most widely used platforms for creating and assessing potential Aviation English training modules and programs. However, no empirical study on the structure has been

conducted in the course of developing and implementing training programs for air traffic controllers in English, except for cabin crew training (Meishella, 2018) and training of aviation maintenance specialists. It bears mentioning that prior to obtaining a license; an air traffic controller must pass an ICAO English language test (Rossydi, 2020a).

Therefore, the development of students' ability to independently master Aviation English within the conditions of the COVID-19 pandemic has not been reflected in the publications of scientists in the form of practical investigations and theoretical studies; however this issue is relevant and open for further research.

### 3 Methods and Materials

The implementation of the objectives of the present research involves the using the methods as follows:

- systematization of the basic directive documents of ICAO and normative-legal acts of Ukraine for the organization of foreign language training of students-aviators;
- system and logical analysis, the method of synthesis of information about the ICAO language proficiency rating scale (the 4th operational level);
- summarizing the latest scientific publications related to the result of studying the academic discipline "Aviation English" in order to form the students' communicative competence and determine how the COVID-19 pandemic has affected learning in all educational institutions;
- the comparison method for distinguishing the goals and objectives of the major discipline "Foreign language (English)" and the professional discipline "Aviation English" in the process of language training of future specialists of the aviation sphere.

In order to determine the individual features, effectiveness and ability of students to independently master Aviation English within the conditions of the COVID-19 pandemic, the study was conducted using descriptive statistics, the data of which were provided as a result of a survey using MS Forms Pro. Consequently, the survey has been conducted to determine students' perceptions of their ability to master Aviation English independently within the conditions of the COVID-19 pandemic and reveal the teaching methods which will help develop students' ability to learn Aviation English independently within the conditions of the COVID-19 pandemic. An online survey was conducted in the period from May, 20 till October 30, 2021, which collected information from 1 900 students of the higher educational institutions as follows: Flying Academy (Brno, the Czech Republic), Czech Aviation Training Center (Prague, the Czech Republic), National Aviation University (NAU) (Kyiv, Ukraine), South Sweden Flight Academy AB (Swedala, Sweden), Omega Aviation Academy (Piraeus, Greece). These participants answered questions about their learning experience, motivation, expectations and general satisfaction with distance education in the process of mastering Aviation English. The following research questions were considered in this survey, namely: 1. How do the students perceive the way universities provide knowledge in the context of exclusively distance education? 2. What is the students' perception of the ability to absorb information in the context of exclusively distance education? 3. What kind of education is better: distance or traditional one? 4. What training methods do you consider the most appropriate for learning Aviation English? 5. What speech skills should be developed in future aviation specialists in order to ensure a high level of their professional speech?

### 4 Results

In pursuance of ICAO standards, all pilots flying international flights and all air traffic controllers providing services on international flights must possess a minimum level of English; this level is known as ICAO Operational Level 4. ICAO has developed criteria for assessing Aviation English. Applicants taking the Aviation English Proficiency Test are assessed from

Level 1 to Level 6. The candidates receive from 1 to 6 points for each of 6 skills as follows: pronunciation, structure, vocabulary, fluency, comprehension and communication (refer to Table 1).

Table 1 – ICAO Language Proficiency Assessment Scale (Operational Level 4)

Operational Level 4	
Pronunciation	Pronunciation, stress, rhythm, accent, and intonation depend on the native language or regional variations, sometimes interfering with ease of understanding.
Structure	Basic grammatical structures and sentence patterns are used creatively, and they are usually well controlled. Errors can occur, especially in unusual circumstances, however, they rarely interfere with meaning.
Vocabulary	Vocabulary and accuracy are usually sufficient for effective communication on general, specific and work-related topics. Ideas can often be successfully paraphrased when there is a lack of vocabulary in unusual or unexpected circumstances.
Fluent speaking	Language phrases and sentences at the appropriate pace are created. Sometimes there may be a loss of fluent speaking in the transition from rehearsed or standard speech to spontaneous interaction; however, this does not interfere with effective communication. Conjunctions or discursive markers may be used to a limited extent. Pronunciation does not distract communicators.
Understanding	Understanding is mostly accurate on general, specific and work-related topics, when the accent or dialect used is sufficiently clear to the international users' community. When the speaker is faced with speech or situational complexity or unexpected turn of events; comprehension may be slower or it requires a rapid messaging strategy.
Communicative interaction	Answers are usually immediate, relevant and informative. The speaker initiates and maintains communicative interaction, even when dealing with unexpected events and situations. He adequately copes with obvious misunderstandings by checking, confirming or clarifying.

