

# The effectiveness of using simulation in learning a foreign language

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**ABSTRACT:** The aim of this study was to measure how the use of simulation contributes to the improvement of speaking skills and the enhancement of students' motivation to learn a foreign language. The methods of observation, testing, and expert evaluation were used to diagnose the criteria of foreign language communicative competence (motivational, cognitive, and behavioral). The quality of the manifestation of interaction was correlated with its development, and three levels of foreign language communicative competence among students were distinguished: low (reproductive), medium (reproductive-productive), and high (productive). The study results showed that the EG significantly increased the indicators for all foreign language communicative competence criteria. The comparison of the results of the two experimental stages revealed a higher increase in indicators of high and medium levels of foreign language communicative competence in the second stage (high level—by 10.1%, medium level—by 4.9%). It was determined that simulations contribute to the gradual development of all foreign language communicative competence criteria. The main advantages of simulations are that they provide an opportunity to reproduce various communicative situations, thereby contributing to improving speaking skills, understanding the language in real time, and adapting to the requirements of real communication. The prospect for further research is the study of the impact of different forms of simulation on the effectiveness of foreign language learning.

**KEYWORDS:** simulations; competence approach; foreign language communicative competence; non-linguistics majors; learning English

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## 1. Introduction

The aim of learning a foreign language in a higher education institution (HEI) is building communicative competence, which enables receiving fairly complete information when reading foreign

language texts, understanding the interlocutor, and expressing one's own opinion or point of view orally or in writing. Therefore, the requirement of the standards of higher education to use interactive forms of conducting classes for building the necessary professional and general cultural competencies in the educational process is justified. This prompts school teachers and higher school teachers to search for new, more effective foreign language learning techniques (Duchatelet et al., 2022). Interactive teaching methods contribute to the implementation of the principles of interaction, student activity, relying on the experience of others, and necessarily providing feedback (Shkabarina et al., 2020). The application of such methods promotes the formation of an educational communication environment, which is characterized by openness, interaction of participants, equality of arguments, accumulation of knowledge and experience, and the possibility of mutual control and evaluation. Simulations are one of those techniques (Chernikova, Heitzmann, et al., 2020; Sydorenko et al., 2018).

However, despite the positive aspects of using simulations in language teaching, there are several disadvantages and challenges that are worth mentioning. The simulation may not sufficiently convey the reality of the language environment, the peculiarities of interpersonal communication, and the nuances of speech. This can limit understanding of real language use and entail an inability to deal with different communicative situations. This is especially important during professional communication, where misunderstandings can lead to problems and difficulties.

Simulations of language situations are often based on interaction with a computer or virtual characters, which may not provide full communication with real native speakers. Real communication has its nuances, such as intonation, gestures, and facial expressions, which cannot always be reproduced in a simulation.

The effectiveness of simulations can depend significantly on the teacher's competence and skills or the software used. It is important that teachers have sufficient knowledge and skills to effectively implement simulations in the educational process and be able to adapt them to students' needs.

Despite all the positive and negative aspects of using simulations as a method of learning a foreign language, the questions of empirical research on the effectiveness of this method remain open. Therefore, the aim of this study is to explore the effectiveness of using simulations when learning a foreign language.

The main research objectives arising from the relevance of the issue under research include:

- Determine the impact of increasing the number of hours in the curriculum on the quality of learning a foreign language;
- Evaluate the impact of simulations on students' motivation to learn a foreign language;
- Make comparative characteristics of the results of traditional foreign language learning and learning using the simulation method.

The research hypothesis is the assumption that the use of simulation in learning a foreign language improves the level of students' foreign language proficiency compared to traditional teaching methods.

