Article

Assessing the Socio-Economic Consequences of Distance Learning during the COVID-19 Pandemic

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Abstract: The research analysis shows that children in mainstream schools suffered from psychological deterioration (aggressive behaviour, depressive moods, despair about academic underachievement, etc.) when governments implemented measures to manage the COVID-19 pandemic, and children's education took place remotely for a significant period. This was caused by the lack of social contact, which in turn contributed to the lack of knowledge in individual subjects, a deterioration in physical condition (spinal problems, visual impairment, insufficient muscle development), and the development of specific illnesses related to low physical activity. The research aims to identify the factors of distance learning that may affect student learning achievements. The research methods included an analysis of the scientific literature, and document and content analysis. A summary of the research findings found that the COVID-19 school quarantine had adverse effects on the students' knowledge, social skills, socialisation, and psychological and physical health. It also caused macro- and micro-economic problems. In summary, the research demonstrated that distance education resulted in a decline in the students' achievements and knowledge, miscommunication with their peers and conflict situations. Because of that, there are health-related concerns and additional financial challenges for parents and educational institutions organising distance education. Households also experienced additional expenditure on the infrastructure necessary for distance learning and tutoring services.

Keywords: COVID-19; distance learning; growing costs; decline in knowledge

1. Introduction

The COVID-19 pandemic and distance learning have become synonymous in the education system. At the peak of the pandemic in the first half of 2020, some 91% of the world's students were quarantined and moved away from their usual learning places in an effort to contain the virus [1]. The OECD estimated that by June 2020, 80% of its member and partner states had already undergone some level of school closure for more than three months, roughly one-third of an average school year [2].

The COVID-19 crisis has undoubtedly had an impact on the pupils' learning processes, learning achievements, emotional states and the socio-economic well-being of their families. As the pandemic unfolded and the novelty and significance of the phenomenon were realised, researchers and practitioners from around the world began to probe deeper into the various current and future consequences of the phenomenon on the education system.

The research was carried out in a variety of countries and settings, ranging from small-scale studies in school communities [3,4], social groups [5–7] and the living environment [8] to studies at the level of countries [9–11], economic impact [12–15] and international organisations [1,16,17].

The research carried out provided detailed results of the challenges faced by the education system in maintaining its primary mission while switching from face-to-face

teaching in schools to distance learning. In this context, schools started to ask themselves how to organise the distance learning process, ensure the quality of teaching and measure the impact of distance learning on student learning achievements. Although a lot of research has been carried out in this field, and many factors have been identified as having an impact on student learning, the short time frame means that there is still a lack of comprehensive research on the effectiveness and impact of distance education on student academic performance. It was noted that all the studies already carried out have some limitations: the problems studied have been—for the most part—approached through the prism of the subjects selected for the research. These were were parents, teachers and students—in other words, their point of view on the problems at hand. Attitude surveys are appropriate for highlighting problems, to assess changes in student learning achievements in the pre-pandemic optional distance learning and the pandemic obligatory distance learning. However, it is necessary to analyse not only attitudes but also the objective changes in the students' grades and the factors influencing their learning achievements.

This research paper aimed to identify the theoretical factors influencing student achievements in distance learning COVID-19 settings.

2. Materials and Methods

To identify the factors of distance learning that may influence student learning achievements during the COVID-19 pandemic, we conducted a systematic review of the scientific literature, articles and documents. Page et al. [18] define a systematic literature review as a systematic method of examining the scientific literature by selecting the most relevant scientific articles according to predefined selection criteria. The document analysis method was chosen as an additional source of data collection for the research. The primary data collection method for the study was the analysis of scientific articles, and the selection of articles suitable for the research was carried out in Scopus and other databases. These databases were chosen because they provide reliable, high-quality research results and are rich in relevant scientific articles.

2.1. Research Procedures

Using the Scopus database, a bibliographic search was implemented in January 2022 using a combination of the following descriptors: education (title), COVID-19 (title, abstract, keywords), issues (title, abstract, keywords), student learning achievements (title, abstract, keywords).

The following restrictions were also in place: (1) English language, (2) peer-reviewed scientific journal, and (3) open access. A time limit of 2020–2022 was applied to locate all the empirical studies.

After automatic data screening in the Scopus database, the selected articles were saved in Excel, where they were assigned sequential numbers. In the next stage of the research, a three-stage article selection was performed according to the PRISMA guidelines: (1) title selection, (2) abstract selection, (3) full-text selection [18]. According to these criteria, the articles were coded 1 = YES; 0 = NO, for a reasoning exclusion of the article from further analysis. In the first stage, the titles of the articles were read, and if the title did not match the key concepts of the research, it was eliminated. In the next stage, the articles' abstracts were read, providing a better understanding of an article's content. If the article's abstract did not correspond to the aim of the research, the article was eliminated.

Following the above procedures, 20 articles meeting the criteria were selected for further analysis.

The reports of existing research projects and the reports of international organisations such as OECD and UNESCO were also selected for analysis by typing keywords into the Google search engine.

2.2. Data Analysis

The selected articles, documents and reports were analysed qualitatively based on content analysis and an interpretative paradigm.

The reading of the selected material involved selecting recurrent factors relevant to the research objective and assigning categories of characteristics to them, and the criteria explaining them.

The process of reading the selected sources was carried out twice to avoid missing relevant information.

The researchers working in a group carried out the data analysis process with regular discussions and joint decision-making. The analysis of the selected articles focused equally on the articles' theoretical, methodological and empirical information.

2.3. Limitations

The main limitation of the study is that all the article searches were conducted in Scopus and a few other databases. The information would likely be enriched by reviewing other databases of scientific articles. Another limitation highlighted was that the research articles were only analysed based on content analysis and an interpretive paradigm. It is likely that a systematic analysis of the scientific literature using the PRISMA method and the MAXQDA software would have led to more profound findings.

3. Results

3.1. The Impact of Distance Education as a Consequence of the Pandemic on Student Learning Achievements: Issues in Distance Learning

In our opinion, the COVID-19 pandemic is a new phenomenon so its consequences, although right now short-term, have to be analysed in various scientific studies. This subsection provides an overview of the research that has already been carried out on distance learning issues.

According to researchers, the COVID-19 pandemic and distance learning have become synonymous in the education system. The COVID-19 crisis has undoubtedly had an impact on the pupils' learning processes, learning achievements and emotional state as well as the socio-economic well-being of their families.

The COVID-19 pandemic has revealed a new reality in our lives. Globalisation processes have led to both positive and negative phenomena, one of which is the COVID-19 pandemic, and this has more or less affected all countries worldwide and all spheres of life. Education was no exception in this context.