Source: Compiled by the authors based on official data of Kankaras, (2020), ICAO, (2010).

In higher education institutions, specialized foreign language training of future specialists takes place; curricula are concluded on the basis of the "Program in English for Professional Communication" recommended by the Ministry of Education and Science of Ukraine, which is a Typical program. The purpose of the discipline lies in forming students' "general and professionally oriented communicative speech competencies (linguistic, sociolinguistic and pragmatic) in order to ensure their effective communication in the academic and professional environment". There are a number of ICAO documents and normative legal acts of Ukraine with directive documents for the organization of foreign language training of students-aviators as follows:

- The Air Code of Ukraine as of July 4, 2013 № 406-VII;
- The Law of Ukraine "On approval of the Rules of Radiotelephone Communication and Phraseology of Radio Exchange in the Airspace of Ukraine" as of August 14, 2012 № 494;
- The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Regulations on the State Aviation Service of Ukraine" as of October 8, 2014 № 520;

- Doc 4444: Amendment No. 1 to the Procedures for Air Navigation Services "Air Traffic Management";
- DOC 9835: Manual on the Implementation of ICAO Language Proficiency Requirements (Saleable Document – Links to the ICAO Store);
- CIR 323: Guidelines for Aviation English Training Programmes;
- Resolution A38-8: Proficiency in the English language used for radiotelephony communications.

In the context of the initiated research, the analysis was conducted concerning direction of the academic discipline in the educational institutions as follows: Flying Academy (Brno, the Czech Republic), Czech Aviation Training Center (Prague, the Czech Republic), National Aviation University (NAU) (Kyiv, Ukraine), South Sweden Flight Academy AB (Swedala, Sweden), Omega Aviation Academy (Piraeus, Greece) for the formation of professional speech skills of future international pilots and air traffic controllers (refer to Figure 1).

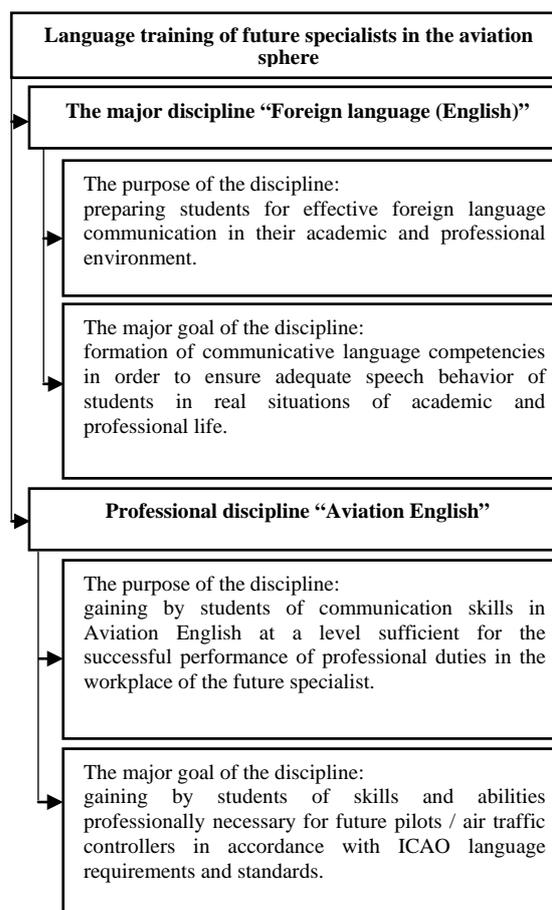


Figure 1 – Language training of future specialists in the aviation sphere

Source: Compiled by the authors based on official data of Kankaras, (2020), ICAO, (2010).

COVID-19 pandemic has affected learning in all educational institutions and only 2% of educational institutions have reported that the pandemic does not influence the training process. Two thirds of educational institutions have reported that teaching has been replaced by distance teaching and one quarter has stated that most activities have been currently discontinued; however, the institution is working on developing solutions for continuing education using digital means or special self-study methods, and only 7% have informed that teaching has been cancelled (refer to Figure 2).

