# Using interactive learning in future aviation professionals teaching English

Oksana Pershukova  $^{[0000-0002-9717-778X]},$ Natalia Pazyura  $^{[0000-0003-1234-7610]}$ and Oksana Vasiukovych  $^{[0000-0002-6607-5334]}$ 

Aviation English department, National Aviation University,
1 Liubomyra Huzara Ave., Kyiv, 03058, Ukraine
pershoks@gmail.com, npazyura@ukr.net, 0.Vasiukovych@gmail.com
http://flyhigh.nau.edu.ua/?lang=en

**Abstract.** The article aims to find out whether interactive learning in ESP language course for future aviation professionals introduction can raise students' level of motivation. This study was conducted during the 2019-2020 academic year at National Aviation University (Kyiv, Ukraine). Testings to determine students' level of proficiency according to Language Proficiency Rating Scale (ICAO, Level 4) were conducted in September and May of the same year of education. With the purpose to learn the motivational effect from interactive learning introduction students were asked to respond to the questionnaire based on Attitude/Motivation Test Battery simultaneously with language testing. The analyses of the data revealed the positive effect of the interactive learning introduction in future aviation professionals' training course on the motivational level as well as language competence level. A greater impact on students' instrumental motivation is observed, which can be explained by the use of professionally-oriented training materials, while students' integrative motivation also has a positive effect. According to the results of the experiment, some other conclusions are made.

**Keywords:** ESP language course  $\cdot$  interactive learning  $\cdot$  motivation  $\cdot$  aviation professionals  $\cdot$  language proficiency

### 1 Introduction

Ensuring a high level of education for students of Technical universities in Ukraine is an urgent task that cannot be accomplished using only traditional teaching methods. New approaches and techniques introduced in the educational process of teaching foreign languages are on time [3, 11, 13, 25]. This is true for training specialists in different professions and especially for aviation professional's education. According to the requirements International Civil Aviation Organization, which is a specialized agency of the UN that set standards for safety and security in aviation and promotes cooperation in International Civil Aviation, future pilots and air traffic controllers must demonstrate a high level of professional competence. As determined by Language Proficiency Rating

Scale there is a need for respondents to achieve the 4 (Operational) Level, which implies some aspects: fluency of communication, ability to interact and comprehend, knowledge of vocabulary and grammar structures, clear pronunciation [12]. Specialists' training who meet such requirements is a complex and multifaceted problem, and many scholars of the field paid attention to its solution. The ways are offered in their works [6, 20, 22]. Motivation to learn is called one of the aspects of its success.

Studies showed that English for Specific Purposes (ESP) is an umbrella term which refers to the teaching and learning of English as a second/foreign language, which is based on content and objectives on the specific needs of target learners [15, 16]. And besides, aviation called 'an ideal area of discourse for ESP approach taught through content' because it is 'a narrow angled, highly contextualized and efficient' [4].

Elements of Interactive learning entered ESP classrooms in the second part of the 20th century on the paper-based materials and later with the development of CD-ROM have been implemented in the process of language teaching. The end of the previous and the beginning of the new century were marked by the widespread use of the Internet, which changed the process of learning foreign languages by creating a communicative space [16, 23, 26].

The objective of the current study was 1) to analyze essential characteristics of interactive learning and the most commonly used techniques in the process of training aircraft professionals (professionally oriented simulations, games and role-playing); 2) to diagnose their influence on the formation of students' motivation for learning and their ability to communicate according to requirements ICAO (Level 4, Operational).

Our days a large amount of literature exists about interactive technology application in the field of ESP and beyond [5, 8, 23], and each paper provides a good study of the issues giving key points, analysis and results of the experiments and researches led. Their authors are unanimous in the opinion that Interactive learning is widely used in the educational field as well as science and industry our days. This is especially true for high-risk industries, such as medicine, engineering, as well as nuclear power, military, business and many more. Professional training includes studying the situation of some aspect of professional activity when each participant must implement professional skills and abilities following the established algorithm for the given conditions. In aviation professionals, ESP training involves different tasks connected with future professional communicative activity. They are used to encourage students to talk and discuss problems, offer their solutions, share information about these cases, make them engaged in professional information searches that become invaluable for ESP acquisition [6].

This is made to meet the challenges outlined in the ICAO Circular 323, which states that the most effective teaching methods of Aviation English should be as the systematic combination of content and functions in a communicative context. With strong intention to comply with ICAO requirements we consider to make use of the specific communicative method and task-based activities (role-

playing activities aimed at problem-solving, simulation of specific situations, and games) for the achievement of the goal of professional readiness forming. Such communication gives learners opportunities of not only implicitly, subconsciously developing their English professional communication skills but also of acquiring professional knowledge and skills in the process of communication necessary to conduct radio exchange.

