Article

An Assessment of the Impact of Distance Learning on Pupils' Performance

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Abstract: Distance education has influenced the organization of education at the level of systems and schools, the change in the specificity of teachers' activities, the change in pupils' learning, and, undoubtedly, the attainment of learning outcomes. The aim of this study is to determine what factors have affected pupils' learning outcomes in the course of distance learning during the COVID-19 pandemic, from the perspective of pupils, pupils' parents, and teachers. A quantitative study was conducted in order to reveal the impact of distance learning. The positive and negative aspects of distance education became clear. As regards the negative consequences of distance teaching/learning, the results of the study showed that in the teachers' opinion, the pupils' learning outcomes generally deteriorated. The positive factors of distance learning influencing the learning process and thus learning outcomes were a comfortable environment, the possibility to use a variety of learning aids available at home, and the possibility to view the lesson records at a time convenient for pupils.

Keywords: COVID-19 pandemic; distance learning; factors influencing distance learning

1. Introduction

The COVID-19 pandemic has invited a new reality to our lives. The process of globalization has led to not only positive but also negative phenomena, one of which is the COVID-19 pandemic, which has more or less impacted all the countries of the world and all areas of life. Education is no exception in this context. The COVID-19 pandemic and distance teaching/learning have already become synonymous in the education systems. The COVID-19 crisis has undoubtedly affected pupils' learning process, learning outcomes, pupils' emotional state, as well as their families' social and economic well-being.

When the infections peaked in the first half of 2020, around 91% of the world's learners were quarantined and displaced from their regular place of education in an effort to curb the spread of the virus [1]. The OECD estimates that by June 2020, 80% of Member States and partner countries had already resorted to a school closure of a particular level for more than three months, which is around one-third of the average school year [2]. Some authors state that home schooling has become a big shock not only for students, but also for their parents, affecting the productivity of parents' activities and children's social life [3].

At its peak, UNESCO reported that nearly 1.6 billion learners in more than 190 countries, or 94 per cent of the world's pupils, were affected by the closure of educational institutions [1]. During the pandemic, education, in order to respond to its mission, had to shift from direct contact in the teaching/learning process at school to distance teaching/learning. UNESCO points out that distance learning is used as a synonym for distance education and describes it as an educational process "in which all or most of the teaching is conducted by someone removed in space and/or time from the learner, with the effect that all or most of the communication between teachers and learners is through an artificial medium, either electronic or print". A communication using information technologies is a key aspect of distance learning. Distance learning offers more flexibility, creates a

learner-centered approach and new ways of interacting. New opportunities for professional development in the workplace emerge for teachers. In addition, distance learning for teachers is ultimately related to the development of a new learning culture. Nevertheless, distance learning requires additional costs and changes in the timing and structure of training [4]. During distance education, not only teachers but also students face challenges such as infrastructural, institutional, and personal aspects. Infrastructural aspects are related to computer hardware, software, and Internet connectivity issues. Institutional aspects may include teacher preparation for fluent use of information technology and financial capacity. Personal aspects relate to the student's personal qualities, such as self-discipline and ability to concentrate, and having a suitable learning environment at home and the necessary tools for distance learning [5]. Such dimensions, as course content, interaction, skills, performance evaluation; and facilities are critical for the successful implementation of distance learning [6].

Although a small number of schools had used distance or hybrid teaching/learning in their activities, this was more of an exception rather than a regular practice. As a result, schools have faced a new challenge: how to organize the teaching/learning process remotely, how to ensure the quality of teaching/learning, and how to measure the impact of distance teaching/learning on pupils' learning outcomes. When researching learning achievements of Dutch primary school students in mathematics, spelling, and reading, Engzell et al. [7] found that the students performed worse than usual during the pandemic. The report by the Education Endowment Foundation (2020) refers to eleven studies which provide evidence of a negative impact of school closures on students' academic achievement in 2020 [8].