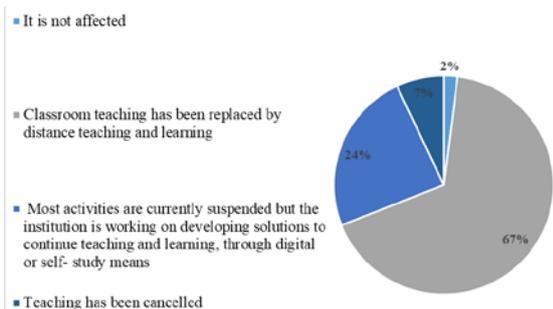


Figure 2 – How has COVID-19 affected teaching and learning?  
 Source: Compiled by the authors based on official data of IAU Global Survey Report (2020).

These results demonstrate that two-thirds of educational institutions were able to transfer teaching online and one third

was not. However, most educational institutions are working to develop solutions for continuing teaching on the Internet.

In order to assess the development of students' ability to master Aviation English independently within the conditions of the COVID-19 pandemic, which has been implemented by teachers remotely, students of Flying Academy, Czech Aviation Training Center, National Aviation University, South Sweden Flight Academy AB, Omega Aviation Academy, have noted that distance education has a positive effect on ensuring the ability to independently learn Aviation English (53.42%); the other part believes that distance education is better than traditional education in the process of independent learning Aviation English (38.16%); however, a smaller number (5.63%) have been unsure of the quality of distance education; the rest of the students have noted that distance education is worse than traditional education due to the inadequate level of development of communicative competence in Aviation English (2.79%) (refer to Figure 3).

