Developing the English Language Communicative Competence of Future Teachers by Means of Mobile Apps

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Abstract. The integration of Ukraine into the world community requires perfect mastery of English not only from citizens, but also from intending professionals. So, English proficiency becomes an important ability and additional educational skill of the future foreign language teachers. The article deals with using the mobile applications as the means of pre-service teachers' English language communicative competence developing. At first, the main professionally oriented mobile applications for studying English and their advantages were identified. Then criteria and levels of assessing students' English proficiency were defined. Four main language skills (listening, reading, writing, speaking) were chosen as the basic criteria and four levels (high, sufficient, average, low) of assessing undergraduates' English language communicative competence were determined. During the implementing stage of pedagogical experiment, the respondents of experimental group used mentioned mobile apps with the aim of improving English. The comparison of the experimental and control groups took place at the ascertainment, and later at the control stages of the experiment with the help of mathematical statistics methods. The effectiveness of using mobile applications in order to improve English language skills during the educational process at the pedagogical faculty at the university has been proved.

Keywords. English language communicative competence, mobile applications, future teachers, educational process at the pedagogical faculty.

1. Introduction

Today, Ukraine is undergoing changes in the modern conceptual foundations of the national education system. The process of national education integration into the world educational space takes place regardless of the difficult contemporary circumstances in Ukraine. The need to update the educational sector of Ukraine is due to its insufficient compliance with modern demands of society, requirements of intercultural communication, and challenges of linguistic globalization phenomena.

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The modernization of an intending teacher training process involves increasing the requirements for their professional level in order to implement the New State Education Standard, which involves the formation of undergraduates' English language competence at the level of B2 English proficiency [1].

To reform the educational sector, there is a need to prepare highly qualified educators for modern school, who can act active in contemporary conditions, to participate in productive professionally oriented international communication. Taking into account the above mentioned, the issue of improving English language communicative competence of prospective teachers in the process of study at higher education establishments is significant. Consequently, the purpose of the article is to study the influence of mobile apps to developing undergraduate students' English competence in the conditions of Ukrainian higher education.

Most part of Ukrainian higher education establishments work in a distance or mixed format today. Nowadays ICT using is especially important for the educational process implementation in higher education establishments in our country. During modern changes, the digital means usage is intended to the opportunities that influence professional becoming of contemporary teachers. Using such means productively allows undergraduates to be ready to the educational communication.

Modern requirements for graduates' professional skills are only growing because they should be competitive to find a job in the contemporary labor market. Accordingly, as part of the individual work planned by the curriculum of the course "English for professional purposes", students should be offered a number of tasks involving the use of mobile applications. Using the professionally oriented mobile applications aimed at improving their level of English proficiency during educational process at the university can facilitate improving English speaking skills. The analysis of scientific literature, interviews, and questionnaires were used as a means of research.

2. Literature Review

There is a considerable amount of scientific literature on developing pre-service teachers' English language communicative competence. The results of the analysis of state documents make it possible to determine that implementing English at higher education institutions of Ukraine take place in accordance with the document: "Methodical recommendations for ensuring quality study, teaching and use of the English language in higher education institutions of Ukraine" [2]. The above mentioned "Methodical recommendations" provided guidelines to the managers and English teachers of higher education establishments in Ukraine regarding the implementation tasks of modern foreign language education, national aims for improving the teaching, learning and use of the English language in higher education. In addition, it is noted about the support of international parterres and the need to participate in international projects. The document lays down the maximum potential of its application in the post-war period of the country's recovery.