## 2 Theoretical framework

We have considered the meaning of the concept of *Interactive learning*. Consisting of the words 'inter' (mutual) and 'act' (act) the main meaning of the word 'interaction' is 'to interact'. Renner [24] defines the notion of Interactive Learning as a pedagogical technique which encourages students to interact with each other and the subject of the matter [24]. In the online medical dictionary, the word is characterized as 'learning in which students receive feedback for their educational efforts, usually from their students, teachers, mentors or electronic educational resources' [19].

Among the list of a wide variety of interactive techniques compiled by Yee [27], we find simulations, games and role-playings as the most appropriate for use. In our work, we distinguish games, simulation, and role-playings. The definition of the notion 'simulation' is found in modern dictionaries. Cambridge online dictionary defines it as 'a model of a set of problems or events that can be used to teach someone how to do something or the process of making such a model' [1]. The Merriam-Webster's online dictionary defines it as 'the imitative representation of the functioning of one system or process using the functioning of another' [2]. So, from the pedagogical point of view, the main characteristic of the notion 'simulation' is the process of using artificially created (in other words called fake) reality with some parameters defined and controlled by the teacher for training students to interact with to achieve the desired results. The main goal of simulation as a technic is to give students exposure to a representation of real-life, while they have to accept the reality of function. In this way, students get to experience what to say under certain situations by taking part in a real-life situation, which makes the process of learning more effective. In the technical university teaching Aviation professionals, it is an example of efficient learning through directed conversation. Participants take on roles, accepting duties and responsibilities and function according to their personalities in a simulated and structured environment. The main distinction of games is their presentation of little or no reality of function and besides, in games participants are players to win the game [1, 17]. While games follow their own rules, competitive and are some kind of pleasant occupation in itself. Being used for teaching how to communicate simulations have to provide an environment where learners have opportunities for creating their communication [14]. And besides simulations are based on imitation of a system or a situation and oriented towards knowledge acquisition or practical goals achievement. There is some difference between simulations and role-plays because in role-plays participants are encouraged to

act according to the script, which is impossible in simulations, where there is no script [17, 27]. The content of future air traffic controllers training should include simulated techniques to conduct radio exchange in routine and non-routine situations.

Many authors [7, 16, 18] note the positive impact of the use of interactive learning in the process of ESP, which is to increase the level of motivation of students along with increasing their level of ability to communicate. As far as we know, no previous research has investigated the specified throughout the experiment.

In our work, we are guided by the idea that *Motivation* is a multifaceted and complex construct. We define motivation as 'an inner drive, impulse, emotion or desire that moves one to a particular action [21]. Motivation is an important factor for success in learning foreign languages at all educational levels as well because it is related to students' awareness of the need to use another language and the significance of this ability for the future profession and professional self-improvement. Gardner and Lambert [10] developed and presented the theory of motivation, which became integral and most influential to modern research in Second Language Acquisition (SLA). To study the motivation in learning a non-native language they compiled a special questionnaire, called Attitude/Motivation Test Battery, AMTB [9]. Although this work was intended to investigate the motivational level of secondary school, its findings have attracted the attention of a wide range of professionals, as the questionnaire included questions of social and psychological orientation and included several questions about the specificities of the educational process. Gardner has identified two kinds of attitudes that influence students' motivation in language learning: attitudes to the target-language speakers and attitudes related to the possible uses of the language being learned and put forward the idea to distinguish integrative and instrumental orientation. *Integratively motivated* students are interested in language learning and oriented to integrate themselves into the culture of the second language speakers and become involved in social interchange within that group. Instrumental orientation deals with the utilitarian purposes and practical advantages of FL learning as a tool for getting a better job or furthering a career.

Therefore, learning motivation is one of the types of motivation involved in learning activities. This phenomenon is characterized as systematic, directional, stable and dynamic. It is influenced by the educational system and the educational institution where the training takes place, the peculiarities of the organization of the educational process and the specifics of the academic subject. Besides, learning motivation depends on the subjective characteristics of the students being taught, as well as the teacher. Important factors affecting students are their age, gender, level of intellectual development, ability to learn, level of desired achievement, self-esteem, ability to interact with other students [21].

Based on the above considerations, **the hypothesis** of the current study **is**: The introduction of interactive techniques (professionally oriented simulations,

role-playing and games) into language ESP courses for aviation professionals can help to increase students' motivation for learning and communicative abilities according to requirements of ICAO (Level 4, Operational).

## 3 Materials and methods

This study was conducted during 2019-2020 academic year at National Aviation University (Kyiv, Ukraine) and involved four-year students studying for the bachelor's degree, the speciality: 'Aviation transport'. Out of 23 participants, 5 were females and 18 males who ranged from 20 to 23 years with the miscellaneous command of Aviation English. At the time of research, English for Specific Purposes (ESP) lessons were part of their official university curriculum. According to the curriculum, two-hour classes were held once a week for two semesters. Language testings according to ICAO requirements (Level 4) were conducted at the beginning (September) and at the end (May) of the academic year. Before the beginning of the experiment, students reported that interactive technologies were hardly used in their studies, in particular, simulations, games, and role-playing were used very seldom. During the year of the experiment, interactive technologies were used in each lesson.