## **2. Literature review**

Simulation is actually the placement of people in imaginary situations, imitating real ones, for training or obtaining an assessment of the work performed. In other words, it is learning by action. As a learning technique, simulation is a safe environment in which students try to cope with the set tasks, overcome communicative failures in simulated situations of professionally oriented communication (Hallinger and Wang, 2020). It should be noted that one cannot talk about successful or unsuccessful

communication in the context of simulation (Koukourikos et al., 2021). The main thing is the immersion of students in communicative practice and the acquisition of relevant experience to overcome the difficulties that arise in the process. The simulation technique allows in practice to provide a way out of situations of communicative difficulties using various compensatory strategies (Chernikova, Stadler, et al., 2021). A compensatory strategy is an activity aimed at the fulfillment of a certain number of goals and means, which leads to the achievement of the main initial goal—compensation for an interrupted communication process caused by a shortage of language resources, and compensatory skills are the ability to find a way out of a situation in the conditions of a shortage of linguistic resources in the process of generation or perception foreign language expression. Compensatory strategies can be: cooperative (the interlocutor helps in solving the problem); non-cooperative (the learner tries to cope with the problem on his own); linguistic (compensation of language and linguistic production plans); paralinguistic (use of non-verbal means of communication—gestures, facial expressions, gaze, intonation, drawings, timbre, etc.).

An educational simulation is a structured scenario with a detailed system of rules, tasks, and strategies that have a specific goal—building specific competencies that can be transferred directly to the real world (Hui et al., 2021). The simulation process in learning a foreign language involves imitative, invented, and acted-out reproduction of interpersonal contacts, centered in a problem situation. It can consist of studying any process or case, solving a problem, making a decision, organizing an event, etc. Simulation is a stimulated communicative problem of language activity, which is carried out in situations as close as possible to real ones. We should also note that student's personal attitude to the discussed communicative problem plays a significant role in the simulation process (Vermunt, 2023).

Simulation technology is a set of interrelated means, methods, forms, and stages of implementation of linguistic didactic tools necessary for the organization of purposeful, professionally oriented students' foreign language learning. Simulation enables the creation of an interactive environment in which different scenarios can be reproduced, users' interactions can be responded to, and the consequences of their actions can be observed. In the context of foreign language learning, simulation can create virtual language environments where students can practice speaking, interact with virtual characters or situations, and receive feedback based on their actions and responses.

The use of simulation as an educational technology is associated with clear modeling of content and procedural components (Ke and Xu, 2020). While the former includes the definition of a problem situation, and the search for didactic materials (texts, audio recordings, video materials, etc.), the latter directly affects the choice and use of methods, techniques, and forms (Tasantab et al., 2023).

Simulation of the communicative situation consists of four stages: design, preparation, and implementation, evaluation (Scholtz and Hughes, 2021). The design stage involves determining the goal of the simulation, the topic, and the problem of the communicative situation, establishing the rules, assigning the roles, and choosing the activity strategy. At the preparation and implementation stage, students study educational material, assign roles, and practice applying what they have learned. At the implementation stage, students immerse themselves in a simulated communicative situation and create a product, with the teacher acting as an administrator. The assessment and self-assessment stage provides for discussing successful and unsuccessful moments, checking simulation results, and making self-evaluation (**Figure 1**).

