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# Teaching Language in the Digital Era: Readiness and Expectations of Future Teachers

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## Abstract

Digital competence is an integral part of a modern teacher's job description including a Russian language teacher. Courses in pedagogical universities curricula as well as refresher courses of in-service teachers are targeted at the development of this competence. Contents of such programs generally suggest education in two domains: technical and pedagogical. However, the success of acquiring each of the domains is determined by initial student's profile, such as the level of basic digital literacy, readiness to learn new technologies and pedagogical models, etc.

The focus of this research is to define the correlation between educational digital technologies course results and the learner's personality in this course. Several research questions have been raised, such as what factors as the general digital literacy level of student, teaching experience, experience of applying digital tools in work and study, the declared area of the student's interest affecting learning outcomes, and which digital language learning areas students find the most promising before and after the course.

The context of the research is implementation of the course "Information technologies in professional activity" in the 1st year of the specialized master's degree "Methodology of teaching Russian as a Foreign Language" at the Pushkin State Russian Language Institute. The data analyzed in the research were collected during 2 years with the involvement of survey methods (before and after the course). The information about participants' academic success on the course results was used to assess the results of training.

The results of the research allow us to conclude that learning outcomes in the field of digital language teaching to the greatest extent correlate to such initial parameters as the degree of thoroughness of the expectations from the course and experience in usage of technologies in their pedagogical practice. The study also found that the expectations of the students were mostly focused on specific programs and resources before the course, whereas after the course the emphasis has shifted to novel pedagogical ideas, models and powerful learning environment driven by digital technologies.

*Keywords:* teacher's digital competence, teacher education, Russian as a second language instructor, digital language learning, CALL.

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## **Introduction**

Digital competence is an integral part of a modern teacher's job description including Russian language teacher. Particularly today a wide range of digital instruments, services and resources are accessible to teachers, and they can increase the studying effectiveness in general and specifically while teaching a language. Today a teacher can choose a regime and a model in which he would integrate digital technologies in the educational process: use them to solve specific methodical tasks in technology-enhanced face-to-face teaching, to design a blended learning or to educate online where digital technologies are a necessary instrument for organizing an educational process in all of its aspects. Practice has shown however that not all of the teachers are ready to use the wide range of modern digital technologies proposed by such fields of applied linguistics as CALL (computer-assisted language learning) and TELL (technology-enhanced language learning).

The COVID-19 pandemic which took over the world in 2020 and the ensuing massive transition of all educational institutions to remote education brought to light the unreadiness of the teachers for online education. Leaving aside infrastructural and organizational difficulties, two groups of problems can be identified: insignificant command of technical aspects (including inability to master a new digital instrument) and limited knowledge of methodical aspects of technology-enhanced and technology-mediated teaching. These two groups of problems correspond to the two domains, technical and pedagogical, which comprise the framework for CALL education, suggested by, for example, Hubbard and Levy (2006).

As noted in (Zair-Bek, Mertsalova, & Anchikov, 2020), not less than 30% of teachers in Russia have insufficient digital competence. Insufficient background in ICT is not properly compensated neither at school nor in advanced education (Zair-Bek et al., 2020, p.20). This suggests the necessity of serious reconsideration of the teachers training system, including higher education of future teachers.

## **Purpose and objectives of the study**

This current study examines future teachers of Russian as a foreign language (RFL) readiness, expectations and learning outcomes regarding a course on digital technologies in teaching, which is conducted during the master's program. The focus of the study is on the correlation of the results of the course and the portrait of the students. Several research questions (RQ) were raised:

RQ1. How do such factors as the level of digital literacy, teaching experience, experience in application of digital instruments at work, the student's declared field of interest and their success in the educational process correlate?

RQ2. How are initial expectations linked with the learning outcomes and self-evaluation of learning by the students themselves?

RQ3. What directions of digital language teaching seem to be the most promising to students before and after studying?