Various approaches have been proposed to solve the issue of developing English speaking communicative competence. In particular, Ukrainian scientists I. Lytovchenko et al [3] draw our attention to the interactive English learning methods and techniques as the most productive education means that give the opportunity to build effective cooperation between all the educational process participants. O. Liubashenko and Z. Kornieva [4] outline several reasons for dialogic interactive speaking skills assessment

of technical English to tertiary school students. In our previous works [5, 6] we trace the advances in intending primary school teachers' English communicative competence development by methods of mathematical statistic. S. Nykyporets and others [7] in the investigation show that communicative competence development of non-linguistic universities students is effective by means of mind maps. Another group of scientists [8] outline the ways of undergraduates' intercultural communicative competence developing, and propose recommendations for its building. T. Yeremenko et al [9] describe the learning scheme of intending teachers' questioning abilities formation, motivating them to the future professional activity. The researches show the possibility to improve undergraduates' communication skills and actualizing them during the theoretical-practical course, and teaching practice. I. Zadorozhna and O. Datskiv suggest to use positive psychology recommendations to teach the English language in distance challenging environment. [10]. The issue of implementing mobile applications in university educational process with the aim of improving English speaking skills has received much attention in the last five years. More recent evidence reveals that foreign language communicative competence of non-philology majors students can be developed by means of mobile applications [11], with the help of robotics usage [12].

Research results show that it is not only Ukrainian scientists, but also foreign researchers study the problem of using mobile applications for developing English proficiency. Foreign scientists have addressed the issue of implementing mobile applications for improving English language communicative competence of university students. I. Ari et al [13] describe the process of implementing Duolingo mobile application with the aim of improving students' English vocabulary. D. Assanova and A. Prlepessova [14] prove the importance of educational mobile apps in learning English for non-linguistic specialties. A. Basal et al [15] demonstrate the effectiveness of mobile applications in English vocabulary teaching. K. Beatty [16] describes the practical aspects of mobile language learning process. M. Bernacki et al [17] show the advantages of mobile technology in education, advances in understanding and measuring the role of mobile technology. Q. Fu and G. Hwang [18] define the directions in collaborative English learning through mobile technology usage. Y. Hsu and Y. Ching [19] share their experiences of designing the mobile app for teaching educators and using it in an online graduate course. D. Huynh et al [20] present the game assessment of English learning platform Duolingo. S. Rohani and others [21] develop a bilingual electronic English dictionary app and prove its effectiveness.

The study of Ukrainian scientists [22] research both the structure of communicative competence, and the system of its building while teaching English in higher education institutions to the students of economics. Md. Biplob Hosen [23] in his work focuses on analyzing the facts that influence the students' perception about telecommunication service quality on online education during the pandemic situation. The research of W. Yasya [24] aims to prove the influence of ICT for communicative competence improving and social changes in a rural area in Indonesia.

3. Aim

The analysis of above-mentioned works shows that different aspects of English proficiency developing by means of mobile application have been studied quite thoroughly. However, implementing the professionally oriented mobile applications in

the educational process with the aim of building pre-service teachers' English language communicative competence may need further research.

Therefore, the aim of this paper is to research the problem of future teachers' English language communicative competence development by means of mobile applications. To achieve the purpose of the research, we should implement some objectives, the solution of which will ensure the realization of the result. The objectives are: 1) to identify the main professionally oriented mobile applications for improving the English communicative competence of future teachers and describe their advantages; 2) to assess the level of intending teachers' English language communicative competence; 3) to check the effectiveness of using mobile apps to improve English language skills during the educational process at the pedagogical faculty at the university.

4.   Results

Table 1. Professionally oriented pedagogical mobile applications for studying English

App	Advantages
"ELT Training" by Oxford University Press	This app offers English language training for English language teachers. It provides interactive activities, videos, and audio content to improve teachers' language skills. It also offers modules on language teaching methodology and classroom management.
"Teach English!" by British Council	This app is designed for non-native English-speaking teachers who want to improve their English proficiency. It offers a range of interactive activities, including listening, speaking, reading, and writing exercises. It focuses on practical English language skills necessary for effective classroom teaching.
"TEFL Training" by TESOL International Association	This app provides resources and training for teachers of English as a foreign language (TEFL). It offers grammar lessons, vocabulary exercises, and pronunciation practice. It also includes lesson planning tips, teaching techniques, and professional development materials.
"Teacher's Assistant Pro: Track Student Behavior" by Thomas Suarez	Although not solely focused on English language training, this app is designed to assist teachers in managing classrooms and tracking student behaviour. It includes features for recording attendance, managing grades, and tracking student performance. It can be useful for English teachers looking for a comprehensive tool to enhance their teaching practices.