At the peak of the pandemic in the first half of 2020, some 91% of the world's students were quarantined and moved away from their usual places of learning in an effort to contain the virus [1]. The OECD estimated that by June 2020, 80% of its member and partner states had already undergone some level of school closure for more than three months, roughly equal to one-third of an average school year [16,17].

At the pandemic's peak, UNESCO reported that nearly 1.6 billion students in more than 190 countries, or 94% of the world's students, were affected by school closures [1].

According to other researchers, education shifted from face-to-face teaching in schools to distance learning to fulfil its mission during the pandemic. Although a number of schools had adopted distance or hybrid learning in their curriculum before the pandemic, this had been the exception rather than the rule. Therefore, schools faced new challenges on how to organise the distance learning process, ensure the quality of teaching and measure the impact of distance education on the student learning achievements.

The pandemic has particularly highlighted what has been emphasised for many years in international educational research (e.g., PISA), namely, the importance of the socio-economic context. This is also reflected in the results of various research studies carried out in different countries.

Donnelly and Patrinos [19] conducted a systematic literature review to assess the impact of distance education on the students' educational progress. They found eight studies

on this topic, seven of which found evidence that students experienced learning loss during distance education. In addition, four of these studies showed that learning loss (poorer learning outcomes) affected certain demographic groups of learners more strongly than other demographic groups.

The analysis of the data produced two clear inferences: (1) pupils experienced learning losses (poorer learning outcomes), and (2) the pupils' demographic characteristics (i.e., place of residence, socio-economic situation of the family) also played a role.

Similar results were obtained by Gandolfi, Ferdig, and Kratcoski [9], who argued that the COVID-19 pandemic highlighted differences in the availability and quality of learning technologies in the United States education system. Low-income and minority students and their families were at a particular disadvantage when it came to having full access to hardware and software technologies to support learning.

The authors' research suggests that distance education, due to COVID-19, has been a source of the growing digital divide in communities.

The inequalities between the socio-economic context and the students from different demographic groups are also referred to in the OECD report [16], in which it is argued that those from privileged backgrounds will easily find a way to bridge the gaps caused by distance learning by finding alternative learning opportunities. Conversely, if the school is closed, those from disadvantaged socio-economic backgrounds will remain 'stuck with' what the school can provide.

The analysis of the factors and consequences of the COVID-19 distance learning environment reveals many aspects of inequalities in the education systems of different countries. This ranges from the high-speed Internet connection and the computers needed for online learning to the enabling environment needed to focus on learning, and the competence of educational managers at different levels and teachers to organise and deliver distance education.

Zhao et al. [10] researched the impact of home-based distance education and learning during the COVID-19 pandemic on schoolchildren (grades 1 to 9), their parents and teachers in China. The research revealed that 76% of respondents thought that home-based education was acceptable.

According to the researchers, teachers were concerned that the students' interest, concentration and academic performance would decrease. Around 69% of parents reported that their children spent more than 3 hours a day in front of a screen. Around 82% claimed that their children spent 2 hours less than the usual time outdoors doing physical activity, and 95% were concerned about their children's eyesight. Moreover, 17.6% of students were found to have emotional or behavioural problems, according to the results of the strengths and difficulties questionnaire (SDQ) as rated by the parents. The results of the self-assessment anxiety scale (SAS) showed higher levels of anxiety than in the samples of the normal population of parents and teachers.

Thus, it can be observed that although parents had a positive attitude towards distance education, they still latently felt anxious about the possible negative consequences of distance education.

Suyadi and Selvi [20] studied the links between online learning and child abuse. Scientific research discovered the factors and consequences of physical, emotional and verbal child abuse and negligence during online learning. Children used online material, but not for learning purposes. The parents' stress levels increased as they had to play the dual role of working and being teachers at home.

Yao et al. [21] investigated the relationship between learners' self-awareness and the intention to use online learning during the epidemic. According to the research authors, proper communication can improve the self-awareness of learners, and the course quality can positively contribute to good learning outcomes.

Martin et al. [22] examined to what extent the distance learning generation level and instructional setting moderated the influences of distance learning on the cognitive, affective and behavioural outcomes. The results of the study revealed, and statistically

significantly confirmed, the effect of distance learning on the cognitive, emotional and behavioural results compared to face-to-face learning.

Korzycka et al. [11] reported that during the COVID-19 pandemic, all Polish schools were closed and obliged to deliver classes remotely. In their study, the authors conducted a demographic analysis of the difficulties of distance learning from the students' perspectives during the coronavirus pandemic in Poland.

The main objective of the research was to provide a demographic analysis of the difficulties of distance learning for young people aged 11 to 18 years old during the period from 25 March to 26 April 2020, the time of the strictest COVID-19 pandemic restrictions in Poland. Their survey included questions on gender, age and place of residence. The respondents for the purposes of the analysis were divided into three groups depending on their age: 11 to 12, 13 to 16 and 17 to 18. Based on a preliminary analysis, it was concluded that, according to the variables chosen to assess the difficulty of distance learning, the answers of respondents from the two of the age groups (11 to 12 and 17 to 18 years old) might differ significantly from each other. The question on place of residence ('where do you live?') had the following response categories: rural; small town (up to 20,000 inhabitants); big town (20,000 to 100,000 inhabitants); large city (over 100,000 inhabitants).

The following survey questions were asked:

1.	What were the most common difficulties that young people perceived as a major problem during the first weeks of the pandemic, when severe restrictions were in place?
2.	What was the ranking of these problems related to gender, age and place of residence?
3.	What was the overall level of distance learning difficulties in the sample, as measured by the distance learning difficulties (RLD) scale?
4.	How did the overall level of distance learning difficulty depend on the gender, age and place of residence of the adolescents surveyed?
5.	What additional problems did young people cite with distance learning?

More than half of the adolescents surveyed ranked the teachers' increased demands on learning as a major problem. Girls were statistically more likely than boys to mention it (59.6% vs. 53.2%). Almost one in three adolescents cited the lack of guidance as a significant problem (31.6%). The respondents who mentioned difficulties with distance learning more frequently than others were the oldest students (17–18 years old) and living in rural areas. The much higher requirements and the poor organisation of distance learning were considered significant problems. Technical difficulties and insufficient skills in using distance learning software were also mentioned.

The main conclusion of the research was that special attention should be paid to the organisation of appropriate technical conditions for distance learning, especially in rural areas, where students were more likely than in urban areas to complain about the equipment and available Internet broadband during the pandemic.

