

Chapter 9

Pandemic Lessons: Story of Cooperation and Competition in Russian Education



Anastasia A. Andreeva , Diana O. Koroleva , Sergei G. Kosaretsky ,
and Isaak D. Frumin

Abstract This chapter examines how main actors such as policymakers, school teams, and Edtech companies faced the pandemic challenges and whether they cooperated with each other. The analysis demonstrates that while before COVID-19, Russian schools and Edtechs rarely cooperated with each other, the partnership developed in response to the necessity of an emergency transition to distance learning. The government attempted to establish a nationwide infrastructure for distance learning and the vetting of educational content during the initial stages of the pandemic, however, this strategy was not implemented. Since the government did not immediately react to the situation, schools were forced to cope with the transition themselves. EdTech helped students, teachers, and regions deal with the crisis. After the pandemic, EdTech companies found themselves in a situation of increased government regulation, to which they reacted differently: some companies preferred to focus on B2C formats, while others responded with investments in the B2G sector. The school-Edtech partnership might be one of the most far-reaching positive changes of the pandemic for education, but our analysis shows this lesson has rather not been learned.

By the time the pandemic began in Russia, there were over 44,000 schools, 16.3 million students and 2.16 million teachers in the Russian school system (Rosstat, 2020). The first cases of COVID-19 in Russia appeared in February 2020. The spread of the epidemic in Russia matched the widespread international model of two successive waves and peaks. The first peak of the epidemic (with an average of 11,656 new cases daily) occurred in early May. The incidence of the disease

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A. A. Andreeva · D. O. Koroleva · S. G. Kosaretsky (✉) · I. D. Frumin
National Research University Higher School of Economics, Moscow, Russia
e-mail: aaandreeva@hse.ru; dkoroleva@hse.ru; skosaretski@hse.ru; ifroumin@hse.ru

subsequently fell until September 2020. This was followed by the second wave of the pandemic between September and December 2020, with a peak (averaging 29,935 new cases daily) just before the beginning of the winter holidays and school vacation. The strategy of the Russian education system changed considerably between the two waves of the pandemic. During the first wave, what amounted to a nationwide lockdown was introduced, and approximately 95% of schools switched to distance education, with some distant rural schools continuing to work in person. During the second wave, the restrictions greatly differed from region to region, and most schools remained open. School closures did not exceed 11% at the peak of the second wave. Interestingly, the second wave was a lot more extensive and serious than the first. The prevalence and incidence rate of the disease increased. Nevertheless, this situation did not lead to a mass transition of the education system to the distance learning format, as had been the case during the first wave (Kosaretsky et al., 2022).

According to statements from the Ministry of Education, citing test results from the fall of 2020, the pandemic did not affect the quality of education. The Ministry claimed that students did not have any serious problems related to mastering material during the period of distance learning (TASS, 2021). At the same time, official data on the impact of the pandemic on the quality of education, on educational losses, was not openly available. Unlike many countries, Russia did not declare or carry out any national plan for restoring the quality of education.

According to World Bank data, Russian students missed about one third of the school year due to the pandemic. According to the World Bank's calculations, each year of schooling equals about 10% of added future income, so it's possible to calculate future losses in income by months of education lost (World Bank, 2020). Empirical study shows that the level of functional literacy of the "pandemic" cohort of Russian schoolchildren, controlled for contextual characteristics, was significantly lower for students of 6 and 8 grades. The biggest loss was found in scientific literacy (Chaban et al., 2022).

To identify the lessons that the Russian education system took away from the forced transition to distance learning during the pandemic, our study focuses on the development of cooperation among government agencies at the national and regional levels, schools, and Edtech companies at different stages – before, during, and after the schools' transition to the pandemic modality– through analyzing statistical data and interviews.

We show that even during mass school closures, the education process was not completely abandoned. Students continued to learn despite the closure of school buildings, aided largely by digital tools. A major role in creating this new education environment was played by EdTech companies, who offered their services and met the needs of teachers, schools, and regions. Thus, players both within and outside the schooling system were able to coordinate and meet the challenges facing the education system. However, after schools returned to the usual in-person format, these three parties began to act without coordination. As a result, the government began to build its own systems, while private companies engaged and worked

directly with parents. While all parties learned specific lessons from the initial steps taken, none of them learned the most important lesson: the need to act with coordination and to engage with parents.

Brief Overview of the Russian Education Policy Priorities Prior to March 2020

The School System: Policy, Trends, Crisis-Preparedness

The key initiator of both general strategies and specific programs of digitalization of education launched before the pandemic was the federal government. It is important to note that the Russian government acted as a solo player in strategy development, despite there being examples of effective cooperation between governments and other sectors and states. For example, the IT sector partnered with the government in Hungary, and there was a unified effort among all players in German states (Koroleva & Naushirvanov, 2021). In this sense, the digitization of Russian schools was a process of “top-down” innovation.

The federal project “Digital Education Environment” aimed to update school facilities and provide equipment for the implementation of a digital education environment, as well as open centers of digital education for children (Ministry of Education of the Russian Federation, 2022a). The “Information infrastructure” project, part of the “Digital economy” national project, had similar goals. Another federal project, “The modern school” (or “Building Schools”), provided children’s tech campuses and updated facilities and equipment for special-needs schools (Ministry of Education of the Russian Federation, 2022b). Just before the pandemic there was an attempt to make a national platform for distance learning called “The Russian Electronic School.” However, this was not done on a large enough scale, and has been seen by researchers as ineffective. In this project, the focus was mainly on providing video content, digitized texts, and images. Despite the site showing large user numbers, teachers complained of a lack of systemization in the content platform and poor navigation. As a result, teachers use the platform sporadically, despite insisted recommendations to use it with consistency. Thus, the main policy focus was digitization of instructional materials and providing the appropriate infrastructure in schools and strengthening the traditional pedagogical approach, but not offering innovative opportunities for the education process.

Without a centralized toolkit being offered at the federal level, the demand was met by the private sector. In the 2010s, a market of private digital education resources and services emerged, both for distance learning and hybrid formats. This included the (Business to Business) B2B segment, with contracts at the regional, municipal, and school levels, as well as a (Business to Customer) B2C segment for family services. The federal government did not show much interest in this market prior to the pandemic, neither in regulation nor support.

The 2012 Law on Education was meant to pave the way towards electronically enabled learning programs and distance learning technologies. However, it lacked concrete guidance for implementing electronic education and distance learning technologies, the government's responsibilities in creating the needed conditions, and the requirements and standards regulating digital resources and services.

The government did not formulate a clear policy regarding the use of portable devices. In one school there might have been a ban on devices in the classroom, while a bring-your-own-device approach was taken by another teacher.

By the start of the pandemic, Russian indicators of computerization and connection of schools to the Internet were above the OECD average (FIOCO, 2020). The reports show that 99% of schools had access to the Internet, but about 22% of them had connection speeds below 1 Mbps. (Rosstat & HSE University, 2020). Many Russian schools, especially in regions with difficult geographical or climatic conditions, lacked the high-speed Internet needed for effective learning. Also, the researchers note that the availability of equipment was not identical to the digitalization of education. It is important to ensure the effective use of technology. Many schools did not effectively consider the transition to a new communication and information culture based on mobile, small-format resources designed for small screens and low-power devices.