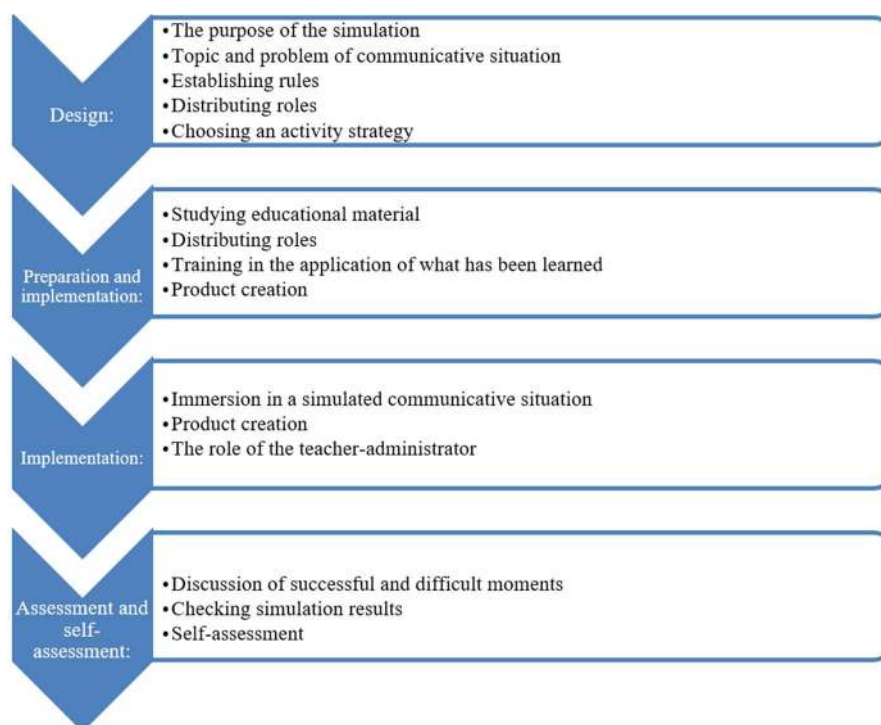


Figure 1. Stages of simulating a communicative situation.

The advantage of simulating communicative situations is the possibility of involving each participant in the performance of the assigned task by students, and the opportunity to show their knowledge, abilities, and talents. Moreover, the need to solve a problematic task requires learners to apply a critical approach, which is logically interrelated to the search for ways to solve it. Summarizing, selecting important information, developing reasoned ideas, communicating with other simulation participants, and relying on independent and collective learning contribute to the formation of a generalized experience of intercultural communication for all participants (Bauer et al., 2022).

Therefore, the simulation method involves creating a virtual environment that imitates real situations in which the pupil/student can find himself in a specific context, in particular a professional one, where it is necessary to learn a foreign language for effective communication (Levin and Flavian, 2022; Levin et al., 2023).

One of the main advantages of the simulation method is the ability to create many situations that may occur in real life but are difficult or impractical to study in the classroom or in a textbook. This enables students/pupils to gain practical experience in using the language in different contexts, which makes the learning process more interesting and effective (Zenios, 2020).

Besides, the simulation method also allows students to learn at their own pace and receive real-time feedback. This enables them to quickly correct mistakes and improve their language skills. The results of the study by Yang et al. (2022) suggest that an online game simulator can create a learning environment that helps reduce EFL (English as a Foreign Language) students' FLA (Foreign Language Anxiety) and subsequently facilitate their English vocabulary learning.

However, the simulation method also has some drawbacks. In particular, creating a virtual environment can be quite expensive and time-consuming (Sailer et al., 2023). Besides, interfaces and other aspects of the software can be unintuitive and difficult to use, which can cause frustration and loss of interest in the learning process (Lutfi et al., 2018).

So, the simulation method is a powerful tool for learning foreign languages, which enables students to gain practical experience in using the language in different contexts.

### 3. Materials and methods

#### 3.1. Research design

The study was arranged in three stages from January 2020 to December 2022. *The first (preparatory) stage* provided for the development of the experiment program. *The second (main) stage* involved:

- Pre-experimental measurement with students of non-linguistics majors in the experimental (EG) and control (CG) groups;
- Implementation of a set of simulation techniques in learning a foreign language;
- Post-experimental measurement.

The simulation techniques were used in EG, while traditional methods were applied in CG. The following simulation tools were used in the process of experimental work: computer programs (Influent), interactive web environments (Quizlet and Kahoot), and role-playing games. Kahoot enabled the teacher to create tests, surveys, and quizzes. Quizlet, as an interactive service, was used to learn lexical material by creating sets of flashcards with words and definitions, combined in modules, folders, or courses.

The following games were used:

- Job interview—In this simulation, students recreate the situation of a job interview;
- United Nations debate—In this game, students play the roles of representatives of different countries as part of a debate at the United Nations;
- Travel agency—In this game, students play the roles of tourists and travel agents.

For students of each major, a plan for introducing simulations into the educational process was developed in accordance with the work program, simulation methods were combined with traditional methods of learning a foreign language. The traditional methods were: grammar translation—a classic method for learning English; direct method—direct method; audio-lingualism—one of the first modern methods; and communicative language teaching—a modern standard method. A detailed scenario was created for each simulation, which predicts professional situations that students may encounter in their future professional activities.

The simulation methods were practically implemented in two stages: in the 2020/2021 academic year and in the 2021/2022 academic year in the subject Foreign Language (English), which is taught in non-linguistics majors during 1st, 2nd, 3rd semesters as a subject related to the basic part of the curriculum. The allocation of two stages of experimental work is connected with a change in the curriculum: starting in 2020, the total number of hours of Foreign Language (English) has increased by 60%, and the number of face-to-face classes has increased by 52%, independent work by 68% in the curricula of non-linguistics majors. *The third (final) stage* provided for data processing; interpretation of statistical indicators; comparison of the obtained results with the expected ones; development of recommendations; and preparation of research results.