Halpern [3] conducted a qualitative case study that examined and compared the experiences of public school and private school teachers in distance education in Brazil during the COVID-19 pandemic-induced school closures. Like the authors of the research discussed above, she found that while children from wealthy families favoured distance learning, students from low socio-economic backgrounds faced severe challenges such as a lack of sufficient resources to attend online classes and continue their education.

The research of other authors investigated the teachers' experiences in adapting teaching strategies for distance learning. The qualitative research data led to three themes that could be used to identify the criteria that influenced the students' learning in a pandemic:

- Theme 1: Distance learning;
- Theme 2: Empathetic teaching versus high-quality teaching;
- Theme 3: Technical literacy versus technology-based teaching (technical literacy is defined as a person who is proficient in or knowledgeable about the use of modern technology).

Abuhammad [4] identified the following issues that were perceived as barriers to distance learning while investigating the parents' perceptions of distance education:

- Personal level barriers: lack of training and support, lack of technical knowledge, lack of communication with professionals and lack of qualifications.
- Technical barriers: insufficient computer equipment and maintenance investment, and poor Internet connection.
- Logistical barriers: lack of preparation of the students, dissatisfaction with distance learning, the students' learning needs not being met during distance learning, lack of flexibility.
- Financial barriers: the inability to buy appropriate technology for distance learning and the inability to pay for Internet services.

Raghul et al. [6], in their research, sought to find the challenges faced by special education teachers in educating special needs children during the COVID-19 pandemic. Thirty special education teachers participated in this study and were selected through purposive sampling. Both quantitative and qualitative methods were used to identify the difficulties and challenges faced by special education teachers. Descriptive analysis was used to analyse the data. During the COVID-19 pandemic, special education teachers working with students with learning disabilities did not receive any specific technological support for their education. The research findings revealed that students with special needs did not have learning environments adapted to them. Most teachers who worked with children with special needs did not receive any training on how to remotely educate children with learning disabilities. In addition, the special education teachers who participated in this study reported that children with special needs did not receive all the tools they needed for their distance education.

In their study, Mukuna and Aloka [8] analysed the challenges faced by rural educators responding to the COVID-19 pandemic in a rural school in South Africa. The study revealed that educators faced various challenges during distance learning. These included poor parental involvement in helping children prepare their homework, poor network access and a lack of learning devices. The qualitative method was adopted in this multi-case study. The research revealed that educators face a variety of challenges during distance education.

Alsubaie [23] examined the effects of distance education on the social literacy of elementary school students during the COVID-19 pandemic. Technology issues, social challenges and support from parents were identified as the most critical challenges in teaching and developing social literacy skills. The study showed that distance education had not only negative consequences, but also positive ones on social literacy. An improved teacher–learner–family relationship, the use of IT tools, enhanced communication, listening and active participation skills among the learners were identified as positive effects of distance education on the social literacy skills of elementary school students. Online communication skills, procrastination, higher socio-economic status of the class, the methodological support of distance learning and the teacher's self-confidence in time management were identified as relevant factors during distance learning in the research conducted by Kohout et al. [24].

Yu [25] identified that online learning outcomes had a significant linkage with nine variables: behavioural intention, instruction, engagement, interaction, motivation, self-efficacy, performance, satisfaction and self-regulation. In addition, Elzainy [26] emphasised that technological skills are directly related to learning achievements.

Naddeo et al. [27] investigated the factors influencing the effectiveness of teaching and learning in a university after the sudden shift from face-to-face to e-learning platforms due to COVID-19 in Italy. The quantitative research was carried out with 700 respondents. Students were able to adapt reasonably well to distance teaching and learning, although it was found that the lack of communication with fellow students had the most significant negative impact on learning effectiveness.

Koskela et al. [7] studied the parents' attitudes and their adjustment to a rapid transition to distance learning in Finland.

The study was conducted at the beginning of the COVID-19 pandemic in spring 2020 via an online questionnaire for parents, which was answered by 316 volunteer participants. Based on the results, parents were concerned about their children's learning and well-being. The results showed the importance of schools and teachers networking with parents during times of change.

Pappa et al. [28] analysed well-being issues at a Finnish university during the COVID-19 pandemic and revealed that lockdown influenced well-being in terms of personal life and the study process. Due to home study and a reduced social circle, students experienced anxiety, stress, sadness and other, similar emotions.

In a qualitative study, Marchant et al. [29] sought to analyse the experiences of distance teaching and learning by primary school staff in Wales and provide recommendations. A total of 208 school staff completed a national online survey. Thematic analysis of the survey responses highlighted that school staff perceived that school closures led to the widening of learning gaps and inequalities in learning conditions. Teachers also felt that the students' health could deteriorate. Five recommendations were made based on the results of the research:

(1) prioritise the health and well-being of students and staff;
(2) focus on empowering parents to help their children;
(3) improve the digital competencies of students and teachers;
(4) consider smaller class sizes and additional staff;
(5) improve the communication mechanism between the schools and families, and between the government and the schools.

Panagouli et al. [30] argued that the constraints of COVID-19 made conventional learning methods impossible, so online learning platforms were introduced to continue the educational processes. Although the virtual lessons provided high-quality learning materials, the effectiveness and impact of distance learning on the academic performance of children and adolescents, in general, is still unknown. The study produced mixed results, finding that some parents felt their pupils had experienced difficulties in learning compared to the years before the pandemic, yet others felt that distance learning had been beneficial. Therefore, this type of research should be continued in the future.

In summary of the research studies reviewed, it can be stated that during the pandemic, education had to reorient itself to continue fulfilling its mission, moving from face-to-face contact in school to distance learning. In this context, schools have faced new challenges in organising the distance learning process, ensuring the quality of teaching and measuring the impact of distance learning on the student learning achievements. There is a large body of research in this area and many factors have been identified as affecting student learning. However, there is a lack of comprehensive research on the effectiveness and impact of distance learning on the students' academic performance due to the short timeframe. It was noted that all the studies already carried out have some limitations. The problems investigated were approached through the prism of the subjects selected for the study—parents, teachers and students—in other words, their views on the problems at hand were presented. While attitude surveys are appropriate for highlighting problems, to assess changes in the students' learning achievements before and during the pandemic distance teaching and learning, it is also necessary to analyse the change in the students' knowledge assessments (i.e., carry out an analysis of the school records that document changes in the student's grades).

Of course, to investigate the factors influencing the student learning achievements, it is first necessary to identify the theoretical factors that may influence the student learning achievements in distance education, which is discussed in the following subsection.

3.2. Factors in Distance Learning That Can Affect Student Achievements

Distance learning has historically been mainly organised to meet the needs of adult learners who could not devote time to contact activities during their full-time studies and could not take time away from their working lives. Distance education has also been

essential to reach remote rural areas. Over time, distance learning has been globalised and commercialised [31].

