Chapter 9
General Education in Russia During COVID-19: Readiness, Policy Response, and Lessons Learned

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Abstract In this chapter, we analyze nationwide measures taken in Russia to organize the education system during the pandemic. We show the opportunities and limitations for responses associated relative to the previous policy phase. Special attention is paid to the peculiarities of a system reaction to the situation of a pandemic in a federative country with heterogeneous regions. In contrast to several other countries that adopted a single national strategy, different scenarios were implemented in Russian regions. We investigate the factors that influenced the scenarios and management decisions at the national and regional levels of the country. We highlight differences in the nature and dynamics of measures taken to organize learning in the first (spring–summer 2020) and second (autumn–winter 2020) waves of the pandemic. We also analyze the subjective experience and wellbeing of students and teachers during a pandemic. As the empirical base, we use data from several large sociological studies conducted in the Russian Federation over the past six months on the issues of school closures, distance learning, and the "new normal." This provides a new perspective for studying the increasing education gap between children with different socioeconomic status due to the pandemic.

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9.1 Introduction

The COVID-19 pandemic posed an unprecedented challenge to over 44,000 schools, 16.3 million students, and 2.16 million teachers in Russian schools (Ministry of Education of the Russian Federation, 2020a). The government has had to solve the complicated problem of providing constitutional guarantees of universal free secondary general education while minimizing the immediate health risks for students and teachers as well as the spread of infection through schools.

In this paper, we describe the situation in which the Russian education system found itself during the COVID-19 pandemic and the education policy measures adopted by the government at the federal and territorial levels. We examine the contextual factors that influenced decision making and reflected the specifics of the country's territorial structure and education management system. We highlight the differences between measures for ensuring the functioning of the education system during the first and second waves of the pandemic and their dependence on the epidemiological situation. Lastly, we discuss the impact and lessons learned from the experience during the pandemic for student quality and wellbeing and the future development of the education system (including policies aimed at families and teachers, digitization, and management models).

The empirical section of the chapter focuses on the subjective wellbeing (SWB) of Russian schoolchildren during the quarantine. We consider this topic to be especially important in the representation of the Russian case because: (1) the topic of subjective wellbeing as a part of the educational process and results has been traditionally ignored by Russian educational policy; (2) subjective wellbeing in the Russian Federation is on average lower than the OECD average (OECD, n.d.); and (3) in the context of a pandemic, subjective wellbeing may be a significantly more important indicator of how well an education system is doing. In addition to a general analysis of the factors associated with subjective wellbeing during school closures for quarantine, we focus on inequality in subjective wellbeing—what happens to children with different socioeconomic status? Against the background of increasing inequality in educational outcomes amidst the pandemic, it is critical for us not to overlook any possible widening gap in subjective wellbeing as this could be a much more dangerous effect of the pandemic on the education system.

9.2 Methodology, Data, and Limitations

We use Russian federal statistics on education and related indicators, such as demographic and economic ones, to identify and describe the context of the education policy. To analyze the administrative decisions adopted for mitigating the consequences of the COVID-19 pandemic, we drew upon open sources (official websites of national, regional, and municipal government agencies, school websites, and

mass media) and interviews with different regional and municipal government officials (over 20 full-length online interviews through Skype). These interviews were conducted by the Higher School of Economics Institute of Education during the period March–October 2020. To assess the readiness of teachers, students, and families for distance learning, we used the results of international studies such as PISA and TALIS (OECD, 2018). To study changes in teaching and learning practices, the labor and living conditions of teachers and students, and the reaction of families to the new study regime, we used the results of sociological surveys administered by governmental and non-governmental organizations, including the School Barometer International Study (Isaeva et al., 2020a).

The goal of the empirical part of the study was to identify and compare the level of subjective wellbeing of Russian schoolchildren before school closures in the spring of 2020 and at the present time (winter 2020). We use data from a study by the HSE Institute of Education. The data was collected in November–December 2020. To assess the situation before the first school closures in spring 2020, we employed retrospective questions about the students' state at that time.

The survey examined four Russian regions: Moscow, Kaliningrad, Leningrad, and Tyumen Regions. The sample of education organizations within each region was stratified by the type of locality (urban or rural) and the socioeconomic status of the school (low, middle, high). The stratified random sample was selected among all the schools of these regions with the help of information obtained during previous studies on the quality of education (e.g., number of computers). The final sample of the present study comprised 7,355 students between the ages of 8 and 19 (grades 4–11) from 99 Russian schools in the Moscow, Kaliningrad, Leningrad, and Tyumen Regions.

The student questionnaires included questions about students' main sociodemographic and economic characteristics (age, gender, parents' higher education, home possessions), their subjective wellbeing before the closure of schools and at the present time (identical set of questions about the periods "before" and "after"), and their ways of interacting with school during the absence of face-to-face education. In addition to the students' answers, the survey made use of school-level variables: share of teachers with the higher qualification category; number of computers connected to the internet per student; percent of students whose parents have a higher education; and type of school area (urban or rural).

We based our questionnaire on a combination of instruments to assess the subjective wellbeing of schoolchildren: Holistic Student Assessment (Malti et al., 2018) and assessment of students' distress level (Goodman, 2009; Brann et al., 2018). According to the theoretical framework, student subjective wellbeing includes several components, of which the following were used in the present study: (1) orientation on physical activity, (2) optimism, and (3) level of distress. We assume that these components are especially important in the context of a pandemic when students may suffer from anxiety and the lack of physical activity. To measure the level of each component, the questionnaire presented 3–5 different statements with responses on an ordinal scale. Some respondents who provided identical responses to all questions were excluded from the analysis. Hierarchical confirmatory factor analysis (CFA)

was used to calculate the overall indicator of subjective wellbeing. We tested a theoretical two-level model, where the first level measured the orientation on physical activity, optimism, and stress level, while the second level measured subjective wellbeing. The results of our analysis confirmed the high quality of this model for two cases: before and after the closure of schools (Appendix 1). The resulting values of the subjective wellbeing score and its components before and after the closure of schools were then used for the purpose of further analysis.

To compare the level of subjective wellbeing of the same students in the studied regions before and after the closure of schools, we made a pairwise comparison of indicators using the t-test for dependent samples. A similar methodology was used to check if there were any differences in the change of subjective wellbeing during the period of pandemic for students with different amounts of home possessions. Using descriptive analysis, we examine how students communicated with their schools during the pandemic. The next step was to use multilevel modeling to assess individual and school factors connected with student SWB before and after school closures and with its variation over the period in question. To assess the changes in subjective wellbeing, we subtracted the current value of the level of wellbeing from its level before school closures. During the final stage, we used ANCOVA analysis to compare the mean indicators of subjective wellbeing in four regions while controlling for significant relevant individual and school factors. The inclusion of covariates in the analysis led to a better assessment of the differences connected directly to regional factors rather than to the students' family or school.

9.3 The Russian Education System in the Face of the COVID-19 Coronavirus Pandemic

To understand the reaction of the Russian education system to the pandemic, we must consider how education policy measures are discussed and implemented at the federal and regional levels. First and foremost, Russia's vast territory and heterogeneous spatial development led to significant differences in both the infection rate and the readiness to organize education activities during a pandemic throughout Russian regions (Mau et al., 2020; World Bank, 2018).

Russian indicators of "computerization" and "connection of schools" to the internet are above the OECD average (OECD, 2018). At the same time, the speed of broadband internet connections is lower in Russia than the world average, amounting to 45 Mbps. Only 76.9% of Russian households have access to the internet, and only 73.6% of them have access to broadband internet (Information Society in the Russian Federation, 2020). A favorable situation exists in approximately 40% of Russian regions as they have high indicators in both factors (availability of high-speed internet and computer technologies).

Russian regions have different levels of urbanization. Some regions, especially in Siberia and the Far East, have large numbers of small settlements with a poorly

developed digital infrastructure. School students living in these areas experienced the greatest difficulties in distance learning. At the same time, the remoteness of villages and the small size of schools were grounds for keeping schools open in those regions.

Difficulties with organizing distance learning disproportionally affected economically disadvantaged and multi-child families. About 4 million economically disadvantaged individuals in Russia are schoolchildren between the ages of 7 and 16. Every sixth Russian inhabitant between the ages of 0 and 17 lives in a multi-child family. The different distributions of these families across regions led to various difficulties in providing such children with computer technologies. The problems were particularly acute in North Caucasian regions and several regions in Central Russia, including the Moscow and Leningrad Regions. In contrast, the cities that formed the nuclei of these regions (Moscow and Saint Petersburg) did not suffer from such difficulties. Different resource availabilities in cities and their surroundings contributed to the growing inequality of school students during the pandemic.