As it was revealed, interactive techniques especially those which use the computer are providing innovative multimedia tools that engagingly present special concepts. In our work, we used *simulations*, *role-playing* and *games* accordingly, it was aimed at reproducing the phraseology of radio exchange between the air traffic controller and the pilot in non-routine situations (such as pressurization problems, bird strikes, emergency landings, critical fuel status, smoke or fire in the cockpit) to enlarge students' knowledge on Aviation English vocabulary and the basic aviation terminology. The purpose of this was to create an informational environment accessible for each future air traffic controller, which would become the factor of his/her development and would create an equal opportunity for everyone to become a professional.

Implementing into language teaching environment computer simulations, games and role-playing make it more communicative, interactive, and student-centred, as well as language programs, become more task-oriented. Teachers have possibilities for developing and adapting teaching materials and tools for ESP learning accordingly. In our work, we used games, role-playing and simulations with and without computer support as well. We have to admit, that such techniques were used with as well as without virtual support. Whether we used computer technology or not, gaming and role-playing procedure had five steps:

- Step 1. (Preparatory): Participants have to be allocated to roles, they are explained some organizational moments, necessary technical means.
- Step 2. (Introductive): Participants are divided into groups, they receive cards with information and tasks, they have explained some rules, goals and timing of the game.
- Step 3. (Gaming/ Role-playing) Participants have to act according to the rules of the game or according to the script of the role-play.

- Step 4. (Reflection) Participants have to write a report about information about their impressions and experience received.
- Step 5. (Discussion) Discussion is organized among the participants about success or failure in the process of the oral task as well as writing assignment fulfilment. Corrections are made if necessary.

The procedure of *simulation* had five steps which are somewhat different from *qaminq* and *role-playinq* procedure:

- Step 1. (Preparatory) Participants have to be allocated to roles.
- Step 2. (Introductive): participants have explained some rules and goals, receive cards with information and tasks, but they receive only some amounts of information, to get the full picture and to fulfil the task they need communication.
- Step 3. (Solving the problem) participants have to discuss the problem and find out necessary information creating their communication;
- Step 4. (Reflection) Participants have to write a report about information found, experience and impressions received.
- Step 5. (Discussion) Discussion is organized among the participants about success or failure in the process of the oral task as well as writing assignment fulfilment. Corrections are made if necessary.

We also paid attention to the control of learning, the students were constantly informed about the results of their work to feel his/her growth.

In the process of teaching, we actively used computer simulations of case studies and specific situations as well as role-playing and games for practising the phraseology of radio exchange between the air traffic controller and the pilot in non-routine situations according to the topics: 'Bird strike', 'Emergency landing', 'Pressurization problems', 'Fuel problems', 'Smoke or fire in the cockpit' and other. In addition to computer materials, we used audio materials and printed texts.

To determine the changes in students' level of motivation we used a questionnaire based on Attitude/Motivation Test Battery (AMBT) designed by Gardner [9], which has been adapted by numerous researches for different purposes. We modified the questionnaire for use to determine the level of technical university student's motivation. The questionnaire consists of 21 statements which can be divided into three parts, 7 statements for *Integrative* motivation determination, 7 – for *Instrumental* motivation, and 7 statements to learn about the level of students' Attitude for learning.

## 4 Results

The results of the study are presented in this section. The data, which were mainly elicited from the survey questions, are reported in tables 1, 2.

To determine students' level of motivation they were asked to respond to the questioner with statements arranged on a five-point Likert scale ranging from 1

('strongly disagree'), 2 ('disagree'), 3 ('neither agree' no 'disagree'), 4 ('agree'), 5 ('strongly agree'). The language used in the questionnaire was English. The questionnaire was administered anonymously during class without the presence of a teacher, the questions in the questionnaire were arranged in random order. Students were allowed to write comments to facilitate the possibility of gathering additional information. In our work, we used descriptive analysis.

Table 1: Results of the questionnaire.