The research has revealed that distance education started in 1896. Since then, it has been continuously developed by discovering new ways, forms and tools, but it has never been universally adopted. With regard to distance learning, the COVID-19 pandemic situation posed challenges for schools and teachers, requiring a lightning-fast response. Without much preparation, it was necessary to 'submerge' into the distance learning space and not only submerge, but also ensure that the quality of teaching and learning was as good as conventional teaching and learning in schools. The extent to which this has been successful is still not fully known. Marchant et al. [29] argue that the closure of schools due to the global pandemic of COVID-19 is likely to have a number of negative consequences on children's development, education and health. To mitigate these negative consequences, further research is necessary to better understand how the school's transition to distance teaching and learning affected the students' performance, health and well-being. Most importantly, to understand how the new policies and practices should address the challenges of distance education.

It is noteworthy that an analysis of the results of case studies and research, along with the researcher's conclusions, showed that face-to-face and distance learning differ in a number of parameters. It is necessary to have a defined set of criteria that reflect the factors that influence the students' learning achievements.

The COVID-19 pandemic has prompted a range of public health safety measures across the majority of countries including social disengagement, school closures and the redesign of education provisions to include distance education [17].

In addition to the health risks, the pandemic has created significant risks to the teaching and learning of students and increased educational inequalities. Therefore, it is crucial to develop solutions so that every child can access the resources they need to study comfortably.

The analysis of the results of the studies carried out allows us to claim that the pandemic crisis became a stress test, challenging the resilience of our education to adverse situations and the overall fairness of the system. When individuals are isolated, and schools are closed, the links between students, schools and their communities are at risk of being broken or becoming inadequate. This is particularly important as out-of-school factors play a crucial role in learning achievements. However, the crisis may be an opportunity to re-evaluate education and explore alternative distance teaching and learning methods that bring schools and homes closer together, promote student autonomy in managing their studies, and provide additional support in adverse circumstances.

The OECD report [17] states that since the transition to distance learning, it is essential to maintain educational quality, equity and well-being in education:

- Quality: To reduce barriers to learning and ensure that students are able to learn at the right level of competence.
- Equity: To ensure that all pupils in the same cohort receive the same learning opportunities.
- Well-being: To ensure not only the physical and mental health of pupils, but also the development of social-emotional skills while preserving the school community and the social bonds between peers and teachers.

The quality of distance learning is the set of procedures and guidelines established by the education and training system to guide the organisation of work and the provision of services [32]. To ensure quality distance learning, educational institutions need to take into account various aspects regulated by official documents and the specificities of their institution.

The first research on pandemic-induced distance education and learning has highlighted factors that influence distance education and learning in practice.

Huang et al. [5], in their analysis of distance learning during the COVID-19 outbreak in China, suggest that the organisation of distance education was based on a particular distance learning strategy. The researchers identified six important aspects: (a) infrastructure;

(b) learning tools; (c) learning resources; (d) teaching and learning methods; (e) services for teachers and students; (f) cooperation between schools and government.

1.　Reliable Internet infrastructure

This factor has been highlighted in many of the studies discussed above. Reliable network infrastructure is essential to support a wide range of activities such as synchronous learning through video conferencing, asynchronous learning by accessing or downloading digital learning resources and collaborating with peers through social software. Schools should test and evaluate the network bandwidth and, if necessary, increase it.

2.　User-friendly learning tools and devices

Other researchers have argued that the effective selection and use of learning tools is beneficial for learners in finding and processing information, constructing knowledge and collaborating with peers. Distance teaching and learning needs to consider the usability of the tools. Specifically, tools need to be user-friendly and fast enough to:

(a)　help teachers effectively create and manage resources, publish messages and manage student activities during lessons;
(b)　help students to participate effectively in learning activities;
(c)　help teachers and students to communicate in real-time;
(d)　help teachers, parents and schools to understand student learning achievements and to establish in-time collaborative interactions between the school and home.

Teachers at all levels need to be able to quickly select a variety of learning tools to facilitate the learning process.

1.　Well-prepared digital teaching and learning resources

With the development of ICT in education, digital learning resources such as massive open online courses (MOOCs), small private online courses (SPOCs), online videos (micro courses), e-books, models, graphics, animations, quizzes, games and e-notes are becoming more accessible, engaging and contextualised. However, students should be guided by the objectives of the distance learning and teaching activity when selecting appropriate digital learning resources.

2.　Effective teaching and learning methods

Unlike traditional classroom education, distance learning is characterised by the fact that teachers and students are located in different places, so teaching/learning should be flexible. This requires careful consideration of effective online teaching and learning methods using different technologies.

3.　Effective support for teachers and students

Adequate support services are the key to the quality of distance education. There are two types of support services for distance education: support services for teachers and support services for students. Both services can be provided in cooperation with the government, municipalities, schools, businesses, families and the public.

4.　Cooperation between schools and public authorities

In our research, we found that public authorities, organisations and schools should work closely together to ensure quality content, a wide range of learning activities and effective distance education. This cooperation should be led by the authorities and organised by schools. Cooperation should include family and school interaction, and social participation. Given the current and future needs for distance learning during the epidemic, public authorities should play a coordinating role in education policy and provide effective supervision. Authorities should also coordinate communication platforms between schools, families, society, etc., select appropriate learning resources, provide convenient learning tools and promote various learning methods.

It can be argued that these experiences, summarised by Chinese scientists, can also be applied in other countries.

Timmons et al. [33] stated that the COVID-19 pandemic led to the closure of schools across North America in March 2020 and there was a subsequent transition to distance learning. It became increasingly apparent that distance learning would need to be extended in the 2020/2021 school year and may need to be extended again in the future. This situation makes it urgent to conduct research to reduce the impact of COVID-19 on teaching and learning, especially among younger school ages. Their research focused on the unique challenges associated with distance education in kindergartens and primary schools. The study's objectives were twofold: (1) to collect information on the unique challenges and successes associated with distance education and learning, and (2) to use the findings to form recommendations and develop support strategies for distance learning during and after COVID-19. Data collection included 45-minute semi-structured interviews with teachers (n = 25) and parents (n = 11). All participants were from the Canadian province of Ontario.

Data analysis revealed five themes: equal opportunities, synchronous and asynchronous teaching and learning, social and emotional impact on students, impact on academic achievement and impact on parents and families.