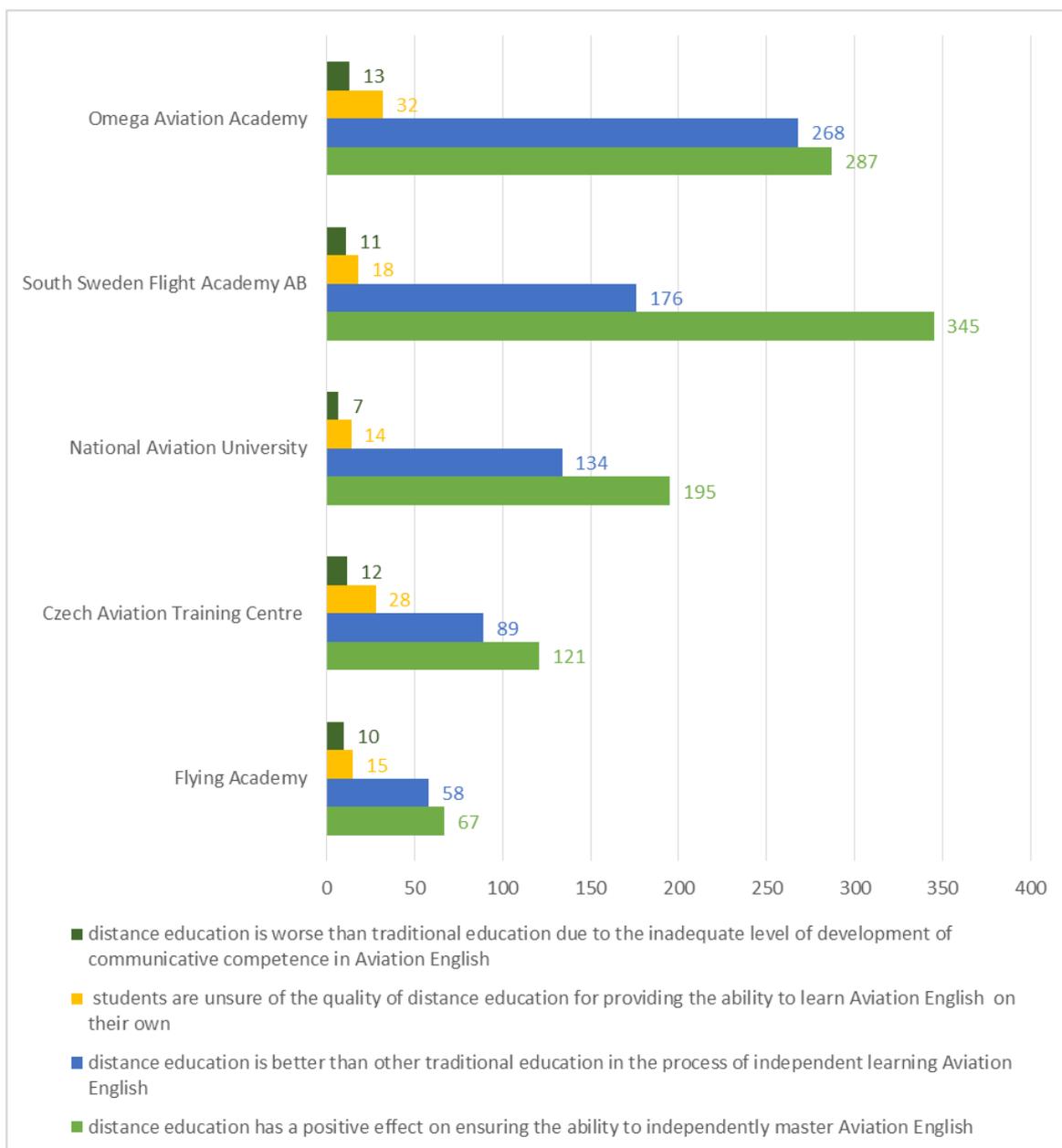


Figure 3 – Assessment of the development of students' ability to master Aviation English independently within the conditions of the COVID-19 pandemic  
 Source: Developed by the authors.

Figure 4 reflects the methods of educational activities contributing to the development of students' ability to master Aviation English independently within the conditions of the COVID-19 pandemic as follows: exercises for the formation of radio communication

skills (1900 people or 8.65%), analysis of aviation events (1900 people or 8.65%), communication tasks (1885 people or 8.58%), role-playing and business games (1859 people or 8.46%) and the digital method (1834 people or 8.35%).