In terms of distance learning infrastructure, different collections of digital resources and the Russian Electronic School national distance learning platform had been created at the federal level before the beginning of the pandemic. Some regions had also set up their own digital platforms and services that could be used for distance learning; the best-known example is the Moscow Electronic School. In recent years, a market has emerged of private digital education resources and services for both distance and blended learning. Contracts with various digital platforms have been signed by separate regions, municipalities, and general education organizations, giving them an advantage during the pandemic.

Another major factor was the federative structure of the state and the division of responsibilities between federal executive agencies, regions, and municipalities that hindered the implementation of a unified state strategy for the entire school system. Most schools in Russia are managed by local municipal agencies. Free schooling in Russia is financed by regional governments. The maintenance and renewal of school property (buildings, equipment, etc.) is financed by local municipal agencies. Federal education management agencies set the standards for education outcomes and the conditions that must be met to attain them. The federal government also sets the principal models for organizing the system's work, including the assessment of education quality, the professional development of teachers, the organization of inclusive education, digitization, etc.

During the pandemic, this distribution of powers resulted in the following situation: the Federal Ministry of Education established the general principles for education organizations (banned mass events, created norms of social distancing, etc.), implemented national measures (launched digital platforms with learning and teaching materials, organized televised lessons), changed the dates and form of the state final certification, and monitored measures taken at the territorial level. At the same time, decisions on extending vacations, closing/opening schools, and classes, fixing the end of the school year and other organizational matters were made at the regional and municipal levels. Regions and municipalities were responsible for assuring the digital infrastructure such as the availability and quality of internet access as well as the provision of PCs and laptops to teachers and students. It frequently

turned out that the regions with the least financial resources for solving these problems were the same regions with the greatest needs.

In addition to the distribution of managerial powers, there is relevant background of relations between federal and regional government agencies. Over the past 5 years, the Federal Ministry of Education has de facto centralized decision making and limited the autonomy of regions in choosing the subjects and development models of general education. For this reason, after the pandemic began, many regions waited for instructions from the federal ministry. Nevertheless, the latter stressed the rights and responsibilities of regions in deciding which measures should be taken in response to the pandemic. This was quite unexpected for some regions.

9.4 Education Policy at Different Levels During the COVID-19 Pandemic: General Trends

The first cases of COVID-19 were recorded in Russia in February 2020. The disease began to spread in early March 2020. The development of the epidemic corresponded to the widespread international model of two disease waves and peaks. The first peak of the epidemic (11,656 new cases daily) occurred in early May 2020. The incidence of the disease subsequently fell until September 2020. This was followed by the second wave of the pandemic between September and December 2020 with a peak (29,935 new cases daily) before the beginning of the winter holidays and school vacation.

The strategy of the Russian education system differed considerably between the two waves of the pandemic. During the first wave, a nationwide lockdown was introduced for all intents and purposes, and most schools switched to distance education. During the second wave, the restrictions greatly differed from region to region, and most schools remained open.

Moreover, as our study shows, school closures during the quarantine had little to do with the real incidence rate of the disease (see Fig. 9.1a,b). Due to the limited access to data on the incidence rate of the disease among children and on the impact of school closures on disease incidence, the decisions to close schools for quarantine or switch to distance study were made based on general federal policy.

First wave

After the beginning of the COVID-19 pandemic, the Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing enacted rules for the organization of educational activities after the quarantine, including cancelling mass events, dividing classes (to limit contact), implementing disinfection measures, and introducing special measures during the state final certification.

The Russian Ministry of Education initiated and/or supported the following key organizational and technological solutions:

1. Cancelling the unified final state certification after the 9th grade

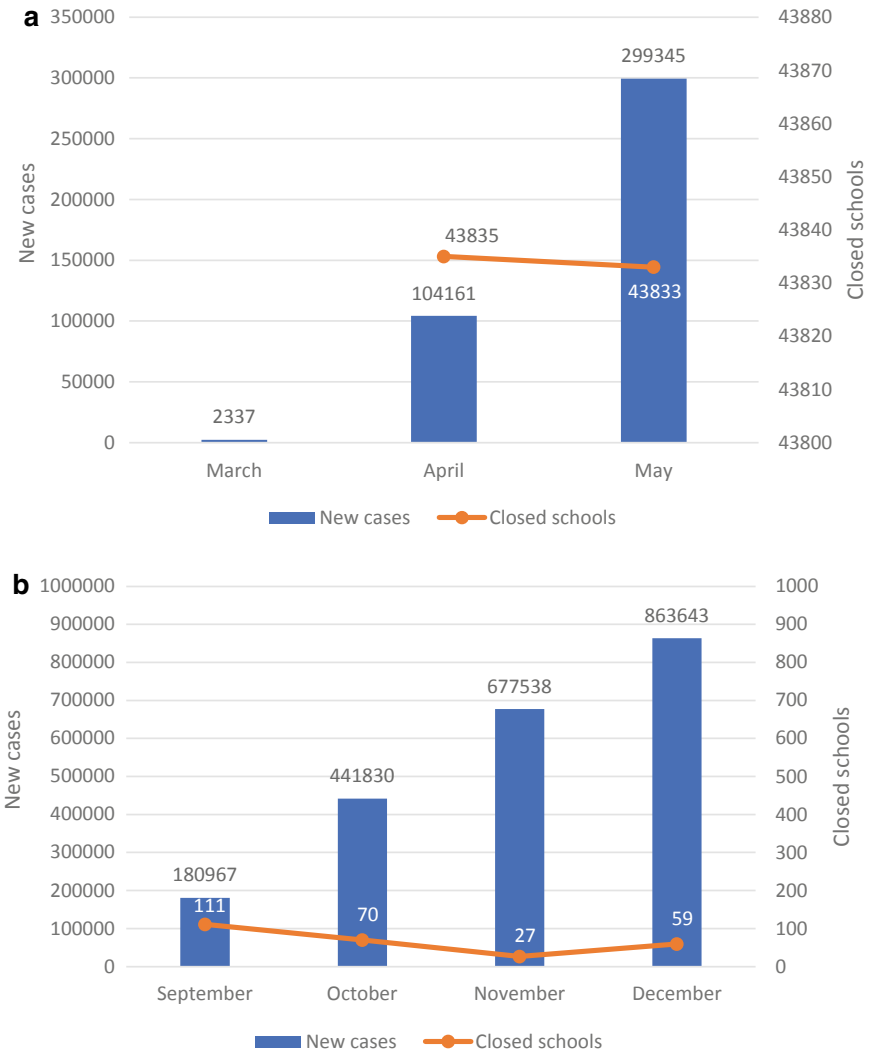

Fig. 9.1 **a** New cases of disease and the number of schools closed for quarantine during the first wave of the pandemic. **b** New cases of disease and the number of schools closed for quarantine during the second wave of the pandemic

2. Postponing the dates of the unified state exam (USE) after the 11th grade
3. Cancelling the USE for students who do not plan to enter university
4. Hotlines for school directors and regional education management agencies to answer questions about the organization of distance learning
5. TV projects for senior high school students for broadcasting lessons

6. Providing schoolchildren from particularly disadvantaged families with computers for distance learning

The Russian Ministry of Education allowed regions to make their own decisions based on the local epidemiological situation about the partial premature termination of the school year and about extending school vacations and changing quarantine regimes. The Russian Ministry of Education also introduced several distance learning platforms from which regions could choose.

Nevertheless, these support measures did not work immediately. Each region had to make its own choice based on different factors. In some cases, regional education management agencies announced the early termination of certain (non-core) classes for students in grades 1–8. This led to the reduction of study loads and internet traffic. This took place in some Siberian regions and regions along the Volga River.

Several regions signed special agreements with internet providers for delivering internet services at reduced rates or free of charge and using secondary regional resources for distance learning needs. They also signed agreements with mobile network operators for lower internet rates and special packages for teachers and students. Some regions also used various other mechanisms such as creating mirror sites and hosting education resources. In some regions, internet providers offered internet traffic for distance learning at low rates or virtually free of charge to economically disadvantaged families. Several private online platforms (Yandex Textbook, Uchi.ru) provided free content to support schoolchildren and prevent academic lag.

The lack of computers in families for organizing distance study was compensated by different regions in various ways. In some areas (such as the Moscow Region), school notebooks were offered to families. Other regions (such as the Republic of Sakha-Yakutia) bought computers to offer them to families. In Saint Petersburg and other regions, computers for families were bought with the help of sponsors. Finally, as we mentioned above, the federal government launched a fundraising campaign for purchasing computers for families in need.

To help teachers organize the study process from home, some regions offered school computers to teachers and provided them with technical assistance in configuring home computers and connecting them to the internet. The federal government implemented the project "Education Volunteers," in which senior students from teaching colleges helped teachers who were unfamiliar with computer technologies to master the basics of organizing distance learning.