### **Literature review**

Teacher's digital competence's essence is discussed in a number of scientific and practical works and is associated with theoretical models of educational digital transformation. Thus, the model SAMR (Substitution, Augmentation, Modification and Redefinition) (Puentedura, 2006) assumes that teachers competent in ICT can move from simply replacing an analogue tool with a digital one to truly innovative use of digital technology. The model TPACK (Technological Pedagogical Content Knowledge Framework) defines digital competence in its relation to subject and pedagogical competences (Mishra & Koehler, 2006).

A separate line of works on the use of technology in language teaching are presented as a part of a teacher's digital competence description. Hubbard & Levy (2006) offer a framework for CALL education where each of the domains – technical and pedagogical – is represented on the one hand by a scope of knowledge, on the other hand – by the range of skills which allow one to apply the knowledge in practice.

Hampel and Stickler (2005) suggest using a metaphor “pyramid of skills” where the basic level is represented by skills related to dealing with the technology at hand and using its advantages, then social skills of community building, followed by language teaching skills, and finally the ability to teach creatively and develop a personal teaching style in an online medium.

All of these models become the theoretical basis for the professional training of future and current teachers. The essence of a teacher's digital competence defines the objectives of training courses aimed at developing this competence. However, these courses' effectiveness depends to a large extent on the learner's readiness and set of parameters: on the level of a (future) teacher's digital literacy; on his ideas about the possibilities of digital linguistics and his expectations from modern technologies. Evidence from (Peters, 2006) shows that pre-service teachers are not sufficiently prepared to integrate technology in their future language classes due to the lack of proper technology training in their previous education or their lack of readiness to integrate technology in their language classrooms. As Guichon and Hauck (2011) noted, acquiring digital skills will continue to depend on teachers' ability and readiness to re-think their practice in order to prepare the ground for successful technology integration. Thus, it is important to note that the effectiveness of

digital competence development programs is determined not only by the initial, basic level of digital literacy of the teacher, but also by his openness to new opportunities which are introduced into education by technologies.

To more accurately plan the content of the programs aimed at digital competence development in the process of teaching, it is important to bear in mind several factors which determine readiness and the pursuit of the teacher, future or current, for comprehension of all aspects of digital educational technologies. These factors can further on become a basis for diagnostics of the initial portrait of a teacher from the standpoint of his/her digital skills. These factors can be used to guide the planning of differentiated education (and possibly for teaching in individual trajectories) relating to digital language teaching (Maderick, Zhang, Hartley, & Marchand, 2016).

### **Methodology**

On the basis of related work, presented in scientific and practical literature, for each of the research questions a hypothesis was formulated:

H1. The success of the student in the process of acquiring digital teaching competences is to a great extent linked to their initial level of digital literacy and their experience of application of digital instruments in teaching rather than with their scientific interests and teaching experience.

H2. The more concrete and detailed are the students' expectations formulated in the beginning of the course, the higher are their results after the studying.

H3. After completing the studies the students are to a larger extent focused on the methodological aspects of digital instruments application than in the beginning of the course.

To answer the RQ the following data were analyzed:

- the survey conducted at the beginning of the course which was aimed to ascertain the level of the students' digital competence, their work experience in education and their expectations from the course (hereinafter - entrance survey);
- study results record book;
- the survey carried out after the course where students had to measure their satisfaction with the course on a 10-point scale, evaluate their results in free-form and share their impression from the course (hereinafter - exit survey).

The present study combines quantitative and qualitative research methods. As most of the questions in the entrance and exit surveys were open-ended, the students' answers to such questions as, 'What do you expect from the course?', 'What is your self-evaluation after completing the course? Name three main ideas, concepts or skills you have acquired' were analyzed and categorized. This allowed us to conduct a quantitative analysis of data to prove the hypotheses of the study. For example, the students' answers about their scientific interests and the subject of their master's dissertation were analyzed from the point of view of whether CALL, TELL and educational technologies as a whole lie within their interests. Thus, the answers to this question were placed into one of the two categories: 1) "scientific interests are connected to EdTech and CALL" or 2) "scientific interests are not connected to EdTech and CALL".