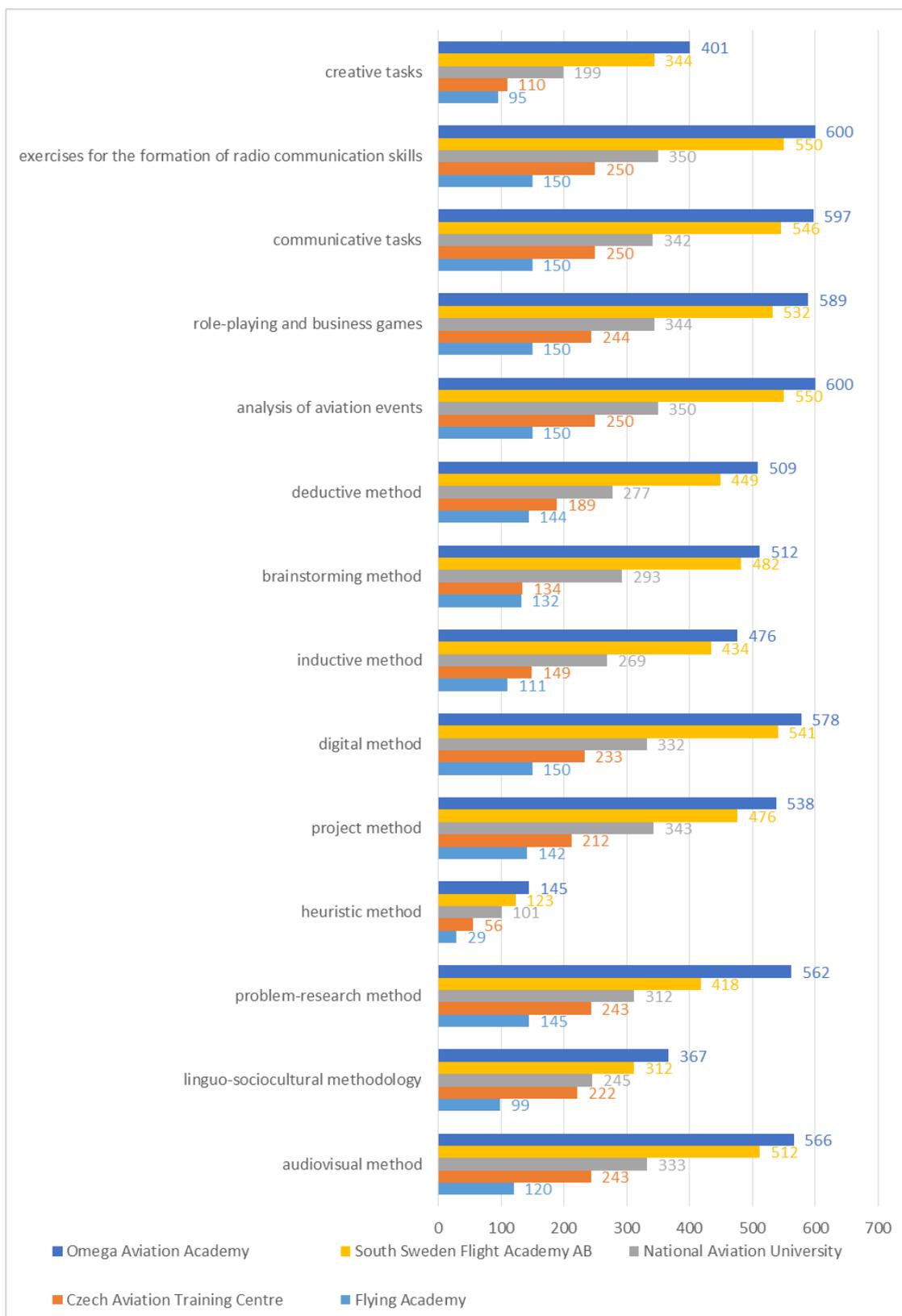


Figure 4 – Methods of educational activities for the development of students' ability to master Aviation English independently  
Source: Developed by the authors.

Figure 5 reflects the result obtained from the learning the academic discipline “Aviation English” for the formation of students’ communicative competence.