In the context of the pandemic, things that had been the focus of international research on education for many years (e.g., PISA) became even more apparent, namely the importance of the socio-economic context and its impact on pupils' learning. This is also reflected in the results of various studies carried out in different countries.

Saavedra [9] argues that children growing up in poor countries and families will feel the significant negative consequences of the pandemic in the future. The pandemic will negatively affect students' educational achievements, will lead to an increase in the number of students who have not finished school, and will cause health deteriorations due to poor nutrition.

Engzell et al. [7] also note that educational achievements of children from socially disadvantaged families deteriorated significantly.

Donnelly and Patrinos [10] conducted a systematic analysis of the literature to assess the impact of distance teaching/learning on pupils' learning progress. They found eight studies on this topic, seven of which found evidence of pupils experiencing learning setbacks in the course of distance teaching/learning. In addition, in four of the studies found, an observation was made that certain demographic groups of pupils experienced more significant learning setbacks (a decline in learning outcomes) than respondents with other demographic characteristics. In this study, two clear results were brought to light: (1) the pupils suffered learning setbacks (a decline in learning outcomes) and (2) the demographic characteristics of the pupils (i.e., the pupils' place of residence, the family's socio-economic situation) also contributed to this.

Similar results were shown by Hattie [11] and Gandolfi et al. [12] arguing that the COVID-19 pandemic highlighted differences in the availability and quality of learning technologies in the U.S. education system. Low-income and ethnic minority pupils and families were particularly disadvantaged when they did not have full access to the hardware and software technologies that support teaching/learning. Andrew et al. [13] propose that policymakers must be prepared to compensate for these obvious differences with consideration of a family's economic status; otherwise, the educational achievement gap between rich and socially disadvantaged families will increase even further.

The results of the authors' study show that COVID-19-conditioned distance teaching/learning was a source of the growing digital divide in communities [14].

The inequalities in the socio-economic context and among pupils belonging to different demographic groups are also addressed in the OECD report, which states that those who come from privileged families will easily find a way to address the gaps caused by distance teaching/learning by finding alternative learning opportunities. Conversely, if a school is closed, individuals from families with unfavorable socio-economic contexts will remain "locked" only with what is provided by the school [1].

This crisis has exposed many aspects of inequality in education systems across countries, ranging from the fast Internet connection and computers needed for online teaching/learning to the enabling environment needed to focus on learning and the competencies of education leaders at different levels to organize distance teaching/learning and teachers to deliver distance teaching/learning.

Zhao et al. [15] studied the impact of distance teaching/learning at home during the COVID-19 pandemic on children in grades 1 to 9, their parents, and teachers in China. The study found that 76% of respondents (parents) found home-schooling to be acceptable. However, teachers were concerned that pupils' involvement, focus, and academic performance would deteriorate. About 69% of parents reported that their children spent more than 3 h a day in front of the screen compared to their normal outdoor physical activity time, and 82% reported that physical activity time was less than 2 h. 95% of parents were concerned about their children's vision. In addition, 17.6% of pupils were found to have emotional or behavioral problems based on the parental assessed strengths and difficulties questionnaire (SDQ) scores. The results of one's own Anxiety Self-Assessment Scale (SAA) showed a higher level of anxiety than normal in the parent–teacher population [15].

Thus, it can be observed that although parents were positive about distance teaching/learning, they were still worried about the possible negative consequences of this type of teaching/learning.

Korzycka et al. [16] discovered that during the COVID-19 pandemic, all Polish schools were closed and obliged to conduct classes remotely. In their study, the authors conducted a demographic analysis of the difficulties of distance learning during the coronavirus pandemic in Poland, from the point of view of pupils.

More than half of the teenagers surveyed rated the teacher's increased demands on their learning as a major problem. A major problem in their view was the much higher demands and poor organization of distance learning. Technical difficulties and insufficient skills in using software for distance learning were also mentioned. The main conclusion of the study was that particular attention should be paid to the organization of appropriate technical conditions for distance learning, especially in rural areas, where pupils complained more often, than in urban areas, about equipment and problems with access to the Internet during the pandemic [16].