Statistics information was calculated using SPSS program. To conduct a qualitative analysis of the answers to open-ended questions the data were converted to corpus and analyzed with the help of the instruments of the corpus manager Sketch Engine.

The research was conducted for 2 years (in 2017-2019 educational years) within the course "Information technologies in professional activities".

First-year master students (n=55) of the Pushkin State Russian Language Institute majoring in teaching RFL took part in the research. Only students assessed with satisfactory mark were included in survey, because students who got a mark "unsatisfactory" for the course (n=3) did not fill in neither the entrance survey, nor exit survey, thus it is impossible to get an insight into their initial parameters and course outcomes.

Gender composition of the participants is uneven: 51 female students to only 4 male students owing to the specifics of the master's program. The age composition of the students was not taken into account although it is known that the groups consisted of the participants of mostly the same age as they entered a master's degree program straight after completing a bachelor's degree or after a short break. All of the participants are native Russian speakers.

## **Results**

Figures 1-7 illustrate the data on the students who took part in the research. Figure 1 shows how students evaluate their initial level of digital competence. It is apparent that most of the students consider themselves as confident users and note that they work mostly with standard programs.

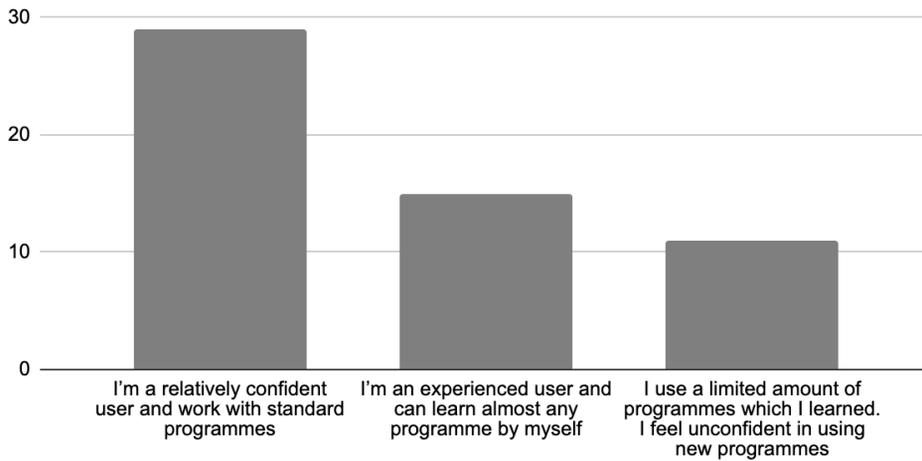


Figure 1. Self-evaluation of initial digital competence

Figures 2 and 3 show that most of the master students have work experience in education and make use of digital technologies in their professional activity. From the diagram, it is gathered that the work experience of most of the students is related to private teaching practice, insignificant part of the students works at schools, universities or conduct additional education.

