

## DISCUSSION IMPERATIVES AND INTERACTIVE LEARNING TECHNOLOGIES IN UNIVERSITY EDUCATION INSTITUTIONS OF UKRAINE: BASIC APPROACHES AND APPLICATION OF EUROPEAN EXPERIENCE

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**Abstract:** As a result of the adaptation of Ukraine's national education to European standards and the requirements of the Bologna Process, not only the traditional model of education has been improved in Ukrainian university education institutions, but also the transition to active and interactive learning technologies has taken place. Modernization of the university education system in Ukraine is due to the transition to the latest educational systems and technologies that have successfully proven themselves in European university education institutions. This study covered seven Ukrainian university education institutions that implement interactive learning strategies aimed at active interaction between student and teacher through the use of basic interactive technologies: learning in the game and training in discussion.

**Keywords:** latest technologies, educational disciplines, role-playing games, trainings, case methods, discussion

### 1 Introduction

In the system of higher education in Western Europe, starting from the 1950s, innovative teaching technologies began to be introduced into the process of professional training of future graduates of universities. The transition from a purely traditional or classical model of learning to active and interactive was due not only to the fact that the classical form was not very efficient, but also due to the rapid development of the economy, which began to recover after a long decline and required experts with critical thinking skills and which would motivate them to develop such qualities as leadership, creativity, innovation, determination, willingness to undertake responsibility (Taleb, 2016; Zirawaga et al., 2017).

In Ukraine the universities began to develop a new model of learning management, introducing the latest educational technologies, only at the beginning of the XXI century. This process was stimulated by the European integration aspirations of Ukrainian society and the accession of the university education system of Ukraine to the Bologna Process on May 19, 2005, following the signing of the Bologna Declaration at the Bergen Conference of European Ministers of Higher Education. (Nikolaeva, 2015) The political, legal and organizational aspects of the process of forming a single European space of education and science are covered in the Lisbon Strategy, which aims to implement organizational, legal and methodological measures of the Bologna Process (Kwiek, 2013). Adaptation of Ukrainian legislation to the requirements of the Bologna Process, joint training of experts in European universities and exchange of graduates have accelerated the entry of the Ukrainian university education system into the European one, which is based on institutional autonomy, academic freedom, equal opportunities and democratic principles (Dakowska, 2017).

Among a number of European universities the oldest is Bologna, which was founded in 1088. Keeping the traditions of cultural institutions, which reflect the ethical aspects of education and research, European institutions of university education for a long time have played an important role in the development of critical thinking skills of students (Bratianu et al., 2011; Karbalaie, 2012). During the emergence of universities in medieval Europe, discussions developed significantly, because the main methods of teaching in universities were lectures and debates. Teachers

presented lecture material, giving explanations to it, after which debates continued, the purpose of which was to establish or substantiate the scientific postulate. Disputes had a clear organizational structure, they were always initiated by the rector of the institution, followed by the dean, masters and, finally, all who wished to speak. The ultimate goal of such debates was not to reveal the truth or to search for new scientific knowledge, but to demonstrate to the partner skilful dialectical techniques.

In modern realities, among the successful educational strategies in European university education institutions, discussions keep being one of the important means of cognitive activity of students (Bowen, 2013). The experience of using this strategy shows that it promotes the development of critical thinking and allows determining your own position, develops the skills of defending your own opinion and deepens the acquired knowledge (Dakowska, 2017).

It should be noted that currently most European universities have developed a powerful system of educational activities with adequate material and technical base and thorough methodological implementation of innovative learning technologies in the training of future professionals. Interactive learning technologies, which involve active interaction between student and teacher through the use of simulation of life and professional situations, role-playing games and methods that create situations of search, empathy and risk have become an integral part of curricula in European university education institutions (Kwiek, 2013).

If we analyze the innovative activity in university education institutions in Ukraine, it is only on the way to its formation. The main idea of modernization of the higher education system is certainly based on the introduction of the latest educational systems and technologies that have successfully proven themselves in European university education institutions (Kwiek, 2012; Report to the European Commission on New Modes of Learning and Teaching in Higher Education, 2014). Particular attention is paid to the development of interactive teaching methods: interactive business games, role-playing games, trainings, case-methods, which allow students to effectively absorb a huge amount of information and further to use the acquired knowledge in future practice.