The purpose of the research and experimental work was to study the effectiveness of using mobile applications in the process of intending teachers' professional training.

The use of mobile apps help to students of pedagogical specialties to solve the problems related to the English teaching methods . Among the most using educational applications for learning foreign languages are: Lingualeo, Duolingo, Babbel, Rosetta Stone, Memrise, Easy Ten, Pussle English, Polyglot, etc. The most of them are designed to everyday communication. However, our aim was to analyze the apps that aimed at developing professionally oriented English-speaking communicative competence of undergraduates at higher educational institutions.

There are professionally oriented mobile apps available for training teachers' English. These apps are designed to provide targeted language training and resources specifically for educators. So, we study and describe the features of the most popular apps that can be useful in studying English by intending specialists of pedagogical professions (see in the table 1). Based on the analysis of scientific and educational sources, we consider it expedient in the process of evaluating to take into account the

following levels of English language communicative competence formation of intending teachers: high, sufficient, average, low (table 2).

Table 2. The levels of English language communicative competence formation

The author's title	British title	The name in accordance with the pan-European recommendations on language education
High	Upper-Intermediate / Advanced	B 2 / C1
Sufficient	Intermediate	B 1
Average	Pre-Intermediate	A 2
Low	Basic / Elementary	A 1

In the process of organizing the experimental work, the complexity and multicomponent nature of the process of English language communicative competence building were taken into account. So, we chose the language skills (listening, reading, writing, speaking) as the basic criteria of assessing undergraduates' English proficiency.

In accordance with the aim and logic of the experiment, the stages of its implementation were defined and substantiated: ascertaining, implementing and control. Certain tasks, corresponding forms and methods of organization characterized each of them. During the ascertainment stage of the experiment, the number of students who possess certain levels according to the main criteria was determined with the aim of finding out the current state of English language proficiency at the pedagogical faculty (table 3).

Table 3. The results of ascertainment stage of the experiment

Criteria	Levels			
	High	Sufficient	Medium	Low
Reading	7,97	48,55	37,68	5,80
Listening	16,67	41,30	39,13	2,90
Speaking	13,04	31,16	55,07	0,73
Writing	6,52	33,33	51,45	8,70

The result of the ascertainment stage (fig.1) shows that contemporary undergraduates have the highest level of English listening, at the same time they have the lowest level of English speaking. The majority of students possess English proficiency at sufficient or medium levels.
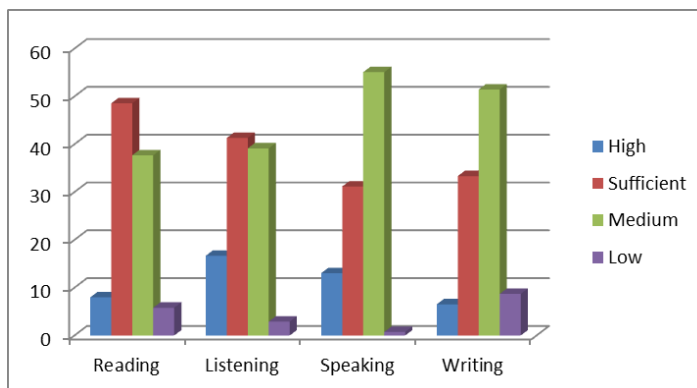

Figure 1. The results of ascertainment stage of the experiment.

The process of developing English language communicative competence requires a certain foundation that enables the achievement of the B2 level of foreign language proficiency as a necessary condition for admission to the master's program. During the analysis of the experimental results, it was concluded that successful mastery of all the language skills in English on professional vocabulary contributes to better English communication. During the implementing stage of the experiment, students used one or more of the mentioned mobile applications as an aid for completing tasks of individual work from the course "English for professional purposes".

In order to ensure the reliability of the obtained data, competent experts of the same qualification (everybody has PhD in Pedagogics and has C1 level of English) from the lectures participated. Compliance with the requirement of probability was aimed at equalizing the basic conditions for conducting a pedagogical experiment in the real conditions of the educational process.