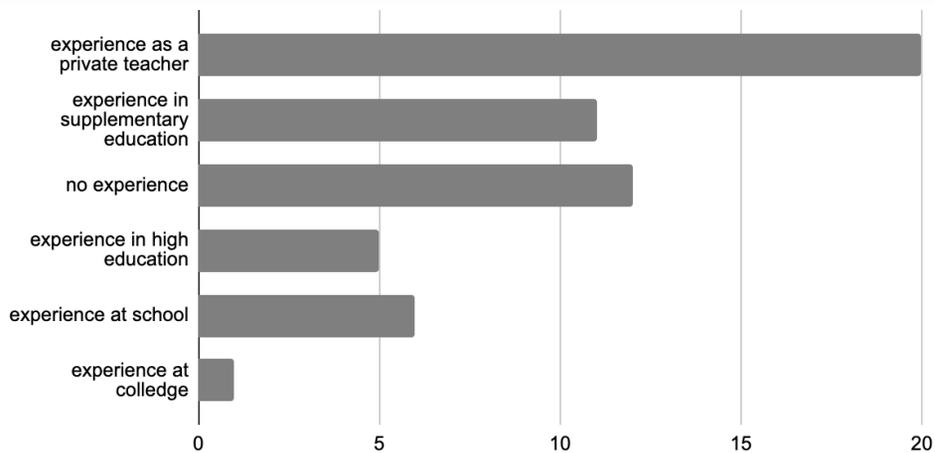


Figure 2. Experience of work in education

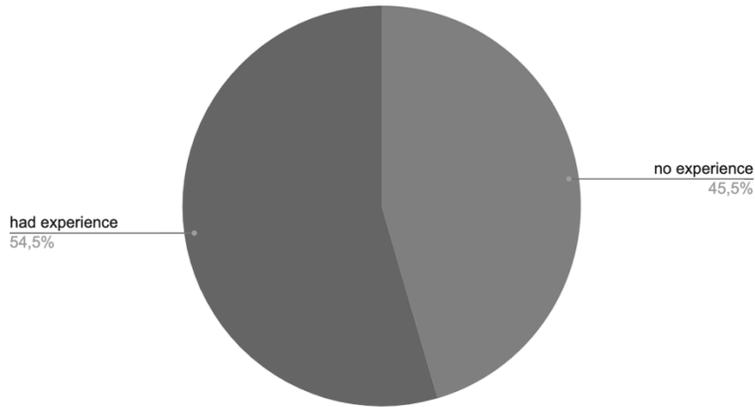


Figure 3. Experience of using digital technology in teaching

Less than a third of students pointed out that fields connected to digital technologies in education and teaching languages lie within their area of interests (Figure 4).

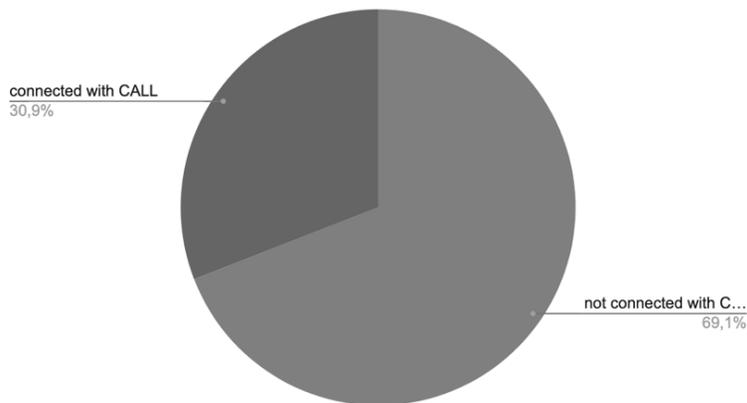


Figure 4. Students research interests in terms of connection to CALL

Distribution of students from the point of view of their expectations from the course should be considered separately. As stated above, students answered the question about their interests in free-form. To conduct a quantitative analysis of the data, all answers were analyzed and placed into one of the categories:

1. Answers where the expectations were not formulated or were described not accurately enough, too generally (for instance: “I’m interested in everything”, “I’d like to learn new programs”, “I’d like to use technologies in my professional activity”).

2. Answers where the students' expectations were limited to acquiring basic digital competences and work with standard programs outside the context of education (for example, "I'd like to learn to use Excel", "Gain computer skills", "I hope to become a more confident user because it's important nowadays").

3. Answers where students aim to get information on modern educational resources and educational media which they could use in their practice (for example, "I'd like to get to know the opportunities of the site "Education in Russian"<sup>†</sup>, learn about other resources that could be helpful in teaching Russian as a foreign language").