Abuhammad [17], investigating parents' views on barriers to distance teaching/learning, found that distance learning brought to light the following barriers:

- Barriers at personal level: lack of training and support, lack of technical knowledge, insufficient communication with professionals, and lack of qualifications.
- Technical barriers: insufficient investment in and maintenance of computer equipment and lacking Internet connectivity.
- Logistic barriers: lack of pupils' readiness, dissatisfaction with distance learning as a method, pupils' learning needs cannot be met in the course of distance learning, lack of flexibility.
- Financial barriers: inability to purchase appropriate technology for distance learning and inability to pay for Internet services.

Huang et al. [18] analyzed the organization of distance learning in China, suggesting that distance teaching/learning during the COVID-19 outbreak was based on a distance learning strategy. It highlights six important aspects: (a) infrastructure, (b) learning tools, (c) learning resources, (d) teaching and learning methods, (e) services to teachers and pupils, and (f) cooperation between schools and the government.

Timmons et al. [19], sought to unveil the unique challenges of distance education in kindergartens and primary schools. Data analysis revealed five important themes affecting pupils' learning outcomes: equal opportunities, synchronous and asynchronous teaching and learning, social and emotional impact on pupils, impact on academic achievements, and impact on parents/families. Blasko et al. [20] found that learning conditions at home and parents' socio-economic status had a significant impact on students' educational achievements during the COVID-19 pandemic. Barlovits et al. [21] study revealed what problems German and Spanish teachers encountered in mathematics lessons. Koskela et al.'s [22] study showed that the relationship between teachers and parents is particularly important for a smooth transition to distance learning. Kruszewska et al. [23] revealed that during distance education, teachers have problems with such things as the lack of students' information technology equipment, communication with students and their parents, students' motivation, and deteriorating health conditions of children. Nevertheless, positive aspects of telework were also observed, such as the gained teleworking experience and the application of new teaching methods.

A decline in educational achievement is also observed in the United States. It is said that due to the COVID-19 situation, the average learning achievement will be about 70% of the average year in science, and the math achievement may be even lower—50% [24].

Daukšienė et al. [25], summarizing the results of previous research, SELFIE self-assessment tool and the research conducted by foreign scientists already this year, singled out the following areas of activity where, in order to make distance education effective, changes must be made when the school starts preparation for distance education: 1. strategy, management, and administration; 2. information technology (hereinafter referred to as IT) infrastructure; 3. digital learning content; 4. digital competencies and continuous professional development; 5. teaching, learning, and assessment in the digital environment; 6. assistance system for pupils and teachers; 7. partnership, cooperation, and networking; 8. quality assurance [25].

Various aspects regulated by official documents and the specificities of education institutions play a key role in ensuring the quality of distance learning [26–28].

Summarizing the analysis of scientific sources and documents carried out in this article, it can be stated that the research on the problem of distance teaching/learning caused by COVID-19 in different countries has revealed many different factors that can affect the organization and conduct of distance learning and, at the same time, learning outcomes. By grouping the presented factors, it can be stated that the factors that can influence learning outcomes were concentrated on three large groups/characteristics (1. socio-economic context; 2. IT infrastructure, tools, and their quality; 3. educational activities), in which 14 criteria were singled out (Table 1).

Table 1. The factors that influence learning outcomes.

Characteristic	Criteria
Socio-economic context	Place of residence
	Social status of the family
	Economic situation of the family
IT infrastructure, tools and their quality	User-friendly learning tools
	School's distance learning environment
	Computer hardware
	Availability of IT tools
	Quality of IT tools
Educational activities	Assessment of performance and progress in distance learning
	Learning workload
	Feedback
	Pupil assistance and support
	Effective teaching methods
	Learning content and its accessibility

A survey instrument, a questionnaire, was constructed on the basis of Table 1.