This study covered university education institutions of Ukraine in which interactive technologies have been developed in some disciplines and are successfully implemented in educational programs. For analysis we selected disciplines represented by such sciences as: humanitarian, juristic, mathematical and medical. This made it possible to show the diversity and effectiveness of educational strategies that are implemented by Ukrainian teachers during the educational process.

### 2 Methods

#### 2.1 Data Sources

To study the implementation of innovative approaches in university education institutions of Ukraine over the past decade, seven universities were selected (Table 1), which successfully practice interactive learning technologies: Dragomanov National Pedagogical University, Kyiv; Institute of Philology of Taras Shevchenko National University, Kyiv; Borys Grinchenko Postgraduate Education University, Kyiv; State University of Internal Affairs, Lviv; National University of Culture and Arts, Faculty of Information Policy and Cyber Security, Kyiv; Mykhailo Kotsiubynskyi State Pedagogical University, Vinnytsia; Ukrainian Medical Dental Academy, Poltava. For the completeness of the study, university education institutions were selected in such a way as to cover different areas of science, in particular: humanitarian, juristic, mathematical and medical.

Information on interactive teaching methods in the above-mentioned university education institutions of Ukraine was obtained from the following sources (Demkiv et al., 2018; Skrypnyk et al., 2012; Mospan, 2012; Borysovykh, 2015; Petruk et al., 2012). In this study the classification of interactive technologies (Pometun & Pyrozhenko, 2004) has been chosen,

which most fully reflects the learning technologies used by teachers in compiling curricula in university education institutions of Ukraine (Fig. 1). The following sources were developed for comparative analysis of the main approaches to interactive learning technologies and the application of the European experience (Taleb, 2016; Dakowska, 2017).

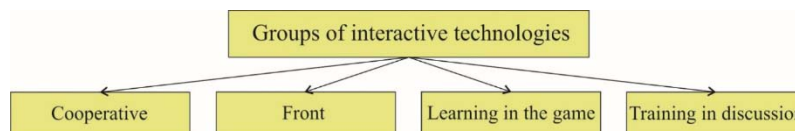


Fig. 1. Groups of interactive technologies used in university education institutions of Ukraine (17)

Table 1. The list of researched institutions of university education of Ukraine and the interactive methods applied by them for studying of separate educational disciplines

Institution of university education	Science/ Specialty	Educational discipline	Interactive methodology
<ul style="list-style-type: none"> <li>Dragomanov National Pedagogical University, Kyiv</li> <li>Taras Shevchenko Institute of Philology, National University, Kyiv</li> <li>Borys Grinchenko University, Kyiv</li> </ul>	Humanitarian / Philology (Foreign languages)	English	Cooperative: - “Three-step interview”, - “We exchange problems”, - “Working in pairs: predictions”; Training in discussion: - “Reading aloud from the author’s chair”
<ul style="list-style-type: none"> <li>Mykhailo Kotsiubynskyi State Pedagogical University, Vinnytsia</li> <li>National University of Culture and Arts, Faculty of Information Policy and Cyber Security, Kyiv</li> </ul>	Mathematical/ Mathematics	Higher mathematics	Learning in the game: - Reproductive games, - Problem-searching generalized games, - Creative games
<ul style="list-style-type: none"> <li>State University of Internal Affairs, Lviv</li> </ul>	Juristic / Law	Civil law and legal proceedings	Cooperative: - “Roundabout”; Front: - Case method; Learning in the game: - “Simplified court hearing”; Training in discussion: - The Oxford Debate
<ul style="list-style-type: none"> <li>Ukrainian Medical and Dental Academy, Poltava</li> </ul>	Medical/ Pediatrics	Clinical	Front: - Case method

2.2 Analytical Approach

Our research is based on a number of data collected by studying the curricula of higher education institutions of Ukraine, necessary for the analysis of the success of the implementation of interactive learning technologies for students to study certain disciplines. A number of theoretical research methods were used and combined in this study: historical and logical methods, analysis, synthesis, classification, generalization and analogy, juxtaposition and comparison, induction and interpretation. Modern educational technologies and fundamental statements of university education pedagogy make the methodological basis of this study.