4. Answers where the students' expectations were focused on the application of digital instruments to completing different pedagogical tasks: creating educational content, organization of the educational process including online-education, motivation management during language learning, etc. (For example, "It would be interesting to learn about gamification programs implementation of edutainment technologies", "I would like to hold effective webinars on RFL", "I'm interested in corpus linguistics and implementation of corpora in teaching Russian").

Thus, based on this classification, the students' expectations were distributed as follows (Figure 5).

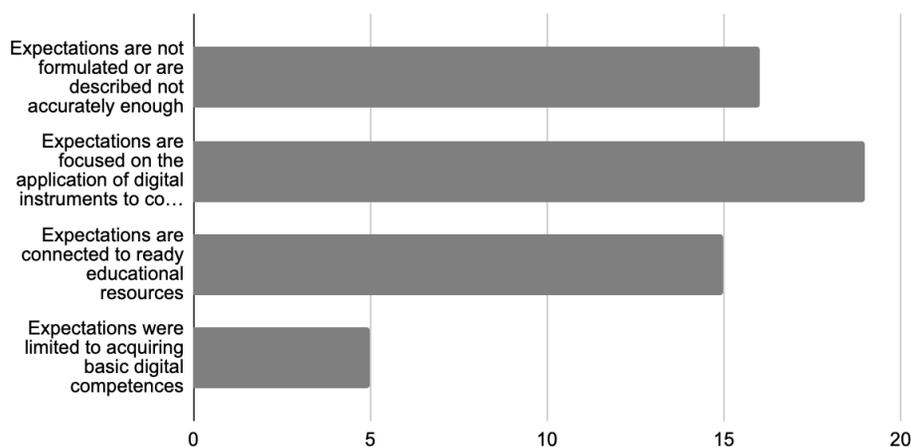


Figure 5. Course expectations

Data on students' academic performance are visualised in Figure 6.

<sup>†</sup> Portal pushkininstitute.ru, established with the support of Ministry of Education and Science of Russia, aimed at promoting of the Russian language abroad.



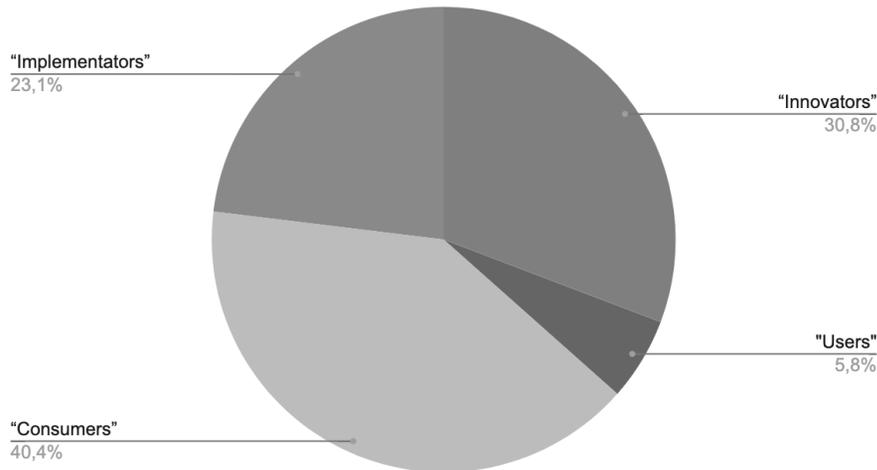


Figure 7. Self-evaluation of the studying results: categories of students

To prove the hypothesis about the correlation of the students' parameters at the beginning of the course with their progress during the educational process Spearman's rank correlation coefficient was counted (Table 1):

Table 1. Spearman's rank correlation coefficient between parameters of students according to entrance survey and students' final results (students' course grade)

	Course expectations	Experience of work in education	Self-esteem of digital literacy	Experience of using digital technology
Final results	0.533**	0.055	0.130	0.384**

\*\*Correlation is significant at the 0.01 level (2-tailed)

The table gives the impression that the variable "final results" (course grade) most strongly correlates with such initial parameters of the students as expectations from the course and experience in using technologies in teaching.