_		1	2	3	4	5	
N	Statements	$S \rightarrow M$	$S \rightarrow M$	S→M	$S \rightarrow M$	$S \rightarrow M$	
1	Statements	Persons; %	Persons; %	Persons; %	Persons; %	Persons; %	
	T. 11.1.		,	6→3	12→13	5→7	
1	English is essential for	$0 \rightarrow 0$	$0\rightarrow0$	$26,9\% \rightarrow 13,4\%$	$52,1\% \rightarrow 56,5\%$	$ 21,7\% \rightarrow 30,4\% $	
	personal development. My University English						
	course helps me to de-						
	velop my intelligence.						
-			$3\rightarrow 2$	8→5	7→11	5→6	
2	Other people (parents,	$0\rightarrow0$			$30,4\% \rightarrow 47,8\%$		
	friends, others) respect me for my knowledge		· · · · · · · · · · · · · · · · · · ·	,	,		
	of English.						
$\overline{}$			4→1	14→6	3→9	$2\rightarrow7$	
3	Being fluent in English				$13,4\% \rightarrow 39,1\%$	8,7%→30,4%	
	gives me a feeling of			,-,-	,-,-	-,.,.	
_	success.		4→3	12→7	4→7	3→6	
4	I wish I could have	$0\rightarrow0$	1 .0		$4 \rightarrow 7$ $17,4\% \rightarrow 30,4\%$	" "	
	many English-speaking		11,170 - 13,470	32,170→30,470	17,470 -> 30,470	13,470-20,970	
	friends.						
5	I want to know more	$0\rightarrow0$	9→0	9->6	4→12	1->5	
	about other cultures,		$39,1\% \to 0$	$39,1\% \rightarrow 26,9\%$	$17,4\% \rightarrow 52,1\%$	$4,35\% \rightarrow 21,7$	
	values and thoughts,						
	especially about cul-						
	tures where English is						
	spoken as a native lan-						
	guage.	0→2	0→7	0→4	19→0	4→0	
6	When I speak English,	$0\rightarrow 2$ $0\rightarrow 8,7\%$	$0 \rightarrow 7$ $0 \rightarrow 30,4\%$	$0 \to 4 \\ 0 \to 17.4\%$	$82,6\% \to 0$	$\begin{vmatrix} 4 \rightarrow 0 \\ 17,4\% \rightarrow 0 \end{vmatrix}$	
	I don't mind making	0 70,170	0 730,470	0 /11,4/0	02,070 70	11,470 70	
	mistakes.						
7	Learning English at	$2\rightarrow 0$	3→0	10 -> 7	7→13	$1 \rightarrow 3$	
	University is easy and	$8,7\% \to 0$	$13,4\% \to 0$	43,5%→30,4%	$30,4\% \rightarrow 56,5\%$	$ 4,35\% \rightarrow 13,4\% $	
	pleasant.						
8	Studying English is im-	$0\rightarrow 0$	8→0	7→4	5→7	3→12	
	portant because it is	0 70	$34,7\% \to 0$	$30,4\% \rightarrow 17,4\%$	$21,7\% \to 30,4\%$	$ 13,4\% \rightarrow 52,1\% $	
	necessary for my ca-						
	reer.						
a	The course material	0->0	0->0	$5\rightarrow0$	$15\rightarrow 4$	$3\rightarrow 19$	
9	expands my knowledge	0-70	0-70	$21,7\% \to 0$	$65,2\% \to 17,4\%$	$ 13,4\% \rightarrow 82,6\% $	
	and contributes to my						
	future profession.						
10	I do my best to get the	0->0	$2\rightarrow 1$	15→8	$3\rightarrow 6$	3→8	
10	grade 'A' all the time		$8,7\% \to 4,35\%$	$65,2\% \rightarrow 34,7\%$	$13,4\% \rightarrow 26,9\%$	$ 13,4\% \rightarrow 34,7\% $	
	I'm learning English.						
1.	0	0 . 0	$2\rightarrow0$	$2\rightarrow 2$	15→6	3→15	
$^{11}$	Good command of	$0 \rightarrow 0$	8,7%→0	8,7%→8,7%	$65,2\% \rightarrow 26,9\%$		
	English increases the number of information				, in the second second		
	sources I can use for						
	education and plea-						
	sure.						
			1	1	Continue	d on next page	
_							