The structure of the concept of foreign language communicative competence was used to determine the criteria and methods of its diagnostics. It includes motivational, cognitive, and behavioral criteria. We distinguish low (reproductive), medium (reproductive-productive), and high (productive) levels of students' foreign language competence (**Tables 1–2**).

**Table 1.** Criteria, indicators, and methods of diagnostics of foreign language communicative competence (CC) in students of non-linguistics majors.

<b>Criteria and indicators of the level of foreign language CC</b>		
<b>Motivational criterion</b>	<b>Cognitive criterion</b>	<b>Behavioural criterion</b>
A positive attitude towards learning a foreign language; Cognitive activity;	Students' understanding of the studied material; Level of specific and general cultural knowledge, communicative skills, and abilities.	Student's ability to cooperate, joint activities; The ability to solve communicative tasks;
Willingness to come into contact with others.		Language behavior.

**Table 2.** Levels of foreign language CC in students of non-linguistic majors.

<b>Low (reproductive) level</b>	<b>Medium (reproductive and productive) level</b>	<b>High (productive) level</b>
Students' unwillingness to perform communicative tasks with passivity in classes; Low productivity of students' work is less than 50% of the planned volume; Students' poorly developed correctness, logic and accuracy of speech; The active vocabulary is poor, the subject component of foreign language competence has not been developed; The level of knowledge of grammatical and lexical means of a foreign language, logic in expressing opinions is low.	Reflects students' willingness to perform communicative linguistic tasks, the recurrent need to communicate in a foreign language, especially on topics learnt; Sufficient knowledge of analysis and synthesis, generalization operations; The ability to partially switch from intellectual to communicative tasks; Students have developed ability to correctly and situationally engage in communication in a foreign language, but lack the ability to competently maintain communication; Communicative tasks are performed with productivity 70% of the planned volume.	Students' need for constant and consistent performance of communicative tasks; The ability to quickly switch from one type of activity to another without loss of intensity; The ability to independently analyse, generalize, draw conclusions, perform tasks within the set time with high productivity up to 100%; The ability to accurately express one's point of view, willingly enter into communication in a foreign language and competently continue it; Students have developed communication skills and abilities, high-level language behaviour.

### 3.2. Sample

The experiment was conducted at:

- The Department of Foreign Philology and Translation of the Faculty of Trade and Marketing of Kyiv National University of Trade and Economics;
- The Department of English Language, Literature with Teaching Methods of the Faculty of Humanities of Mukachevo State University;
- Department of Theory and Practice of English Translation of the Educational and Scientific Institute of Philology of Taras Shevchenko National University of Kyiv;
- The Department of Foreign Languages of the Natural Sciences Faculties of Taras Shevchenko National University of Kyiv;
- The Department of Modern European Languages, Faculty of International Trade and Law of Kyiv National University of Trade and Economics.

The study involved a total of 229 (first-year) students of non-linguistics majors in the experimental training—091: Biology; 106: Geography; 122: Computer Sciences; 011: Educational and Pedagogical Sciences. The first stage (2020–2021) of the experimental training involved 102 students, and the second stage (2021–2022)—127 students. Participants were included by random distribution.

### 3.3. Data analysis

The method of observation, testing, and expert evaluation was used to diagnose the criteria of

foreign language CC. The quality of manifestation of interaction was correlated with the level of development, such as: not developed (0 point), developed at a minimal level (1 point), developed with some gaps (2 points); developed at a sufficient level (3 points).

The general assessment of the level of competence was carried out according to the Equation (1) and filled with the content of foreign language training, where  $C$  is foreign language communicative competence,  $L$  is the number of developed indicators,  $a_i$  is the coefficient of the given level (1—high, 0.75—sufficient, 0.5—low),  $SC$ —sub-competence, and  $i$ —module:

$$C = \frac{1}{L} \sum_{i=1}^L a_i SC_i \quad (1)$$

The obtained points are correlated with the level of foreign language CC: 1–60—low level (reproductive), 61–90—medium (reproductive-productive), and 91–100—high (productive).