3 Results

3.1 The Results of the Implementation of Interactive Learning Technologies for the Study of English: Dragomanov National Pedagogical University, Kyiv; Institute of Philology of Taras

Shevchenko National University, Kyiv; Borys Grinchenko Postgraduate Education University, Kyiv

In the researched institutions of university education at the Department of Foreign Languages, in addition to traditional basic methods of teaching a foreign language (English), interactive learning technologies are implemented, which are aimed at the transition from informational-explanatory to practical-developmental learning. For this purpose, teachers have developed a number of approaches that allow the implementation of new technologies for successful learning of English in a consistently organized environment. Figure 2 schematically shows the most common interactive learning technologies that are used in practice in the studied universities. The most common is cooperative technology, which involves building a learning process based on a short group strategy. This strategy includes: “Three-step interview”, “We exchange problems”, and “Working in pairs: predictions”.

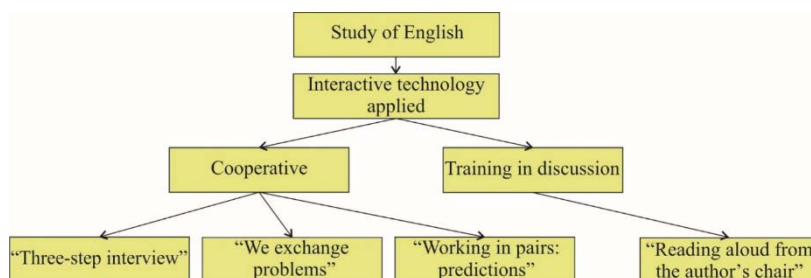


Fig. 2. A diagram showing the applied learning technologies for the study of English

Let's take a closer look at these strategies and what positive results they can get. "Three-step interview" – the teacher sets a topic for discussion and a group of three students must try themselves in different roles: interviewer, the one who gives the interview and the one who writes it down. This strategy allows improving not only language skills but also writing.

Strategy "We exchange problems" – the teacher asks to read the cognitive text. Students who have formed pairs highlight the key points of the text and have to retell it in their own words. Then, each pair of students identifies the questions that arose while reading the text, which should be answered by another pair of students. This learning strategy is designed to develop and improve students' speaking skills.

Teaching methods "Working in pairs: predictions" allows developing both conversational skills and reading. Students are divided into pairs. They are offered to exercise with a work of art unknown to them. The teacher reads the key words from the work of art. The students write down these words and after discussing them in pairs have to express their assumptions about the possible plot of the work. After this discussion, students begin reading the work of art to compare the plot with their predictions.

An important strategy that is often used after the above methods is "Reading aloud from the author's chair". The student is asked to present his thoughts on paper in the form of ideas or essays, and then he is offered to take the so-called "author's chair", which is located in the middle of the classroom and read the written text aloud. Then students are invited to discuss what they have heard. This technique allows improving a number of skills: writing, reading and communication.

3.2 The Results of the Implementation of Interactive Learning Technologies for the Study of Higher Mathematics: Mykhailo Kotsiubynskyi State Pedagogical University, Vinnytsia, and National University of Culture and Arts, Faculty of Information Policy and Cyber Security, Kyiv

To effectively master the Higher mathematics by the students of the studied university education institutions, teachers implement interactive technologies in the learning process, which are based, as shown in Figure 3, on learning technologies in the game, including the use of reproductive games designed to form the student's necessary knowledge and skills, problem-searching generalized games, that involve a search element and creative games that develop cognitive qualities.