At the start of the 2019–2020 school year and before the pandemic, only 797,000 Russian school students (5% of the total) used distance-learning technologies. Of these, an insignificant number (around 8000) used an exclusively remote format. Such technologies were used in 21% of schools; 28% in secondary schooling, and 24% in elementary (Mertsalova & Senina, 2022).

Studies have shown that Russian teachers were not familiar with distance-learning formats. Fifty-seven percent of teachers had no experience with them before the quarantine. Slightly less than a quarter (23%) had conducted online lessons a few times, and only 5% had done so regularly (Koroleva et al., 2020a). A post-quarantine survey revealed that two-thirds of teachers considered themselves totally or partially unprepared to work in those conditions.

With regard to the parents' view of the situation, more than one-third of parents (38%) indicated that their child had experienced distance learning before the pandemic. As compared to students from lower-income families, higher-income students were more than twice as likely to have participated in distance learning outside of school, such as online courses or standardized test preparation (EGE, BSE). They were almost 4 times more likely to have worked with tutors remotely, outside of standardized test preparation. Rural students were the least likely to have taken online classes outside the school curriculum or worked with tutors outside of test preparation (6% and 1%). It is interesting to note that more than a quarter (30%) of parents whose children had pre-pandemic experience with online classes viewed these lessons as being completely useless (Mertsalova & Senina, 2022).

We conclude that the government did not view the support for online education as an important task, despite there being three main levels of familiarity: active users, intermittent users, and those that have never used the resources at all.

Overview of the EdTech System

Assessments measuring the potential of the Russian EdTech market are varied. Researchers note that this is partially due to different definitions of the industry and what constitutes EdTech. For example, should private tutors who work over Skype or Zoom without registering as a business be counted? Estimates of the size of the EdTech market in 2019 before the pandemic ranged from 30 to 40 billion rubles, which is on par with the global average of 1.5% relative to the size of the education market as a whole. However, the EdTech sector showed a high rate of growth, about 20% per year (Obukhov & Tomilina, 2021).

The leading companies in 2019 were SkyEng, an English language learning program established in 2012 with tutoring and specially designed curriculum, and Maximum Education, a standardized exam preparation program active since 2013 (Ryzhkova et al., 2020). The primary business model in this market was B2C. EdTech users before the pandemic were school students, their parents, and teachers. The B2B segment, where the school acts as the buyer, was very underdeveloped. This is largely because some schools lacked the needed funds, so there was little demand for purchasing EdTech products. The private education sector is not very large, which made a market strategy of creating customized products for schools ineffective (Chavkin, 2020).

Furthermore, as noted earlier, the Ministry of Education and regional governing bodies did not make a concerted effort to create conditions for the growth of EdTech. They did not deter EdTech companies from developing but tended to stay out of the online education market entirely. Among the 85 regions, the level of engagement with EdTech companies and informal market players varied extremely. There were specific cases of intense collaboration between regional authorities and online companies, such as the Republic of Dagestan's work with Dnevnik.ru— a unified electronic environment for teachers, students, parents, and local governments, in the market since 2007. Most often, however, the government was absent both in terms of subsidies as well as regulations for third-party companies, and often these initiatives “reinvented the wheel” by giving public funding for services that already existed in the market.

Summary The pre-pandemic period in Russian schooling is marked by numerous government-led digitization initiatives. These were developed and executed by the government, without the participation of EdTech companies or other outside experts. They were imposed on schools, which tended to greet these initiatives with little enthusiasm and implement them only on the surface. The EdTech market was growing quickly in the pre-pandemic years, not yet reaching its full potential but slowly filling empty niches in the education system.

Response of the Russian Education System to the Pandemic

The Government's Response

The moment of transition to distance learning at the start of the COVID -19 pandemic in Russia can be dated to March 18, 2020, when Russian Education Minister Sergei Kravtsov announced the extension of spring break to three weeks. He also announced that schools should prepare to transition to a new format at the end of this break and stated that the final decision should be made by local (or regional) authorities, depending on the epidemiological situation (Voronov, 2020).

The main limitations of the current school system in addressing the organizational challenges of the pandemic were lack of internet in a number of territories, and/or low connection speed; lack of computers—including desktops, laptops, tablets— among students and teachers; lack of reliable and universal platforms (or services) for distance learning; insufficient experience in distance education among all participants; and insufficient access to state-of-the-art education resources (Avksentiev et al., 2020). In July 2020, Minister Kravtsov acknowledged that only 25% of schools were prepared to provide quality distance education, and the others required at least some assistance (Kolesnikova, 2020). During the pandemic, the Russian federal and regional governments addressed some of these gaps by delivering computers and laptops, connecting schools to the internet, and developing IT competencies among teachers.

By March 20, 2020, the Ministry of Education prepared a document including a set of methodological recommendations for schools and regional and local administrations (Ministry of Education of the Russian Federation, 2020a). The recommendations included a basic model of how to carry out education programs with distance learning, as well as in-progress and final assessment methods. Subsequently, several other regulatory documents were produced that provided more specificity about the mechanisms and standards for implementing this model. However, the model and oversight regime that was offered throughout the pandemic was a general framework. The regions and schools that were ready and able to make independent choices and find solutions on their own were given the opportunity to adapt to their specific conditions. This caused difficulty for those looking for direct instructions. We illustrate this using quotations from interviews we conducted with the heads of regional and municipal governing bodies in the education system (interviews were conducted in April–October 2020):

We were given recommendations on how to organize distance learning from the Ministry of Education. At first, they were vague, and then narrowed somewhat, so we decided to go our own way. We created our own methodological recommendations, and these remain relevant and doable today. We were able to create the basic structures for guidance that teachers are most concerned with, doing so in a way that was not vague, but gave specific instructions on how things should be done, etc.

We got used to a situation where things were strictly organized. We wanted there to be a centralized decision - say, three lessons per day. So that both teachers and parents were on the same page. So that everything was coordinated, and it wasn't a situation where one teacher gave 20 assignments and the other 2 assignments. There needed to be some kind of structure, but no one had created a structure before.

In March 2020, the Ministry of Education published recommendations for using the federal and regional online education platforms, available free of charge to every student, teacher, and parent (Ministry of Education of the Russian Federation, [n.d.](#)). These included both government platforms, such as Russian Electronic School and Moscow Electronic School, as well as private platforms like Yandex.Textbook, Learn.ru, New School Platform, Foxford, InternetUrok.ru, and Skyeng.

While some regions tried to follow the recommendations closely, others acted outside of this framework. They contracted with companies that were not among recommended by the government. For example, the Tatarstan region had its own list offering 10 additional platforms to schools, which helped the regional government provide optimal service and content for all levels and subjects. The Moscow region and the Yaroslav region made their own deals with some Edtech companies for certain services. Moscow, which had its own platform and experience working with it before the pandemic.

In addition to usable services and content, an important challenge was providing methodological support for teachers in learning how to use the new resources and technology. There was no existing centralized solution for this. National programs were insufficient in both number and quality. In response to this during the pandemic, the work of EdTech companies and leading universities became an important resource, with horizontal cooperation between school systems and schools. Online communities were also formed, and webinars and conferences were organized to show best practices and share experience.