### 3.4. Data collection procedure

The language tests with open- and closed-ended questions were developed and applied to quantitatively measure the cognitive criterion of students' foreign language communicative competence. One hundred test items were developed for the diagnostics of listening, reading, and writing. The method of expert evaluation was used to measure behavioral and motivational criteria. A group of experts who had significant experience in studying a foreign language and language communication was involved in supporting the objectivity of the assessment. The experts were independent from students and had appropriate education and experience. The members of the expert group of 10 experts were selected from among the teachers at the universities where the experiment was conducted.

Internal validity was ensured by carefully developing test items and observations considering foreign language communicative competence criteria. External validity was ensured through comparison with other methods and criteria for assessing communicative competence. The following measures were taken to ensure the reliability of the research results.

The tests used to measure foreign language communicative competence were designed so that their items were consistent and measured each criterion of competence in the same way. Some research objects were tested twice at different stages of the research (first and second stages) to assess the stability of the results. Additional verification and analysis were carried out in variances between the results at different stages.

### 3.5. Tools

The SPSS 17.0 package was used for statistical data processing to compare the average values of two independent samples using the Student's  $t$ -test.

### 3.6. Ethical criteria

The respondents' participation in the study was voluntary, the principles of protecting the rights of research participants, and ensuring their safety and privacy were observed in the process of data collection. The research was based on the principles of impartiality and objectivity in the course of research.

## 4. Results

**Table 3** contains the results of the experimental measurement of the level of foreign language CC of students of non-linguistics majors at the summative stage of the experiment.

**Table 3.** Results of experimental measurement of the level of foreign language CC of students of non-linguistics majors.

Stage of experimental work	Level	Criteria for the level of foreign language CC			The level of foreign language CC, %
		Motivational criterion, %	Cognitive criterion, %	Behavioral criterion, %	
Stage 1 (2020–2021)	High	4.5	17	14.4	12
	Medium	50.6	47	31.4	43
	Low	44.9	36	54.2	45
Stage 2 (2021–2022)	High	5.3	17.6	14.4	12.4
	Medium	53.3	47	31	43.8
	Low	41.4	35.4	54.6	43.8

The following conclusions were drawn based on the generalized data of the summative diagnostics of the level of foreign language CC:

- 1) At the beginning of the experimental training, the majority of subjects had medium or low levels of foreign language CC;
- 2) Different aspects of communicative competence are developed unevenly; understanding of the studied material and attitude to foreign language learning are developed at a medium level, while others, for example, cognitive activity, communication skills, and language behavior are at a low level;
- 3) The following criteria are developed at a medium level: understanding of the studied material, attitude to the study of a foreign language, and the desire to come into contact with others;
- 4) The following criteria are developed at a low level: cognitive activity in the study of a foreign language, specific and general cultural knowledge, communicative skills and abilities, the ability for joint activity and cooperation, and language behavior in a foreign language;
- 5) Comparable results of the initial diagnostics were obtained at the two stages of the experimental work (2020–2021 and 2021–2022), which indicates a similar level of students' foreign language CC.

The initial diagnostics of students of different majors enabled the formation of control and experimental groups with the same initial level of foreign language CC. This guarantees more objective results of the experiment, as students have a similar initial base of learning a foreign language.

During three semesters, the experimental groups used a simulation of a communicative situation, which is described in the research methods. This approach made it possible to consistently observe the process of learning a foreign language and evaluate the effectiveness of the simulation technique.

