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г. Казань, 420021,  
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[samorazvitie@mail.ru](mailto:samorazvitie@mail.ru)

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# Digital Technologies in Teaching and Learning Foreign Languages: Pedagogical Strategies and Teachers' Professional Competence

Thierry Karsenti<sup>1</sup>, Olga M. Kozarenko<sup>2</sup>, Victoria A. Skakunova<sup>3</sup>

<sup>1</sup> *University of Montreal, Montreal, Canada*

*Email: thierry.karsenti@umontreal.ca*

*ORCID: <https://orcid.org/0000-0003-1733-4608>*

<sup>2</sup> *Russian Peoples Friendship University, Moscow, Russia*

*Email: kozarenko\_om@rudn.university*

*ORCID: <https://orcid.org/0000-0002-5918-9288>*

<sup>3</sup> *Lomonosov Moscow State University, Moscow, Russia*

*Email: victoria.skakunova@gmail.com*

*ORCID: <https://orcid.org/0000-0002-2998-8070>*

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## Abstract

**Research problem:** Today's education system must adapt to the digital revolution and use it to best advantage. One of the most critical paths to pursue is to develop digital skills among student teachers. Many Russian researchers have focused on practices of digital technology integration in foreign language teaching, but, few among them have formulated systematic teaching strategies.

**The aim of the study:** To elaborate the pedagogical strategies for developing digital competence among students on the basis of the complex approach and scientific achievements in this field.

**Research methods:** The research is based on the statistics obtained during an online survey among university and school teachers, students. While conducting the interviews additional information appeared and teachers' opinions were specified. The participants included 100 university foreign language teachers as well as 120 students from Central Russia.

**Results:** The analysis revealed how the professors organized their digital learning spaces. Among others, the findings highlighted on which aspects they spent more Internet time, and the factors that limited digital use in class. The analysis of the students' responses revealed some problems in using digital tools while learning a foreign language. The results can be used in developing students' competences and in elaborating syllabus and teaching materials.

**Conclusions and recommendations.** On the basis of recent achievements and collected data, the complex of pedagogical strategies to form digital competence among students during the foreign language learning have been elaborated. With the appropriate pedagogical accompaniment, digital technologies allow the development of student teachers' digital competence to meet the demands of the modern society. Thus, it can increase the efficiency of foreign language teaching and will contribute to students' personal development.

**Keywords:** foreign language teaching, digital competences, pedagogical accompaniment, information technologies.

## Цифровые технологии в преподавании и изучении иностранных языков: педагогические стратегии и профессиональная компетенция преподавателей

Т. Карсанти<sup>1</sup>, Ольга М. Козаренко<sup>2</sup>, Виктория А. Скакунова<sup>3</sup>

<sup>1</sup> Монреальский университет, Монреаль, Канада

Email: [thierry.karsenti@umontreal.ca](mailto:thierry.karsenti@umontreal.ca)

ORCID: <https://orcid.org/0000-0003-1733-4608>

<sup>2</sup> Российский университет дружбы народов, Москва, Россия

Email: [kozarenko\\_om@rudn.university](mailto:kozarenko_om@rudn.university)

ORCID: <https://orcid.org/0000-0002-5918-9288>

<sup>3</sup> Московский государственный университет имени М.В. Ломоносова, Москва, Россия

Email: [victoria.skakunova@gmail.com](mailto:victoria.skakunova@gmail.com)

ORCID: <https://orcid.org/0000-0002-2998-8070>

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### Аннотация

**Проблема исследования.** Современное образование должно адаптироваться к требованиям времени и использовать преимущества цифровой эволюции. Одним из важнейших направлений реализации этого принципа является последовательное развитие цифровых компетенций будущих учителей. Многие преподаватели-исследователи, работающие в вузах России, посвящают свои исследования конкретным практикам использования цифровых технологий в преподавании иностранных языков (ИЯ). Существенно меньше тех, кто занимается их систематизацией и обоснованием педагогических подходов их реализации.

**Цель исследования** заключается в разработке педагогических стратегий для формирования цифровых компетенций у обучающихся на основе комплексного подхода и с учетом научных результатов и достижений в этой области.