We engaged with 19 online communities. We supported not only teachers, but also students and parents. The VKontakte social network was used to create a community around school subjects, psychological/pedagogical support, special-needs teaching, and coordination. The moderators were the top teachers and methodology specialists from universities. Moodle was used to organize computer courses and webinars. The community worked out solutions to practical cases, solving common problems for teachers. When the basic narrative framework of a case is created, it becomes a concrete example that can be put to use.

In the leadup to the second wave of the pandemic in August 2020, the Russian Ministry of Education began to demonstrate greater engagement and a desire to manage the process. The government announced the creation of a national platform that would provide all the necessary content and communication services for schools. This served as an alternative to internationally popular services such as Zoom (Alizar, [2020](#)). However, these plans came to fruition slowly, behind the schedule announced by the Ministry. While the state digital content platform was launched in the second stage of the pandemic, it did not play a key role (Mediateka, [2022](#)). The plans for a national service that were announced during the pandemic were not completed.

By the beginning of the second wave, Federal government agencies had not issued any teaching or organizational recommendations, stressing that regions should make all managerial decisions on their own. Only in early October did the Russian Ministry of Education elaborate and publish new recommendations on amending curricula due to the coronavirus infection (On recommendations for amending study programs, 2020) and on using information technologies (On recommendations for using information technologies, 2020). The Ministry published practical recommendations on organizing the work of teachers in the distance-learning format in November (On sending recommendations, 2020). In these conditions, reflected in the interviews we conducted and in analysis of media coverage, regions continued to provide curricular support to schools and train teachers on their own.

At the same time, the government called for the creation of a vetting process for digital teaching materials (TASS, 2020). It sought to create rules for approving electronic content for schoolchildren in accordance with the federal education standard (FGOS). Plans were also announced to create a competition for those who wanted to contribute their content to the Ministry's resource catalog.

During this period, a decision was made to amend the law regarding the use of electronic education materials. However, discussions on the content of these amendments continued until the end of the pandemic.

The Schools' Response

Russian schools were asked to transition to a distance learning format in just a few weeks (Ministry of Education of the Russian Federation, 2020a, b). Digital technologies allowed learning to resume while the virus-related closures were still ongoing.

A significant limitation ended up being teachers' insufficient skills and know-how in using distance learning platforms and electronic services. Only 48% of students believe that their teacher had sufficient competency in organizing distance learning. Even less parents (36%) agreed on that (Saprykina & Volokhov, 2020).

Analyses of schools' coping reactions (see Fig. 9.1) revealed a pluralism of approaches to adapting to the emergency transition. Some of the coping strategies aimed for a fast response to the pandemic and were limited in effectiveness: a lack of attention to increased workloads (5a) and stress (4a); exclusionary practices in decision-making (7a) and organizing the education process; suspension of certain standards in quality and effectiveness (1a-3a). All this is seen by the informants as acceptable, or even optimal, given the perception of the pandemic as an extraordinary and temporary phenomenon. However, this prevents them from learning lessons from this time. Many schools missed the opportunity given by the pandemic to develop schools' digital potential.

Other coping strategies involved a more comprehensive solution but required more time and resources. Some schools took the opposite approach to the issues



Fig. 9.1 Russian schools' approaches to adapting to the emergency transition. (Source: Study of schools' coping strategies in the context of the transition to distance learning, based on interviews with teachers and administrators (N = 43) (Andreeva, 2022))

listed above and instead prioritized the following approaches: endeavors to optimize workload (5b), reduce the stress of the situation (4b), inclusive decision-making processes (7b), inclusive education formats (6b), and increased attention to quality and efficiency standards (1b-3b). Here, faculty and staff were willing to put forth the effort needed for a successful transition (including bringing in external resources), and review adopted practices. They viewed it in terms of leading a transformation and creating a long-term system for distance learning. These approaches were especially relevant to ameliorating resistance to technology and the threat of teacher burnout, as well as developing schools' potential for digital transformation.

In most schools, there was an opportunity to create partnerships with EdTech providers. Our surveys showed an increase in the flow of information about digital technologies, both in the social environment of teachers, as well as among school administrators. They indicate increases of 85% and 94%, respectively (see Fig. 9.2). Additionally, we identified an increase in direct engagement between schools and EdTech companies. This was largely felt on the part of administrators (65%), but the share of teachers reporting increased engagement was also high (51%), as seen in Fig. 9.3.

Given that government initiatives offered only a general framework, schools had to develop specific practices to set up distance learning. A large share (38%) of administrators indicated that the school made an independent plan to transition to distance learning, and another 36% said they did not wait for a transition plan

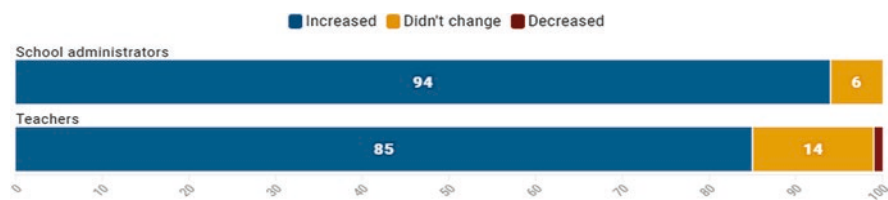


Fig. 9.2 Amount of information about EdTech for teachers and school administrators (percent of respondents). (Source: (Koroleva et al., 2020a))

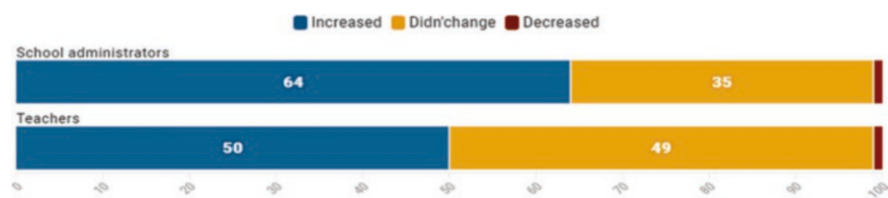


Fig. 9.3 Amount of interaction with Edtech companies for teachers and administrators (percent of respondents). (Source: (Koroleva et al., 2020a))

from above, but rather relied on the experience of their colleagues at other institutions (Koroleva et al., 2020b).

Moreover, not only in different schools, but also within the same school, different distance-learning formats were employed. Forty-three percent of parents said that their children were learning in a live online setting, the format closest to in-person education at school (Fig. 9.4). But most teachers used asynchronous formats— such as sending materials, assignments, and feedback via email (70%), telephone (5%) or delivering printed materials (about 2%). The choice of distance learning format depended on the size of the city or town. In Moscow, the synchronous format was very widespread, while in small cities and rural areas it was half as common, which revealed a problem of increased inequality.

During the pandemic, schools also used a variety of digital platforms. The leader in terms of regions covered was the private education platform Uchi.ru (35%). Other companies in the top 10 are listed in Fig. 9.5, with shares ranging from 8% to 20%. This shows that there was no monopoly over the market by one or more companies. The figure shows that the B2G market— where the service is purchased by the region— included both private and public EdTech companies.

Ultimately, most schools did not stop the education process during the pandemic, and many took steps to set up distance learning by engaging with EdTech companies. However, schools adapted in different ways: organizing distance learning in synchronous and asynchronous formats and adapting various public and private education platforms, as well as various coping strategies.