The comparison of the experimental (EG) and control (CG) groups took place at the ascertainment, and later at the control stages of the experiment with the help of mathematical statistics methods. The determination of the results of the integral evaluation by experts of the levels of undergraduates' English proficiency were analysed in order to establish the coincidence or differences in the characteristics of the studied groups by comparing the distributions of the experimental and control groups at the beginning of the ascertaining and at the end of control experiment stages.

5.   Methods

Table 4. Dynamics of the English proficiency levels of the respondents in the experimental and control groups during the experiment

Levels	High		Sufficient		Average		Low	
Groups	**%**	**Persons**	**%**	**Persons**	**%**	**Persons**	**%**	**Persons**
EG at the research beginning	14.06	9	25.00	16	39.06	25	21.88	14
EG at the end of the research	21.88	14	39.06	25	28.13	18	10.93	7
CG at the research beginning	12.90	8	25.81	16	42.32	25	20.97	13
CG at the end of the research	14.52	9	27.42	17	38.71	24	19.35	12

To realize the aim of the study, such methods were used: theoretical: analysis of pedagogical, psychological, methodical literature; empirical: observation of the educational process, questionnaires, interviews; statistical; graphic. In order to prove the reliability of the obtained results of the experimental research, statistical methods of data processing of the pedagogical experiment were used.

Fundamentals of statistical hypothesis testing. Consider two aggregates. The probability of occurrence of event A in the first set is p_1, and in the second – p_2. It is necessary to check the hypothesis $H_0 : p_1 = p_2$ with the alternative $H_1 : p_1 \neq p_2$. Let n_1 experiments were conducted in the first aggregates in which the event occurred m_1 times, and n_2 experiments were conducted in the second aggregates in which the event occurred m_2 times. Estimates of the unknown probabilities p_1 and p_2 will be the corresponding relative frequencies $\dfrac{m_1}{n_1}$ and $\dfrac{m_2}{n_2}$.

Let's consider the difference $\dfrac{m_1}{n_1} - \dfrac{m_2}{n_2}$.

We have $E\left(\dfrac{m_1}{n_1}\right) = p_1$, $E\left(\dfrac{m_2}{n_2}\right) = p_2$ $\hfill$ (1),

$$Var\left(\frac{m_1}{n_1} - \frac{m_2}{n_2}\right) = \frac{p_1(1-p_1)}{n_1} + \frac{p_2(1-p_2)}{n_2} \hspace{2cm} (2).$$

If the main hypothesis $p_1 = p_2 = p$, is correct, then we can assume that (n_1+n_2) observations were made, in which the event occurred $(m_1 + m_2)$ times.

We will use a criterion

$$Z = \frac{\dfrac{m_1}{n_1} - \dfrac{m_2}{n_2}}{\sqrt{\left(\dfrac{m_1+m_2}{n_1+n_2}\right)\left(1 - \dfrac{m_1+m_2}{n_1+n_2}\right)\left(\dfrac{1}{n_1} + \dfrac{1}{n_2}\right)}} \hspace{2cm} (3)$$

to test the hypothesis.

The quantity Z is asymptotically normal with parameters 0 and 1. Therefore, the level of significance α can be found from the condition.

$$P\{|Z| < z_\alpha\} \approx 2\Phi_0(z_\alpha) = 1 - \alpha \hspace{2cm} (4).$$

According to the results of observations, we find the observed value of the criterion z_s. If $z_s < z_\alpha$, then the hypothesis is accepted, otherwise it is rejected.

According to the assessments of independent experts, recommendations for the assignment of educational qualifications are possible for the undergraduates who possess English proficiency at first three levels, and the assignment of professional qualifications is recommended only for the students who have high and sufficient levels of English language communicative competence.

