Organization of a system of digital education practices in the municipal sphere of general education

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Abstract. This article is devoted to solving the problem of accumulation, systematization and translation of the practices of using digital educational technologies in municipal educational organizations. The solution to this problem was carried out through the implementation of the municipal project "Organization of a system of digital education practices in the urban district of the city of Yelets" in 2019. The project was aimed at involving at least 350 managing and teaching staff, 4000 students into the active practice of using digital educational technologies in educational organizations of the urban district of the city of Yelets by the end of 2019. As a way to achieve the goal, the implementation of a system of digital education practices in educational organizations of the urban district of the city of Yelets was determined. Continuity and concession are key features of this system. Consequently, the stakeholders are preschool educational organizations, general educational organizations, organizations of additional education, secondary vocational education and higher education. This system involved the use of such organizational forms as a resource center, a municipal network platform, a pivotal school, an author's school, within which approbation, tuning and dissemination of the experience of using software products, the LECTA digital educational platform, the digital educational environment "Mobile e-education" and directions 3D modeling, digital video and robotics. The key results of the conducted research were not only quantitative but also qualitative indicators. The main problem that has blocked the adoption of digital education tools among the pedagogical community is the belief that they are ineffective compared to full-time education.

1. Introduction
The results of a number of foresights and futurological studies carried out by authoritative organizations and scientific groups make it possible to fix one of the constants of the probable image of the future - the total digitalization of the economy, production processes, services, education and everyday life in general [1, 2, 3].

The transformation of the labor market, which involves the release of jobs and the emergence of new ones, the creation of "new employment", is considered as concrete facts determined by digitalization. The last phenomenon is due to the differentiation of the population by the watershed of digital literacy and competence: are you an IT-person or not? Despite the fact that the temporal forecasts of total digitalization are different, we and our children must prepare for this. In this context, a significant load is placed on the sphere of education [4-5].

In the national program "Digital Economy of the Russian Federation", education is given tasks at the national level - to increase the output of specialists in the digital economy and ensure universal digital literacy [6]. In this context, the leitmotif of the research activities of many theorists and practitioners of
education in recent years has become the search for an answer to the question: "How to organize educational activities, successfully combining the advantages of full-time and distance education?" [7].

To determine the vectors of digital transformation of the municipal education system, it is essential to study the starting situation, since educational organizations of various municipal territories have a certain experience of digital education, albeit different. In addition, schools and kindergartens do not exist in an airless space, as a rule, within a specific municipal territory, they are linked into a kind of network, interact with each other on the basis of formal and informal ties. If there is interaction, then it must be coordinated. In the municipality of the urban district, the city of Yelets, Lipetsk region, such a coordinator of the digital transformation of the municipal education system, like many other innovative solutions, is the Yelets State University named after I.A. Bunin.

To this end, in October-December 2018, the initiative group for the digital transformation of the municipal education system monitored the educational institutions of the city district of the city of Yelets. In total, the city district has 13 educational institutions, 30 kindergartens and 3 institutions of additional education. The monitoring was attended by 387 teachers and managers in the field of general education (31.29% of the total).

Monitoring of the level of development of digital literacy and competence of teachers in the district revealed a deficit state, aggravated by the internal rejection of digital transformation of educational activities by professionals. 26.10% of respondents demonstrated a sufficient or higher level of digital literacy formation, 18.61% - a sufficient or higher level of digital literacy formation competence. Meanwhile, only 16.02% of teaching staff actively use digital education tools in educational activities.

At the same time, the monitoring revealed a number of successful digital practices that have taken shape in the educational space of the district. In particular, in the field of digital educational platforms, additive technologies, distance learning, digital video creation. However, the area covered by these practices is local, isolated.

Consequently, the problem of accumulation, systematization and translation of the practices of using digital educational technologies in the educational institutions of the district was identified.

To solve this problem, the project "Organization of a system of digital education practices in the urban district of the city of Yelets" was initiated at the municipal level. This article describes the practice of accumulation, systematization and translation of the experience of using digital educational technologies in educational institutions of the district, implemented within the framework of project activities, and analyzes its results.

