

## Artículo de investigación

**Psychological and pedagogical foundations for interaction technologies implementation at the university****Психолого-педагогические основы реализации технологий взаимодействия в вузе**

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The technological approach necessitated the development of professional competence of students as the main educational goal. Professional competence is developed only in the process of active activity and constant interaction of students. Therefore, higher education institutions should implement various technologies of interaction in their work, which are today one of the most effective in this process. The purpose of the article is to highlight psychological and pedagogical foundations of interaction technologies implementation at the University. In the article interaction is considered as a basic concept of pedagogical psychology. The authors identified the components of the category "interaction" and identified educational technologies that are responsible for the development of each component. It is noted that technologies interact with each other and produce a positive effect on the development of professional competence of students, organizing effective process of students' interaction. A survey of students and teachers on the most suitable, in their opinion, technologies for organization of effective interaction is presented. The received answers allowed allocating technologies which cause interest both at teachers and at students.

**Key words:** Interaction technologies, interaction, psyche, professional education.

**Аннотация**

Технологический подход обусловил необходимость формирования профессиональной компетентности студентов как главной образовательной цели. Профессиональная компетентность формируется только в процессе активной деятельности, постоянного взаимодействия студентов. Поэтому высшие учебные заведения должны реализовывать в своей работе различные технологии взаимодействия, которые являются на сегодняшний день одними из самых результативных в данном процессе. Цель статьи: выделить психолого-педагогические основы реализации технологий взаимодействия в вузе. В статье взаимодействие рассматривается как базовое понятие педагогической психологии. Авторами были выделены компоненты категории «взаимодействие» и определены образовательные технологии, которые отвечают за формирование каждого компонента. Отмечено, что технологии взаимодействуют между собой и производят положительный эффект на формирование профессиональной компетентности студентов, организуя результативный процесс взаимодействия обучающихся. Представлен опрос студентов и преподавателей о наиболее подходящих, по их мнению, технологиях для организации результативного взаимодействия. Полученные ответы позволили выделить технологии, которые вызывают интерес как у преподавателей, так и у студентов.

**Ключевые слова:** технологии взаимодействия, взаимодействие, психика, профессиональное образование.

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## Introduction

The competence of the graduate is the goal of the entire professional educational process. The development of competence is based on students' active interaction, therefore, to build a productive educational process, it is necessary to establish psychological and pedagogical basis for implementation of student interaction technologies (Vaskovskaya, et al 2018). Interaction is considered by the authors as an important component of professional educational process, which allows students' activity. In modern professional education, the most used technologies are the following: personality-oriented technologies, game, discussion, interactive technologies, case-technologies, problem-based learning and project technologies. Technologies of personality-focused learning are aimed at students' personality. This technology creates necessary conditions for the disclosure of his identity (Bulaeva, et al 2018). Game technologies allow immersing students in conditions close to real professional (Klinkov, et al 2018). Discussion technologies allow students developing the ability to interact within the framework of resolving any issue and to build their evidentiary position (Ilyashenko, et al 2019a). In development technologies reveal the possibilities of students in the selection and analysis of relevant development in modern reality. Interactive technologies ensure students' mobility and support their independence (Myalkina, et al 2018). Various electronic means activate their creative interaction at a distance from each other (Bartkiv, et al 2018). Case technologies reveal students' ability to solve small professional tasks quickly (Markova, et al 2019). Problem-based learning technologies enable students to solve larger professional tasks through collaboration (Nikonova, et al 2019a). Implementing technology projects in higher education, students develop independence, creative component, create a specific product of pedagogical activity on the basis of constant interaction (Ihnatenko, et al 2018). The implementation of these technologies taking into account the psychological and pedagogical foundations contributes to the development of students' professional competence (Vaganova, et al 2019i).

## Theoretical basis

Interaction is a basic philosophical and ontological category. It denotes phenomenon of communication and development of different objects under mutual influence (Vaganova, et al.