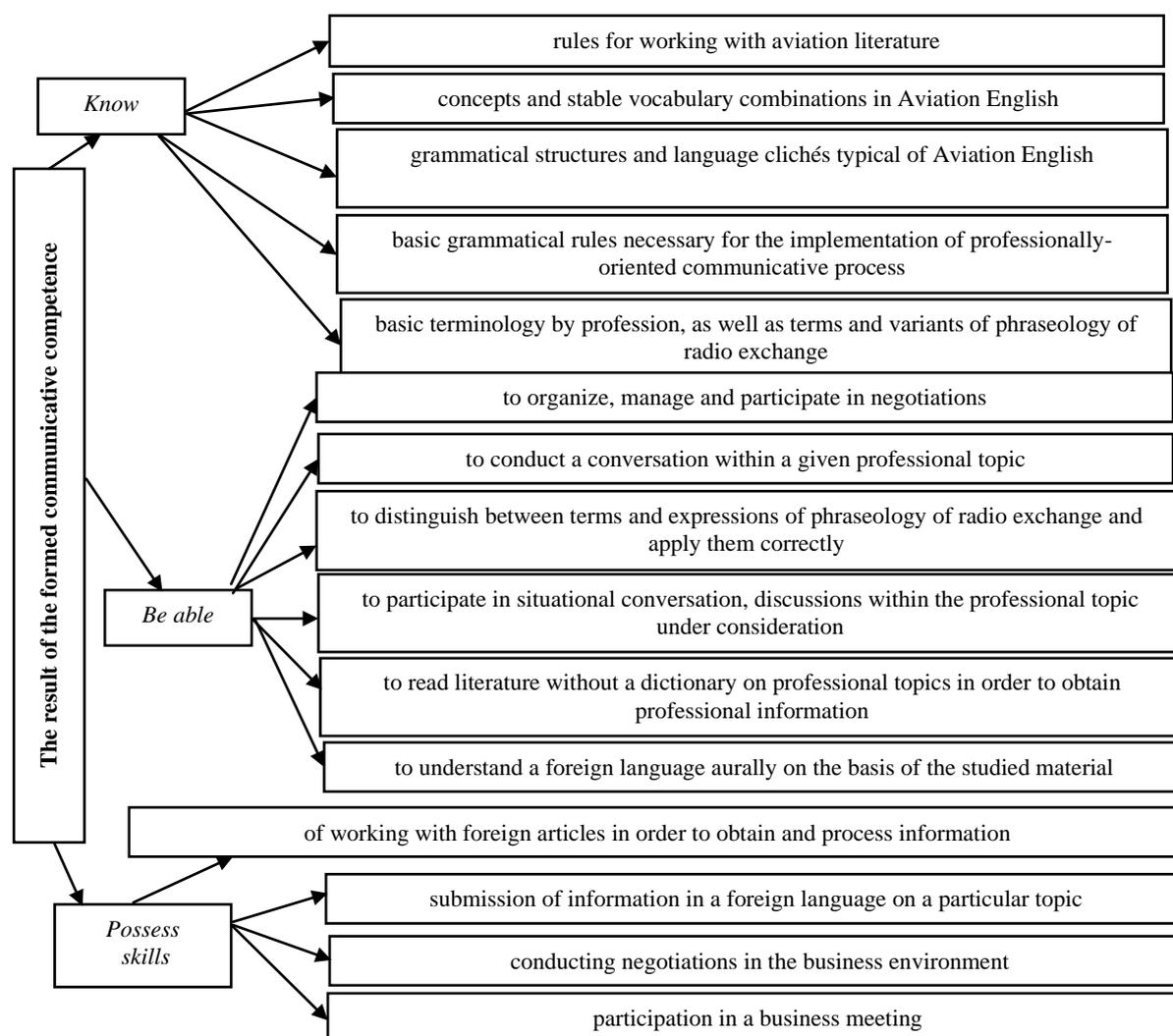


Figure 5 – The result of mastering the discipline “Aviation English” for the formation of students’ communicative competence  
Source: Compiled by the authors based on official data of Kalugina (2016).

Speech skills of students and future professionals are expected to be improved in the professional direction, in particular to form the ability to “build communication in accordance with ICAO standards concerning the 4 operational level of professional English proficiency”.

## 5 Discussion

The results of the research conducted on the development of students’ ability to independently master Aviation English within the conditions of the COVID-19 pandemic have led to the conclusions as follows. Distance learning benefits students when it is used as an additional tool to replace the traditional learning process. A great amount of investigations has shown that students tend to have a positive attitude towards distance education; although, sometimes, some of them believe that they absorb information better due to the traditional system of teaching Aviation English (Coman et al., 2020).

Firstly, investigations have revealed numerous benefits of distance education, namely: better learning outcomes, adapting the learning process to students’ needs, flexibility, students’ orientation and removal of barriers to master Aviation English independently (Babu, Sridevi, 2018). Secondly, the survey conducted proves that the educational process quality achieved due to distance learning will ensure the independent learning Aviation English by students, if the teachers apply exercises to

form radio communication skills, tasks for analyzing aviation events, communication tasks, role-playing and business games and the digital method (Coman et al., 2020). Data visualization, image processing and the creation of a virtual environment allow future aviation professionals achieving approaches to independently master Aviation English.

The research conducted demonstrates that distance education can influence the development of students’ ability to learn Aviation English on their own, forasmuch as respondents have reported that distance education has a positive effect on the ability to learn Aviation English independently; however, the rest of the respondents believe that distance education is better than traditional education in the process of independent learning Aviation English. Taking into consideration the globalization challenges, teachers will have to work in a more complex educational environment, forasmuch as the 2020 pandemic has brought changes to traditional education; consequently, teachers should integrate into the educational information technology space in order to ensure effective learning of Aviation English. Therefore, teachers and students will face challenges due to the fact that the potential of distance education in the educational information technology space is quite high, however, it is not sufficiently implemented, the in-depth study of which will increase attention towards improving distance education for effective learning Aviation English.

## 6 Conclusion

As a result of analyzing the development of students' ability to master Aviation English independently within the conditions of the COVID-19 pandemic, it has been established that due to the intensification of educational processes and the emergence of obstacles to traditional learning, requiring an urgent alternative solution, this process involves the development of distance learning, where this issue is becoming increasingly relevant. It has been revealed that in connection with the pandemic, distance learning is gaining popularity in almost all countries of the world.

The quality of distance learning should be improved and perceived as equal to traditional education in an educational institution, which will contribute to the development of students' ability to independently master Aviation English within the conditions of the COVID-19 pandemic. It is currently quite obvious that in order to achieve an effective learning process on mastering Aviation English, educational institutions should combine the benefits of mixed types of education. The application of modern methods of training activities for developing students' ability to independently learn Aviation English will contribute to the quality education of future specialists. In addition, the research has evaluated and identified the results of studying the discipline "Aviation English" for the formation of students' communicative competence. It is expected that the provision of these results for the period of applying distance education will help improve the Aviation English language learning proficiency as students move on to the next academic year. By the way, it is particularly important to improve distance education platforms, which may be the only available way to learn and teach Aviation English, which can ensure the continuity of learning during unexpected events such as the COVID-19 outbreak.

The practical significance of the research conducted lies in the fact that the conclusions and recommendations developed by the author and proposed in the academic paper can be used for prospective development of students' ability to independently master Aviation English in the context of distance learning.

Further investigations can be aimed at improving distance education for students' ability to independently learn Aviation English, which will stimulate the educational sphere and improve teaching activities in the educational information technology space, providing quality online education. Increasing the capabilities and widespread using innovative, scientific – research approaches to distance education at the educational level can be the basis for strategies for future periods.

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**Primary Paper Section: A**

**Secondary Paper Section: AM**