With consideration of the problems detected during the analysis of scientific sources, the study identified two challenges:

1. To reveal the factors that influenced pupils' learning outcomes through distance learning from the perspective of pupils' teachers.
2. To reveal the factors that influenced pupils' learning outcomes through distance learning from the perspective of pupils.

2. Materials and Methods

2.1. Survey Sample

Survey respondents are Lithuanian school teachers, pupils, and their parents. The sample of pupils was selected only from senior grades, from 5th to 11th. The sample was calculated using the roasoft.com spreadsheet by entering the 95% confidence interval and 5% dispersion interval into it, which is appropriate for social science research to form a representative sample.

On the basis of the obtained sample calculation results, the survey data collection was carried out with 478 pupils and 78 teachers, which corresponded to the sample envisaged in the survey sample calculation. Quantitative survey data were collected from children and teachers in Kaunas city gymnasiums and progymnasiums. All respondent groups participated in the study on a voluntary basis. Parental consent with pupils' participation in the study was obtained. The survey data were collected between January and February 2022.

2.2. Research Instrument

A quantitative research method was selected for the research. Quantitative research may be considered as a way of thinking about the world [29] and focuses on measuring variables, testing hypotheses, and explaining the relationships [30]. Quantitative research methods allow obtaining objective, accurate, statistically reliable, and easy-to-process data that can be reasonably and reliably interpreted. The most popular designs for quantitative methods are experiment and survey. This study uses a survey research design. The selected research design allows to reveal the attitude, behavior, factors, and effects of individuals. Survey research design is convenient in that a large population can be described from a small group of individuals, and data collection is quick and convenient [31,32].

The research data collection method is a written survey. The research instrument was designed on the basis of three characteristics and fourteen criteria identified during the analysis of the scientific literature (see Table 1). Two separate questionnaires for teachers and pupils were developed to collect the survey data.

33 questions for teachers and 36 for pupils, which reflected the factors identified in the scientific literature that could influence pupils' learning outcomes during the COVID-19 pandemic-related distance learning.

Since 5-point Likert scale was chosen to measure the variables, the response options on the scale ranged from 1—"least important" to 5—"most important".

Questions related to the demographic characteristics of the respondents (e.g., age, gender, place of residence, subject taught, etc.,) were also included in the questionnaire. For most questions, the 5-point Likert scale was used to measure the variables. Several open questions were also included in the questionnaire in order to find out the reasons behind the selected answer.

The reliability of the questionnaires was evaluated using its internal consistency of the questionnaire items estimating the Cronbach's alpha value. The calculated Cronbach's Alpha for the teachers questionnaire is 0.889, and for pupils questionnaire is 0.952, which are adequate for social science research and indicate the internal consistence of the questionnaire.

Respondents filled in the questionnaires provided to them on the online survey platform apklausa.lt.

2.3. Research Data Processing Logic

Access to research data processing was determined by the research tasks, the specificity of the research instrument, and the specificity of the research itself.

The processing of the quantitative research data was carried out in the following stages: overview of the overall situation of the survey data by variables. The method of descriptive statistics was used to calculate the mentioned frequencies and percentages. In particular, a calculation of the response rate for each variable block was carried out in order to provide an overview of the overall situation of the survey data. Mean calculations summarize the means of the responses for each variable. Mode calculation enabled to distinguish the most frequently mentioned response options for each variable. The calculation of the standard deviation allowed to see the variation in the range of responses for each variable. Stage II: identification of statistically significant differences between independent variables. The cross-tabulation table (crosstab function) method was used. Moreover, this step of survey data processing was aimed at looking for a statistically significant difference between the respondents participating in the study in different blocks, according to the demographic characteristics distinguished in the research instrument. A mono-factorial variance analysis (ANOVA) was selected as the method of realization of this step. In this study, a statistically significant difference was considered when $p < 0.05$. Stage III: summary of the research data. The method used is descriptive statistics.