In many regions, education development institutes and municipal curricular offices helped teachers by offering express courses and consultations on working in the new format, recorded video guides and training webinars, opened tutor centers, and organized consulting by curricular association directors and teachers who had won professional competitions. Other regional initiatives catered to parents. Hotlines were setup to consult and assist both parents and children using the new distance learning format. These hotlines were staffed by specialists from education management agencies, education psychologists, school counselors, and teachers. In different regions, schools provided support for low-income families distributing food products and even ready meals.

The regions that were the best-positioned to deal with COVID-19 had prior experience in organizing distance learning in bad weather conditions. In these regions, online study was quickly and efficiently deployed, while teachers were much better prepared for the distance learning format. The same was true of individual education organizations that had already begun to develop digital environments before the pandemic, actively used electronic agendas, maintained up-do-date sites stocked with different content, and participated in social media groups. All these instruments were easily adapted to serve the needs of distance learning.

As the first wave of the pandemic showed, distance learning was best organized in territories in which regional and local management teams took the initiative without waiting for directions from federal education management agencies.

All schools in Moscow and the Moscow Region were given the opportunity to work on a high-quality platform with a full range of content. The Republic of Tatarstan invited its schools to use several different education platforms simultaneously for different subjects and grades. At the same time, internet access was almost completely lacking in rural schools in several South Siberian regions, forcing teachers to bring homework assignments to collection points (such as village stores), from where they were gathered by parents and students. Some regions in the Far East, South Siberia, and Far North organized education with the help of televised educational programs.

No analytic or preparatory work for the new school year was conducted during the summer holidays (June–August). No nationwide programs for improving the availability and quality of internet access and computer technologies were implemented, either.

During the first wave of the pandemic in the spring, many parents, teachers, and education managers at different levels believed that the pandemic was a temporary emergency that would soon end without requiring the education system to make any major changes. Some parents, teachers, and students did not believe in COVID-19 or considered its danger to be greatly exaggerated. The skeptical attitude of some teachers, parents, and schoolchildren to the risks and dangers of the pandemic, especially during the first wave in the spring, as well as the belief that the quarantine would not last long led to a certain inertia and reactionism of managerial decisions.

Interviews with officials of regional and municipal education management agencies have shown that the uncertainty and lack of clear forecasts about the development of the pandemic, especially during its initial period, led regions and schools to take quick short-term measures. These measures had small time horizons and were based on the expectation of a rapid return to the usual format of face-to-face learning. The distance learning format was viewed as a temporary emergency measure that did not require any major investments of resources. In addition, the tendency to downplay the pandemic and its consequences for schools was also linked to the lack of clear and unambiguous instructions from the federal government by the respondents. The freedom allotted to regional, municipal, and school managers to take their own decisions was often interpreted as a sign that the federal government did not know what to do in the circumstances. On the other hand, the lack of control from above was seen as an opportunity to avoid “awkward” measures that could irritate parents, teachers, and students.

Due to the increased loads during the distance learning period and the prolongation of the school year, teachers were given an additional leave before the start of the new school year. Most teachers, parents, and students expected the school year to start in the traditional place-based format. Regions partially implemented local preparatory measures for preparing schools for the school year: renovating and re-equipping buildings, providing high-speed internet access, and training teachers.

Second wave

In October, it became clear that the second wave of the coronavirus pandemic had already begun in Russia. Federal government agencies had not issued any teaching or organizational recommendations by the beginning of the second wave, stressing that regions should make all managerial decisions on their own. Only in early October did the Russian Ministry of Education elaborate and publish recommendations on amending study programs in view of the coronavirus infection and recommendations on using information technologies (Ministry of Education of the Russian Federation, 2020c, d). The Ministry published practical recommendations on organizing the work of teachers in the distance learning format only in November (Ministry of Education of the Russian Federation, 2020b). In these conditions, regions continued to provide curricular support to schools and train teachers on their own.

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 the mass transition of the education system to the distance learning format, as had been the case during the first wave (Fig. 9.2).

In October–November 2020, 55 regions kept schools in the place-based format (with isolated transitions to quarantine regimes and distance learning when the minimum prevalence rate of the disease was surpassed), while 30 regions made a partial transition to the distance learning format. While different regions put different grades into distance learning, almost none of them applied this measure to primary schools; the mass distance learning format also did not affect schools with small student bodies, as a rule. 70% of schoolchildren continued to study in the place-based format in October–November. Only 0.1% of all schools were closed entirely for quarantine.[1]

By late December, the total number of closed schools had decreased, even though the incidence rate of the disease continued to grow. Only 64 schools in 20 regions were still closed (0.16% of all schools) in late December (Fig. 9.3).

At the same time, some regions with high incidence rates did not adopt distance learning. 37 regions did not extend the fall break, while 48 regions extended the fall break by 1–3 weeks. Vacation prolongation was the most widespread anti-pandemic measure in Russian regions (a prolongation of 2 weeks in 40 regions and 3 weeks in 8 regions). Once again, many regions with high incidence rates refused to prolong school vacation, and only 39% of regions with high incidence rates converted

[1] https://edu.gov.ru/press/3172/sergey-kravcov-glavnyy-princip-sozdaniya-cifrovoy-obrazovatelnoy-sredy-v-tom-chto-process-obucheniya-nahoditsya-na-pervom-meste-a-tehnologii-na-vtorom/ (accessed on January 19, 2021).

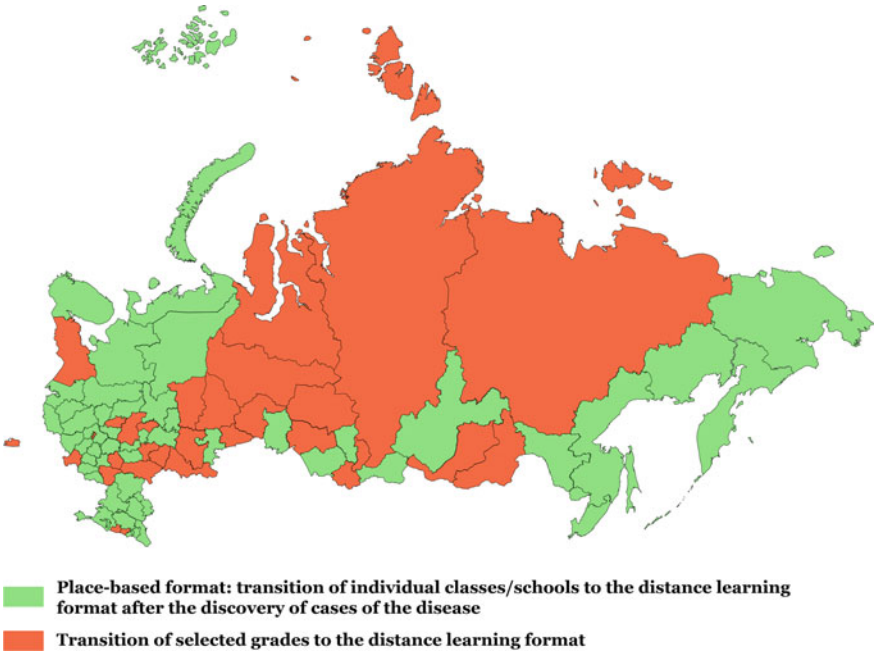

Fig. 9.2 Distribution of place-based and distance learning formats in the Russian Federation in October–November 2020 (Mertsalova et al., 2021)

schools to distance learning. Moreover, regions with similar conditions sometimes took different decisions. For example, Moscow put middle and high school students on distance learning, while Saint Petersburg retained place-based education for all schoolchildren, even though the incidence rates and risks of infection in Saint Petersburg were no lower than in Moscow. In some cases, parental protests over distance learning along with electoral worries discouraged government officials from making changes. Parental anxieties grew despite repeated assurances that distance learning would not be introduced under any circumstances (Kommersant, 2020). Thus, anti-pandemic measures during the second wave were chosen more based on social and political factors than objective assessments of the risks.