**Методы исследования.** Исследование опирается на статистические данные, полученные в результате онлайн опроса преподавателей педагогических вузов, учителей школ, учащихся. В ходе индивидуальных собеседований была получена дополнительная информация и конкретизированы мнения преподавателей. Было опрошено около 100 преподавателей и 120 студентов вузов Центральной России. **Анализ полученных результатов** позволил понять, как организовано цифровое пространство преподавателей ИЯ, каким аспектам они уделяют больше времени, работая в Интернете; выявлены причины, ограничивающие использование цифровых технологий на занятиях, личное мнение участников опроса об уровне их цифровых навыков и др. Анализ ответов учащихся обнаружил их отношение к использованию цифровых технологий в изучении ИЯ, способы их работы с цифровыми носителями на занятиях, алгоритмы поиска информации и т. д. **Результаты исследования.** С учётом полученных данных, а также на основе последних научных достижений для проведения занятий по иностранному языку был разработан комплекс педагогических стратегий, которые могут быть использованы для формирования цифровых компетенций учащихся и при составлении учебных программ и учебно-методических комплексов. **Обсуждение.** При условии грамотного педагогического сопровождения информационные технологии позволят сформировать цифровую компетенцию будущих учителей в соответствии с запросами современного общества, что повысит эффективность преподавания и изучения иностранных языков в цифровую эпоху и будет способствовать личностному росту учащихся.

**Ключевые слова:** преподавание иностранного языка, цифровые компетенции, педагогическое сопровождение, информационные технологии.

## Introduction

The issue of research related to the integration of digital technologies in education is becoming more and more widespread among Russian researchers. This process reflects the ground-breaking changes that enhance massive usage of new technologies in the educational process. In our view, special place in this research should be attributed to the formation of digital competences among pre-service teachers since in most cases the future of social achievements depends on them.

The massive shift to distance education due to Covid-19 has demonstrated once again the weaknesses in the formation of digital competences among university and school teachers. The current situation is similar to an iceberg where people use only a small number of a wide range of accessible digital technologies and their opportunities.

That is why a special significance is attributed to research aimed at solving the concrete problems that occur while implementing digital technologies in the teaching process, and that are designed at revealing those difficulties that university and school teachers of foreign languages face in the digital environment. Thus, to understand the situation objectively this study examined the forms of teaching and learning activity while using digital technologies in foreign language teaching.

While conducting the research we noticed that certain technical difficulties that occur in the teachers' activity could hide even more important aspects related to the pedagogical accompaniment of digital technologies integration into the classroom. In this respect, the approach of using digital technologies is not always complex. As a result, the consequences of such situation can reflect on the entire process of digital competences formation among students - and student teachers in particular.

The teachers' workload does not always allow them to be able to follow all latest innovative achievements and their colleagues' advanced experience in this field.

All these aspects have determined the direction of the present research.

## Purpose and objectives

The purpose of the study was to elaborate the pedagogical strategies for developing digital competences among students on the basis of the complex, integrated approach and scientific research and achievements in this field. To address this aim we identified the following research objectives. To:

- Collect factual data on the use of digital technologies in foreign language teaching at schools and universities;
- Study the opinions on this issue of all participants in the educational process (university teachers, school teachers and student teachers);
- Define main directions of the work on the development of digital competencies among students;
- Elaborate the list of digital competences for student teachers and pre-service teachers of foreign languages.

## Literature review

At present, the studies conducted into teachers' digital competences are shifting their focus from just applying technologies in teaching process to the role of information and communication technologies (ICT), in contemporary society. This is oriented, in its turn, on the acquisition of new knowledge, skills, competences and attitudes towards the concept of life-long learning (Bennett, Maton, & Kervin, 2008; Janssen et al., 2013; Voogt, Erstad, Dede, & Mishra, 2013). The authors hold that digital competence allows teachers to provide students with the possibilities of expressing their capacities in terms



of studying a discipline with help of digital skills in the twentieth century. This situation has led to significant changes. Educational frameworks and models have been created (European Commission, 2007; Ferrari, 2012; Ferrari, 2013). For example, in the official document of educational reform in Norway (Ministry of Education and Research, 2006), digital competence was identified as the fifth important competence together with reading, counting, writing and oral skills. However, some researchers note that, despite a big interest to these notions and a range of studies, still there is a “gap between technical knowledge and knowledge on how to employ technology in a learning context” (Haugerud, 2011, p. 227). On the basis of the research conducted among Norwegian teachers and students, Krumsvik (2008, 2014) underlines the positive influence of the introduction of digital competence on the results of the educational process. Moreover, Kay (2006) concludes that an ICT-competent teacher has a positive impact on the process of subject study by students and thus, contributes to the development of critical attitude to the construction of the structure and approaches to the integration of digital technologies in the learning process. Similarly, some researchers emphasise the fact that the integration of digital technologies into the educational process in a reflective manner could greatly contribute to the efficiency of their usage in terms of teaching foreign (French) language.