2019d). A number of scientists who have devoted their work to the development of psychology note that "interaction" is an independent category. Among such researchers we can distinguish A. A. Brudny, A. A. Bodalev, L. P. Bueva, M. S. Kagan, E. S. Kuzmina, A.V. Petrovsky. G. M. Andreeva distinguishes interaction as an interactive aspect of communication. Many researchers connect the concepts of "interaction" and "attitude". B. D. Parygin expressed the opinion that communication is a mental interaction of people manifested in all forms. He notes the complexity and versatility of communication, so it can be both as a process of interaction and as a development process, including the attitude of people to each other, mutual influence, mutual understanding. M. I. Lisina defines interaction as communication saying that it is a type of human activity which involves mandatory initiative impact on the interlocutor. A. A. Leontiev in his works, in contrast to the above authors, delimited these concepts, although he noted their close relationship. The process of communication acts as a means of ensuring collective activity. Many authors support the position of A. A. Leontiev and emphasize the complexity of dilution of the concepts considered by us from the point of view of psychology. Understanding interaction as an interactive component of communication process allows preserving continuity of interaction and communication, but at the same time avoiding their identification (Vaganova, et al 2019f). The development of human psyche, according to many scientists, depends on subject-practical activities and interaction between people. For the emergence of interpersonal contacts, it is necessary to adhere to "equality" (Nikonova, et al 2019b). That is, for the emergence of effective interaction, it is important to consider the consulting role of the teacher, who does not "stand above" the students, but acts as their partner (Smirnova, et al 2019). This condition allows reaching the atmosphere of greatest susceptibility and openness of influence, allows opening a positive dialogue (Ivanova, et al 2019). The interaction, thus, has the following characteristics: subject orientation, external manifestation, clear regulation of the interaction process (Chirva, et al 2018), multitasking (Denysenko, et al 2018) which allows defining different subjective intentions and real actions of the interaction participants in different ways (Vaganova, et al. 2019b). In psychology, all kinds of interaction can be divided into cooperation (cooperation) or competition (Prokhorova, et al 2018). Cooperation

contributes to the achievement of the goal through the joint efforts of all participants (Rakhimbayeva, et al 2019). The conflict confronts opposing interests, opinions, positions (Ilyashenko, et al 2019b). For a long time the conflict was considered as a negative side of interaction, however, today, in the conditions of active implementation of innovative technologies of interaction, the conflict acts as a means of activation of student activity, as a motivating component (Koshechko, et al.2018). The interaction process consists of several components: motivational, emotional, cognitive, and behavioral (Sedykh, et al 2019). In the process of professional competence development, these components should be taken into account (Kamenez, et al 2019).

### Methodology

The paper identifies several components of the category "interaction" as a psychological and pedagogical basis for implementation of educational technologies and the development of professional competence of graduates. A survey was conducted involving 80 students and 45 teachers to identify the most effective, in their opinion, technologies for interaction organization between students and teachers and between students (Vaganova, et al 2019a). The results allowed us to identify several technologies that are preferred by respondents. 80 students were accepted for 100%, 45 teachers were accepted for 100%. The results of the survey of students showed that among the technologies for the development of interaction, they distinguish project technologies (18%), game technologies (17%) and interactive technologies (14%). The results of the survey of teachers show that they chose project technologies (18%), interactive technologies (15%) and case technologies (15) in the first place, slightly fewer respondents voted for discussion technologies and problem learning technologies. Comparing the results, we can say that both students and teachers highlight the importance of project technologies in the development of interaction components. In second place, the students put gaming technology whereas the teachers chose interactive ones (students are still more interesting to realize themselves in the gaming environment, close to professional to feel like a real specialist). The

third place among students is occupied by interactive technologies (they still realize their importance in the construction of modern interaction), the teachers gave preferences to case-technologies.