An important role was played by political signals from the federal center based on fears of aggravating social and economic problems due to the pandemic. Another major factor was growing popular discontent. Parents' tensions and mistrust of the distance learning format grew as the pandemic progressed. A survey conducted in mid-April showed that 63% of parents believed that schools had successfully shifted to distance learning, while 17% of parents disagreed (Public Opinion Foundation, 2020). In a survey in May, 55% of surveyed parents of final-year students expressed their discontent with the organization of distance learning (Rambler News Service, 2020). By the start of the following school year, 93% of parents believed that study should be implemented in a place-based format. This was motivated by the assertion

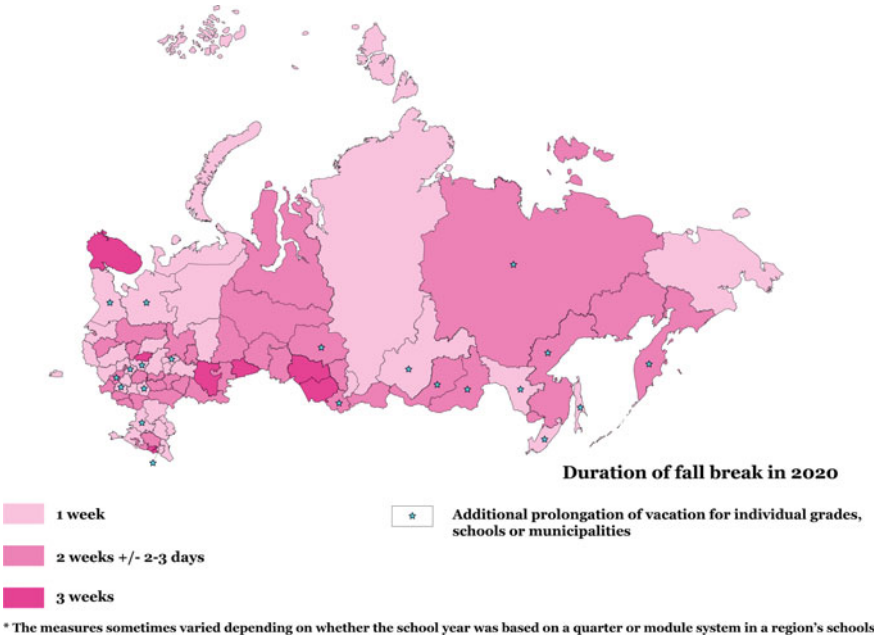

Fig. 9.3 Prolongation of fall break in Russian regions (Mertsalova et al., 2021)

that face-to-face study allows children to communicate and socialize (30%) and leads to better education quality (20%), better knowledge (17%) and direct contacts with teachers (16%); in addition, parents believe that they cannot educate their children as well as teachers (14%) (Russian Public Opinion Research Center, 2020). Some mass media even launched an information campaign claiming that the government was planning to abandon place-based education altogether after the end of the pandemic.

9.5 Consequences and Lessons of the Coronavirus Pandemic

The experience of transforming the general education system in Russia in the conditions of the pandemic has produced important consequences and lessons for the development of Russian education both today and in the future. Russian experts agree that the reorganization of education during the pandemic, especially during the first wave, led to losses in the quality of education on account of changes in the employed technologies and the reduction in study time (due to prolonged vacations as well as schools and classes put in quarantine). With regards to technology, distance learning is not yet fully able to replace face-to-face learning, according to most teachers,

parents, and students. Many distance lessons have suffered from poor quality, simplified content, and the lack of interactivity and feedback. The reduction in study time depended on the school and the subject. Subjects calling for student participation (physical education, art, music, technology, etc.) were particularly affected.

At the same time, the national system for education quality assessment does not provide open data about education losses, as we have already mentioned. According to World Bank forecasts, Russian schoolchildren will lose about 16 points on the PISA reading score or 1/3–1/2 year of study on average (World Bank Group, 2020). The Ministry of Education postponed the annual national tests (taken by all school students simultaneously and in the same format) from April to the beginning of the school year to serve as "initial assessments that would be used to correct the study process" (RG, 2020).

The very idea of conducting a monitoring and diagnostic study of the readiness of students for the new school year and their academic lag due to the extraordinary study circumstances in March–May 2020 was considered very important for both theoretical and practical reasons. The large sample (6 million people) could have been used to identify typical problems and difficulties faced by students and elaborate recommendations for teachers on the format of curricular materials for place-based and distance learning formats. The analysis of the identified problems could have also served as a guideline for private producers of educational content, including designers of digital platforms. However, no analysis of the sort was conducted, and the results were neither discussed by the expert and teacher communities nor used as sources for planning teacher retraining courses and the work of education psychologists. The Ministry's methodological recommendations invited schools and teachers to analyze the results of the national tests themselves and to submit within two weeks a proposed scheduled of working with students experiencing academic problems (Ministry of Education of the Russian Federation, 2020e). Thus, the national tests led to an additional workload being put on teachers in the absence of all informational and curricular support from the federal government.

During the first semester of the new school year, no national measures (extra classes, prolonged school year, vacation programs, etc.) were taken to compensate for losses in education quality that affect student trajectories and labor market prospects, despite recommendations by international organizations (UNESCO, 2020). Our analysis shows that few regions and schools implemented such measures at their own initiative. The introduction of such measures aimed both at students completing school during the current year as well as planning to enter vocational colleges and universities and at the entire student body that has been adversely affected by the pandemic remains a key yet open item on the agenda.

Another major negative consequence is the deterioration of the subjective well-being and psychological health of students because of the adverse impact of living conditions during the pandemic (including the lack of social interaction, face-to-face communication between children, and communication between children and adults during mutual activities; strained family relations; reduced physical activity; and significantly reduced external support for study). 78% of surveyed parents spoke about the growing discomfort of their children due to the lack of communication with

peers, noting that this is a very important function of school. Only half of surveyed parents (49.3%) said that teachers interacted with pupils in the distance learning format and organized direct communication. A similar share (49.6%) noted that teachers provided feedback to students about study and assessment results (Isaeva et al., 2020a). Psychological problems resulting from self-isolation and distance learning were found among 83.8% of Russian schoolchildren: 42.2% purportedly suffered from depression and 41.6% from asthenia (TASS, 2020).

In the context of the data already available, we decided to conduct a separate study. We were less interested in the absolute picture of the subjective wellbeing of schoolchildren than in whether the patterns of changes differ for children with different SES. Additionally, we looked for indirect evidence of whether schools "lose" children during quarantine by examining the characteristics and frequency of interaction between the school and the child.

Subjective wellbeing and psychological health of students

Researchers now predominantly ignore such topics, focusing instead on the analysis of objective losses in the quality of learning due to digital inequality (Engzell et al., 2020; Robinson et al., 2020; Van Lancker & Parolin, 2020). They disregard the theme of subjective wellbeing, although psycho-emotional problems due to school closures, lack of traditional summer vacations, illnesses of close relatives, and an uncertain future may have an even bigger impact on students (Ghosh et al., 2020). At the same time, certain international monitoring studies (OECD, 2017) assess subjective satisfaction with life. Promoting subjective wellbeing is the third of the 17 UN Sustainable Development Goals (United Nations, 2020). This is particularly relevant during worldwide pandemics such as COVID-19. In the present study, we analyze contextual factors at the school and individual levels related to different SWB trends of Russian school students during the COVID-19 pandemic.

The notion of wellbeing is understood in different ways depending on the context. However, it is clear that wellbeing is a complex notion that cannot be measured by a single indicator (Borgonovi & Pál, 2016). Wellbeing studies traditionally examine all participants of the educational process—children (Yu et al., 2018), parents (Buehler, 2006), teachers (Mccallum et al., 2017)—and the connections between them (Casas et al., 2012; McCallum & Price, 2010). In the OECD framework, wellbeing comprises 11 indicators, including personal security and social connections (OECD, 2017). In this paper, we focus only on subjective wellbeing, ignoring other dimensions such as health. We define wellbeing as "the assessments, whether positive or negative, that people make of their own lives" (Diener, 2006).

Many organizations, besides OECD, make international comparative studies about the contextual factors that determine the subjective wellbeing of school students. For example, a study by Korean scholars shows that subjective wellbeing is best predicted by variables from the micro level of children's life (family, school and close community), while economic and broader national contextual factors are less or not at all significant (Lee & Yoo, 2015). However, another study shows that national factors are, on the contrary, quite important: the better the public health, material wellbeing, and education system in a country, the higher the children's subjective

wellbeing (Bradshaw et al., 2013). At the same time, the comparison of rural and urban territories within a single country traditionally shows that rural children have a higher level of subjective wellbeing (Gross-Manos & Shimoni, 2020; Rees et al., 2017). Nevertheless, this trend may only apply to countries with a sufficiently high overall standard of living in rural areas (Requena, 2016).

Regarding studies of the impact of inequality (whether economic or territorial) on the subjective wellbeing of children, a survey of 15 different countries in Europe, Asia, and Africa demonstrated a positive connection with a child's home possessions yet no connection with economic inequality indicators at the national level (Main et al., 2019). Studies of so-called "rich societies" paint a different picture: the wellbeing of children at the national level is connected with the level of economic inequality in a country yet not with the mean wage (Pickett & Wilkinson, 2007). At the same time, other studies show that the lower the general socioeconomic level of the neighborhood in which children grow up, the lower their subjective wellbeing (Laurence, 2019). However, this paper indicates that there is no direct connection here: disadvantaged communities have more negative and fewer positive social interactions, which results in lower wellbeing (Ibid.).