2.4. Limitations

Respondents from a single Lithuanian city Kaunas were interviewed in the survey. Only pupils and teachers were included in the survey. More stakeholders, such as pupils' parents, policy, and decision-makers could be included. Distance learning impact on IQ, mental and physical health of pupils and economic aspects were not taken into consideration in this study.

3. Results

3.1. Demographics

A total of 78 respondents participated in the teacher's survey, of which 85% were women and 15% were men. Survey respondents teach various subjects. The majority of the surveyed teachers (15%) were Lithuanian language teachers, 12.8% English language teachers, and 7.7% mathematics and physical education teachers.

A total of 478 pupils took part in the pupil survey, 52.7% of whom were girls, 45.4 percent were boys, and 1.9% did not specify their gender. The distribution of respondents by age was as follows: 43.3%—11–13 years, 31.4%—14–16 years; 22.6%—17–18 years. By grade: pupils of 5–6 grades—34.1%; 7–8 grades—27%; 9–10 grades—13.4%; 11–12 grades—23.2%.

3.2. Results of the Survey of the Factors Influencing Pupils' Learning Outcomes during Distance Learning: From the Teachers' Perspective

Pupils' progress and motivation in distance learning. The results of the survey showed that pupils' performance and progress deteriorated in the course of distance learning. 71.8% of the surveyed teachers say that during distance learning the child's performance and progress situation "deteriorated" and "greatly deteriorated", and only 1.3% "Improved". The assessment of pupils' motivation in distance learning showed that motivation decreased. This was supported by 71.8% of the respondents, and only 1.3% of the respondents said that the motivation "Improved" (Figure 1).

Time spent learning, learning workload, and feedback. The transition to distance learning has resulted in higher time costs. 43.6% of respondents agree and strongly agree that distance learning resulted in increased time costs. However, the rest of the respondents (28.2%) disagree and strongly disagree. In terms of changes in pupils' learning workload, 43.6% of respondents agree and strongly agree that the learning workload has increased, while 30.8% of them disagree (disagree and strongly disagree). Feedback plays an important role in distance learning. The survey results show that 62.8% of respondents agree

and strongly agree that teachers assessed and provided feedback to pupils' parents on a continuous basis, and only 9% of respondents disagree with the statement (disagree and strongly disagree) (Figure 2).
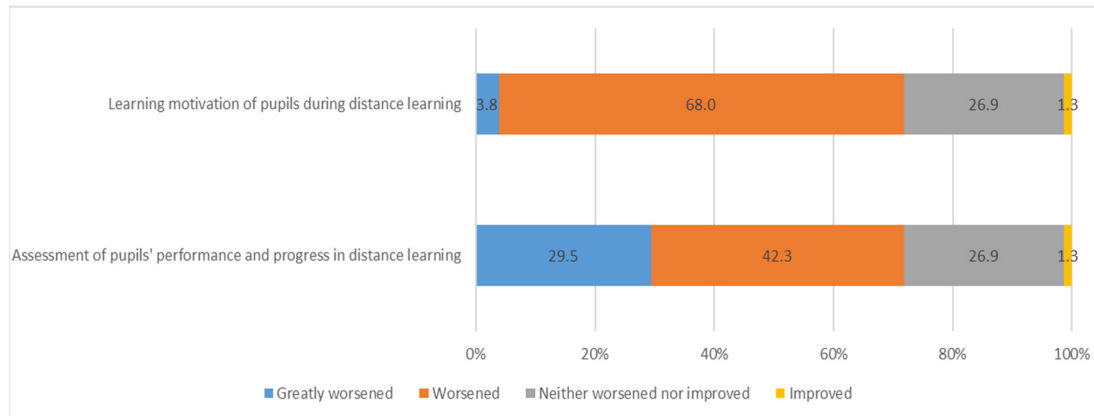
Figure 1. Assessment of pupils' learning motivation and performance and progress from the teachers' point of view.
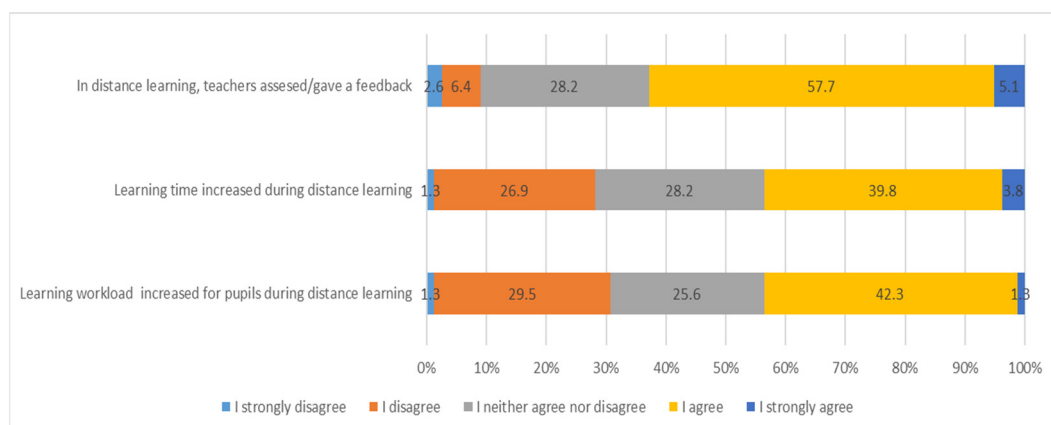
Figure 2. Teacher assessment of learning workload, time, and feedback.