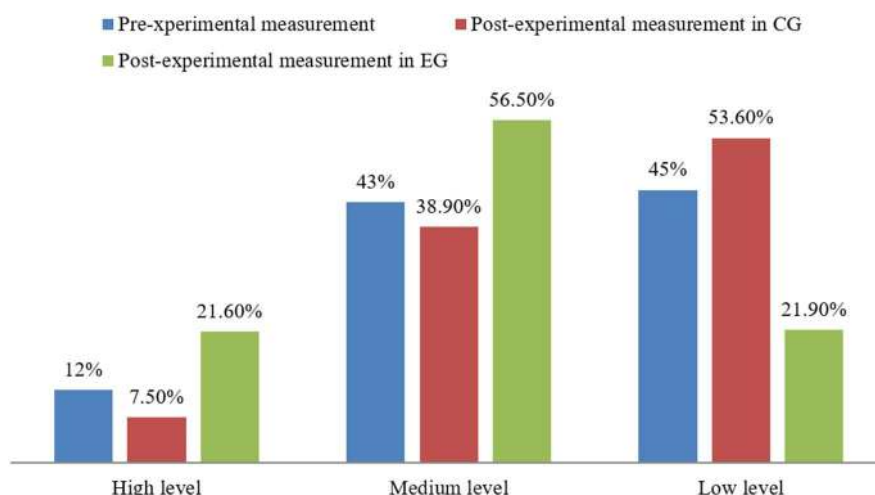
The experimental training was followed by post-experimental diagnostics, the results of which are presented in **Table 4** and **Figures 2–3**.

**Table 4.** The results of post-experimental measurement of the level of foreign language CC of students of non-linguistics majors.

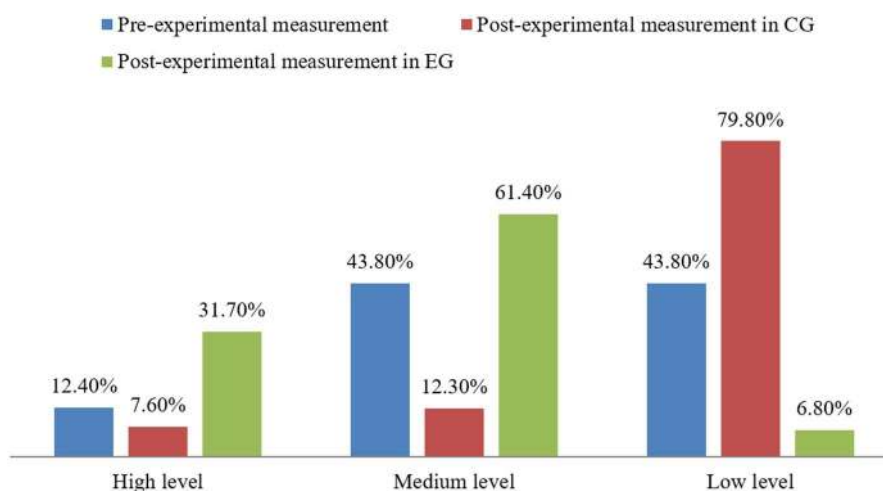
Stage of experimental work	Levels	Criteria for building foreign language CC									The level of foreign language CC, %		
		motivational criterion, %			cognitive criterion, %			behavioural criterion, %			Sd	CG	EG
		Sd	CG	EG	Sd	CG	EG	Sd	CG	EG			
Stage 1 (2020–2021)	High	4.5	4.9	24.5	17	9.8	22.5	14.4	7.8	17.6	12	7.5	21.6
	Medium	50.6	34.3	53.9	47	48	58.8	31.4	34.3	57	43	38.9	56.5
	Low	44.9	60.8	21.6	36	42.2	18.7	54.2	57.8	25.4	45	53.6	21.9
Stage 2 (2021–2022)	High	5.3	4.7	33	17.6	10.2	34.7	14.4	7.9	27.6	12.4	7.6	31.7
	Medium	53.3	11.8	60.6	47	15.8	62.2	31	10.2	61.4	43.8	12.6	61.4
	Low	41.4	83.5	6.4	35.4	74	3.1	54.6	81.9	11	43.8	79.8	6.8

Note: Sd—summative diagnostics, CG—final diagnostics in the control group, EG—final diagnostics in the experimental group.





**Figure 2.** Dynamics of the level of foreign language CC of students of non-linguistics majors at stage 1 (2020–2021) of experimental work.



**Figure 3.** Dynamics of the level of foreign language CC of students of non-linguistics majors at stage 2 (2021–2022) of experimental work.