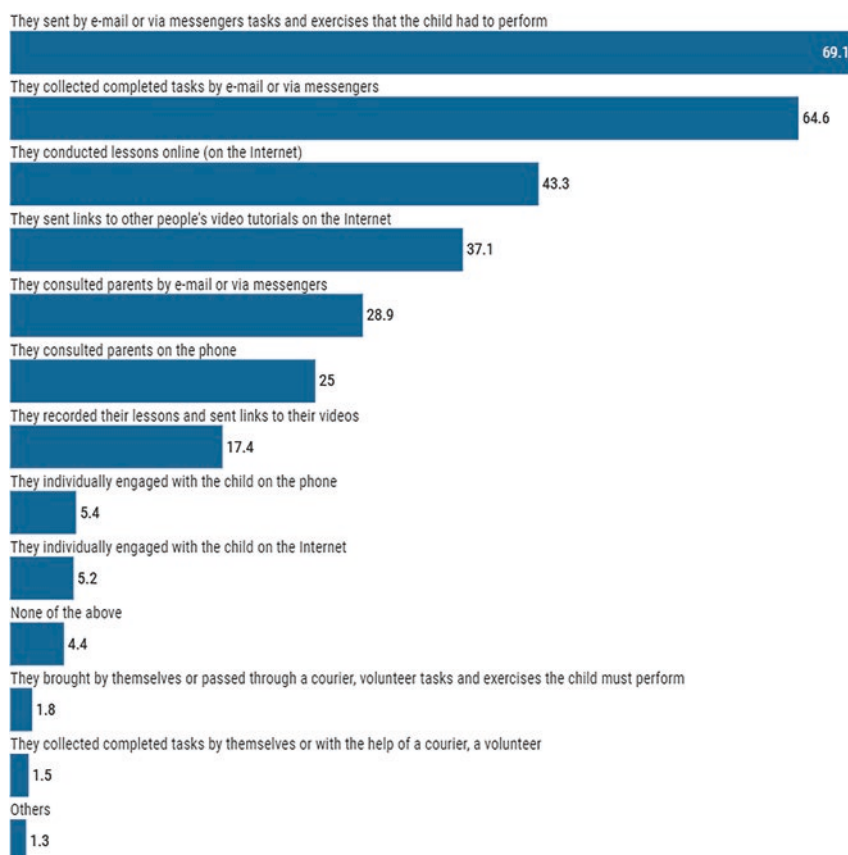


Fig. 9.4 What forms of work with your child were used by teachers during the period of remote work?. (Source: HSE University, [n.d.](#))

EdTech's Response

Summing up, the year 2020, we saw rapid, exponential growth in the demand for online education (Smart Ranking, 2021). The total revenue of the top 60 EdTech companies grew by 113% from the previous year, reaching almost 34 billion rubles. The sales volume of these companies also increased substantially. For example, sales of the online foreign language school Skyeng reached 4.1 billion rubles, which was 141% more than the 1.7 billion reported in 2019. Uchi.ru's revenue was 2.5 billion rubles, 150% more than the 1.0 billion in 2019. Site visits to Uchi.ru grew to three million users per day, 6 times more than before the quarantine. The platform's total users increased to about eight million school students.

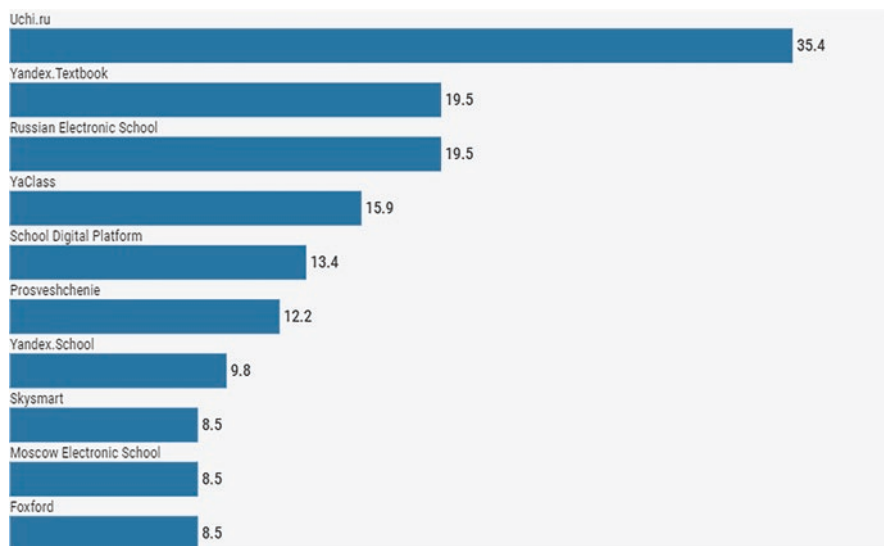


Fig. 9.5 Rate of use by regions of the general education platforms, based on contracts with outside partners. (Source: Laboratory for Digital Transformation of Education, [n.d.](#))

Based on the interviews with Russian Edtech CEOs (Skyeng, Cifrium, Vk, GlovalLab, Internetlesson, Mobile electronic school, Stimul, Sberclass), this jump can be explained in the following way. First, the pandemic led to many EdTech companies expanding their free content, taking advantage of the “freemium” format. The increasing demand was mostly for this “freemium” category of materials. Skyeng, for example, offered a free service that helped teachers check homework assignments. To promote the service, Skyeng reached out directly to teachers using standard marketing practices. EdTech companies also offered discounts on basic content and expanded their product lines. Thus, companies were able to attract additional B2C customers: school students, families, and teachers in need of quality education resources. Second, there emerged greater trust between formal and informal market players. Regional departments overseeing school systems, municipal departments, groups of schools, and individual schools worked with EdTech companies to integrate online solutions into their teaching methods. One Edtech company CEO said:

One thing that helped us and opened increased opportunities was the fact that in Moscow Oblast we gave free access to our content during the pandemic. This was beneficial to them, and some students were able to continue their studies, if they needed it or were interested. And after that, the Moscow regional authorities had a warmer disposition towards our company and became more open to partner with us to meet the challenges of digitizing education.

Another example is the Uchi.ru platform, which gave special access to children of medical workers who were battling the pandemic (B2C) and increased free access to tools for conducting online classes (B2B). Out of the available subjects, the most popular on the platform were mathematics for grades 1 through 9; Russian, English, and nature studies for grades 1 through 4; and computer programming for grades 1 through 6.

It is important to note that third-party EdTech services outperformed previous platforms from the government in terms of user experience, user interface, feedback, support, etc. This was due to the companies' greater experience in product integration.

The analysis of the interviews with CEOs of Russian Edtech companies highlights several strategies employed by EdTech companies during the pandemic. These strategies differed for players of different sizes of market capitalization. The first strategy can be called “*run as fast as you can just to stay in place*,”¹ which was characteristic of smaller companies who had a narrow focus. These companies generally oriented themselves towards the B2C segment and lost clients at the start of the pandemic. They were forced to find new segments, diversify their business, and optimize their products to stay afloat. Such companies did not always lose revenue, nor did they see the explosive growth that the other groups did. The second strategy was to “*bet on stability, quality, and organic growth*.” This strategy was also common among smaller companies. Most EdTech companies continued to provide quality content and grew about 25% to 35% during the pandemic year. According to representatives of these companies, the pandemic did not significantly affect their operations. They saw steady, organic growth in their user base both before and after the pandemic. One CEO reflected:

It was not because of the pandemic, but because the market overall is growing...we were able to grow. We were also growing at the same rate before the pandemic. Every year we create our business model, a business plan, and plan for a rate of growth. And these plans more or less correspond to reality.