Researchers from Yale University and Columbia Business School show that the higher the income inequality in a country, the higher the level of subjective wellbeing. Although this does not directly apply to children, it is an important consideration since the authors conduct an extensive analysis of the contradictory nature of statistics in this field (Katic & Ingram, 2017). Objective aspects of wellbeing are unequally distributed by gender, age, class, and ethnicity and are strongly associated with life satisfaction (Western & Tomaszewski, 2016). Although there are relatively few studies of the effect of specific factors on subjective wellbeing, especially in the case of children, we attempt to do so in this study. There are many studies on the relation between subjective wellbeing and age, which show that most developed countries have U-shaped SWB curves with a minimum at the age of 40–50 (Steptoe et al., 2015). At the same time, the objective and subjective SES of people is connected to changes to the SWB in at least a 4-year perspective (Zhao et al., 2021).

In the present study, we examine the existence of similar trends for children over a short-term period. Clearly, a country's social policies are important in the long term: children are happier if they live in favorable conditions and safe communities, attend good schools, etc. (Bradshaw, 2015). However, we cannot examine such policies here. Instead, we look at the impact of certain factors "here and now" rather than in the long term.

One example of the questions that were included in the survey as a component of wellbeing scale is the statement: "There are more good than bad things in my life." Respondents were asked to agree or disagree with this claim. It can be seen from Table 9.1 that the distribution of answers for the period before school closures differs from answers about the current situation. We can see a widening pattern for opposite categories, which is also true for the SWB index as a whole.

A comparison of the level of subjective wellbeing of students before the closure of schools in the spring and at the present time shows that this indicator fell on average in most of the studied regions (Fig. 9.4). Significant decreases in the level of

Table 9.1 The distribution of answers on the Item "There are more good than bad things in my life"

Answers	Before	After	Change
Never	231	276	+45
Sometimes	1381	1316	−65
Often	3275	2974	−301
Almost always	2468	2789	+321

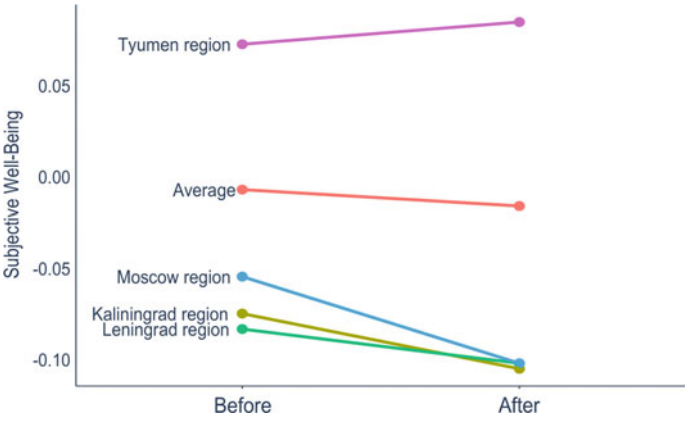

Fig. 9.4 Student subjective wellbeing before and after school closures

wellbeing were observed in the Kaliningrad Region ($t = 3.14$, $p = 0.001$), Leningrad Region ($t = 1.76$, $p = 0.039$) and Moscow Region ($t = 1.65$, $p = 0.050$). The latter experienced the greatest decrease. At the same time, the wellbeing of children in the Tyumen Region increased slightly over this period, although this increase was not significant ($t = -1.58$, $p = 0.943$).

Assessment of the change in wellbeing during the pandemic for groups of students with different amount of home possessions reveals alarming results. We found that in the group of students with comparatively low level of home possessions there was a significant decrease in wellbeing during the pandemic ($t = 2.42$, $p = 0.016$). On the other hand, students from families with middle and high levels of home possessions did not experience any significant changes in subjective wellbeing. This illustrates growing inequality between students from different families in the period of school closures (Fig. 9.5).

Among all other socio-demographic characteristics, only student age was significantly related to a change in wellbeing in the pandemic period. Younger students aged 8–10 years claimed a slight increase in subjective wellbeing after school closures ($t = -5.27$, $p = 0.000$). At the same time, students from 11 to 14 years old had significantly lower results on the subjective wellbeing scale after school closures ($t = 3.34$, $p = 0.001$ and $t = 2.98$, $p = 0.003$). In addition, no significant changes in subjective wellbeing were found for students aged 15 years and older (Fig. 9.6).

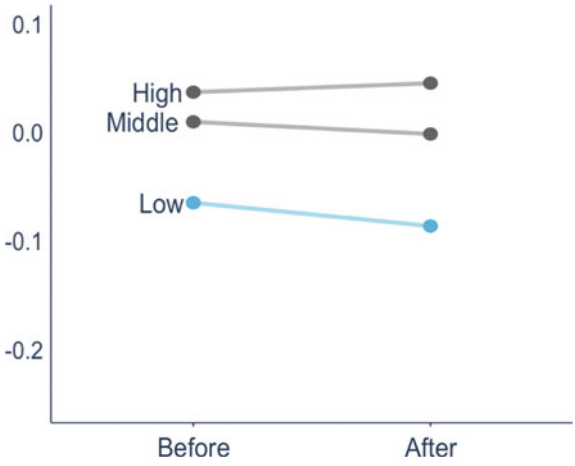

Fig. 9.5 Student subjective wellbeing in families with different amount of home possessions

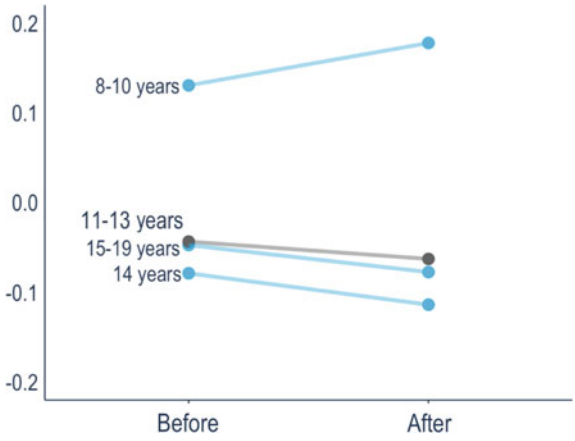

Fig. 9.6 Student subjective wellbeing for different age groups

As for communication with school, it appears that about 11% of all students lost almost all contact with their schools. Only 89% of respondents stated that they received messages from school almost every day. Other students received messages from school once a week or even less. Of all the means of communication with students, schools used emails most often (84%). In addition, 32% of students claimed that they communicated with school by video calls (Fig. 9.7).

Our study of factors contributing to student subjective wellbeing showed that school characteristics did not play a key role in the state of children. No school characteristic (school resources, student body, area) had a significant connection with the subjective wellbeing of students if individual and regional factors were included in the model. Significant individual characteristics both before and after school closures

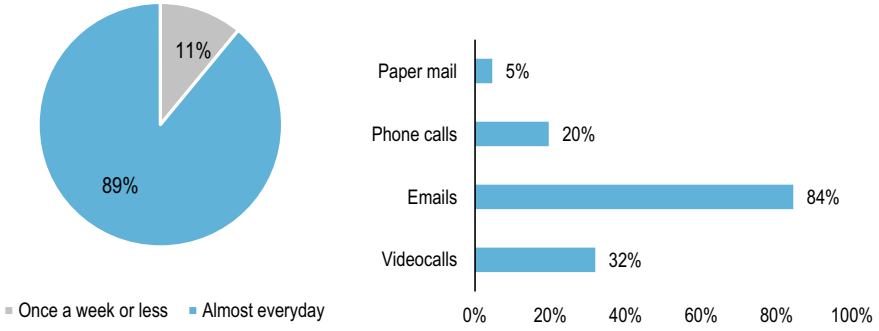

Fig. 9.7 Communication with school

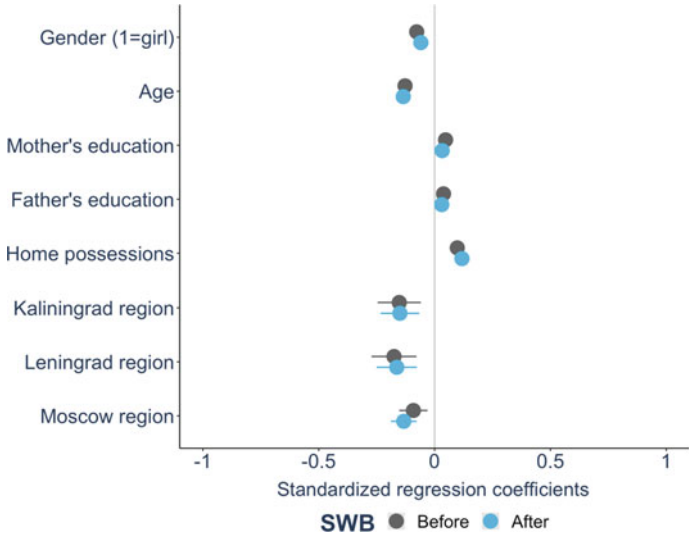

Fig. 9.8 Factors of student subjective wellbeing before and after school closures

included gender, age, parents' higher education, and home possessions (e.g., car, television, computer, air conditioner, etc.) (Fig. 9.8).[2] Girls had a lower level of subjective wellbeing than boys; the same was true for older students in comparison to younger. At the same time, the parents' education and the number of home possessions had a positive relationship with the subjective wellbeing. The region in which the student lives also had an effect: the subjective wellbeing of students in the Tyumen Region was higher than in other regions both before school closures and in the winter of 2020.