Judging by the results of the final diagnostics, *in the control groups*:

- 1) Motivation to study a foreign language generally decreased compared to the beginning of studies (most students demonstrated a low level of motivation). This may indicate the need to enhance students' interest in language learning during the educational process;
- 2) In the first stage, the number of students with a high level decreased, but the number of students with a medium level of foreign language CC increased; this phenomenon was not observed in the second stage, which may indicate a certain progress in the language learning in the control groups;
- 3) Indicators of the cognitive criterion increased slightly (probably due to the development of the ability to read professionally oriented texts). This may indicate the successful implementation of the program in order to develop the academic level of students' speech in the relevant fields of knowledge;
- 4) The indicators of the behavioral criterion increased slightly (because little attention is paid to the study of the peculiarities of speech behavior in the traditional teaching of a foreign language in a HEI).

Summing up, the results of the final diagnostics of control groups confirm the need for constant

improvement of methods and approaches to teaching foreign languages, in particular, the use of innovative technologies and focus on the development of motivation and behavioral aspects of language learning.

*In the experimental group:*

- 1) Indicators for all criteria of the foreign language CC increased significantly. This testifies to the effectiveness of the application of the simulation of communication situations. This approach enables students to gain practical experience in communication in real situations, which contributes to the active development of their language skills and confidence in using a foreign language;
- 2) A slightly higher increase in indicators of high and medium levels of the foreign language CC at the second stage of experimental work (high level—by 10.1%, medium level—by 4.9%), which may be explained, on the one hand, by an increased number of face-to-face classes and independent work in the 2021–2022 curricula, and teachers’ experience of working with the technology of simulating a communicative situation, on the other hand. This confirms the importance of using innovative approaches in the process of learning foreign languages and contributes to the improvement of quality indicators of student learning.

The analysis of the indicators obtained as a result of the experiment showed that the general population, represented by samples of the obtained data, is distributed according to law, close to the normal one, which allows applying the Student’s *t*-test to determine the statistical significance of the experimental data. The following hypotheses are put forward to check the equality of general averages of two independent samples in SPSS: null hypothesis H0—averages are equal, and competing H1—general averages are unequal. The null hypothesis is accepted at the level of significance (significance (2-sided))  $p > 0.05$ , while at  $p \leq 0.05$  the competing hypothesis is accepted. **Table 5** presents the results of the calculations.

**Table 5.** Statistical indicators of the results of the experiment regarding the effectiveness of using simulation in learning a foreign language.

Competence	CG	EG
Foreign language CC	The arithmetic mean of the compared set of answers (M)	
	16.6	34.3
	Variance ( $\sigma^2$ )	
	1.485	1.768
	The number of degrees of freedom (f)	
	298	
	Student’s <i>t</i> -test	
	8.467	

The reliability of the experimental results is confirmed by their statistical significance. Based on the Student’s *t*-test calculated for the experimental group, the reliability of the differences in indicators of students’ foreign language CC at the beginning and at the end of the experiment was proven. In this case, the use of the Student’s *t*-test in the experimental group made it possible to confirm the reliability of the differences in indicators of students’ foreign language CC at the beginning and at the end of the experiment. This means that the changes observed as a result of the application of simulating the communication situation are statistically significant and cannot be explained by chance.

## 5. Discussion

The main goal of the study was to explore and evaluate the effectiveness of using the simulation

method in learning a foreign language. In other words, we tasked ourselves with determining whether the use of simulations can contribute to improving the level of foreign language proficiency among students of non-philological faculties compared to traditional teaching methods.

The results of our study confirm the hypothesis that the use of the simulation method in teaching a foreign language contributes to the improvement of students' language proficiency compared to traditional teaching methods.

Discussing the methods of learning foreign languages, Angelini and García-Carbonell (2019) note that simulation is an effective means to achieve the high level of language competence necessary for successful communication. They combine simulations with the flipped classroom, where teaching involves Internet resources out of class, and traditional homework is transferred to class. Our study confirms these results and emphasizes the importance of simulation in improving students' English writing skills.

Our results are consistent with Prabowo and Yulia's (2018) research, which also showed that simulation promotes the development of foreign language students' speaking skills. Michelson's (2019) article also showed the educational effectiveness of using simulations in French language learning. The author used global simulations, where students played the roles of fictional characters and performed written and oral dialogic tasks. Our study, aimed at higher education students, used simulations that simulated professional activities. Our study, aimed at higher school students, used simulations of professional activities.