The third strategy can be defined as “*maximum diversification and servicing a large flow of clients*.” This strategy is characteristic of most of the major players in the online education industry, who were able to respond to the explosive growth in demand across the full spectrum of B2C, B2B, and B2G strategies.

Summary To sum up the immediate response of the Russian education system to the pandemic, our analysis shows that the pandemic led to a period of shock innovation for Russian schools, which found several coping strategies to deal with the crisis. Since the government did not immediately react to the situation, schools were forced to find outside resources to solve their problems— including technical ones. These resources were often EdTech companies, which helped students, teachers, and regions deal with the crisis. The Russian education market began to produce an ecosystem that included both formal and informal actors (such as schools and EdTech companies), and connections between the two.

¹Paraphrasing Lewis Carroll, *Alice in Wonderland*.

Pospost-Crisis Period

The Government's Actions

After a delayed response with top-down solutions, the government remained almost indifferent to bottom-up innovation. Neither schools nor EdTech representatives were seen as valued partners in designing post-COVID policies. The government took a course towards centralization and strict state control in the field of digitalization. Although policy in this area is part of a general policy of the state to unify everything and reduce autonomy, the rigidity of their position regarding school digitalization has its own specific reasons. On the one hand, this is due to security issues, especially in terms of students' personal data. On the other hand, this causes the market to become monopolized in the interest of a limited number of companies.

One can claim that the Russian education authorities, while slow in reacting to the crisis brought on by the pandemic, was able to recover from the lost ground. The lessons of the pandemic resulted in the clarification of the goals and challenges facing federal projects and new education standards. These changes were made irrevocable and in favor of centralized solutions.

The "Digital Education Environment" project (COS) now offers a federal information and service platform for digital education, which was not widely available during the pandemic. This platform includes a library of approved teaching content, a platform for assignments, a social network, and a video conferencing system. The primary entry point to the system has become the "My School" platform.

The Mail.ru group and Rostelekom were contracted by the Ministry of Education and the Ministry of Communications to create an information and communication platform called "Spherum." The platform allows school students to participate in remote classes through a video conferencing system. The software can be used in a quarantine situation or on an individual basis, such as if a student is sick. Schools are equipped with cameras that point at the teacher in the classroom. In addition to videoconferencing, schools and teachers can create closed communities and chat rooms where they can invite students and parents. The new service is integrated with the "My School" platform, which provides access to verified teaching materials.

The government is seeking to put into law the process for selecting electronic education resources that are approved for use in schools. The federal law "On amendments to the federal law 'On education in the Russian Federation'" gave the Ministry of Education the right to set the rules for creating a federally approved list of electronic education resources. The list included a selection of organizations that are allowed to provide teaching materials and approval for electronic education resources that may be used in public schools. To be included in the list of education materials, companies must be approved by a commission of experts. On August 2, 2022, the Russian Ministry of Education issued an order "On confirming the federal list of electronic education resources approved for use in accredited education programs in K-12 education" (2022).

We note that the decision to increase state control in the area of electronic education was two-fold. On one hand, this increase was the result of the experience during the pandemic and the lack of comprehensiveness and quality in the resources being offered to schools and students. On the other hand, this decision was part of a trend towards reducing variation and unifying the methodological approaches within the school system. This trend began in the middle of the 2010s vis-à-vis textbooks. The number of officially approved textbooks was considerably reduced at that time, and this trend has noticeably accelerated in the past two years, now including teacher training and professional development. The Russian Ministry of Education created a list of organizations that are allowed to provide teaching materials and methodological support for schools (TASS, 2020), as well as a “federal registry of additional professional programs for pedagogical education.” It is important to note that a number of experts have pointed out that arguments in favor of greater control in the interest of quality have been used by large companies with ties to the government in order to gain competitive advantage.

Another factor leading to increased government centralization and control is the increased concern by authorities over the threat of influence on the youth by “Western ideology.” Education with the freedom of choice and variety, similar to internet resources, is looked upon as high risk for “state interests.” There is now a demand to create tools for state control that would limit choices available to schools and families. A notable example of this is the April 2021 “Law on educational activities,” officially the Federal Law “On Education in the Russian Federation,” (On amendments to the federal law “On education in the Russian Federation”, 2021). This law established the concept of “educational activities” and the foundation for a regulatory regime, giving regulatory authority over such activities to the Russian government. Subsequently, the government established guidelines for conducting educational activities (On approval of the rules for the implementation of educational activities, 2022). This document placed limits on who had the right to carry out educational activities, while keeping the definition of such activities quite broad. Educational formats— both in-person and online— such as lectures, presentations, seminars, master classes, roundtables, and discussions were listed. Special attention was given to educational activities conducted by foreign agents. This document also impacted the sector of informal education for children both within and outside of the curriculum. Both the law itself and the discussions about its implementation revealed that a major motivating factor for the government was ideological control over the content of education resources available to families.

Additionally, quasi-official statements from government officials show a high level of anxiety related to the risk of nongovernmental providers getting access to the private data of school students.

Nevertheless, the existing ecosystem of private digital services was not entirely ignored. The library of verified content and approved communications applications is supposed to be composed of two separate segments.² The first list is composed of

²These two segments were not yet completed at the time this section was written.

free and universally accessible content covering the whole school curriculum, including assignments with automatic grading, video materials, and interactive presentations. The second list includes additional content from EdTech providers, which will be displayed in a separate section called a “Marketplace” (Mironova, 2019). This content needs to be approved by a commission, in accordance with established norms.

In addition to the Russian Ministry of Education, the EdTech sector also interacts with the Ministry of Digital Development, Communications, and Mass Media. This ministry has launched a project called “Catalog of digital education content. Unified free access to materials from leading online education services in Russia.” This project is under the auspices of the federal project “Cadres for the Digital Economy,” which is part of the national program “Digital Economy of the Russian Federation.” The project is funded by a federal budget allocated by the Ministry of Education. The project aims to provide unified, universal access to materials created by leading online education service providers in Russia. Teaching materials that are included undergo special checks to make sure they comply with federal education standards. Free access to educational content is provided to students at schools, lyceums, and gymnasiums from grades 1 to 11, as well as at vocational schools. Parents or legal guardians must register on the site, and students over 18 years of age may register independently. Teachers at schools, lyceums, gymnasiums, and vocational schools may also register.

The project offers more than 1500 educational courses, and other online platforms are being added with new content. Six months after the launch of the project, 30,000 schools and 85 regions of Russia have engaged with it. More than 1.6 million students and 240,000 teachers have already gained access to the online course materials. By 2024 there are plans to give free access to these materials to all schools and vocational programs.

Another lesson realized by the government from the pandemic was the necessity to increase investment in the infrastructure for digital resources. The “Digital Education Environment” project launched after the pandemic is aimed at providing teachers with personal devices and schools with Wi-Fi networks that cover more than just classrooms and libraries but also hallways and cafeterias.