N Statements	1	2	3	4	5
12I want to underst the world better, th why I watch films read in English, special literature the future professio the most important	at's and but on n is	$ \begin{array}{c} 2 \rightarrow 0 \\ 8,7\% \rightarrow 0 \end{array} $	, ,	$   \begin{array}{c}     17 \rightarrow 10 \\     73,91\% \rightarrow 43,5\%   \end{array} $	, ,
13I would feel q relaxed if I had communicate v strangers in English	$_{ m vith}^{ m to}$	$ \begin{array}{c} 11 \to 0 \\ 47,8\% \to 0 \end{array} $		$3 \rightarrow 7$ $13,4\% \rightarrow 30,4\%$	
14Studying English, prefer the tasks of nected with my fut profession.	con- cure	$ \begin{array}{c} 16 \to 0 \\ 69,57\% \to 0 \end{array} $	$\begin{array}{c} 2 \rightarrow 3 \\ 8,7\% \rightarrow 13,4\% \end{array}$	$2 \rightarrow 5 \\ 8,7\% \rightarrow 21,7\%$	$3 \rightarrow 15$ $13,4\% \rightarrow 65,2$
15 I wish my English c would be different.	$\begin{array}{c} 2 \to 15 \\ 8,7\% \to 65,2\% \end{array}$	$ \begin{array}{c} 13 \to 6 \\ 56,5\% \to 26,9\% \end{array} $	$\begin{array}{c} 5 \to 2 \\ 21,7\% \to 8,7\% \end{array}$	$3 \to 0$ $13,4\% \to 0$	$0 \rightarrow 0$
16 I wish I could study the other University				$^{1\to 0}_{4,35\%\to 0}$	0-0
17 I think the evaluate method is unfair.	0→78,2%	$ \begin{array}{c} 8 \to 3 \\ 34,7\% \to 13,4\% \end{array} $	, ,		$ \begin{array}{c} 3 \to 0 \\ 13,4\% \to 0 \end{array} $
18 In my English cl the teacher's person ity is important.	nal- 8,7%→0	$ \begin{array}{c} 16 \to 4 \\ 69,57\% \to 17,4\% \end{array} $	,	$2 \rightarrow 7 \\ 8,7\% \rightarrow 30,4\%$	$1 \rightarrow 12 \\ 4,35\% \rightarrow 52.1\%$
19 In my English cl the teacher's met and class activities important.	hod $4,35\% \rightarrow 0$ are	$ \begin{array}{c} 17 \to 0 \\ 73,91\% \to 0 \end{array} $	,	$1 \rightarrow 5 \\ 4,35\% \rightarrow 21,7\%$	
20 In my English cl the group is importa	ant. 8,7%→0	$ \begin{array}{c c} 15 \rightarrow 3 \\ 65,2\% \rightarrow 13,4\% \end{array} $	$2 \rightarrow 2 \\ 8,7\% \rightarrow 8,7\%$	$^{1 \to 3}_{4,35\% \to 13,4\%}$	$ \begin{array}{c c} 2 \to 15 \\ 8,7\% \to 65,2\% \end{array} $
21 The English coumethod encourse me to learn and known in my fut profession.	iges 65,2%→0	$3 \to 0$ $13,4\% \to 0$	$3 \rightarrow 2$ $13,4\% \rightarrow 8,7$	$2 \rightarrow 17 \\ 8,7\% \rightarrow 73,91\%$	$1 \rightarrow 4 \\ 4,35\% \rightarrow 17,4\%$

As we can see from table 1, the data collected during the experiment reveal that students' level of *Integrative* motivation has changed. The item 1 demonstrates that respondents became better understanding the importance of English for their personal development and attaining cultural and social goals (52,1% vs 56.5% 'agree' and 21.7% vs 30.4% 'strongly agree'). Students also became aware of the positive attitude of family members and friends to their ability to communicate in English (item 2) (30,4% vs 47,8% 'agree' and 21,7% vs 26,9% 'strongly agree') and fluency in English makes them feeling successful (item 3: 13,4 vs 39,1% 'agree' and 8,7 vs 30,4% 'strongly agree'). The data of items 4 and 5 shows students' desire to use their knowledge and skills for making new friends and integrate into English speaking society for widening their job and life opportunities (17,4% vs 30,4 % 'agree' and 13,4% vs 39,1% 'strong agree'; 17.4% vs 52.1% 'agree' and 4.35% vs 21.7% 'strongly agree'). In the result of the experiment, students understood the need to avoid mistakes (item 6: 0%vs 8,7% 'strong disagree' and 0% vs 30,4% 'disagree'), most of them (30,4% vs 56,5% 'agree' and 4,3% vs 13,4% 'strongly agree') believe that studying at the university is not too difficult (item 7).

The study in the level of *Instrumental* motivation changes demonstrates respondents' understanding importance English for future career and achieving academic goals (21,7% vs 30,4% 'agree' and 13,4% vs 52,1% 'strongly agree') as well as they approve and support the choice of educational materials (62,2 vs 17,4% 'agree' and 13,4% vs 82,6% 'strongly agree'), items 8 and 9, which is a significant result. Students' diligence and persistence in the studying English, intensification of the efforts in the result of the experiment displays item 10 (13.4% vs 26.9% and 13.4% vs 34.7%). The potential of a good command of English understand the majority of students, as is demonstrated in item 11: 65,2% vs 26,9% 'agree' and 13,4% vs 65,2% 'strongly agree'). Respondents show more active use their communicative ability for the future profession as well as for life (item 12: 73,91% vs 43,5% 'agree' and 4,35% vs 39,1% 'strongly agree'). Students' answers in item 13 exhibit less fear and anxiety from communication in English as a result of the experiment (13.4 % vs 30.4 % 'agree' and 26.9% vs 47,8% 'strongly agree'). Respondents' deepening interest in the future profession and their preference in tasks after the experiment displays item 14 (8,7% vs 21,7 'agree' and 13.4% vs 65, 2% 'strongly agree').