[2] The graph includes only significant variables in the regression analysis.

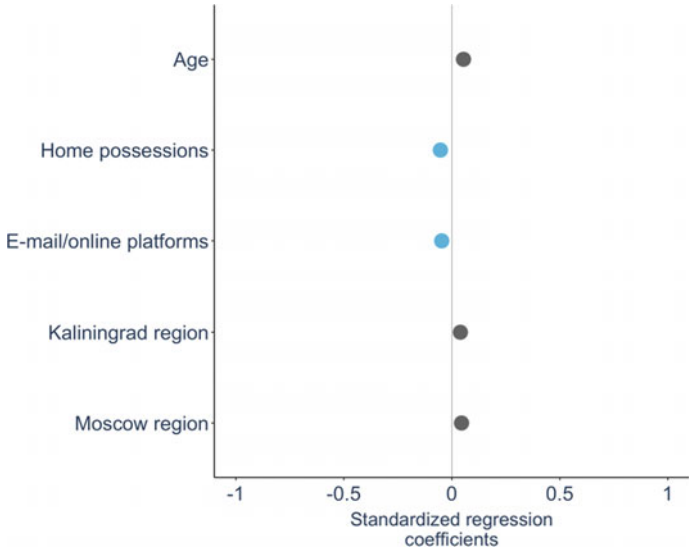

Fig. 9.9 Factors of the change[3] in student subjective wellbeing since school closures

[3] The change was measured as SWB before school closure minus SWB after school closure.

Our analysis confirms the results of prior SWB studies. In particular, our findings that primary school students had higher subjective wellbeing than older students before and after school closures, while boys sustainably felt better than girls, are consistent with recent major studies of student subjective wellbeing (Lampropoulou, 2018).

Measurements of the level of SWB since the closure of schools show that subjective wellbeing had fallen less for students with numerous home possessions (Fig. 9.9).[4] Another important factor is student interaction with schools during the absence of face-to-face learning: students who received information from their school by email or through online platforms showed a more stable level of subjective wellbeing. At the same time, the older the student, the more his or her subjective wellbeing decreased over the period in question. With regards to regional differences, the greatest changes in SWB were observed in the Kaliningrad and Moscow Regions while the least changes were observed in the Tyumen Region.

Finally, we made a comparative analysis of the level of student subjective wellbeing in 4 regions after school closures while controlling significant individual factors of wellbeing (gender, age, parents' education, home possessions) as well as the level of subjective wellbeing before school closures (Fig. 9.10). The inclusion of covariates into the analysis helped to identify differences that arose between regions during the absence of face-to-face learning and that were not connected with the

[4] The graph includes only significant variables in the regression analysis.

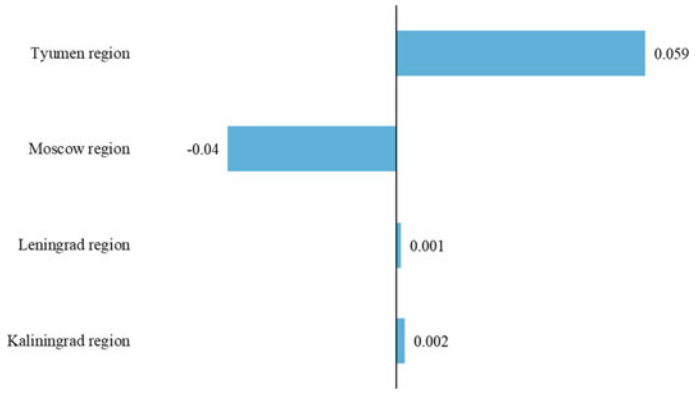

Fig. 9.10 Factors of student subjective wellbeing since school closures

individual characteristics of student families and their level of subjective wellbeing before school closures. Our analysis showed that a significantly high level of well-being was observed in the Tyumen Region during the period of the survey. Other regions had a lower (and roughly similar) level of student subjective wellbeing (with corrections for student individual characteristics).

Can schools help to overcome the instability of subjective wellbeing during distance learning? Our analysis shows that they do have some levers at their disposal. The use of online platforms by schools to communicate with students studying at a distance is correlated with higher SWB stability during the pandemic. This measure is simple to implement. At the state level, one must elaborate commonly accepted protocols for the interaction between schools and students during emergency situations such as the COVID-19 pandemic. There is also a need for programs for developing social skills and skills for coping with emotions. In the context of current problems and difficulties, such programs are particularly urgent (during both school closures and the return to "normal" life) (Lampropoulou, 2018).

Looking at the broader research and policy context, it would also be important to study the impact of national factors on student subjective wellbeing. Another area is quasi-experimental studies of the connection between the wellbeing of adults and the wellbeing (or even the presence) of children. It has been shown already that the pandemic has had, on average, a negative impact on the SWB of all families and that, moreover, these effects differ for families with and without children (Möhring et al., 2020).

9.6 Discussion and Conclusions

The pandemic in Russia has highlighted the problem of the digital gap and, more broadly, educational poverty—the set of differences between children's study conditions connected with their family's place of residence (internet access, quality of telecommunications), material status (computer, workplace, ability to pay for internet and telecommunications), cultural capital, and involvement in education (ability to offer assistance). Children from low-income and multi-child families were the most affected.

While inequality is one of the main issues on the international agenda of education research and policy, it has been largely neglected by the Russian government over the years. The pandemic has opened the eyes of politicians and society to what they had mostly overlooked in the past: differences between children in the conditions of study connected to the family place of residence, cultural capital, and involvement in education. This connection has become more apparent during the pandemic than in "normal" conditions, leading to a more widespread understanding of the existence and impact of such inequalities on "normal" life. As it turned out, the education system did not know whom it was working with in particular, it disposed of no information or data on student and family categories that would allow it to identify and support groups at risk quickly. Whereas countries such as Australia, New Zealand, and the USA allowed children who could not get the proper care and supervision at home to continue to attend school, Russia did not have any initiatives remotely similar.

Several studies have already shown that the pandemic has broadened the knowledge gap between children with different socioeconomic statuses (SES) (Engzell et al., 2020). Our study demonstrates that the same thing is happening with respect to SWB during school closures. Students from low-SES families not only had lower level of SWB before school closures, but also experienced a significant decline during quarantine. This indicates that children with fewer home possessions have been more affected by the pandemic in comparison to their more advantaged peers. Policymakers may think that this problem can be simply solved by allocating distance learning technologies to children from disadvantaged families. Nevertheless, these mechanisms are a lot more complex, and the problem cannot be simply solved by distributing laptops (as California did during the transition to online learning) (Bravo, 2020).

While some measures were implemented for equalizing education opportunities during the pandemic, they were far from exhaustive. It is important that the interests of disadvantaged students and schools remain at the center of attention of federal and regional governments. Building a system for identifying and supporting children at risk of academic failure (including extra financing for schools where such children study, target work with families, remedial education programs, etc.) is vital for the future of Russian general education.

The pandemic has also highlighted the role of parents in education. The introduction of a lockdown in April led many parents to work online at home as well as to help

their children to study. Many parents were ill prepared for this challenge. The School Barometer survey asked parents, "How well did you manage to combine work, your children's studies, and ordinary life while staying at home during self-isolation?" The mean response amounted to 3.6 points (on a 10-point scale with 1 corresponding to "very poorly" and 10 to "very well") (Isaeva et al., 2020b). Domestic conflicts flared out, and fatigue and psychological discomfort grew. As a result, parents began to protest about the distance learning format during the pandemic and its use in the future.