The “Help Me Learn at Home” project provided half a million devices to assist with online learning to low-income families. 332,171 devices were supplied by regions, 72,282 devices were donated by citizens, and more than 96,000 devices were donated by business companies (Pomogi uchit'sya doma, 2022).

We note that large-scale initiatives to improve the infrastructure for Russian education tend to favor hardware, which leaves out the training of teachers and students to gain the skills necessary to use digital tools. Professional development and retraining programs for teachers are now the purview of the regional level of digitization strategy. This makes the process more individualized and local. However, there is a lack of specific guidelines and goals, which make the process uneven and nonmandatory.

It is important to note that digitization initiatives are not supported by many parents, and many actively oppose them. The parent community views these initiatives not as a rational strategy based on lessons from the pandemic and in preparation for future risks, but rather as an unnecessary strategy of replacing traditional learning. Since the government is not in cooperation with key market players, it is left addressing the population of unhappy parents.

Schools' Post-Crisis Actions

Research shows that there is a long-term impact from the pandemic on the education system. Thus, we can offer hypotheses about the presence of certain initiatives taken by schools to advance school development and compensate for negative consequences. Our analysis of interviews with teachers and administrators shows that not all schools took such initiatives.

In one group of schools, we find a lack of any post-crisis strategy. The administration and most teachers in such schools have not looked for opportunities to adapt the experiences they gained from the pandemic to the post-COVID era and have not reflected on the positive or negative effects of the pandemic, such as teacher professional development or gaps in education, the latter of which often corresponds with negative attitudes to digitization in the school as a whole.

Another group of schools gained positive lessons from the pandemic, and often makes use of the pandemic experience since returning to the “normal” way of working. However, their adaptation of the innovations is done chaotically or spontaneously. Only some teachers use digital tools in the classroom, and administrators rarely put forth effort to instill best digital practices throughout the school. The use of digital tools in these schools is sometimes driven by parental demand. In one class, parents may understand the importance of these tools and are willing to pay for them, while another class may not find such an enthusiastic audience and students continue with a more traditional program. In these cases, the school’s strategy does not explicitly define a digital transformation. Instead, projects within the school have their own independent development paths. Such schools are only interested in working with EdTech companies if they can successfully integrate these projects into their community. For example, schools may partner with EdTech companies targeting gifted children only if there is a gifted population at the school.

Finally, the third group of schools viewed the pandemic as an opportunity for “growth and a new course towards digitization.” In these schools, leaders reflected on the pandemic experience and are ready to scale digitization in the post-pandemic context. This includes using distance-learning formats when needed, as well as integrating digital tools into the in-person teaching process. These schools took advantage of the unusual situation and used it as a catalyst to change attitudes that previously blocked integration of digital innovation into school practices and

to master digital tools along with a new pedagogical paradigm. One school principal reflected:

If it wasn't for the bad, we wouldn't have the good. We took a huge step forward in using the [digital] platforms, in our own personal growth. We took this step forward because of the pandemic, took a step into the digital world, which would not have happened without this unfortunate event. We would have taken a long time to get moving. It was truly a jolt forward, a breakthrough. We all stepped into the digital world (School principal).

In summary, school leaders' attitudes varied greatly in terms of their desire to apply the lessons of the pandemic to traditional in-person education. There is a distinct group among educators and administrators with highly negative attitudes about the pandemic experience and who fail to reflect on the opportunities to apply the lessons learned in the future. On the other hand, some school personnel view the pandemic situation as a trigger for professional growth and display readiness to adapt the experiences and methods developed during the pandemic to longer-term needs. The effects of this can already be seen in schools today.

EdTech's Post-Crisis Actions

EdTech company revenues in 2021, after the pandemic, continued to grow, and reached 73 billion rubles. Growth for the year was about 70%, which was lower than the 113% rate pushed by the pandemic in 2020 but higher than the pre-pandemic growth rate of 20%. Companies generally attribute the slowdown to market saturation. Despite this, investors still view this as a very promising market. In 2021, the volume of investments in education startups ranked fourth, following FinTech, SaaS, and AI/ML.

Representatives of the EdTech sector noted more active participation from the government in regulating the market for online education following the pandemic. However, there is a lot of uncertainty in the market since it is not possible to know what kind of regulations will appear in the future.

On one hand, government regulation is viewed by EdTech companies as a damping force on the market. Companies note that being included on the list of recommended content providers involves reorganizing business processes, closing the door to certain opportunities, and standardizing the content for the average user. On the other hand, the government provides vetting, control of quality and safety, and the applicability of content to public education curricula and the new FGOS standards. Given the limitations imposed by the government, several EdTech companies that interacted with the public school system in B2B or B2G formats preferred to focus on B2C formats, which allowed for greater independence. Another aspect of EdTech that is related to the regulatory issue is the export of technologies to foreign markets. Researchers note that the Russian market is oversaturated, and—given the instability coming from unpredictable public policy—EdTech companies are diversifying their target audiences and markets. The most popular foreign markets for Russian EdTech are Europe and Latin America. One EdTech company CEO said:

“We now have a partner school in Spain. This is very important for us at this point. Especially because our students can now pass standardized testing in an accredited Spanish school, in Europe. They are accredited in Russia; it is a Russian school. So, we can collaborate with them now.”

Another contrasting strategy for EdTech companies is to focus on developing B2G. In this case, companies often view the government as an investor and partner. In this light, the B2B model, where EdTech companies partner with individual schools, functions differently. Startup founders note that after making deals with individual schools, they must go to regional authorities and initiate B2G cooperation to secure funding and then return to the schools. Thus, the government no longer implements software solutions from the top down, but it acts as the middleman and controls engagement on the lower level.

Summary Summing up, the post-pandemic period has been marked by many programs and projects initiated by the government, largely without the participation of EdTech companies and other outside experts. Some of the long-term initiatives have yet to be adopted. However, an important innovation of this period has been the creation of an EdTech marketplace and the development of a mechanism for subsidizing schools to help them make use of it. The government has thus become a market maker and a middleman between EdTech companies and the school system.

Conclusion

The Russian education system was unprepared for the challenges of the pandemic in terms of offering a timely, full-featured infrastructure for distance learning. One of the reasons for this was a lack of a coherent policy on the federal level. The government failed to create a centralized system of public services and failed to act as a full-fledged mediator between various players in the free market before and during the COVID-19 pandemic.

Given the lack of a national system during the first phase of the pandemic, the government was limited to a broad framework of recommendations, shifting responsibility onto regions and schools. Schools found themselves in an unusual state of autonomy. Being given the opportunity to make decisions locally led to a pluralism of coping strategies and digital initiatives, resulting in the emergence of local innovations. This autonomy also provided some flexibility for schools to find the best option for their context and work in a way they could “afford.” Nevertheless, this autonomy also posed a challenge for educators and administrators, who took on the responsibility of transitioning to the new realm of digital learning. Additionally, the absence of support for teachers led to a disparity in instructional quality and the efficiency of digital technology usage, ultimately leading to an increase in educational inequality.