2. Materials and methods

The municipal project "Organization of a system of digital education practices in the urban district of the city of Yelets" was implemented during 2019. The goal of the project was defined as follows: involvement of at least 350 managements and teaching staff, 4,000 students in the active practice of using digital educational technologies in educational organizations of the urban district of the city of Yelets by the end of 2019. As a way to achieve the goal, the implementation of a system of digital education practices in educational organizations of the urban district of the city of Yelets was determined.

Continuity and continuity are key features of this system. Consequently, the stakeholders are preschool educational organizations, general educational organizations, organizations of additional education, secondary vocational education and higher education.

This system involved the use of such organizational forms as a resource center, a municipal network platform, a pivotal school, an author's school, within the framework of which the testing, tuning and dissemination of the experience of using software products, the LECTA digital educational platform, the MEO digital educational environment ("Mobile Electronic Education") and directions of 3D modeling, digital video and robotics.

The result of the project was formulated as follows: a system of digital education practices was created in the urban district of the city of Yelets, which ensures the active use of digital educational technologies in educational activities by participants in educational relations in the amount of at least
300 managers and teachers, 2000 students. The users of the result are management and teaching staff, students, parents (legal representatives), educational institutions of the urban district of the city of Yelets. The result of the project is personalized. Digital education practitioners are learners, educators, and parents. This is also the experience of digital education. It is the activation of digital education practices that will lay the foundations for the digital transformation of the district's educational space in the future.

The project team was made up of leading and pedagogical workers of educational organizations of the district, in particular, Yelets State University named after I.A. Bunin, 9 schools, 6 kindergartens, 1 institution of additional education, as well as specialists from the Department of Education.

The project budget was 312 thousand rubles: it is financed in the amount of 200 thousand rubles. purchase of keys for the digital educational system MEO and 3D pens from extra-budgetary sources of educational organizations; financed from the local budget in the amount of 112 thousand rubles. implementation of an additional professional training program.

The social efficiency of the project is the coverage of the population with social benefits in the amount of 4.3 thousand people.

The main blocks of work of the project include a description of the activities of educational organizations, structured according to the functions performed.

During the implementation of the project on the basis of the Yeletsk State University. I.A. Bunin, a digital education resource center was created. The resource center possesses the necessary information, scientific and methodological, software, personnel, methodological, material and technical resources and conditions to coordinate the digital transformation of the municipal education system. The Resource Center has developed an additional professional advanced training program for teaching staff "The use of digital educational platforms in the educational process of the school", designed for 36 hours. In the course of its implementation, 243 teachers were covered with additional professional training.

In order to accumulate, systematize and broadcast the experience of using the digital educational platform LECTA, the work of flagship schools was organized. As part of the activities of these pivotal schools, 56 lessons were developed using the LECTA digital educational platform in educational activities, 3 practice-oriented seminars on the research problem were held for the district teachers, and methodological recommendations were developed on the use of the LECTA digital educational platform in educational activities.

To achieve a similar goal regarding the use of the digital educational system MEO in educational activities, a municipal network platform has been created, combining the efforts of 5 schools and 2 kindergartens. A municipal network platform is a form of organizing the activities of two or more educational institutions for the development, testing and implementation of methods and technologies of digital education. Teachers of municipal network sites for testing the digital educational system of the MEO in educational activities have developed 63 lessons, 24 classes, conducted 4 practice-oriented seminars on the problem of research, developed methodological recommendations for using the digital educational system of MEO in the educational activities of schools and kindergartens.

In the direction of 3D modeling, a municipal network platform was also created, which united 1 school, 1 institution of additional education and 2 kindergartens. Participants of the municipal network sites for teachers of the district held 6 master classes, focused both on the transfer of methodological experience in teaching students 3D modeling and teaching 3D modeling for preschoolers using 3D pens. As part of the activities of these sites are organized. The already annual student competition in 3D modeling and a competition for interdisciplinary projects using 3D modeling for students. As a result of the work of the site, an interesting product was obtained - a collection of cases of educational developmental situations using 3D pens for children 6-7 years old. The case includes 30 educational developing situations using 3D pens on 6 topics.