Dwelling on the questions of competences, it should be noticed that this term is quite changeable and many researchers propose different terms such as ‘information literacy’ (Zurkowski, 1974), ‘computer literacy’ (Tsai, 2002), ‘media literacy’ (Hobbs, 2011), ‘multi-modal literacy’ (Heydon, 2007), ‘digital literacy’ (Gruszczynska, Merchant, & Pountney, 2013) and others. All of them associate this term with the effective integration of digital resources into teaching and learning processes. Falloon asserts that this situation happens due to ‘evolving technological, cultural and societal landscapes’ (Falloon, 2020).

Concerning the concept of general digital competence, Janssen emphasises that a ‘sensible and healthy use of ICT requires particular knowledge and attitudes regarding legal and ethical aspects, privacy and security, as well as ... balanced attitude towards technology...’ (Janssen et al., 2013, p.480). In this way, a teacher’s role is not only to introduce digital technologies to students but also to demonstrate the broader vision and its impact on the society.

Other scientists consider digital competence as a way of using digital technologies and understanding their influence on the digital world via optimal integration of technologies into education (NMC, 2017). According to Navarro et al. (2016) and Ananiadou and Claro (2009) digital competence is the integrated use of knowledge, skills and attitudes towards digitalization.

Likewise, Lakkala et al. (2011) consider this notion as the ability to use digital technology and software. The pedagogical digital technologies have influence on the relationship, knowledge, and didactic usage of teachers (From, 2017).

Specifically, according to Lázaro-Cantabrana et al. (2019) pedagogical digital competence is “a set of skills, abilities and attitudes that the teacher must develop to incorporate digital technologies into their practice and professional development”. Rivera-Laylle et al. (2017) noticed the digital competence implies both technological knowledge and didactic usage. Therefore, the teacher’s digital competence includes the responsibility in two dimensions: to improve the level of digital competence and contribute to the development of digital competence among their students (Instefjord and Munthe 2017). The European Commission (EC 2017) created a project called DigCompEdu where the digital competence is determined as the ability of a person to have safe, critical and creative approach in the use of ICT. The National Institute of Educational Technologies and Teacher Training (INTEF, 2017) created their dimensions based on the systems of dimensions, indicators and levels of the development of their skills in teachers’ digital competence.

One of the most significant issues of digital competences formation is models. The most famous models in this way were created by UNESCO (2011), TPACK described by Mishra and Koehler (2006), ISTE (2017).

Lund et al. (2014) points out that, while implementing technologies in the educational process a teacher educator needs to show how to use it in their professional purposes but also how to be 'capable of using technology in productive ways,' calling it the 'transformative competence' (Lund et al., 2014, p.286).

A conceptual model describing competencies needed for teachers of today is the TPACK model (Mishra and Koehler, 2006) which includes three dimensions: technological knowledge, pedagogical knowledge and content knowledge. This model demonstrates the integration of the different types of knowledge. However, TPACK was criticized for not always being useful with various studies following the way it is being used (Willermark, 2018).

We note that Digital Competency Framework developed by Quebecois Ministry of Education and Higher Education (2019) promotes ethical citizenship and technological skills. This document describes different dimensions that encompass innovation and creativity, digital resources for learning, information literacy, collaboration, communication, content production, inclusion and diverse needs, personal and professional empowerment, problem solving, critical thinking.

As for the digital competence for language teachers, Sysoyev and Evstigneev (2015) define it as ICT competence of language teachers in a digital environment and put forward the idea that ICT competence comprises two essential components: knowledge about the ICT that could be used in the teaching foreign languages; and the skills and abilities to implement ICT in the educational process properly from the technological and didactic points of view.