The analysis of the cross-tabulation table (Table 2) shows that there are statistically significant differences between the evaluation of the analyzed statement and the demographic variables, such as the subject taught and education. In terms of changes in pupils' performance and assessment of their progress, teachers of mathematics (17.4%), the Lithuanian language (30.4%) and chemistry (13.4%) are more likely than others to believe that learning outcomes and grades have deteriorated; the English language teachers (24.2%) believe that neither they have deteriorated nor improved; the French language teachers (19%) think that they have improved. Statistically significant differences were found between respondents of different education levels when assessing pupils' learning motivation in distance learning. Teachers with higher education more often than other respondents reported that the motivation of pupils had deteriorated strongly (68%). Assessing the changes in pupils' subject knowledge during distance learning, it was found that teachers with higher education consider that it has deteriorated (95%).

Table 2. Statistically significant differences between the evaluation of the analyzed statement and the demographic variables.

Question	Sex	Teaching Subject	Education
Evaluations of pupils' performance and progress in distance learning	7.706 (0.053)	66.687 (0.022) *	2.933 (0.817)
Learning motivation of pupils during distance learning	0.947 (0.814)	32.263 (0.960)	26.729 (0.000) **
Pupils' knowledge of a subject during distance learning	3.065 (0.216)	32.154 (0.459)	18.885 (0.001) * 5.749 (0.675)
Learning workload increased for pupils during distance learning	6.422 (0.170)	69.237 (0.304)	4.194 (0.839)
Time spent learning for pupils increased during distance learning	2.631 (0.621)	64.248 (0.468)	1.269 (0.996)
Learning motivation of pupils during distance learning	7.195 (0.126)	60.396 (0.605)	2.933 (0.817)
Pupils' knowledge of a subject during distance learning	0.947 (0.814)	66.687 (0.022) *	26.729 (0.000) **
Learning workload increased for pupils during distance learning	3.065 (0.216)	32.263 (0.960)	18.885 (0.001) *

* χ-squared test *p*-value is lower than the significance level α ($\alpha = 0.05$), $p < 0.05$. ** χ-squared test *p*-value is lower than the significance level α ($\alpha = 0.01$), $p < 0.01$.

The aim of the study was to deepen the understanding of the reasons that led to the changes in pupils' achievements and assessments of their progress during distance learning. Respondents' answers to the open-ended question "Please indicate what you think has contributed to this change" allowed to identify the reasons for the negative impact, such as work at computers, lack of self-study skills, lack of honesty and motivation (Table 3).