In the process of experimental work, Devos et al. (2021) found that the share of students in the experimental group with a high and sufficient level of success in learning a foreign language doubled, exceeding the same indicator in the control group of language learning after using simulations. After the experimental work in the experimental group, indicators for all criteria of the level of foreign language CC increased.

It is worth noting that many authors use simulations, combining them with other approaches and methods of teaching foreign languages.

Research by Takimoto (2020) indicates the success of cognitive linguistics using metaphors to teach politeness at different levels of learning Japanese as a foreign language. Furthermore, the research of Kaleta (2020) is valuable for further studying the possibilities of the cognitive linguistic approach to learning foreign languages. They confirm the effectiveness of this approach in teaching syntactic categories such as infinitive and gerund to students learning English as a foreign language, in particular Polish students.

Research by Jacobsen (2018) shows that the cognitive approach successfully helps to overcome the complexities of the conditional when teaching English to Polish students.

Razali and Ismail (2017) indicate the positive impact of simulations and role-playing games on the development of students' language skills and enriching their vocabulary. The results of the study by Rokhayani et al. (2017) show that pair modeling, which includes simulations and role-playing, successfully develops speaking competence in English, reduces the psychological distance between teachers and students, and builds confidence and professional motivation, which correlates with our findings.

So, these studies confirm that the use of simulations in teaching foreign languages is an effective method that contributes to the development of students' speaking skills. The use of different types of

modeling, such as global modeling and simulations, allows the creation of a realistic environment and realistic relationships between participants, which enhances student motivation and stimulates their speaking activity.

All the reviewed studies make it clear that the use of simulations and cognitive approaches in teaching foreign languages is very effective. These methods allow students to learn the language more interactively and improve their language skills. It is also important to note that a combination of different methods and approaches can give even better results in foreign language learning. All this confirms that the use of new technologies and approaches in education can help improve the level of foreign language proficiency.

### **5.1. Research limitations**

The study was limited by the sample size, which included only students of non-philological majors with a limited number of faculties. The study did not take into account the factors of students' age and gender and was also conducted during two stages, which may affect the results due to possible dynamics in the study and foreign language development of students.

### **5.2. Recommendations**

We recommend studying the influence of various forms of simulation on the effectiveness of foreign language learning for further development of the issue under research.

## **6. Conclusions**

The modern world requires people to learn foreign languages more than ever before. The growth of international communications and the globalization of the economy require professionals to know a foreign language at the level of understanding and ability to communicate.

The use of simulations in learning foreign languages can significantly improve the quality of education, providing students with the possibility of deeper and more effective adaptation to the real language environment. The results of the study show that the use of simulations in the educational process can enhance students' motivation and increase their level of success in learning a foreign language, which is confirmed by statistics.

The obtained results can be applied in educational institutions of various levels to improve the quality of teaching foreign languages. The use of simulations can help engage students in the learning process, improve their motivation, and make learning more interesting and effective. Besides, studies showed that simulations can help students improve their language skills, particularly understanding and use of grammar and vocabulary, as well as develop speaking competence and reduce the psychological distance between teacher and student. Therefore, the results of this study can be useful for teachers, methodologists, and developers of foreign language learning programs.

We consider the study of the influence of various forms of simulation on the effectiveness of language learning, such as interactive games, virtual excursions, and other forms of visual and audio simulation, as promising directions for further research. The study of the influence of age and level of language knowledge on the effectiveness of using simulation in learning language is also relevant. All these areas of research can help to better understand the role of simulation in language learning and develop more effective methods of using it in practice.

## Author contributions

Conceptualization, IZ, IT, IB, SM, KM and TS; methodology, IZ, IT, IB, SM, KM and TS; validation, IZ, IT, IB, SM, KM and TS; formal analysis, IZ, IT, IB, SM, KM and TS; investigation, IZ, IT, IB, SM, KM and TS; resources, IZ, IT, IB, SM, KM and TS; data curation, IZ, IT, IB, SM, KM and TS; writing—original draft preparation, IZ, IT, IB, SM, KM and TS; writing—review and editing, IZ, IT, IB, SM, KM and TS; visualization, IZ, IT, IB, SM, KM and TS; supervision, IZ, IT, IB, SM, KM and TS. All authors have read and agreed to the published version of the manuscript.

## Conflict of interest

The authors declare no conflict of interest.

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