The results of the study have led to the development of a set of recommendations that can be adapted for older pupils, teachers and parents:

1. Specific training and professional development for teachers and parents on the use of technology and software are needed.
2. Appropriate technology for teaching and learning for all primary school pupils needs to be acquired.
3. Approaches to children's learning and achievement within families need to be integrated. This should include a range of family support programmes to meet the learning needs of all children in the family.
4. Synchronous and asynchronous approaches to teaching and learning should be promoted.
5. Lesson tasks and processes should be clearly explained to parents and pupils. Families and students need to know where to go to obtain information on their lessons.
6. More individual guidance is needed to meet the learning needs of all students.
7. Families need to be provided with learning bundles that include the learning resources and materials they need for the week's learning activities (e.g., glue, paper, scissors).
8. As pupils move towards personalised learning, teachers will need to meet pupils where they are, to respond to their individual learning needs.
9. Policy initiatives need to be implemented to support teachers, as learning can move to distance education at any time.
10. Equal learning opportunities, diversity and inclusion must be ensured.

Lithuanian researchers have also already carried out various studies on distance learning in the context of the COVID-19 pandemic.

Summarising the results of previous research [31–34], the SELFIE self-assessment tool and the research carried out this year by foreign researchers have identified the following areas of activity that need to change when a school starts to organise distance education:

1. Strategy, management and administration

To achieve quality distance education and to ensure that change is seamlessly integrated into all areas of the school's activities, distance education needs to be included in the school's strategic documents—regulations, statutes and implementation plans.

2. Information technology (IT) infrastructure

The IT infrastructure of the school is essential for the organisation of distance education. Without the proper infrastructure, quality distance education cannot be organised. Distance education requires that students and teachers have the technical equipment (e.g., computers) to access the digital learning content and to participate fully in the learning process. The school needs to have a distance learning environment to deliver the learning content and organise the education. The school should choose a user-friendly distance learning environment with the possibility of assessment, which will reduce the workload

of the teachers and students. The e-learning environment must also be secure, as data protection is a major consideration.

3. Digital learning content

Research evidence suggests that schools should target educational funding to ensure that learning resources are appropriate and easily accessible. Pupils should be given remote access to learning resources. It is also the school's responsibility to ensure that students can use them. The educational process must go beyond written or visual learning resources and allow students to participate in virtual practices using virtual laboratories according to their educational needs. The range of digital learning content is extensive and must be selected in a targeted way, taking into account the subject's specificities and the pupils' age. The structure of the content should be simple and straightforward, and the learning content should be well designed and clearly presented to the learners so it is easy to find information in the material.

4. Digital competencies and continuous professional development

Digital competence refers to the safe and critical use of ICT for work, leisure and communication, based on essential digital competencies. It includes using ICT for secure information retrieval, evaluation, storage, content creation, presentation and sharing as well as for communication and participation in virtual communities.

Effectively organised educational models recognise the critical role of distance learning for quality and define the structure, profiles and functions of teacher competencies. Professional development in the context of distance education can be different from traditional professional development, especially when it concerns transitioning from a traditional teaching and learning environment to a distance environment. This transition often results in the teachers' need to acquire both pedagogical and technological knowledge. The direction in which continuing teacher development will be organised is determined by analysing the teachers' learning needs.

5. Teaching, learning and assessment in the digital environment

In distance learning, the targeting of learning resources, the use of teaching methods and the organisation of assessment are crucial. The modules (part of a lesson, a lesson or a series of lessons) of the created virtual learning environment are unique, i.e., independent from each other. However, design and integrity play a key role in their development. The choice of an appropriate didactic approach is a key element in the design of a subject.

6. A support system for students and teachers

A successful distance education school must have a support system in place for both students and teachers. Community members need to know when and to whom they can turn for help. 'Not all pupils will be immediately ready for distance education, so the different types of support need to be planned and provided to the pupils, teachers and other members of the school community' [35].

7. Partnerships, collaboration and networking

All schools are established by a number of institutions that hold them accountable for their performance. Decisions are therefore often not only made within the school community, but are also initiated by the institutions that set up the schools. In various crisis situations including the COVID-19 pandemic, schools need to consult and receive support from their founding institutions and cooperate with other educational institutions. Discussion and the sharing of best practices allow them to see the solutions adopted by other schools in the face of a crisis, and to adjust their own school activities. Organising and participating in discussions on distance education also encourages collaboration with experts in the field, as the challenges of distance education and the opportunities for solving problems change with technological developments.

8. Quality assurance

The quality of distance education is a complex phenomenon to measure accurately, as even in the context of traditional, face-to-face teaching and learning, the term 'quality of education' is notoriously vague. The only way to avoid uncertainty in measuring the quality is to clearly agree on what will be measured and how. Quality can be measured at the micro level (e.g., in a single subject), or at the macro level, where it is measured in terms of how distance education has played out across the entire educational process. The quality of teaching in an individual subject can be evaluated by each teacher or the school administration. It is important to note that quality is determined by the consensus of all the parties involved, so the lesson and the teaching of the subject must be discussed with the students. Teachers do not have to consider all the student's wishes regarding the education organisation; still, after a critical evaluation, they should explain to the pupils why some of their suggestions are not taken into account. This also leads to quality because the pupils clearly understand why they should behave differently [35].

Summarising the analysis of scientific sources and documents, most of the recommendations for distance learning focus on the same or very similar criteria. Research into the issue of COVID-19 distance learning in different countries has revealed a wide range of factors that can influence the organisation, delivery and thus the learning achievements of distance learning. In the context of the documents and research results analysed, the following factors can be identified as influencing the students' distance learning and learning achievements:

1. socio-economic context (demographic characteristics);
2. IT infrastructure;
3. IT tools and their quality;
4. user-friendly training and learning tools;
5. assessment of achievement and progress in distance learning;
6. learning workload;
7. learning time;
8. feedback;
9. help and support for distance learning;
10. effective teaching and learning methods;
11. digital education content, and its delivery.

3.3. The Impact of COVID-19 on Economic Processes in Education

Due to the emergency situation during the COVID-19 pandemic, 188 countries decided to close their schools at the beginning of the first wave of the pandemic (February–March 2020). The intention was to to stop face-to-face education, affecting about 1.5 billion (about 91%) of students worldwide. The world has never experienced such a dramatic impact on human capital. The consequences of COVID-19 on the economic, social and political indicators, although not yet fully known and difficult to predict, are, according to many authors and international organisations, sure to be dramatic [1].