Teachers who participated in the study stated that the grades for pupils' performance and progress have improved and identified reasons such as "Children feel comfortable, more focused at home", "Maybe it's due to various aids available at home", "The opportunity to record lessons and view them at a time convenient for pupils", "Young people's capacity to make proper use of information technology. Psychologically some of them feel better", "...working in a quiet environment without disturbances". Nevertheless, respondents associate the improvement in performance and progress with unscrupulous behavior ("the conditions for cheating in tests", "...it is likely that when taking tests remotely, they are using notes, information on the Internet", "I think that there was more assistance from parents or other relatives", "...parental assistance; cheating in tests; working in a quiet environment without disturbance").

In order to find out the reasons for the increased learning workload, the surveyed teachers were given an open question "Please indicate the reasons for the increase of the learning workload during distance learning for the pupils". Based on the respondents' responses, the main reasons for the increase in learning workload can be distinguished as: Different capacity to make proper use of information technologies; extra assignments and a greater amount of self-study; work at a computer; lack of time planning; it is not clear whether pupils understood the subject being taught (Table 4).

There were also some respondents who said that the workload had not increased. Statements to illustrate this are given below:

- "The workload for pupils has not increased, due to the limitations of the duration of the classes and the trimming of the content, leaving only the most important things."
- Teachers' professionalism and ability to perfectly plan class time and methodological materials.
- Well-organized distance learning.

- I did my best not to overload the pupils with information.
- Each day of learning and performing the assignments did not increase the workload.
- I used to try to get pupils complete as many assignments as possible during the class, and those who worked diligently completed more assignments.

Table 3. Reasons behind negative changes in assessments of pupils' performance and progress from the teachers' point of view.

Reasons	Justification
Work at computers,	Decreased activity of pupils from too much time spent at the computer, staying constantly at the computer, inability to resist the temptation of playing video games cheating in tests, gaming instead of attending classes
Lack of self-study skills,	"Insufficient work, lack of self-learning skills, lack of willpower" "Lack of self-learning skills of pupils, unscrupulous behavior of pupils and lack of preparation of teachers for such a behavior" "Pupils were unable to learn some things without the help of a teacher
Honesty	"Reduced control and increased chances of cheating", "During the lessons, they would watch videos, when invited to reply, they would pretend that the sound had disappeared, they would turn off the computers, then they would say that the Internet had disappeared . . . ", "Unscrupulous behavior of the pupils and their parents", Inability to force oneself to learn, cheating in tests. The pupil is able to not log in due to supposedly technical problems. Pupils' irresponsibility, cheating in tests.
Lack of motivation	Pupils did not have the motivation to learn independently complete indifference to the learning outcome.

Table 4. Reasons for the increase in learning workload from the teachers' point of view.

Reasons	Justification
Different capacity to make proper use of information technology	More individual work, different pace of work, different individual skills in using IT All teachers gave a lot of extra assignments;
Extra assignments and a greater amount of self-learning	Teachers use class time to present the theory, while practice and application are left for the remaining class time or as homework Persistent work on a computer—texts on a computer screen, more self-study using learning materials Excessive reliance on technology and too much time spent at a computer
Working at a computer	Working at a computer all day is an extra burden that not every young person can bear Lack of time planning capacity Lack of time planning
Lack of time planning	Pupils are not good enough at planning their time, now there are many new tasks that require a computer.
It is unclear whether the pupils understood the subject being taught	Those pupils who are shier do not say they did not understand, in the classroom that could be seen from their behavior, eye contact. Often pupils attend without a video camera, and if they do, not all are visible on the screen when you are showing them something. In addition, the feedback response is much slower