Table 5. Dynamics of the English proficiency levels of the respondents in the experimental and control groups for professional qualification

Levels Groups	High and sufficient levels		Average and low levels	
	%	Persons	%	Persons
EG at the research beginning	39.07	25	60.93	39
EG at the end of the research	60.93	39	39.07	25
CG at the research beginning	38.71	24	61.29	38
CG at the end of the research	41.93	26	58.07	36

Table 4 for professional qualifications can be converted to Table 5.

For the experimental and control groups at the beginning of the experiment, the value of z is the criterion $z_s = 0.04 < z_\alpha = 1.96$. The hypothesis of equality of probabilities for both groups is accepted.

For the control group at the beginning and at the end of the experiment, the value of z is the criterion $z_s = 0.366 < z_\alpha = 1.96$. The hypothesis of equality of probabilities for the control group at the beginning and at the end of the experiment is accepted.

For the experimental and control groups at the end of the experiment, the value of z is the criterion $z_s = 2.134 > z_\alpha = 1.96$. The hypothesis of equal probabilities for both groups is rejected.

For the experimental group at the beginning and at the end of the experiment, the value of z is the criterion $z_s = 2.475 > z_\alpha = 1.96$. The hypothesis of equality of probabilities for the experimental group at the beginning and at the end of the experiment is rejected.

6. Discussion

Conducting user testing and gathering feedback from teachers is very important part of the research for improving the development process and ensure the app meets their needs and preferences. The survey of pre-service teachers made it possible to determine key considerations and features that are important in the app: user-friendly clean and intuitive interface; comprehensive library of teaching resources, incorporating opportunities for teachers to practice speaking through dialogues, role-plays, and voice recording features; integrating gamification elements; tracking progress and providing performance feedback; implementing synchronization features to update progress and content when the app reconnects to the internet; providing a calendar or scheduling feature to help teachers manage their teaching activities effectively.

It's important to note the most of university staff embrace mobile technologies as an important tools for improving quality of education. Over time, their benefits become more apparent and educators' attitudes evolve. Our paper proves the effectiveness of mobile technologies usage. The issue of using mobile application became especially important nowadays. The works of L. Gorbatiuk et al (2019) and S. Rohani et al (2019), revealed that incorporating mobile apps has valuable influence on quality of education. The results of our article confirms with the previous results (I. Ari et al, (2020), D. Assanova & A. Prlepessova (2020), M. Bernacki et al. (2020)) and proves that mobile means implementation has both positive and negative influence on educational process, and a balanced approach is recommended for effective English learning. The article is in good agreement with O. Kyrpychenko et al (2021) Zadorozhna et al (2023) works. The evidence we found points to the mobile apps as an effective means of English learning.

Considering all the advantages, we can note that using mobile apps for learning English is significant means nowadays. Nevertheless, mobile apps can be used as a perfect additional means for language learning. Mobile applications are not able to substitute full-fledged communication and interaction with live people. We believe, apps usage should combine with other learning methods, such as real-life communication with native speakers, engaging in student mobility and exchange programs, conversation clubs, classes with a teacher.

7. Conclusion

The research has led us to conclude about the significance of using mobile apps for learning English. They can be a valuable tool to enhance the English language skills of undergraduates in higher education institutions.

According to the aim of the paper, we realized some objectives:

1) We have outlined the main professionally oriented mobile apps for improving English proficiency of future teachers : "ELT Training" by Oxford University Press,

"Teach English!" by British Council, "TEFL Training" by TESOL International Association and "Teacher's Assistant Pro: Track Student Behavior" by Thomas Suarez.

2) The levels of intending teachers' English language communicative competence were assessed according to the language skills at the beginning and the end of the pedagogical experiment. University students can enhance their communication abilities by different means, one of the most effective of which is mobile apps for studying professional English. By addressing the challenges in improving communicative competence, pedagogical establishments can better train their undergraduates for the complexities of the teacher profession.

3) The effectiveness of using mobile applications for improving professionally oriented English learning at the pedagogical faculty has been proved. The levels of pre-service teachers' English language communicative competence have increased after the learning English by means of professionally oriented mobile applications.

We see the prospects for further research in the study of the peculiarities of the impact of artificial intelligence usage to the communicative competence development in the course of university studying English.

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