Skakunova V.A. (2017) states that ICT competence as the integrative active quality of teachers' activity can be divided into several components: conceptual component (awareness, positive and critical attitude towards the implementation of ICT into the educational process); organizational and content component (which implies the ability to systematize the educational material and to project the educational electronic environment with the use of ICT); technological component (which presupposes the technological skills and knowledge) and the evaluation component (the ability to analyse the technological and didactic features of an ICT).

## Methodology

Data was collected using a survey of university teacher educators of foreign languages dealing with teaching staff, school teachers of foreign languages and student teachers of foreign languages. The survey was conducted in the educational institutions of Central Russia. In total 220 people participated in the survey.

University teachers were also interviewed in order to clarify and better understand their perception of the problem. The data went through a comparative analysis and were statistically processed.

## Results

The results showed that neither at universities nor at school were lesson conducted in which students study on the Internet during the whole lesson. There are individual responses that show students use the Internet in their study during the half of the lesson. A quarter of the pupils interrogated said that they use the Internet technologies for no more than 10 minutes. For students at universities, this time increases to 30 minutes.

The organization of the educational process in both schools and universities presupposes that two thirds of the students use digital technologies in their classroom work or homework. However, a third of students use the Internet only for work outside the class. Half of the material that is offered by half of the language teachers within the classroom is in digital format.

A quarter of students asked their teachers for advice on using digital technologies in language learning. But only a third of these felt the advice was helpful; half of them received a partial answer.

Over 60% of students consider the use of digital technologies makes the language learning more effective and a third of them stated that it gives them confidence in their study work. Nevertheless, half of the students could not provide concrete examples of the application onto language learning.

Three years ago, 80% of teachers (Kozarenko, 2019) answered that they used digital technologies in their work. The authors' survey found a significant increase in this percentage. However, only 25% of teachers considers that they have their own well-elaborated strategy of integrating digital technology effectively in the educational process.

Among the difficulties that hinder teachers from using digital technologies were:

- technical problems – 66% of the university teachers and 50% of school teachers;
- psychological problems that are connected with breaking traditional forms of the teaching process;
- a high level of teachers' workload (reported by 65%).
- A quarter of the teachers surveyed admit that they do not possess the sufficient information to implement innovative forms of work with the use of digital technologies.

When organizing students' work, nearly 7 out of 10 teachers at universities use tasks aimed at finding the information on the Internet and this was confirmed by the students' answers with 90% of students at universities answering the question 'Can you find the information on the Internet on your own?' positively. This percentage fell to 68% among school pupils.

Half of school teachers pay attention to security issues in the digital environment. According to the survey, 10% of university teachers emphasis this point among their students.

The reliability of information found on the Internet is mentioned by half of university teachers but only a quarter of school teachers mention this in the classroom.

Digital interaction between teacher and students is becoming more diverse every year and covers all existing forms of communication. However, school teachers seem to be more traditional in this way although more than 90% of them prefer email as a way of communication with their pupils (Karsenti et al., 2020). Today the tendency to use chat platforms as a way of communication is becoming highly popular among almost all teachers. Yet, 60% of university teachers and 25% of school teachers prioritize face-to-face communication with students.

In the authors' opinion, during the period of total shift to online education due to Covid-19, students have reconsidered their attitude towards traditional forms of delivering lessons and towards the value of face-to-face communication with their groupmates and a teacher. The survey indicates their desires to return to real classrooms are explained by technical issues (problems with connection and the access to the Internet). On the other hand, it is related to the necessity of real-world communication rather than in the virtual one: "I miss my groupmates in reality".

Approximately a quarter of university teachers and a fifth of school teachers prefer not to communicate with their students via social nets, explaining this situation by the

need to protect their privacy. However, half of those who use this form of communication in their work tend to use only a foreign language for educational purposes.

Turning to the use of digital technologies in writing, only one third of the teachers agreed that firstly, it is important to teach digital writing and the comprehensive use of all digital technologies. Only a few people saw advantages of digital writing. On the whole, Russian teachers' attitudes towards the use of digital competences is rather critical (Kozarenko, 2018).

The study found an insignificant amount of time in the use of digital technologies in the classroom and little demand from teachers for the implementation of digital technologies in foreign language teaching and learning, as a result of a low level of digital competences among university and school teachers, major technical difficulties and insufficient equipment in classrooms

Teachers pay special attention to the development of information competence, leading to the idea there is no complex approach in teachers' perception of the possibilities that digital technologies hold in terms of foreign language teaching and learning.