Some authors argue that as we move beyond COVID-19 into the recovery phase, it will be crucial to reflect on the resilience of education systems and their role in fostering resilient societies, and achieving sustainable development in countries. As a result of COVID-19, many countries have faced similar educational challenges:

- ease of access to education;
- methods and coverage of distance education;
- teacher preparation for distance education;
- readiness of school administrators for rapid changes;
- continuation and completion of the school and the academic year;
- ways of transition to the next stage of learning and studies;
- student employment;
- day care for children;
- problems of feeding pupils from less affluent families;
- extent of falling behind educational programmes;

- learning gaps.

In the midst of the quarantine of the first wave of the pandemic (spring 2020), problems related to socio-economic and health factors affecting education have also become apparent:

- physical and mental health of pupils, parents or guardians, and teachers;
- emotional well-being;
- social well-being;
- digital and social exclusion.

The proportions of partial or total school closures varied between the first and second waves of the pandemic. At the beginning of the first wave, many countries had closed schools completely but during the second wave, most countries tried to keep schools open or at least partially open.

During the COVID-19 pandemic, educational institutions worldwide inevitably had to switch to distance education, which required additional resources from teachers, students and their parents. The economic implications of the pandemic for stakeholders in the education process have been analysed in the scientific literature. In this subsection, we will review studies investigating the challenges posed by distance learning and the associated socio-economic implications.

Sarosa [12] investigated the impact of the perceived risks and perceived costs of distance learning, and the use of information technology for distance learning. It has been argued that distance learning poses particular challenges. It requires the provision of Internet connectivity and appropriate equipment. For example, a regular one-hour video meeting session can use up to 500 megabytes of data. Learners may have between five and more than ten hours of remote meetings. Tele-meetings alone may require 4–5 gigabytes of data to be viewed per week, not including downloading learning materials, preparing and submitting assignments, online tests, self-tests or online exams. A typical mobile Internet package that meets this need would cost a student around USD 8 per month, while a cable Internet package would cost around USD 20 per month. By comparison, the typical minimum wage in Indonesia in 2020 is between USD 127 and USD 225 per month. Some students also used publicly available equipment and facilities and some study participants indicated they had to purchase equipment such as smartphones, laptops and tablets themselves [12].

Nicola et al. [13] analysed the socio-economic consequences of the COVID-19 pandemic. According to the researchers, the long-term effects of school closures are not yet visible. However, based on the experience of the 2009 H1N1 outbreak in Taiwan, when schools were closed for one week, 27% of families were unable to go to work, and 18% lost direct income as a result.

The Brookings Institution [14] analysed the consequences of school closures during pandemics, and found that school closures trigger the following direct economic costs related to childcare. When schools close, parents have to find a way or someone to look after their children, and if alternative childcare solutions are not found, the adults will not be able to work, which will be directly linked to a reduction in income. However, some households will have adults who can combine work and childcare.

The researchers of the Brookings Institution [14] modelled how school closures in major US cities and across the country affected economic spending. The study showed that the average cost per student per week increased to USD 142. As a result, it was estimated that the four-week closure of New York City would cost USD 1.1 billion. A 12-week closure of New York would cost USD 1.1 billion, and a 12-week closure of the whole country would cost 1% of GDP. Additionally, the study examined the direct impact of the closure on health workers with children, and estimated the loss ranging from 6% to 19% of the health workforce in terms of hours [14].

Keogh-Brown [15] suggests that prolonged school closures could cost up to 3% of the UK's GDP. However, Wren-Lewis [36] noted that the 'direct' impact of a pandemic will depend on the number of illnesses and deaths, and on the number of people who have missed work to avoid becoming infected. School closures are said to reduce the labour

supply further if some workers are forced to take time off work to care for their children. Closing schools for about four weeks can increase the GDP impact by as much as three times, and twice as much if they are closed for an entire quarter. However, even if all schools were closed for three months and many people avoided work when they were not ill, the maximum impact on the UK in terms of GDP loss per year would be 5% [36].

According to Nicola et al. [13], COVID-19 has affected:

- social mobility, as schools are no longer able to provide free school meals for children from low-income families;
- social isolation;
- school drop-out rates;
- childcare costs for families with young children.

Additionally, there are significant disparities between higher-income populations with access to technologies that can ensure that education continues digitally in times of social isolation. In Dubai, for example, 13,900 people signed a petition to reduce independent tuition fees by 30% because parents struggled to access these funds following recent salary cuts of up to 50% and high living costs.

According to a representative survey of the Lithuanian population [37], around 33% of families with school-age children had seen their costs increase as a result of distance learning, with 10% of them reporting a significant increase. Another 35% of respondents said that their costs related to their children's education remained similar. Only 20% of parents said that they were pleased that this budget line has decreased. The Telia survey also shows that 26% of responding households bought computers for their children, followed by 27% who bought computer accessories, and an additional 15% who bought tablets. The purchases directly impacted the families' spending: 20% of families with school-age children bought more modest computer equipment or accessories, spending up to EUR 150. A further 20% budgeted for new equipment between EUR 151 and EUR 500, while 13% of respondents budgeted EUR 500 and over.

Meanwhile, 4% of households spent more than EUR 900 on distance learning. The OECD [34] states that distance learning is available to children who have access to a broadband connection at home that is fast enough to support distance learning. There are still geographic areas and populations that lack sufficient Internet connectivity to support seamless distance learning. These include rural and remote areas, and low-income families. For example, in many OECD countries, less than half of rural households are located in areas with sufficiently fast fixed broadband connections. In addition, children need access to devices such as computers and the necessary software to participate in online learning activities, which is often a challenge for lower-income households.

During the COVID-19 pandemic, the switch to distance education meant some students could not receive sufficient hours of instruction. For example, 71% of state-school children in the UK did not receive any distance learning lessons, or fewer than one daily while in Germany, only 6% of pupils attended online lessons daily and for more than 50% it was less than once a week [16]. Some economists estimated that as a result, by autumn 2020, students in the United States would resume school with an average learning achievement of around 70% of a normal school year and that mathematics achievement may be even lower. In the case of mathematics, the percentage of students with a high school diploma is as low as 50% [38]. It is therefore important for education policymakers to understand the factors that have prevented some children from receiving sufficient education. This is in addition to a lack of infrastructure, adequate preparation in schools and among teachers and in some cases, a lack of curriculum guidance. These elements have also led to wide variations in the quality of online learning across schools and countries. Without corrective measures, the disparities in educational outcomes between socio-economic groups will likely increase. In the United States, for example, more than a third of students have been excluded from online learning altogether, especially in schools with large numbers of low-income students.

In contrast, elite private schools experienced almost total attendance [39,40]. Data from the UK showed that children from affluent families spent 30% more time studying at home than children from poorer families during school closures. Their parents reported that they felt more able to support them socio-economically [41].