The Municipal Digital Video Networking Platform united 1 school and 2 kindergartens. During the work of the site, master classes were given on organizing joint activities of a teacher with children in an animation studio to create digital video, a competition was held to create digital video, and guidelines were developed.
3. Results and discussion
At the beginning of the project, 62 teachers from 9 schools, 6 kindergartens, 1 additional education institution were identified in the urban district of the city of Yelets, who actively use digital educational technologies in educational activities (9.89% of the total; 627 teachers in total). According to the goal of the project, it was planned to involve at least 300 teachers in the active use of these technologies. As a result of the project, the number of this group increased to 312 teachers (49.76% of the total).

Also, at the beginning of the project, 1211 students were identified who actively use digital educational platforms for educational purposes (28.72% of the total; total 4217 students). As a rule, these were school students. The share of kindergarten pupils in this group is insignificant (57 pupils). The target was to involve at least 2,000 students in digital education. At the end of the project, 2,673 students were identified (63.39% of the total).

The assessment of the levels of formation of digital competencies of pedagogical workers and students before and after the implementation of the project are contained in Table 1. In the group of pedagogical workers, the tested system showed the greatest efficiency among teachers of additional education. In the group of students, the greatest increase in results is noted among school students. The use of the chi-square statistical method made it possible to establish the statistical significance of the recorded changes.

Table 1. The level of formation of digital competencies of teachers and students.

| Respondents | High level (%) | Enough level (%) | Insufficient level (%) |
|-------------|----------------|------------------|------------------------|
| Before the project | After the project | Before the project | After the project | Before the project | After the project |
| Teaching staff (total); of them: | | | |
| school teachers | 8.13% | 11.32% | 15.95% | 38.44% | 75.92% | 50.24% |
| kindergarten teachers | 8.05% | 9.43% | 15.40% | 37.47% | 76.55% | 53.10% |
| additional education teachers | 7.95% | 13.64% | 16.48% | 40.91% | 75.57% | 45.45% |
| Students (total); of them: | | | |
| school students | 12.50% | 37.50% | 25.00% | 37.50% | 62.50% | 25.00% |
| kindergarten children | 10.60% | 17.04% | 22.47% | 65.26% | 66.93% | 17.70% |

The key results of the conducted research were not quantitative but qualitative indicators. The main problem that has blocked the adoption of digital education tools among the pedagogical community is the belief that they are ineffective compared to full-time education. Immersion in the practice of digital education has given impetus to the transformation of the didactic experience. While stimulating the development of digital educational practices, a pool of successful samples and models was created, which were broadcast in the pedagogical community. The attitude towards digital education tools gradually changed, as a result, pedagogical creativity and innovation in the field of digital didactics developed. Similar results were obtained in the works of A A Verbitsky [8], A N Makarenko, L G Smyshlyaeva, N N Minaev, O M Zamyatina [9], A Yu Uvarova, I D Frumin [10].

Of course, we realize that this is the tip of the iceberg, however, in the pedagogical environment, the introduction of new didactics (digital didactics refers to this kind of innovation) is possible through a change in the attitude of the pedagogical community. The ideology of the project was based on the idea that it is in the pedagogical community that there are digital education practices that need to be developed. Moreover, these practices were not imposed from outside, they came from the individual and collective experience of the community itself. Each direction of the project had its own leader from among the teachers.
4. Conclusions
The global challenges of our time create new needs and opportunities, require rapid changes in various aspects of the educational system. The 2019-2020 academic year for all schools and kindergartens has become special in connection with the announced coronavirus pandemic. During this period, kindergartens functioned in the format of "duty groups". In schools, not only the curriculum has changed, but also the peculiarities of the organization of educational activities: the spring break was extended to 2 weeks instead of one, visits to educational institutions were canceled, 100% of school students and teachers worked remotely, using all possible forms of e-learning. It was the quarantine during the pandemic that showed all the pain points of the general education sphere. Observing the schools of the urban district of the city of Yelets during the period of the forced transition to distance learning showed that the teachers and educational institutions participating in the project withstood this difficult period with dignity.

The main conclusion, which was formulated during the implementation of the project, is that in order to achieve a positive effect of introducing digital practices into the sphere of general education, the most important thing is to appeal to the experience of the pedagogical community, accumulate, systematize and broadcast the practices of using digital educational technologies in educational organizations. Of course, in order to enhance the effect, it is necessary to create an informal network of educational organizations that would consolidate pedagogical science and educational practice.

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