The high level of teachers' workload limits their possibilities of getting acquainted with the increasing amount of knowledge in the field of digitalization of education. This creates difficulties for elaborating recommendations for teachers in the context of using digital technologies in their routine work. This demonstrate to students the advantages of the usage of digital technologies in studying a discipline and in their professional activity as well. Nonetheless, specific tips and recommendations cannot replace the answers to general questions of implementation of digital technologies in education, their possibilities and limitations.

One more aspect of note is the elaboration of a complex approach to interpreting students' digital competences; an approach that could take into account the contemporary level of knowledge at this point.

Special attention is attributed to the elaboration of detailed recommendations on the pedagogical accompaniment of ICT integration in foreign language teaching and learning. In the context of the overload of work this could help to take advantage of latest achievements in using digital technologies in teaching.

Basing on these results, we have elaborated a pedagogical approach to form students' digital competences.

## Discussions

### *Pedagogical strategies in the development of students' digital competences in foreign language learning*

The formation of students' digital competences in foreign language teaching and learning presupposes the use of new technologies to communicate effectively in written and oral forms in a foreign language within a digital environment, including situations in their private, educational and professional life.

To make the process of competences formation more harmonic and effective, it is important to observe all the dimensions. This research used the Digital Competency Framework created by the Ministry of Education and Higher Education in Quebec (Canada) as a base to elaborate the concept of digital competences in teaching foreign language (Cadre de références de la compétence numérique, 2019).

While describing pedagogical strategies we firstly defined the student's digital competence and then specified main directions of the work to implement them.

1. *While interacting in a foreign language on the Internet, students should be taught to be responsible digital citizens.*

- a) Respect other users' points of view observing ethical rules of communication.

- Be able to see differentiate between linguistic registers in digital communication.
- Be able to express oneself in a foreign language, respecting ethical norms and according to the type and style of the digital communication (professional, interpersonal types of communication).

b) Pay attention to the presentation of personal data in a foreign language on the Internet in order to avoid using them for commercial, publishing purposes etc. Learn how to present personal information in formal communication (for example, to be employed) and informal (for instance, for communication in social networks and also the comprehension of the limits and ways of protecting personal data).

c) Learn to respect copyright while working with documents in a foreign language.

• While learning foreign languages it is important to quote the sources in order to avoid unconscious plagiarism.

• Learn how to use linguistic ways to present others' ideas in written and oral forms.

d) Learn to pay attention to the reliability of information in a foreign language.

• Stay informed of the criteria of identification of the sites with reliable examples in a foreign language.

• Find recommended sites in foreign languages to check the authenticity of photos and videos.

### *2. Know how to learn a foreign language with the help of digital technologies*

a) Learn to organize a digital working space to learn a foreign language (be able to maximise the use of smartphones educational platforms and for educational purposes; be aware of communities of students learning a foreign language in the same institution etc.).

b) To offer students some digital minimum from the beginning of the process of foreign language learning (Karsenti et al., 2020).

c) Over time the command of linguistic competences should evolve in terms of a wider range of digital instruments (video creation, the use of corpus, the creation of profiles in a foreign language, the animation of blogs in a foreign language, collective writing, the usage of virtual reality etc.) (Karsenti, 2018, a, b; Karsenti, 2019; Karsenti, 2020; Karsenti et al., 2019, a, b).

### *3. Make students write in a foreign language with the help of digital technologies.*

a) Learn the particularities and advantages of digital writing (Karsenti, 2018, a, b; Karsenti, 2019; Karsenti, 2020; Karsenti et al., 2019, a, b).

d) Install some self-correction services and applications on devices (as recommended by a teacher) while studying a foreign language.

c) Learn to use self-correction applications for spelling and grammar to support digital writing (Bonpatron.com; Cordial.fr; Reverso.net).

d) Learn the particularities of different forms of digital writing (comments, posts, publishing articles, SMS etc.) and the mobile communication (using smartphones, and tablets).

e) Propose projects in collective writing.

### *4. Learn to translate with the help of digital support*

a) Get recommendations for digital possibilities for translating texts, documents, pictures in a foreign language (electronic dictionaries, data bases, encyclopaedias, sites of professional translators, corpus etc.).

b) Pay attention to the applications for translation in their devices.

c) Learn the features of machine automatic translation.

d) Get acquainted, or work together with a teacher, on working with electronic translation algorithms.