The pandemic also encouraged collaboration between Russian schools and EdTech companies. When schools needed tools for providing distance learning,

they were forced to agree to implement digital tools into their practice. Some even formulated their own requests to EdTech companies. Governmental policies have not instituted any official initiatives towards fostering a conducive environment for collaboration between EdTech companies and schools. However, there have been no active efforts to impede such partnerships. The nature of the interaction between these two entities has been ambiguous and lacks clear delineation, which heightens the potential for risks for both the schools and the EdTech companies. This situation could prove particularly challenging for schools, given their established practices and reliance on stable and regulated conditions. The absence of governmental interventions in facilitating partnerships between schools and EdTech companies cannot be regarded as the optimal strategy. This is since certain schools may not possess the capacity to assume a proactive role in establishing collaborative relationships with EdTech enterprises. Consequently, there is a pressing need for targeted governmental programs aimed at assisting such schools. Nonetheless, collaborations between these entities' present advantages to education organizations, as they provide a means for teachers and school leaders to advocate for their specific needs and interests.

While remaining silent about the school-EdTech interaction, the government attempted to establish a consistent, nationwide infrastructure for distance learning and the vetting of educational content during the initial stages of the pandemic. A variety of motives factored into this choice. One of these was the apparent weaknesses of the existing model where the national government provided a framework and regional governments created the specific conditions for digital learning. This led to inequality in terms of resources and administrative potential among regions. Another set of motives surrounded political and ideological concerns, with the federal government seeking greater ideological control over education. There were also economic motives, including lobbying efforts from quasi-public companies in the EdTech space.

However, this strategy was never implemented during the pandemic period and still needs to be fully applied. After rejecting the idea of a unified platform, the government decided to regulate the growing number of relationships on the market between EdTech companies and schools. Having adopted the role of mediator, the government initiated strict control over content being provided to schools, as well as formats for cooperation between the formal and informal sectors. This legitimized the relations between schools and EdTech companies. It also led to changing strategies and restrictions for private EdTech companies, including its partial withdrawal to the B2C sector. Furthermore, it deprived schools of their voice in articulating commissions for projects.

While the EdTech sector was not sufficiently developed or prepared at the start of the pandemic, it supported regions, schools, and families in overcoming the challenges of pandemic. EdTech companies now have increased government regulation, which led many to react by focusing on B2C formats with greater independence and others to increase their investments to B2G sector.

In the B2C segment, many families learned to use private EdTech resources during the pandemic, which provided them with help in the moment. It also gave them a new understanding of the potential of the digital age.

In conclusion, all the players in the four-sided constellation of government, schools, EdTech, and families took valuable lessons away from the pandemic. The government began to pay attention to the private sector and offered mechanisms for working with existing and competing companies, albeit under rather strict regulation. Schools found their voice and opened themselves up to third-party players to solve common problems. EdTech companies shifted their focus towards formal education and developed frameworks for supporting teachers. Many families started to use EdTech resources to supplement the education of their children. Despite these lessons learned, there was a missed opportunity in the lesson of mutual support and trust between schools and EdTech companies. There is a tendency towards letting the horizontal mechanisms of spreading innovation developed during the pandemic dwindle. This leads to an imbalance between top-down and bottom-up flows, which are the two key sources of development in the education system (Esteves et al., 2021; Fullan, 1994; Rivera-Vargas & Romani, 2020). It also blocks the path towards actualizing the potential of a holistic and collaborative approach, which is needed to align all the relevant stakeholders to create sustainable and effective lifelong learning systems (Fung, n.d.). By relying on a single actor for decision-making and rule-setting, the government exposes the public education system to new risks. Without fresh views, it thereby deprives the system of resources that could be used to solve the “old problems” of education.

References

- Alizar, A. (2020, April 20). V Rossii sozhdadut analog zoom dlya shkol [they will create an analogue of zoom for schools in Russia]. *Habr*. <https://habr.com/ru/news/t/498048/?ysclid=I9s1psf23y391763104>
- Andreeva, A. (2022). Coping strategies of Russian schools teams during the pandemic: Get ahead of themselves vs survive and forget. In A. L. Martinez & I. C. Torres (Eds.), *INTED2022 proceedings: 16th international technology, education and development conference* (pp. 8196–8202). <https://doi.org/10.21125/inted.2022.2076>
- Avksentiev, N., Agranovich, M., Akudinova, N., Aldoshina, T., Alieva, E., Asmolov, A., Bajkov, A., Barinova, V., Belyov, S., Blinov, V., Bondarenko, N., Borzyh, K., Bryzgalova, S., Buklemishev, O., Bysik, N., Vojkina, E., Voron, O., Gagiev, N., Gohberg, L., & Yakushev, E. (2020). *Obshchestvo i pandemiya: Opyt i uroki bor'by s COVID-19 v Rossii* [society and the pandemic: Experience and lessons of fighting COVID-19 in Russia]. The Russian presidential academy of National Economy and public administration (The Presidential Academy, RANEPa).
- Chaban, T., Rameeva, R., Denisov, I., Kersha, Y., & Zvyagintsev, R. (2022). Rossijskaya shkola v period pandemii COVID-19: Effekty pervyh dvuh voln i kachestvo obrazovaniya [Russian schools during the COVID-19 pandemic: Impact of the first two waves on the quality of education]. *Voprosy obrazovaniya*, 1, 160–188. <https://doi.org/10.17323/1814-9545-2022-1-160-188>
- Chavkin, Z. (2020). Poisk biznes-modeli obrazovatel'nym startapom v segmente vzroslogo obucheniya na rossijskom rynke [searching for business model by edtech startups in adult education segment on the Russian market]. *Strategicheskie resheniya i risk-menedzhment*, 11(1), 70–97. <https://doi.org/10.17747/2618-947X-2020-1-70-97>