To determine the relation between expectations from the course to the other variables Spearman's rank correlation coefficient was counted as well (Table 2).

Table 2. Spearman's rank correlation coefficient between students' course expectations, their final results and other initial students' parameters

	<b>Final results</b>	<b>Experience of work in education</b>	<b>Self-esteem of digital literacy</b>	<b>Experience of using digital technology</b>
<b>Course expectations</b>	0.533**	0.234	0.408**	0.404**

\*\*Correlation is significant at the 0.01 level (2-tailed)

The data show that quality of expectations from the course (their thoroughness and methodical accuracy) to a greater extent correlate to the students' self-esteem of digital literacy and experience of using digital technology in teaching practice.

To evaluate the differences between the final grades between the groups of students depending on their expectations from the course Mann-Whitney pairwise test was conducted. As a result, significant differences in the course grades were identified between the groups of students: (1) whose expectations were the most general and those whose expectations related to the level of "Implementators" ( $U=32,5$ ,  $p<0.01$ ) and (2) between the groups "Consumers" and "Implementators" ( $U=67,5$ ,  $p<0.01$ ).

K-means clustering allowed us to identify groups of students based on several variables of interest. We expected to see two clusters based on course grades, expectations from the course and work experience with digital technologies. Table 3 shows that the group of students which did not have detailed expectations from the course or whose expectations were limited to using ready-made study resources is on the average less successful based on the course results. The group of students which had teaching experience using digital resources and had thoroughly formulated expectations on an advanced level got higher grades for the course on the average.

Table 3. Clusters based on course grades, expectations from the course and work experience with digital technologies

<b>Final Cluster Centers</b>		
	<b>Cluster 1</b>	<b>Cluster 2</b>
<b>Number of cases</b>	23	32
<b>Final results</b>	66	94
<b>Course Expectations</b>	2	3
<b>Experience of using digital technology in teaching practice</b>	0	1

To carry out qualitative analysis of the research all the open answers of the students were analyzed with the help of the corpus manager Sketch Engine. Thus, nominative keywords in the students' expectations before the course and their self-esteem of the most significant course results were determined. In Sketch Engine, keywords are words that appear more frequently in the focus corpus than in the reference corpus (as a reference corpus was used RuTenTen 11 which is a Russian corpus made up of texts collected from the Internet). Table 4 contains top-20 keywords for each set of answers. Some of the nouns are provided with an identification which always or almost always accompanies this noun in the compiled texts (thus, we point out terminological collocations – for example, “flipped classroom”).

Table 4. Top-20 frequent nouns from students' free-form answers on questions about students' expectations before the course and on their self-esteem of course results

<b>Students' expectations before the course</b>	<b>Self-evaluation of significant course results</b>
RFL	LMS
Webinar	RFL
Plickers	Evaluation
Kahoot	Corpus
Stepic	(learning) analytics
Video editor	(flipped) classroom
(Hot) Potatoes	Engagement
Prezi	(mixed) learning
Akinator	Visualization
Audio file	Interactivity
Excel	Motivation
Word	Vocabulary
Power Point	Communication
Teaching	Testing

Skype	Online-lesson
Resource	Online-task
Toolset	Test
Portal	Resource
Trick (in the sense of “teaching tricks”)	Difference
Visualization	Skill
	Reading

The table 4 shows that before the course students focus more on specific programs, services and resources than on the concepts CALL и TELL (Plickers, Stepic, Prezi, Akinator, Hot Potatoes, etc. – these are names of applications). On the contrary, after the course students tend to describe their results based on key ideas and models CALL и TELL (mixed education, flipped classroom, online-lesson). Apart from that, in final evaluations of the course results students pay attention to what pedagogical tasks can be solved using digital technologies: evaluation, engagement, motivation, etc. They also mention specific tasks in the field of language teaching: vocabulary, reading (other aspects and skills are not in top-20, but are also mentioned in the answers). Another difference is that after completing the course the students do not so often name specific programs, but service categories, for example, LMS (instead of the particular LMS like Stepic), online-task or interactive task (instead of services Kahoot and Hot Potatoes), etc. Finally, there are tangible changes in terms of special language: instead of using the word “webinar” which refers to any videoconference the students use the term “online-lesson” where the focus is shifted towards an educational purpose.