*5. Learn to organize the educational communication in a foreign language in the digital space*

a) Choose digital ways of communication in a foreign language between a student and a teacher (tchat, email, messages, social networks etc.), with groupmates in the institution, and with native speakers in the electronic environment or inside digital communities according to the learners' interests.

b) Learn to regulate the timetable while communicating digitally in different time zone.

c) Try not to be afraid of communication in a foreign language on the Internet, find help or assistance (from a teacher) in order to feel self-confident.

d) Pay attention to the need to update their profile presented in a foreign language.

e) According to their preferences, create spaces for digital communication in a foreign language on the Net (creation of pages in a foreign language in social networks or creation of a site in a language they learn).

f) Take into account all the advantages of digital communication, remembering the values of face-to-face communication.

*6. Develop information competence in foreign language learning*

a) Learn how to find, select, evaluate, secure, present, and share information in a foreign language (Karsenti and Kozarenko, 2016).

b) Taking into consideration the increase of toxic information on the Internet, learn to determine the validity and reliability of digital sources

c) Develop critical attitude to work with digital documents in a foreign language.

*7. Learn to cooperate in digital and media environment in a foreign language*

a) Teachers need to motivate students to search/create and use the forms of cooperative work for studying a foreign language in the Internet space (e.g. Padlet for posting joint projects; the use of wikis to create joint publications, pictures etc., the creation of, and participation in, various joint educational, informational, entertainment Internet platforms; collective work with documents in clouds etc.).

b) Learn to use principles of cooperative creation/writing documents in a foreign language (parallel work in groups, individual writing of materials for collective project, group work in sections, distribution of responsibilities in group while working on some text etc.).

b) Elaborate and participate in joint projects.

d) Learn to use the Internet space to finding or delivering help in foreign language learning (e.g. for translating difficult phrases, finding online consultation and advice etc.)

*8. Make students participate in the development of their collective intelligence in the world scope with the help of a foreign language*

a) Develop confidence in oneself and in one's knowledge while communicating in a foreign language in the Internet space.

b) Develop motivation and their needs to share their knowledge and skills with the help of a foreign language with native speakers.

c) Provide help in searching optimal forms of participation in a collective task (e.g. being 'editors' in Wikipedia; posting their work in Tweeter, YouTube etc.).

9. *Stimulate students' interest in selecting digital instruments and resources in a foreign language so as to develop competences in the subject or in a professional field.*

a) Demonstrate to the students the instruments for selecting resources in a foreign language that could be useful for them in their future professions.

b) Motivate students to attend forums, sites of recruitment agencies, professional social nets in a foreign language to facilitate their integration into professional field.

10. *Exploit the usage of virtual reality in learning foreign languages*

Advise students of different applications that they can use in virtual reality (for example, Google Translate which can allow to see the translation of phrases during the communication with a native speaker).

11) *Explore the usage of artificial intelligence in the formation of linguistic competences*

1) Advise students various digital applications, programs or platforms in order to:

a) Learn foreign languages (e.g. Duolingo, Mon Coach Bescherelle – an application that adapts to the level of a user and helps to train spelling).

b) Correct written texts automatically.

c) Correct pronunciation.

d) Translate.

e) Use programs that can help to choose the most suitable educational course to study online (MOOC) according to the demands and needs of a learner.

f) Evaluate the content of a text in the long view basing on the designated principles (Wang, Chang, Li, 2008).

g) Detect the amount of plagiarism.

2) Learn to integrate functionality of different programs in order to improve the content (e.g. it is possible to vote for the most successful translation).

## **Conclusion**

Due to the rapid and dynamic changes in modern technologies, the questions of using digital technologies in education (in particular, in foreign language teaching) require regular monitoring of the situation. The later should include obligatory tracking of those difficulties that occur while dealing with digital technologies in the educational process, constant updating and instruction of teachers about new achievements in this field, and cooperation to concentrate their joint efforts in order to gain the results.

The issues of the formation of digital competences of pre-service teachers require special attention. Because of the specific features of their professions they need to be aware of all innovative processes of education.

The efficiency of the educational process depends on how it is going to be organized with the use of digital technologies and what pedagogical principles and strategies are going to be used in order to help a student express their creative potential during the educational process.

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