### Analysis

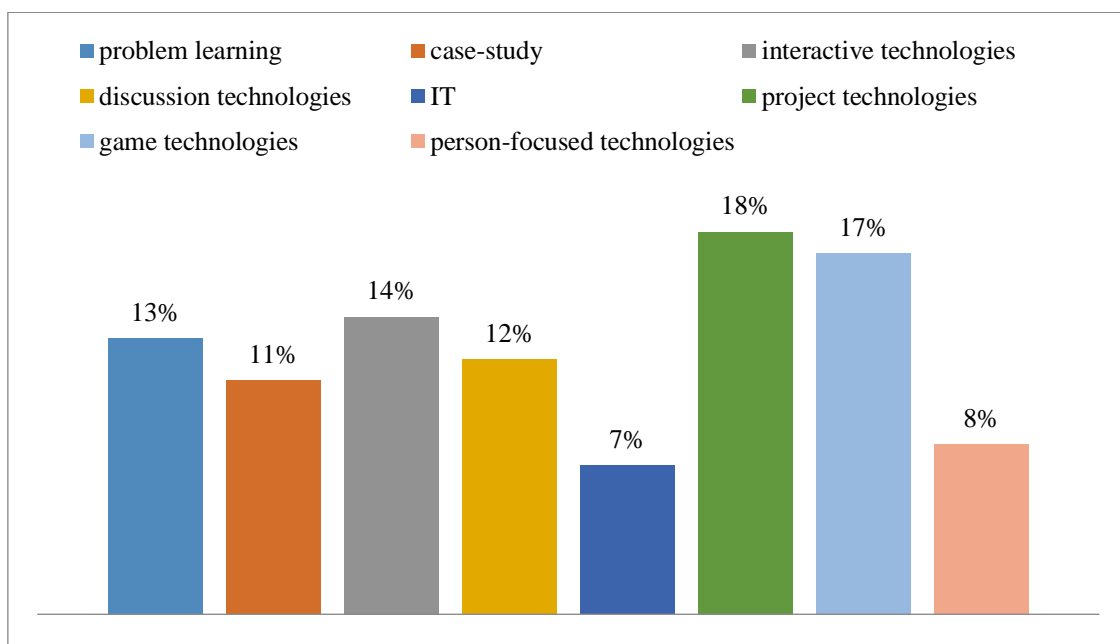
Innovative educational technologies will contribute to the development of the above components best of all. Appropriate technologies may be responsible for each individual component (Vaganova, et al. 2019c). Table 1 shows the components and technologies responsible for their implementation. In the process of preparing students, each of these technologies is used to some extent. Carrying out independent, research, scientific-cognitive, scientific-professional activities, students develop projects, work on case studies (Pometun, et al 2018). Teachers set them problematic tasks that may arise in real professional activity, activating their independence and creative position, which will help them to navigate the workplace more easily (Garnevska, et al 2018). Development and interactive technologies are also included in this process. Students are constantly interacting on-line. The on-line platform Moodle contains materials designed by the teacher specifically for a particular group of students, so that they can refer to them at any time. With the help of LMS Moodle tools, students actively communicate not only within their working groups but also organize larger-scale discussions on the most problematic issues. To protect their projects, they prepare presentations that are able to protect in the classroom, equipped with the necessary multimedia devices. In the process of protection of works there is also interaction as cooperation and as rivalry. Rivalry can bring the work of students to a new level, because competition is a strong motivator, awakening the desire to do something better than the opponent, but this interaction remains only within the framework of educational activities and does not pass on the interpersonal relationships of students in life outside the University. For a long time, this interaction was considered negative, but today it is considered as a psychological incentive to achieve a higher level of learning.

**Таблица 1.** Interaction components and technologies implementing them

Component	problem learning
motivational	development technology; case technology
emotional th	student-focused technologists
cognitive	discussion technology; technologists and projects
behavioral	Interactive s technology and gaming technology

It should be noted that the division of these technologies is advisory. These technologies interact with each other, interpenetrating each other, so they are difficult to divide into components.

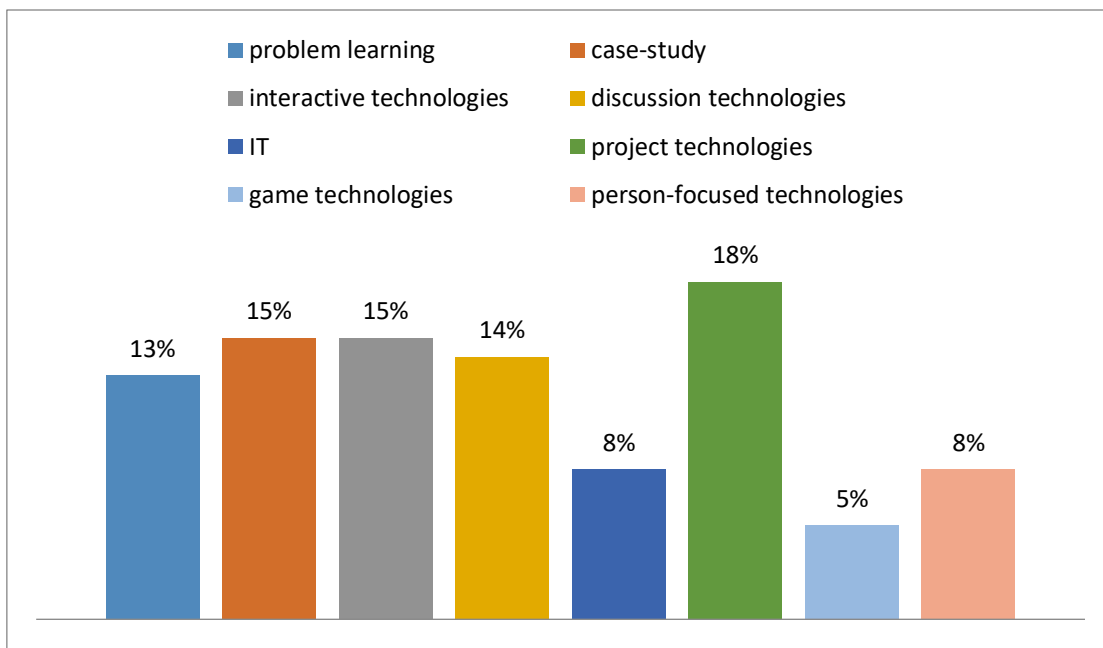
Figure 1 shows the results of the student survey. Students determined which technologies, in their opinion, influence the development of effective interaction on the basis of their experience.