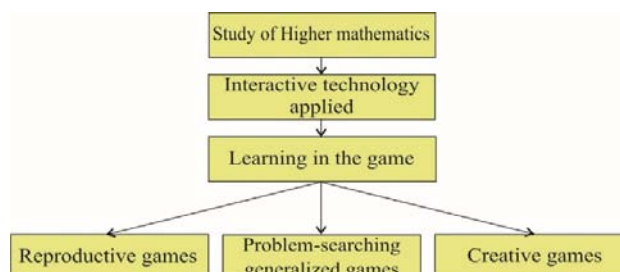


Fig. 3. A diagram showing the applied learning technologies for the study of Higher mathematics

Let's focus on the analysis of these learning technologies in the game. Reproductive games allow the teacher to deepen and improve the already acquired knowledge of students. Lottery games are often practiced. For example, "Mathematical lottery on the boundary theory". Each student is offered to buy a lottery at a symbolic price. The ticket price is an answer regarding the equivalence of a certain infinitesimal function. The student receives a lottery ticket with the task to calculate the boundary. After the calculation, students have the opportunity to compare the answers. Those who have a "lucky ticket" receive a prize in the form of solving a problem with automatic calculation on this topic. Students who have "unlucky tickets" receive points for each correctly solved task.

Problem-searching generalized games are aimed at the implementation of logical operations by the student, provide an element of search and are based on the knowledge acquired by the student. The teacher forms two groups of students and suggests solving two different exercises related to the same object. The teacher then calls a representative from each group, who reports on the progress of the task and gives answers to any questions from the teacher. According to the results of the presentation of each of the representatives from the groups, the whole group of students is evaluated. This technology allows the teacher to form the student's organizational skills, decision-making skills and skills of undertaking responsibility.

Creative games that develop the student's cognitive abilities are also quite common educational technology, in particular, such tasks are often offered in analytical geometry. The teacher divides students into two groups and describes a very realistic life situation, where students in an imaginary area by solving problems in analytical geometry by calculations should build a certain infrastructure: bridges, roads, buildings, calculate distances to them, the size of buildings. Time is limited, it is important to do everything quickly and correctly. Two groups

competing with each other try to show their professional creative thinking, to understand the visual application of acquired knowledge. Students from passive listeners become participants in the educational and creative process.

Thus, the game approach to the study of Higher mathematics sharpens students' interest in studying or mastering the material, encourages them not only to properly assess their capabilities, but also to implement them and visualize the results of their activities.

3.3 The Results of the Implementation of Interactive Learning Technologies for the Study of Civil Law and Legal Proceedings: State University of Internal Affairs, Lviv

The researched university education institution successfully implements interactive learning technologies, which allow future lawyers to significantly improve the amount of mastered material and give the opportunity to acquire practical skills that are essential for the future expert. As it is shown in Figure 4, all four interactive technologies are used to study civil law and legal proceedings: cooperative, front, learning in the game and training in discussion. In this study we will focus on some of them in more detail.

One of the methods that is being successfully implemented is "Roundabout". Divided into two groups, students form two circles. In the inner circle, students play the role of listeners and can ask clarifying questions, while the participants sitting in the outer circle express their thoughts on the topic suggested by the teacher. All the students are divided into pairs and those sitting in the outer circle move every one or two minutes. Then the participants from the inner circle change with the participants from the outer one. Thus, law students learn to quickly express their opinions, to be able to listen to the opponent and to ask short meaningful questions.

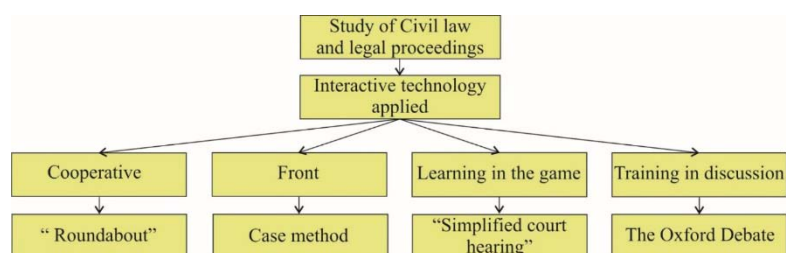


Fig. 4. A diagram showing the applied learning technologies for the study of Civil law and legal proceedings

The case method, which is formed on the basis of a theoretical course and meets the professional needs of the student, is introduced quite successfully for the study of Civil law and legal proceedings. The teacher offers students a situation that is closely related to real cases that have occurred in the practice of legal professionals, the solution of which required immediate legal decisions. Dialogues, remarks of participants of a situation are presented. Both positive, and negative examples of the solution of the set task are analyzed. To solve the situational exercise, the teacher provides clear instructions, but without hints on which way to solve the problem. This learning technology is quite successful because it allows connecting the law and factual situations, teaches students to look for the right answers and make balanced legal decisions by analyzing current legislation.