The data collected display significant changes connected to students' Attitude to learning. In items 15 and 16 respondents' actively reject the idea of changing the class for learning English (8,7 % vs 65, 2% 'strong disagree') or University to study at (8.7% vs 52.1% 'strong disagree' and 26.9% vs 39.1% 'disagree'). The results of the questionnaire indicate students 'opinions about their work evaluation as fair enough because they actively deny the statement in item 17 (0% vs 78,2% 'strong disagree' and 34,7% vs 13,4% 'disagree'). Students' real attitude to their teacher and her personality is displayed in item 18, the importance of teacher's personality is more actively supported in May compared to September (8,7% vs 30,4% 'agree' and 4,35% vs 52,1% 'strongly agree'). Active support of the used teaching method and class activities that are part of interactive learning is illustrated in item 19 (4,35% vs 21,7% 'agree' and 4,35% vs 65,2% 'strongly agree'). Respect to the team in which the student's study is demonstrated in item 20 (4,35% vs 13,4% 'agree' and 8,7% vs 65,2% 'strongly agree'). The benefits and the positive of the course as inspiring for longer learning is proved in item 21 (8.7% vs 73.9.7% 'agree' and 4.35% vs 17.4% 'strongly agree'), which isevidence to the learning in general as well as in the context of the experiment. Results of the questionnaire are presented in table 2.

**Table 2.** Results of the students' testing before and after the experimental learning.

Marks	Before the experimental learning		After the experimental learning Difference			
Warks	Students	%	Students	%	%	
A (5)	2	8,7	5	21,7	+13	
B (4)	5	21,7	7	30,4	+8,7	
C(3)	9	39,1	10	43,4	+4,3	
D (2)	5	21,7	1	4,3	-17,4	
E (1)	1	4,3	_	_	-4,3	
Total	23	100	20	100		

Simultaneously students' level of communicative competence according to the requirements ICAO level 4 (Operational) was determined. The results of the testing students' level of communicative competence according to the requirements ICAO level 4 (Operational) at the beginning and the end of the year are demonstrated in table 2. According to the results of tests at the beginning of the academic year, 8,7% of students had A-Mark, after the experiment the percentage of students with A-Marks increased to 21,7%. The difference reached +13% which is significant. The percentage of students with B-Mark was 21,7% before and 30,4% with the difference +8,7%. Similarly, the percentage of students with C-Mark was 39,4% and changed to 43,4% which is increasing +4,3%. The results of the testing allow us to state a decrease in the number of students with D-Mark from 21,7% at the beginning of the year and the end to 4,3% with the difference -17,4% which is significant as well as the student with E-Mark which constitutes 4,3% made progress in learning and the percentage of students with E-mark decreased -4,3%.

### 5 Discussion

The last three decades have been marked by the rapid introduction of interactive learning techniques in various spheres of education. In our country, these technologies are not so widely developed because of many reasons, the most significant of which are poor funding of the educational sector, deficient information on the theory and practice of interactive learning in the world educational theory and practice, insufficient training of teachers to use interactive learning in everyday work, a small number of ready-made developments in this field and their often-high cost.

The purpose of our work was to test experimentally the effect of interactive learning introduction into the process of ESP learning future Aviation Professionals. For this, we analyzed essential characteristics of interactive learning and the most commonly used techniques in the process of training aircraft professionals (professionally oriented simulations, games and role-playing). Next, we tested students' level of motivation (using the questionnaire developed on the based of Attitude/Motivation Test Battery (AMBT)), and level of students' communicative competence in Aviation English according to the requirements of ICAO, Level 4 (Operational) at the beginning and the end of the experimental year of study.

The results of the experiment revealed a positive effect from interactive learning (simulations, role-playing and games) the introduction into language ESP courses for aviation professionals. The positive effect of introduction has some peculiarities that are as follows. The data demonstrate a greater impact on students' instrumental motivation. This can be explained by the use of professionally-oriented training materials. Evidence of this statement is the calculation of positive responses ('agree' and 'strongly agree') of students (table 1, Items 1-7: 25 positive responses correspond to Integrative motivation, while Items 8-15: 79 positive responses correspond to Instrumental motivation). But

students' Integrative motivation also has a positive effect. Students' general attitude to learning has changed for the better. They recognized that the teacher's personality is important (table 1, Item 18), the group in which learning takes place is important (Item 20), as is the method of learning and activities (Items 19 and 21). According to the answers of our students, we can state a decrease in the level of stress from communication with strangers (table 1, Item 13) as well as a positive attitude to learning is also evidenced by the lack of desire to change the group (table 1, Item 15) or university where the training takes place (table 1, Item 16).

As a result of the experiment, the learning outcomes of students have significantly improved, their level of communicative competence has increased which is demonstrated by increasing the total number of positive marks (A-, B-, C-Marks: 13%+8.7%+4.3%=26.0%) and decreasing the total number of negative marks (D-, E- Marks: 17.4%+4.3%=21.0%), which is significant.