**Figure 1.** BingSurvey of students to identify the most preferred interaction technologiesSurvey of students to identify the most preferred interaction technologies

The results of the students' survey showed that among the technologies for the development of interaction, they distinguish project technologies, game technologies and interactive technologies. These indicators can be explained by the fact that students have

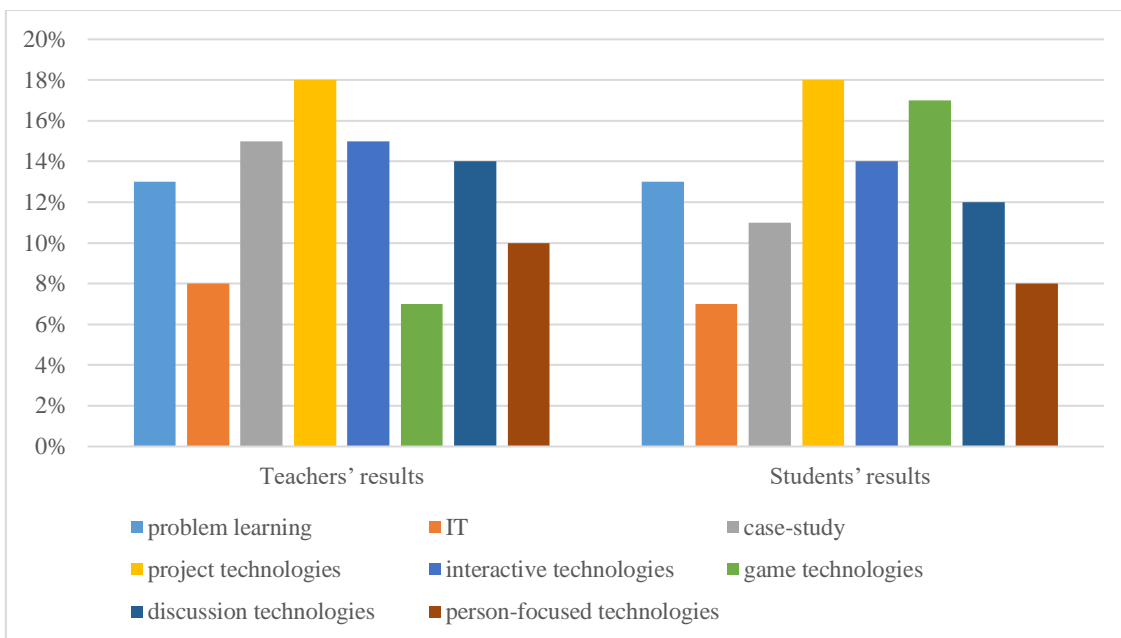
the opportunity to disclose their creative potential to the fullest through these technologies. Here they show the greatest independence and each and notice that each of the components of the interaction is not just affected, but actively developing.



**Figure 2.** Survey of teachers to identify the most preferred interaction technologies

The results of the teachers’ survey show that they put project technologies, interactive technologies and case technologies in the first place, slightly fewer respondents voted for discussion

technologies and problem-based learning technologies. A comparison of the results is shown in figure 3.



**Figure 3.** Comparative characteristics of survey results

The comparative analysis allowed establishing that both students and teachers agree that discussion technologies contribute to building competent interaction among students. Unlike teachers, students put gaming technologies in

second place, while teachers put interactive learning technologies and case technologies in second place, because case technologies allow students solving problems that may arise in the real workflow but unlike games, they are more

effective because they do not require long and thorough training. They can be carried out more often. Finally, with the use of interactive technologies it becomes even faster.

### Conclusion

As a result of the work, psychological and pedagogical foundations of interaction technologies implementation in the University were identified. Several components of the category "interaction" as psychological and pedagogical bases of implementation of educational technologies and development of professional competence of graduates are presented: motivational, emotional, cognitive and behavioral. For their development, several of the most commonly used in professional educational process interaction technologies were selected. We selected personality-oriented technologies, game, discussion, development, interactive technologies, case-technologies, problem learning and project technologies among them. The survey conducted involving teachers and students of the University revealed the technologies that they consider the best for the development of competent process of interaction. Both students and teachers noted the importance of project technologies. The development of projects includes other different technologies and allows to reflect the professional activity most fully. Despite the fact that students consider the game the most appropriate technology, it does not sufficiently allow students to develop research skills that are formed in the process of this interaction, the game does not always imply the presence of final product that can be implemented in educational process and used in future professional activities. Therefore, we single out project technologies as one of the most effective technologies in the organization of interaction.

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