According to the Data Europa EU website [42], three requirements need to be met to make the transition to distance learning:

- access to the Internet;
- the right technology;
- skills of using the technologies.

It should be noted that the digital infrastructure is not as advanced everywhere as in Europe. Global estimates show that 826 million students do not have a computer at home, 706 million do not have Internet access, and 56 million do not have mobile 3G or 4G network coverage. Families without access to the Internet are severely disadvantaged in times of crisis, and this is often the case in already deprived homes. For example, the International Telecommunication Union (ITU) estimates that 82.2% of households in Africa lack Internet access at home. In addition, past health problems, most recently the Ebola outbreak, have shown that the most substantial impact on education is likely to be in countries with already low learning outcomes and high drop-out rates [42].

According to international organisations, it is also essential to have a quiet place to study and a device to work with in addition to Internet access. Families with several children who need online learning may not have a dedicated device per child, making it difficult to keep track of all lessons. Again, there are significant differences between socio-economic groups, according to a report published by the OECD based on data from the Programme for International Student Assessment among 15-year-olds. More than 95% of students in many European countries say that they have a computer for homework. Around 91% say they have access to a quiet place to study. However, in Indonesia, for example, only 34% have a computer, and only 70% have access to quiet study space [35].

In the UK, research shows that low-income parents and guardians are stressed by the closure of schools and distance education [43]. They are much more stressed and worried about home education and household finances than parents and guardians living in better-off homes. The study found that:

- Low-income families were twice as likely to say they lacked the needed resources for home-schooling, and 40% said they lacked at least one essential facility.
- Low-income families are more likely to buy learning resources than those with higher income levels. Around 33% of respondents had to buy a laptop, tablet or other device.
- Around 33% of all responding families reported that they enjoyed learning at home. These families were much less likely to report money-related worries or a lack of resources. Families who were worried about money were more likely to say that they found it difficult to continue their activities while home-educating their children.
- Children and young people appreciated the opportunity to communicate with their teachers online.
- Secondary school pupils tended to say that they did more schoolwork at home if they had been in regular contact with their teachers. Schools provided the necessary resources for students who had to do more work at home.
- Socio-economic background did not significantly impact the parents' attitudes towards returning to school. Regardless of income, the most crucial factor for many parents and guardians was the emotional support provided by their schools.

A study on the socio-economic impact of COVID-19 on children was carried out in North Macedonia [44]. The cuts in financing resulted from school closures (projects requiring physical presence for different target groups, inclusive education with teachers physically present, etc.). On the other hand, funds to improve the standard of living of pupils and subsidies to municipalities—for material costs and salaries of school staff—increased by 5.3% and 0.3%, respectively. Given that the equipment needed for learning

was mainly borne by the schools (computers, Internet, software, etc.), the additional material resources provided through subsidies were very modest. Education expenditure was essential for schools to continue providing teaching and learning services within the constraints and precautions of COVID-19.

In contrast to the financial cuts on education, the overall social security spending remained broadly unchanged. While this is positive, in reality it may represent a lack of direct children-related policy measures with fiscal implications. The expenditure on social protection for children fell by 0.8%.

It should be noted that one of the most important aspects of support for students and learning opportunities is access to education. Given that unequal access to education and learning resources has been observed in the pre-dating and early stages of a pandemic [36], it is important to understand what barriers children face during the pandemic. Access to education is a multifaceted issue, with the access to technology and educational resources to support learning for all students and teachers only being one aspect. Other aspects include a facilitated learning environment, quality of learning, and other individual and environmental variables. This analysis, therefore, examines the availability of the Internet, technology and other educational resources for teachers and students during a pandemic as well as learning methods and approaches, and ways to support children's learning during a pandemic. Some teachers did not have access to the necessary equipment (e.g., computers) to organise distance learning successfully. The same problem was observed among the families of students attending school. Around 10% of teachers reported that they did not have a computer and only used a tablet or phone to communicate with students. In addition, a large proportion of teachers (42%) had unstable or limited Internet access problems. The survey revealed technical problems from the parents' point of view. The results showed that the children had to share a computer with other family members during distance learning (37% of respondents), did not have a printer to print out the assignments (37%), had poor Internet connection (13%), and faced other technical issues using communicational platforms such as Zoom (36%) [44].

Ehleret [45] analysed the socio-economic factors of COVID-19 in different German regions. The study examined the association of socio-economic, demographic and health-related variables at the regional level with COVID-19-related cases and deaths in Germany during the so-called first wave until mid-June 2020. A total of 401 regions were included in the multidimensional spatial model that took into account the regional inter-relationships and possible spillover effects. The socio-economic consequences of the quarantine measures taken in almost all countries to contain the pandemic were severe, and their long-term evolution is not yet foreseeable. At present, except for a few flagship countries or regions, there is still no universal vaccination (around 160 million vaccinated worldwide by 12 February 2021) and, therefore, no effective herd immunity. This increases the pressure to empirically assess the prevailing contact limitations and thus to develop and implement targeted and effective policy measures for the future. Current clinical and epidemiological studies mainly deal with the individual risk factors for infection or the probability of survival. Although these studies have a strong ad hoc influence on government quarantine measures, until now, there are only a few studies on the socio-economic and region-specific factors associated with the spread of COVID-19 at the ecological level (after taking control of the initial regional epidemic surge) [45].

Buja et al. [46] analysed the demographic and socio-economic factors associated with COVID-19 in western Italy. Ginsburgh et al. [47] studied the association between COVID-19 and the economic conditions in France. Hanushek and Woessmann [48] analysed the potential long-term economic impact of the closure of educational institutions during the years of the COVID-19 pandemic. Pupils who dropped out due to the pandemic will face a long-term loss of income in the future. The economic value of learning relates to the cognitive skills that are acquired in the learning process. People acquire specific skills through education, so education is vital for productivity and efficiency. In the process of education, learners acquire the knowledge and skills to innovate, which in turn leads to

technological and economic progress in the country. The authors note that research shows a strong correlation between the skills acquired and labour market earnings. It is estimated that the losses associated with the prolonged closure of schools will result in a 2.6% loss of income over the entire career of the current students. Estimated losses due to this one-third of a year closure exceed 3% in the United States and 5.6% in Singapore. These estimates represent the lowest anticipated level of the impact of learning loss. In addition to earnings potential, better skills are also significantly related to the likelihood of entering the labour market. The authors suggest that each additional year of schooling increases the lifetime earnings by 7.5–10% on average. Therefore, losing one-third of the learning time during a single school year is likely to reduce the subsequently earned income by around 3%. Learning losses can lead to lower qualifications in the workforce; this means that a less skilled workforce will result in lower growth rates for the national economy. An estimated loss of one-third of a year of effective learning will reduce a country's GDP by an average of 1.5% over the rest of the century. Moreover, if the return to contact education does not result in the pre-pandemic educational standards, the impact on future economic welfare will be proportionately even more significant [48].