## 6 Conclusions

The experiment allows us to draw the following conclusions. The use of interactive learning (professionally oriented simulations, role-playing and games) which comprises a simulation of specific situations connected with future profession and enables the teacher to create communicative situations closely reproducing real communication. This has a positive effect on the development of students' motivation to learn and master future professions, which now requires a high level of proficiency in Aviation English.

For better results, the interactive learning (simulations, role-playing and games):

- should be relevant to the profession, as well as the lives and interests of the students, with the teacher monitoring the proceedings;
- should be underpinned by a sense of reality or should create a brand-new reality;
- should be constantly applied as a part of the educational process at every lesson.

Teachers should be aware of the need to modify the pace, style and content of their training delivery to meet the requirements, backgrounds, levels, specific objectives and learning styles of particular groups.

Interactive learning in teaching English aviation professionals creates a tangible positive effect, because:

- gives the possibility to provide students with an interactive student-centred environment which is favourable for a personalized learning and experience acquisition;
- permits numerous rehearsals of learning situations and makes possible less stressful role-playing;
- allows students to experiment with new vocabulary and structures and benefits from incorporating new knowledge into already known;

- promotes students concentration, stimulates and encourages them in learning, helps in understanding the purpose of this process, increases their self-esteem;
- creates opportunities for students to carry out a task or solve a problem together;
- allows teachers to monitor progress and participation unobtrusively;
- gives students the freedom to make their own choices and decisions based on their own experience and promotes constructivist principles in education by allowing the learner to take ownership of knowledge.

Introducing interactive learning teachers should take into account and prevent the appearance possible negative effect:

- students pronunciation and grammar structures using is not always sufficiently clear and strict;
- new vocabulary can be misunderstood and misused by students;
- weak and less motivated students can be withdrawn from participation.

So, these moments require special attention and improvement, as well as teacher, should realize that preparation takes time and rationally solve these problems. Thus, it is possible to determine the implications for further investigations of the issue. It is necessary to observe how to avoid and to reduce students' faulty pronunciation and grammar structures use, ensure their effective operation of new vocabulary, prevent students' withdraw from participation in interactive learning in the classroom.

In our opinion, the interactive learning introduction is an indispensable condition of modern teaching foreign languages at different levels, especially it is important at the ESP university level. Today, without such training, it is impossible to form an appropriate level of students' communicative competence that meets the requirements of international organisations, motivate students to become an expert in their profession and engage them into non-stop process of professional development.

#### References

- [1] simulation. In: Cambridge Dictionary, Cambridge University Press & Assessment (2023), URL https://dictionary.cambridge.org/dictionary/english/simulation
- [2] simulation. In: Merriam-Webster.com Dictionary, Merriam-Webster (2023), URL https://www.merriam-webster.com/dictionary/simulation
- [3] Amelina, S.M., Tarasenko, R.O., Semerikov, S.O., Shen, L.: Using mobile applications with augmented reality elements in the self-study process of prospective translators. Educational Technology Quarterly 2022(4), 263–275 (Sep 2022), https://doi.org/10.55056/etq.51
- [4] Bastturkmen, H.: Ideas and Options in English for Specific Purposes. ESL & Applied Linguistics Professional Series, Lawrence Erlbaum Associates, Inc., Mahwah, New Jersey & London (2006), URL https://www.academia.edu/29511629