Among the game methods the educational technology "Simplified court hearing" is widespread. Students have the opportunity to get an idea of the simplified procedure of court proceedings and court decisions. The teacher distributes roles within the group: prosecutor, barrister, plaintiff, defendant, judge, witnesses and other members of the trial. Students stage a trial, discuss it, and gain decision-making skills to better understand their actions in real life.

An important role in the process of teaching law students is given to interactive technologies "Learning in discussion". One of the most common, but at the same time the most complex educational technology practiced in the researched university education institution is the Oxford Debate. The teacher conducts

preparatory work, teaches students to work in groups, to master the technology of studying problems and to make public speeches of keynote speakers. Then each group must convince opponents of the need to change their point of view, being able to express their opinion, to listen to the opposite side and to find a common solution. In addition, this technology of interactive learning envisages after the presentations of the keynote speakers to conduct debates that continue until everyone has spoken. The debates are structured so that speakers from each group take turns speaking and defending their points of view, while others oppose them. The debates end with a vote, during which all participants have the right to speak based on the position that everyone has taken. All voters vote on the basis of arguments provided by both parties.

#### 3.4 The Results of the Implementation of Interactive Learning Technologies for Medical Students to Study Clinical Disciplines: Ukrainian Medical and Dental Academy, Poltava

In the researched university educational institution at the Department of Internal Medicine teachers actively use the case method as an interactive technology of teaching students (Fig. 5). The most common is the practice of using this technology during clinical and clinical-pathological conferences, as well as during medical practice. This method allows teachers, together with a group of students, to analyze the situation that may arise in a particular clinical case and to indicate to participants what plan it is necessary to choose for patient examinations, what practical solution to develop for diagnosis, treatment and further disease prevention.

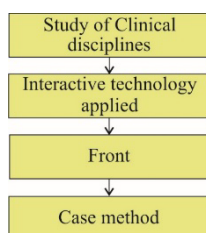


Fig. 5. A diagram showing the applied learning technologies for the study of Clinical disciplines

Often students are asked to analyze various pathologies at no apparent reason. Participants should independently analyze the symptoms to determine the probable causes of this pathology. Then they should make and substantiate their diagnosis and the optimal treatment tactics. The case method during its application has shown its effectiveness in the acquisition of knowledge and in the ability of medical students to make independent decisions.

#### 4 Discussion

According to results of investigations in a number of European university education institutions, students at all academic levels study on programs with in-depth strategies and practices of analytical thinking (Peters, 2017; Sawaya, 2012). Innovative programs are developed taking into account the points of view of students. Annual seminars are organized for teachers, where they have the opportunity to learn about new educational technologies. (20) At the same time, the practice of interactive

technologies has long been widespread in school education (Zirawaga et al., 2017).

Important role in European university education institutions is given to funding, which encourages teachers to create effective innovative curricula on a competitive basis (Auranen & Nieminen, 2010; Bratianu & Orzea, 2013; Hicks, 2012). In addition, considerable attention in the development of teaching methods is paid to the development of analytical thinking, which is characterized by clarity of algorithm, chronological considerations, convincing reasoning and efficient steps (Darmawan, 2020). For this purpose, various technologies of interactive learning are used, in particular: cooperative, front, learning in the game, training in discussion, (Ennis, 2011; Lincoln & Kearney, 2019) which, as shown in this research, have been successfully implemented in Ukrainian universities.