At the same time, during the distance learning period some parents (especially from the urban middle class and above) saw the need to take a more conscientious attitude to their children's education and choice of study trajectories by hiring tutors and selecting online platforms; they are planning to do so in the future, too. The experience of the pandemic also showed that school is not the only place where education can take place, and that distance learning has clear advantages in certain areas (such as allowing individuals to study and have greater opportunities for independent work). This has motivated many families to switch to home education.

The difficult interactions between parents and schools, their mutual distrust, and their attempts to put the blame and responsibility on each other were important lessons of the pandemic. Russian general education clearly needs a new model of interaction between schools and parents with a distribution of responsibilities and mechanisms of mutual assistance and parent education.

During the pandemic, radical changes occurred in the work of teachers and their relations with other education stakeholders. The load on teachers greatly increased during the distance learning period due to the need to master online resources and tools, make additional preparations for class, consult students and parents, etc. The existing model of regulating labor relations also showed limitations, in particular, in such aspects as overtime work, wages (including compensating the costs of employing one's own equipment and using outside services), and salary incentives. At the same time, no teacher protests coordinated by labor unions took place in Russia in contrast to other countries. Russian schools need a new type of contract with teachers that would combine modern standards for professional competences and optimal working conditions.

The experience of transforming general education during the pandemic was also highly informative for the education management system. The pandemic made it clear that the federal government did not dispose of sufficient levers to assure equal opportunities of full-fledged schooling in all Russian regions. There were useful regulatory and curricular documents, recommendations, and initiatives at the federal level. Nevertheless, problems were mostly solved at the regional and municipal levels, which differed in their available resources, management potential, and accumulated experience.

The lack of a pro-active stance in most Russian regions, municipalities, and schools with regards to anti-coronavirus disease measures is an evident problem of Russian education. In some regions, education managers took a more active stance by looking for new solutions. Nevertheless, most of them began to go beyond traditional measures and offered creative solutions only after understanding that the pandemic

would continue for a long time. It was only then that they stated that the distance learning format would remain in effect until the end of the school year.

Far from simply implementing federal initiatives and meeting preset indicators of effectiveness, successful regions took individual approaches and launched their own initiatives in which education was embedded into socioeconomic policy. Regions with less initiative that managed education on a day-by-day basis without a global strategy, simply reacting to federal initiatives, were much worse off. The interaction between different levels of education management during the pandemic shows that regions with a lot of initiative should be given extensive freedom in the use of federal resources for digitization. Instead of trying to control all processes, the federal government should let regions, municipalities, and schools take the initiative and build their own horizontal ties. Unified solutions should be implemented with the help of a mechanism of target support aimed at reducing interregional differentiation.

Another major new international trend of education management is to base managerial decisions on a broad range of educational and contextual data, including data that has not been used up until now. This data comes from the domains of healthcare, culture, finances, and demographics. The publication and analysis of such data has led to the emergence of a new field that may be called "evidence-based education," which is analogous to the field of evidence-based medicine. Some management models (e.g., the model of online extracurricular education) can be implemented only after analyzing certain indicators and sets of indicators. Unfortunately, no such transition has occurred in Russian education so far. In contrast to many other countries, Russia has published no open statistics about the incidence rate of the pandemic among school-age children that could serve as guidelines for converting schools to distance learning, nor has it conducted detailed studies of losses in education quality.

Decisions on organizing the work of the education system in the conditions of the COVID-19 pandemic were made in conditions of considerable uncertainty about the nature of the disease, the magnitude of the risks, and the role of schools and students in spreading the infection as well as about the impact of school closures on the quality of education and the wellbeing of children. Our analysis shows that this uncertainty existed in Russia both during the initial stage of the pandemic and during the period between the first and second waves. Its impact on losses in education quality and student wellbeing has yet to be determined. Nevertheless, a key lesson of the pandemic is that one must learn to plan in the conditions of continued uncertainty to implement both education response and education recovery measures. One must keep track of the growing experience in this domain in the country and the world particularly with regards to the effectiveness of education response and education recovery in Russian regions and other countries.

Building an evidence-based education management system for effectively responding to the challenges of the current pandemic and possible similar challenges in the future with the help of digital instruments should become a national priority. This would greatly simplify the work of schools in the event of a new wave of COVID-19 as well as solving the problems that flared out in 2020 before they become endemic.

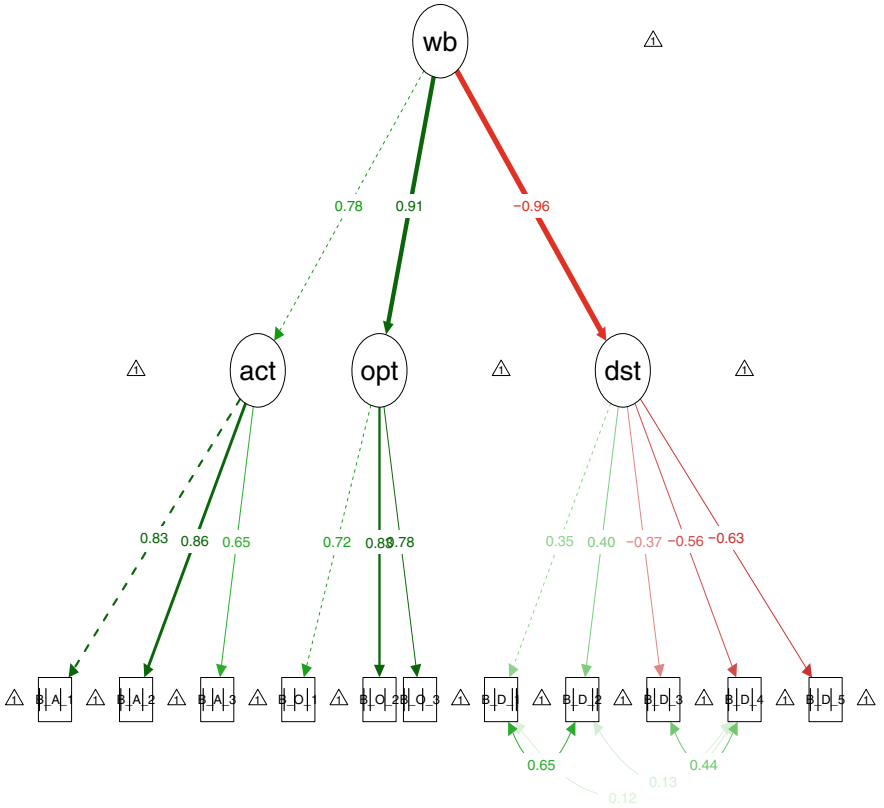

Fig. 9.11 Results of hierarchical confirmatory factor analysis (Subjective wellbeing before school closures in the spring of 2020)

Appendix 9.1

WLSMV algorithm; $\chi^2 = 857.248$; df = 37; p = 0.000; CFI = 0.98; TLI = 0.98; RMSEA = 0.05; 90% confidence interval [0.052; 0.058]; SRMR = 0.03 (Fig. 9.11).

Appendix 9.2

WLSMV algorithm; $\chi^2 = 1186.103$; df = 37; p = 0.000; CFI = 0.99; TLI = 0.98; RMSEA = 0.06; 90% confidence interval [0.062; 0.068]; SRMR = 0.035 (Fig. 9.12).

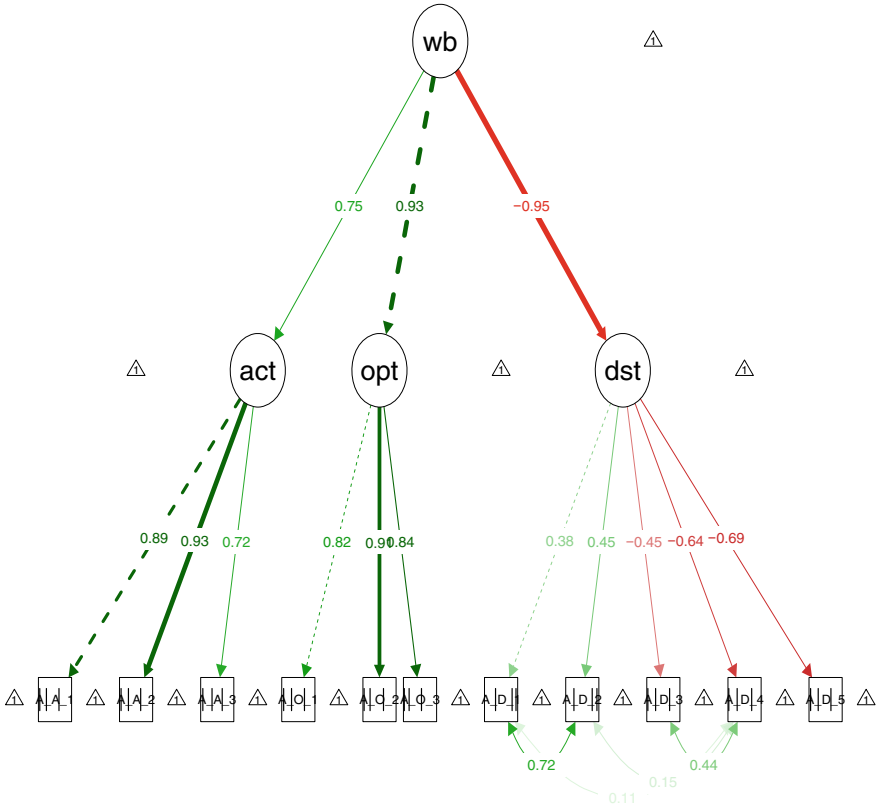

Fig. 9.12 Results of hierarchical confirmatory factor analysis (Subjective wellbeing at the time of the survey in November–December 2020)

Appendix 9.3

See Table 9.2.