## Discussions

Reflecting on a course on teaching with digital technologies for master students, this study’s findings indicate a significant relationship between students’ individual readiness and expectations and their course results.

The analysis has shown that from all of the factors considered in the study such factors as experience of using educational technologies in teaching and level of expectation from the course have the closest relation to the success in acquisition of digital educational technologies. Students who realize that they want to learn to use technologies to solve pedagogical tasks before the course are more likely to show excellent performance in studies and appreciate their results. More often students with sufficient level of digital literacy and experience in using digital technologies in pedagogical activity have such advanced expectations.

The study has also shown that students are able to evaluate both their level of digital literacy and their results after the course aimed at developing this competence. The analysis of their answers about their

expectations from the course allowed us to distinguish several groups of students according to their willingness to develop their pedagogical competence. The following groups can be distinguished:

- “Clean slates”: students with unformed expectations.
- “Users”: students intending to acquire basic digital skills outside the educational context.
- “Consumers”: students who primarily want to learn information about trending educational resources and learning media.
- “Implementators”: students aiming to apply digital instruments for solving specific pedagogical tasks.

These notional groups of teachers can be represented as a hierarchy of levels of pedagogical digital literacy. Here a metaphor of a ladder similar to the SAMR model seems appropriate. Future teachers go up the ladder upon the road of digital competence acquisition. The analysis of the course described in this research makes clear that a relatively short course allows a teacher to pass 1-2 steps of our imaginary ladder. Based on the data on how the students evaluate their results, we can distinguish the following notional groups of students:

- “Users”: students with basic technical skills.
- “Consumers”: students having learned information on readymade learning digital resources.
- “Implementators”: students having acquired skills of using digital instruments for solving specific methodological tasks.
- “Innovators”: students appreciating the ideas of digital transformation of the learning process and innovative usage of digital instruments.

Despite limited amount of data analyzed in the study we consider these categories present both among pre-service language teachers and in-service instructors. The value of such categorization seems to be in the fact that the assessment of the initial level of a teacher’s digital competence can be based on it. Further on individual trajectories of the teachers’ preparation for work can be built in the context of digital economics.

The study also found that the expectations of the students were mostly focused on specific programs and resources before the course, whereas after the course the emphasis has shifted to novel pedagogical ideas, models and powerful learning environment driven by digital technologies.

Thus, eventually, the study is helpful in providing the criteria of the course success both in general and for each student individually. This can be done, firstly, having assessed a student’s progressing up the ladder of digital competence, secondly, having analyzed the contents of a student’s self-reflection after the course.

The degree of how clearly the ideas of solving methodological tasks using digital instruments and ideas of new models of education only possible thanks to digital transformation of the educational process are represented in the students' reflection can be an indicator of the course effectiveness.

### **Conclusion**

Under current conditions of digital economy, the development of digital literacy of teachers can be viewed as a key component of their professional education (Voogt, Erstad, Dede, & Mishra, 2013; Tomczyk, 2020). In the present study several factors determining education success of future teachers of the Russian language during the course in using digital technologies in pedagogical activity were analyzed. Despite the fact that the study was confined to Pushkin Institute context and relies mostly on self-reported student data, the findings seem valuable for courses and programs in development of digital literacy for language teachers in general.

The study results can be useful in terms of planning differentiated programs where students with different initial profile study in different trajectories and achieve their goals corresponding to their level of competence.

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