In Ukraine, the school education system differs significantly from the approaches to university education. It is difficult for



first year students to adopt new approaches to the acquisition of knowledge in university education institutions, because, as research has shown, the skills they acquired at school were not sufficiently directed to develop independent work. The results of investigations (Table 2) show that their ability to work independently with educational literature and theoretical material as well as compilation of compendium are quite insignificant. (Petruk et al., 2011)

Table 2. The indicators of skills of independent work for first year students of university educational institutions of Ukraine (Petruk et al., 2011)

Indicators of skills of independent work	Rank rating	Number of students in %
Learned a compendium of lectures	0	23.2
	1	24.3
	2	52.5
Found educational literature on the advice of a teacher	0	12.2
	1	18.4
	2	69.4
Independently selected literature on the studied topic	0	41.3
	1	27.1
	2	31.6
Learned theoretical material and compiled a compendium	0	39.1
	1	36.3
	2	24.6

Therefore, special importance is given to innovative learning technologies that in search of improving the educational process are successfully developed by teachers in a number of university education institutions in Ukraine (Demkiv et al., 2018; Skrypnyk et al., 2012; Petruk et al., 2012). Efficient implementation of interactive teaching methods was facilitated by Ukraine's entry into the Bologna Process, which led to the use of credit-modular system of learning in university education (Garben, 2010). It improves the quality of training of future professionals, enables teachers to better manage students' cognitive activities, while students can study more independently, if necessary receiving the consultation of teachers, to learn the material themselves when working with the recommended main and additional literature. The modular approach has led to the transition from passive to active forms of learning and achieving the necessary professional competence through independent activity.

The results of analysis of seven institutions of university education of Ukraine, presented in this study, namely: Dragomanov National Pedagogical University, Kyiv; Institute of Philology of Taras Shevchenko National University, Kyiv; Borys Grinchenko Postgraduate Education University, Kyiv; State University of Internal Affairs, Lviv; National University of Culture and Arts, Faculty of Information Policy and Cyber Security, Kyiv; Mykhailo Kotsiubynskyi State Pedagogical University, Vinnytsia; Ukrainian Medical Dental Academy, Poltava, showed that for the development of skills of self-education, self-improvement and formation of professional competencies of students, efficient approaches have been developed for various branches of science, covering all basic interactive technologies: cooperative, frontal, in-game learning and discussion. The implementation of interactive teaching methods in the professional education in the fields of humanitarian, juristic, mathematical and medical disciplines allow the teacher to change the attitude of the student to the object of study, turning it into a subject of study. With this approach to learning, the student becomes a co-author of lectures, seminars and practical classes.

## 5 Conclusions

Summarizing this study, it should be noted that the implementation in Ukrainian universities of the latest educational technologies, which are successfully working in European university education institutions is on the way to its establishment. This is due to the fact that innovative technologies began to be used in the system of university

education in Western Europe in the 50s of the XX century, while in Ukraine only at the beginning of the XXI century.

Basic interactive teaching methods, such as discussions, interactive business games, role-playing games, trainings, case methods, which allow students to efficiently absorb a huge amount of information and further to use the acquired knowledge in their practical activities, have been especially developed.

Investigation of seven university education institutions of Ukraine covered in this study, in which interactive technologies have been developed on certain subjects, allowed to show the diversity and efficiency of educational strategies that are implemented by Ukrainian teachers during the educational process. The disciplines represented by such sciences as humanitarian, juristic, mathematical and medical have been selected for this study.

This research has shown that for various analyzed disciplines teachers have selected educational technologies that are most efficient for mastering certain subjects. In particular, group strategy and discussion learning are successfully used to study English. They develop all the basic skills, such as writing, reading and communication. To study mathematics learning in the game technologies are used, which not only contribute to the acquisition of the necessary knowledge and skills, but also develop the cognitive qualities of students. To master the refinement of civil law and legal proceedings the university students are offered a number of efficient learning technologies that allow not only to study real cases that occur in the practice of lawyers, but also to have the opportunity to get an idea of simplified litigation and judgment. In order to study clinical disciplines by students, teachers have developed successful learning strategies that allow to analyze the situation that could arise in a particular clinical case and to indicate to participants what plan they need to choose for patient examination and what practical solutions to develop for diagnosis, treatment and follow-up disease prevention.

Thus, based on the described above investigations, it should be noted that the interactive technologies, successfully implemented in university education, have all the prospects for their further development in the curricula of all leading universities in Ukraine.

## 6 Acknowledgements

The article has been prepared within the scope of the scientific project "Ecolinguistic Modes of Discursive Space of Ukraine in the European Multicultural Continuum" (registration number 2020.02/0241) with the support of the National Research Foundation of Ukraine.

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**Primary Paper Section: A**

**Secondary Paper Section: AM**