Appendix 9.4

See Table 9.3.

Appendix 9.5

See Table 9.4.

Table 9.2 Results of multilevel regression modelling for SWB before school closures

Predictor	Beta	CI	Beta	CI	Beta	CI
School characteristics						
School area (city = 1)			−0.03 (0.05)	−0.12 to 0.07	−0.04 (0.04)	−0.13 to 0.05
Share of teachers with higher qualifications			0.07 (0.04)	−0.01 to 0.16	0.07 (0.04)	−0.02 to 0.15
Computers with internet (per student)			0.01 (0.04)	−0.07 to 0.08	0.01 (0.03)	−0.06 to 0.07
Student body			-0.11^{*} (0.06)	−0.22 to −0.00	−0.07 (0.05)	−0.18 to 0.03
Individual characteristics						
Gender (1 = girl)			-0.08^{***} (0.01)	−0.10 to −0.05	-0.08^{***} (0.01)	−0.10 to −0.05
Age			-0.13^{***} (0.01)	−0.15 to −0.10	-0.13^{***} (0.01)	−0.15 to −0.10
Mother's education			0.05^{***} (0.01)	0.02–0.07	0.05^{***} (0.01)	0.02–0.07
Father's education			0.04^{**} (0.01)	0.01–0.06	0.04^{**} (0.01)	0.01–0.07
Home possessions			0.10^{***} (0.01)	0.07–0.12	0.10^{***} (0.01)	0.07–0.12
Regions (reference group = Tyumen Region)						
Kaliningrad region					-0.15^{**} (0.05)	−0.25 to −0.06
Leningrad region					-0.18^{***} (0.05)	−0.27 to −0.08
Moscow region					-0.09^{**} (0.03)	−0.15 to −0.03
Random effects						
σ^2	0.30	0.27	0.27			
τ_{00}	0.04_{school}	0.04_{school}	0.03_{school}			
ICC	0.12	0.14	0.11			
N	99_{school}	95_{school}	95_{school}			
Observations	7355	6100	6100			

(continued)

Table 9.2 (continued)

Predictor	Beta	CI	Beta	CI	Beta	CI
Marginal R^2/conditional R^2	0.000/0.124	0.048/0.181	0.068/0.170			
AIC	12,131.445	9658.337	9657.874			
Log-likelihood	−6062.721	−4817.143	−4813.898			

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table 9.3 Results of multilevel regression modelling for SWB after school closures

Predictor	Beta	CI	Beta	CI	Beta	CI
School characteristics						
School area (city = 1)			−0.04 (0.05)	−0.13 to 0.05	−0.06 (0.04)	−0.14 to 0.02
Share of teachers with higher qualifications			0.02 (0.04)	−0.06 to 0.10	0.04 (0.04)	−0.03 to 0.12
Computers with internet (per student)			0.01 (0.03)	−0.06 to 0.07	0.01 (0.03)	−0.05 to 0.07
Student body			−0.11 * (0.05)	−0.22 to −0.01	−0.07 (0.05)	−0.16 to 0.02
Individual characteristics						
Gender (1 = girl)			−0.06*** (0.01)	−0.08 to −0.04	−0.06*** (0.01)	−0.08 to −0.04
Age			−0.13*** (0.01)	−0.16 to −0.11	−0.14*** (0.01)	−0.16 to −0.11
Mother's education			0.03* (0.01)	0.00–0.06	0.03* (0.01)	0.01–0.06
Father's education			0.03* (0.01)	0.00–0.06	0.03* (0.01)	0.00–0.06
Home possessions			0.12*** (0.01)	0.09 – 0.14	0.12*** (0.01)	0.09–0.14
Regions (reference group = Tyumen region)						
Kaliningrad region					−0.15*** (0.04)	−0.23 to −0.07
Leningrad region					−0.16*** (0.04)	−0.25 to −0.08
Moscow region					−0.13*** (0.03)	−0.19 to −0.08
Random effects						
σ^2	0.43	0.39	0.39			
τ_{00}	0.05_{school}	0.05_{school}	0.04_{school}			
ICC	0.11	0.12	0.08			
N	99_{school}	95_{school}	95_{school}			
Observations	7355	6100	6100			

(continued)

Table 9.3 (continued)

Predictor	Beta	CI	Beta	CI	Beta	CI
Marginal R^2/conditional R^2	0.000/0.112	0.048/0.164	0.071/0.149			
AIC	14,773.031	11,856.044	11,845.523			
Log-likelihood	−7383.514	−5915.996	−5907.722			

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table 9.4 Results of multilevel regression modelling for the difference in SWB before and after school closures

Predictor	Beta	CI	Beta	CI	Beta	CI	Beta	CI
School characteristics								
School area (city = 1)			0.02 (0.02)	−0.02 to 0.05	0.03 (0.02)	−0.01 to 0.06	0.03 (0.02)	−0.00 to 0.07
Share of teachers with higher qualifications			0.01 (0.02)	−0.02 to 0.05	0.01 (0.02)	−0.02 to 0.05	0.02 (0.02)	−0.02 to 0.05
Computers with internet (per student)			−0.00 (0.02)	−0.03 to 0.03	−0.01 (0.02)	−0.04 to 0.02	−0.01 (0.02)	−0.04 to 0.02
Student body			−0.00 (0.02)	−0.04 to 0.04	−0.01 (0.02)	−0.04 to 0.03	−0.01 (0.02)	−0.05 to 0.03
Individual characteristics								
Gender (1 = girl)			−0.01 (0.01)	−0.03 to 0.02	−0.01 (0.01)	−0.03 to 0.02	−0.01 (0.01)	−0.03 to 0.02
Age			0.05*** (0.01)	0.02–0.07	0.05*** (0.01)	0.02–0.08	0.05 *** (0.01)	0.03–0.08
Mother's education			0.01 (0.01)	−0.02 to 0.04	0.01 (0.01)	−0.02 to 0.04	0.01 (0.01)	−0.01 to 0.04
Father's education			0.01 (0.01)	−0.02 to 0.03	0.00 (0.01)	−0.02 to 0.03	0.00 (0.01)	−0.03 to 0.03
Home possessions			−0.05*** (0.01)	−0.08 to − 0.03	−0.06*** (0.01)	−0.08 to − 0.03	−0.05 *** (0.01)	−0.08 to − 0.03
Communication with school: video calls							−0.03 (0.01)	−0.05 to 0.00

(continued)

Table 9.4 (continued)

Predictor	Beta	CI	Beta	CI	Beta	CI	Beta	CI
Communication with school: emails and online platforms							−0.05 *** (0.01)	−0.07 to −0.02
Communication with school: phone calls							0.01 (0.01)	-0.02 – 0.03
Regions*(reference group = Tyumen Region)*								
Kaliningrad region					0.04* (0.02)	0.01 to 0.07	0.04* (0.02)	0.00–0.07
Leningrad region					0.03 (0.02)	−0.01 to 0.06	0.02 (0.02)	−0.01 to 0.06
Moscow region					0.05** (0.01)	0.02–0.07	0.04** (0.02)	0.01–0.07
Random effects								
σ^2	0.20	0.19	0.19	0.19				
τ_{00}	0.00_{school}	0.00_{school}	0.00_{school}	0.00_{school}				
ICC	0.01	0.00	0.00	0.00				
N	99_{school}	95_{school}	95_{school}	95_{school}				
Observations	7355	6100	6100	6100				
Marginal R^2/conditional R^2	0.000/0.006	0.005/0.008	0.008/0.009	0.010/0.014				
AIC	8943.656	7397.948	7408.224	7418.486				
Log-likelihood	−4468.826	−3686.948	−3689.072	−3691.187				

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

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