- [5] Bilotta, F.F., Werner, S.M., Bergese, S.D., Rosa, G.: Impact and Implementation of Simulation-Based Training for Safety. The Scientific World Journal 2013, 652956 (2013), https://doi.org/10.1155/2013/652956
- [6] Bystrova, B., Nemliy, L., Paziura, N., Vasiukovych, O.: Problem-based ESP methods for teaching future air traffic controllers to conduct radio exchange in non-routine situations. Advanced Education 6(12), 74–79 (Jun 2019), https://doi.org/10.20535/2410-8286.155041
- [7] Daskalovska, N., Gudeva, L.K., Ivanovska, B.: Learner Motivation and Interest. Procedia - Social and Behavioral Sciences 46, 1187–1191 (2012), ISSN 1877-0428, https://doi.org/10.1016/j.sbspro.2012.05.272, 4th WORLD CONFERENCE ON EDUCATIONAL SCIENCES (WCES-2012) 02-05 February 2012 Barcelona, Spain
- [8] Demirbilek, M., Koç, D.: Using Computer Simulations and Games in Engineering Education: Views from the Field. In: Ermolayev, V., Mallet, F., Yakovyna, V., Kharchenko, V.S., Kobets, V., Kornilowicz, A., Kravtsov, H., Nikitchenko, M.S., Semerikov, S., Spivakovsky, A. (eds.) Proceedings of the 15th International Conference on ICT in Education, Research and Industrial Applications. Integration, Harmonization and Knowledge Transfer. Volume II: Workshops, Kherson, Ukraine, June 12-15, 2019, CEUR Workshop Proceedings, vol. 2393, pp. 944–951, CEUR-WS.org (2019), URL https://ceur-ws.org/Vol-2393/paper\_345.pdf
- [9] Gardner, R.C.: Attitude/Motivation Test Battery: International AMTB Research Project (2004), URL https://publish.uwo.ca/~gardner/docs/englishamtb.pdf
- [10] Gardner, R.C., Lambert, W.E.: Motivational Variables in Second-Language Acquisition. Canadian Journal of Psychology / Revue canadienne de psychologie 13(4), 266–272 (1959), https://doi.org/10.1037/h0083787, URL https://eric.ed.gov/?id=ED031968
- [11] Gayevska, O., Kravtsov, H.: Approaches on the augmented reality application in Japanese language learning for future language teachers. Educational Technology Quarterly **2022**(2), 105–114 (Feb 2022), https://doi.org/10.55056/etq.7
- [12] ICAO: Manual on the Implementation of ICAO Language Proficiency Requirements. International Civil Aviation Organization, Montréal, Second edn. (2010), URL http://www.icscc.org.cn/upload/file/20190102/Doc. 9835-EN%20Manual%20on%20the%20Implementation%20of%20ICAO% 20Language%20Proficiency%20Requirements.pdf, Doc 9835 AN/453
- [13] Kuts, M., Lavrentieva, O.: Ergonomic aspects of computer-oriented pedagogical technologies implementation in teaching foreign languages to students of higher education institutions. Educational Technology Quarterly **2022**(1), 88–104 (Feb 2022), https://doi.org/10.55056/etq.9
- [14] Landriscina, F.: Simulation and Learning: A Model-Centered Approach. Springer, New York, NY (2013), https://doi.org/10.1007/978-1-4614-1954-9
- [15] Lemeshchenko-Lagoda, V., Kryvonos, I.: Interactive means of motivating students to learn English for specific purposes at agrarian and technical

- universities. Educational Dimension 3, 233–250 (Dec 2020), https://doi.org/10.31812/educdim.v55i0.3950
- [16] Lesiak-Bielawska, E.D.: Technology in ESP Pedagogy. English for Specific Purposes World 16(48) (2015), URL http://esp-world.info/Articles\_48/ Lesiak Bielawska E.pdf
- [17] Lyu, Y.: Simulations and Second / Foreign Language Learning: Improving communication skills through simulations. Master's thesis, The University of Toledo (2006), URL https://etd.ohiolink.edu/apexprod/rws\_etd/send\_file/send?accession=toledo1147363791&disposition=inline
- [18] Martinović, A., Poljaković, I.: Attitudes toward ESP among university students. FLUMINENSIA: časopis za filološka istraživanja **22**(2), 145–161 (2011), URL https://hrcak.srce.hr/file/97888
- [19] Medical Dictionary: interactive learning (2009), URL https://medical-dictionary.thefreedictionary.com/interactive+learning
- [20] Moskalenko, O.I., Muravska, S.M., Didenko, O.V., Biliavets, S.Y.: Defining the Underlying Factors of Ukrainian Student Pilots' Motivation to Learn Aviation English. Revista Romaneasca pentru Educatie Multidimensionala 11(2), 198–221 (Jun 2019), https://doi.org/10.18662/rrem/125
- [21] Pershukova, O.O.: Motivation of students' of non linguistic universities in learning English as a pedagogical problem. Science and Education a New Dimension. Pedagogy and Psychology VII (85)(208), 36–41 (2019), https://doi.org/10.31174/SEND-PP2019-208VII85-09
- [22] Petrashchuk, O.: Integrated approach to language training of air traffic controllers. Advances in aerospace technology **58**(1), 84–89 (Jun 2014), https://doi.org/10.18372/2306-1472.58.6699
- [23] Ranalli, J.: Learning English with *The Sims*: exploiting authentic computer simulation games for L2 learning. Computer Assisted Language Learning **21**(5), 441–455 (2008), https://doi.org/10.1080/09588220802447859
- [24] Renner, R.: Interactive Learning Definition (2018), URL http://web.archive.org/web/20221203044807/https://www.theclassroom.com/interactive-learning-definition-5494900.html
- [25] Volkova, N., Tarnopolsky, O., Lebid, O., Vlasenko, K.: Students' computer-based workshops in mandatory classes of English for students majoring in psychology and linguistics: A comparative experimental study. Educational Technology Quarterly 2021(2), 274–292 (May 2021), https://doi.org/10.55056/etq.55
- [26] Winsberg, E.: Computer Simulations in Science. In: The Stanford Encyclopedia of Philosophy (2019), URL https://plato.stanford.edu/entries/simulations-science/
- [27] Yee, K.: Interactive Techniques (2020), URL https://www.usf.edu/atle/documents/handout-interactive-techniques.pdf