Khan and Ahmed [49] conducted research that analysed the impact of COVID-19 on learning loss, school drop-out rates and the economic costs in terms of foregone earnings for children in Pakistan. The authors argue that school closures could significantly increase the drop-out rates, which in turn could have negative long-term economic consequences such as lower income, well-being and growth.

Kuhfeld et al. [50] analysed the economic and related social impacts of COVID-19. They distinguished effects such as an increase in the stress level of families due to economic uncertainty and job loss, fear of contracting a life-threatening virus and the psychosocial impact, isolation, disruption of daily life and loss of work. Consequently, this could lead to a lack of food, domestic violence and abuse against children, and limited opportunities to purchase the essential goods needed for a child's education.

After summarising the analysis of the scientific sources and documents carried out for this article, it can be stated that the studies on the issues of distance learning caused by COVID-19 in different countries have revealed many different factors that can affect the organisation and implementation of distance education and the learning results. After grouping the presented factors, it can be stated that the factors influencing learning outcomes are concentrated in three large groups: (1) socio-economic context, (2) IT infrastructure, tools and their quality, and (3) educational activities. In these groups, 13 criteria were distinguished and detailed into factors (indicators), which can be supplemented according to the existing school context (see Table 1).

Table 1. The criteria, factors and indicators influencing distance learning.

Group of Factors	Criteria	Indicators (Factors)
Social and economic context	Residence	City, village, countryside, etc.
	Family social status	Education, engagement in the labour market, family status
	Family economic status	Financial incomes
IT infrastructure, tools and devices, and their quality	Technical equipment	Internet, servers, etc.
		Internet connection quality at school and at home.
	School distance teaching and learning environment User-friendly learning tools	ZOOM, Teams, etc. Hosting learning resources (for students and parents) in the Cloud, e-portfolio etc. Access and availability of group work and chat rooms

Table 1. *Cont.*

Group of Factors	Criteria	Indicators (Factors)
	Provision with IT tools and devices	Personal computers, tablets, headphones with microphone, devices specially adapted for students with special needs, e-mail account, etc.
	Quality of the IT tools and devices	Quality equipment needed for communication
		Quality of computers
Educational activity	Assessment and evaluation of student achievements and progress in distance learning	Monitoring and presentation of student learning results
	Learning workload	Learning time and duration, scope
	Feedback	Means, ways and frequency of providing feedback
	Student assistance and support	Student assistance, and support means and tools
	Effective teaching methods	Use of methods intended for distance learning
	Learning content and its availability and accessibility	Delivery and availability of teaching and learning content

4. Conclusions

After summarising the educational research reviewed, the following can be concluded:

As education has moved from face-to-face teaching and learning in schools to distance learning, schools have been faced with the new challenges of:

- how to organise the distance learning process;
- how to ensure the quality of teaching and learning;
- how to measure the impact of the distance learning process on student learning achievements.

There has been a great deal of research in this area, and many factors have been identified as affecting student learning. However, there is a lack of comprehensive research on the effectiveness and impact of distance learning on the students' academic performance due to the short timeframe.

It has been noted that all the studies that have already been carried out have some limitations. This is due to the fact that all of them investigated the issues through the prism of the subjects selected for the study, which were the parents, teachers and students—in other words, their views on the problems.

Attitudinal studies are appropriate for highlighting problems. However, to assess the change in student learning achievements before and during pandemic distance teaching and learning, it is necessary to analyse not only the attitudes, but also changes in the student's knowledge assessments (e.g., by carrying out an analysis of school records documenting the changes in the student's grades).

Research into the issue of COVID-19 distance learning in different countries has revealed a wide range of factors that can influence the organisation, delivery and therefore the learning achievements of distance learning. In the context of the documents and research results analysed, the following factors can be identified as influencing the students' distance education and learning achievement:

- socio-economic context (demographic characteristics);
- IT infrastructure, IT tools and their quality;

- user-friendly learning tools;
- the assessment of achievement and progress in distance learning;
- learning workload, learning time;
- feedback, help, and support for distance learning;
- effective learning methods.

The proportions of partial or total school closures varied between the first and second waves of the pandemic. At the beginning of the first wave, many countries had closed their schools entirely, but in the second wave, most countries tried to keep their schools open or partially open.

The analysis of the socio-economic consequences of distance education during the COVID-19 pandemic makes it possible to distinguish between microeconomic and macroeconomic consequences. From a microeconomic point of view, the most common consequences are:

- an increase in household costs;
- an increase in the household expenditure;
- additional costs to educational institutions to ensure infrastructure;
- a reduction in the parents' income due to the time they had to devote to support their children's studies;
- additional working time for teachers;
- an increase in the household costs due to health concerns (due to reduced physical activity, emotional health, visual impairment).

From a macroeconomic point of view, the following consequences can be identified:

- additional costs to educational institutions to ensure infrastructure;
- a decrease in the income of students as future labour market participants;
- a decrease in the qualifications of students as future labour market participants;
- a decrease in the country's economic growth (impact on GDP; innovation; productivity);
- an increase in public expenditure to compensate for learning losses (government grants, subsidies, etc.);
- an increase in the public expenditure due to health problems (due to reduced physical activity, emotional health, visual impairments).

The literature analysed lacks research on the expenditure made on tutors, psychologists and other additional services to make up for educational losses.

Although the Baltic States have experienced one of the fastest economic growth rates compared to other EU countries during the pandemic, distance learning for children has created new problems. These include a lack of socialisation, a drop in the students' level of knowledge, problems of integration into the classroom, the psychological problems of students and additional costs for the acquisition of necessary equipment.

The research findings have practical applicability at the micro and macro levels. Educational policymaking institutions can make decisions and prepare appropriate measures to reduce the adverse effects of distance learning. At the micro level, schools can also evaluate their situation based on the identified factors to assess their situation and make the necessary decisions and take measures. The study results will also be helpful for the parents of schoolchildren, ensuring smoother learning; the identified factors and their indicators can be used in conducting scientific research in a broader context. We agree with the above research results and the statements made by the researchers. Still, we emphasise that the relevance and expression of the factors summarised and isolated in our study are determined by national, regional and local contexts. The analysed scientific sources focused on the problems of education organisation and execution in the context of the COVID-19 pandemic. However, further research is required to study and detect factors such as physical activity, social communication and the psychological state of students, which may affect the student's learning achievements.

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