- Esteves, N., Buttmer, C. J., Faruqi, F., Soukab, A., Fourkiller, R., Gutierrez, H., & Reich, J. (2021). The teachers have something to say: Lessons learned from U.S. PK-12 teachers during the COVID-impacted 2020-21 school year. *EdArXiv*. <https://doi.org/10.35542/osf.io/h8gac>
- FIOCO. (2020). PISA-2018 Organizatsionnye faktory i rezul'taty [PISA-2018 Organizational factors and results]. https://fioco.ru/Media/Default/Documents/%D0%9C%D0%A1%D0%98/%D0%9E%D1%80%D0%B3%D0%B0%D0%BD%D0%B8%D0%B7%D0%B0%D1%86%D0%B8%D1%8F%20%D1%88%D0%BA%D0%BE%D0%BB%D1%8C%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BE%D0%B1%D1%83%D1%87%D0%B5%D0%BD%D0%B8%D1%8F_.pdf
- Fullan, M. (1994). Coordinating top-down and bottom-up strategies for educational reform. *Systemic reform: Perspectives on personalizing education*, 7–24.
- Fung, M. (n.d.). Ecosystem approach to build lifelong learning societies. *The GFCC*. <https://www.thegfcc.org/ecosystem-approach-to-build-lifelong-learning-societies>
- HSE University. (n.d.). Monitoring of education markets and organizations. <https://memo.hse.ru/en/>
- Kolesnikova, K. (2020). *Tol'ko 25 procentov shkol okazalis' gotovy k distantsionnomu obucheniyu* [only 25 percent of schools were ready for distance learning]. *RG.RU*. <https://rg.ru/2020/07/14/tolko-25-procentov-shkol-okazalis-gotovy-k-distantsionnomu-obucheniiu.html>
- Koroleva, D., & Naushirvanov, T. (2021). Digital countries: Osobennosti cifrovizatsii obrazovaniya v Rossii, Vengrii i Germanii [digital countries: Features of digitalization of education in Russia, Hungary, and Germany]. *Obrazovatel'naya politika*, 87(3), 106–118.
- Koroleva, D., Khavenson, T., Akaeva, K., & Naushirvanov, T. (2020a). Informatsionnyy byulleten' "Monitoring ekonomiki obrazovaniya" Vyp.14 (2020) Vzaimodeystvie rossijskikh shkol s EdTech-kompaniyami v period massovogo perekhoda na distantsionnoe obuchenie [Newsletter "Monitoring of the Education Economy" 14(2020) Interaction of Russian schools with EdTech companies during the mass transition to distance learning]. HSE University Publishing House.
- Koroleva, D., Khavenson, T., Andreeva, A., & Akaeva, K. (2020b). Ambassador obrazovatel'nyh innovatsij: Edinyj den' cifrovoy tekhnologicheskoy gotovnosti [ambassador of educational innovations: A single day of digital technological readiness] [Conference presentation]. Conference: Vnutrennij Seminar Instituta Obrazovaniya NIU VSHE, Moscow, Russia. https://www.researchgate.net/publication/341622273_Ambassador_obrazovatelnyh_innovatsij_edinyj_den_cifrovoy_tekhnologicheskoy_gotovnosti
- Kosaretsky, S., Zair-Bek, S. I., Kersha, Y., & Zvyagintsev, R. (2022). General education in Russia during COVID-19: Readiness, policy response, and lessons learned. In F. M. Reimers (Ed.), *Primary and secondary education during Covid-19* (pp. 227–261). Springer.
- Laboratory for Digital Transformation of Education. (n.d.). *Monitoring of Schools' Digital Transformation*. <https://ioe.hse.ru/en/cdle/mdts/>
- Mediateka. (2022). Retrieved October 27, 2022, from <https://media.prosv.ru/>
- Mertsalova, T., & Senina, N. (2022). *Distantsionnyj rezhim kak vyzov dlya shkol'nogo obrazovaniya: Informatsionnyj byulleten'* [distance mode as a challenge for school education]. HSE University.
- Ministry of Education of the Russian Federation. (2020a). Methodological recommendations for the implementation of educational programs of primary general, basic general, secondary general education, educational programs of secondary vocational education and additional general education programs using e-learning and distance learning technologies.. <https://docs.edu.gov.ru/document/id/1792>
- Ministry of Education of the Russian Federation. (2020b, March 26). *83.5% Russian schools closed on holidays*. <https://edu.gov.ru/en>
- Ministry of Education of the Russian Federation. (2022a, August 10). Federal'nyj proekt "Cifrovaya obrazovatel'naya sreda" [Federal project "Digital Education Environment"]. <https://edu.gov.ru/national-project/projects/cos/>
- Ministry of Education of the Russian Federation. (2022b, August 10). Federal'nyj proekt "Sovremennaya shkola" [Federal project "The modern school"]. <https://edu.gov.ru/national-project/projects/school/>

- Ministry of Education of the Russian Federation. (n.d.). Recommendations of the Ministry of Education of Russia on the organization of education at home using remote technologies. <https://edu.gov.ru/distance>
- Mironova, K. (2019, October 1). Ministerstvo prosveshcheniya zapustilo obrazovatel'nyj marketplejs [Ministry of Education launches education marketplace]. Kommersant. <https://www.kommersant.ru/doc/4111125>
- Obukhov, A., & Tomilina, M. (2021). *Razvitiye cifrovyyh obrazovatel'nyh tekhnologiy v Rossii do pandemii: Istoriya i osobennosti industrii EdTech* [development of digital educational technologies in Russia before the pandemic: History and features of the EdTech industry]. *Informatika i obrazovanie*, 8, 52–61. <https://doi.org/10.32517/0234-0453-2021-36-8-52-61>.
- On amendments to the federal law “on education in The Russian Federation”. Federal law No. 472-FZ. (2021). https://www.consultant.ru/document/cons_doc_LAW_405488/
- On approval of the rules for the implementation of educational activities. No. 1195. (2022). <http://publication.pravo.gov.ru/Document/View/0001202207040032>
- On confirming the federal list of electronic education resources approved for use in accredited education programs in K-12 education. No. 653. (2022). <https://www.garant.ru/products/ipo/prime/doc/405111329/>
- On recommendations for amending study programs. No. GD-1730/03. (2020). <https://www.garant.ru/products/ipo/prime/doc/74669008/>
- On recommendations for using information technologies. No. GD-1736/03. (2020). <https://www.garant.ru/products/ipo/prime/doc/74744797/>
- On sending recommendations. No. GD-2072/03. (2020). <http://www.garant.ru/products/ipo/prime/doc/74844651/?prime>
- Pomogi učit'sya doma [Help to study at home]. (2022). Retrieved October 31, 2022, from <https://помогичитсьядома.рф/>
- Rivera-Vargas, P., & Romani, C. C. (2020). Digital learning: Distraction or default for the future. *Digital Education Review*, 37.
- Rosstat. (2020). Form OO-1. Ministry of education of the Russian federation. <https://docs.edu.gov.ru/document/c38a1f764e0c77030235de22850ae531/>
- Rosstat & HSE University. (2020). *Informacionnoe obshchestvo v Rossijskoj Federacii. 2020: statisticheskij sbornik* [Information Society in the Russian Federation. 2020: statistical collection]. <https://rosstat.gov.ru/storage/mediabank/lqv3T0Rk/info-ob2020.pdf>
- Ryzhkova, D., Aranovskaya, M., Reichardt, I., & Vysokih, S. (2020, November 27). 35 *krupnejshih EdTech-kompanij Rossii: Rejting RBK* [35 largest EdTech companies in Russia: RBC rating]. RBC. <https://trends.rbc.ru/trends/education/5d68e8fb9a7947360f1e2e52>
- Saprykina, D., & Volokhovich, A. (2020). *Problemy perekhoda na distancionnoe obuchenie v Rossijskoj Federacii glazami uchitelej* [problems of transition to distance learning in The Russian Federation through the eyes of teachers]. HSE University.
- Smart Ranking. (2021, April 27). *Ukreplyaj i vlastvuj* [Strengthen and rule]. <https://edtechs.ru/blog/post/itogi-2020-goda-dlya-rossijskogo-rynka-edtech>
- TASS. (2020, August 5). Minprosveshcheniya hochet proverjat' cifrovoj kontent dlya shkol'nikov na sootvetstvie standartam [The Ministry of Education wants to check digital content for schoolchildren for compliance with standards]. <https://tass.ru/obschestvo/9123921>
- TASS. (2021, March 11). V Minprosveshcheniya i Minobrnauki rasskazali o vyzovah dlya sistemy obrazovaniya v pandemii [The Ministry of Education and the Ministry of Science told about the challenges for the education system in the pandemic] <https://tass.ru/obschestvo/10875667>
- Voronov, A. (2020, March 18). *Rossijskie shkoly uhodyat na antivirusnye kanikuly* [Russian schools go on anti-virus holidays]. Kommersant.. <https://www.kommersant.ru/doc/4111125>
- World Bank. (2020). *COVID-19 and human capital: Europe and Central Asia economic update (fall)*. <https://doi.org/10.1596/978-1-4648-1643-7>

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