The results of the study showed that teachers encountered problems such as (Figure 3) during distance learning.
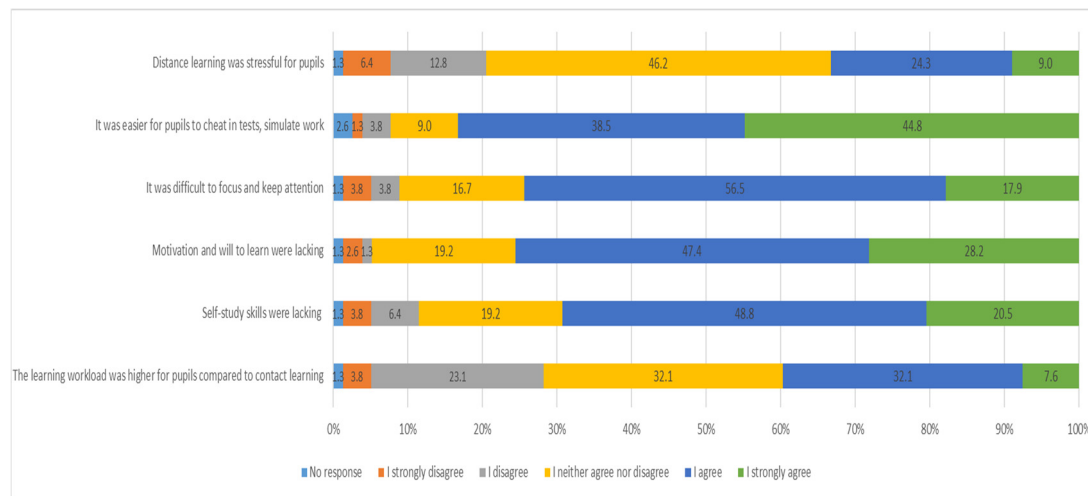
Figure 3. Problems encountered by teachers during distance learning.

- The learning workload was higher than in contact learning. This was supported by 39.7% of the respondents (I agree/strongly agree); not supported by 26.9% (I disagree/strongly disagree).
- Lack of self-study skills. 69.2% (I agree/strongly agree); 10.3% (I disagree/strongly disagree).
- Lack of motivation and will to learn. This was supported by 39.7% of the respondents (I agree/strongly agree); not supported by 26.9% (I disagree/strongly disagree).
- Difficulties in focusing and keeping attention. This was indicated by 74.4% of the respondents (I agree/strongly agree), 7.7% disagreed (I disagree/strongly disagree);
- Cheating in tests and work simulation. 83.3% of respondents agreed (I agree/strongly agree), 5.1% did not agree (I disagree/strongly disagree).
- Distance learning was stressful for pupils. 33.3% of the respondents agreed (I agree/strongly agree); 46.2% were of a neutral opinion, 19.2% disagreed.

The analysis of the cross-tabulation table (Table 5) shows that there are statistically significant differences between the evaluation of the analyzed statement and the demographic variables, such as the subject taught and education. Women are more likely than men to agree (87%) or strongly agree (81%) that there was a lack of self-study skills, while men are less likely than women to agree (14%) or strongly agree (18%) that there was a lack of motivation and will to learn.

Table 5. Statistically significant differences between the evaluation of the analyzed statement and the demographic variables.

Question	Sex	Teaching Subject	Education
The learning workload was higher for pupils compared to contact learning.	8.010 (0.156) *	92.944 (0.153) *	18.699 (0.044) *
Lack of self-study skills	18.751 (0.002) **	68.422 (0.819) *	5.395 (0.863) *
Lack of motivation and will to learn	12.471 (0.029) *	82.333 (0.407) *	3.627 (0.963) *
It was difficult to focus and keep attention	7.727 (0.172) *	63.769 (0.908) *	2.068 (0.996) *
Pupils were able to cheat in tests, simulate work more easily	2.535 (0.771) *	67.872 (0.831) *	2.157 (0.995)
Distance learning was stressful for pupils	9.670 (0.085) *	64.819 (0.891) *	13.419 (0.201) *

* χ-squared test *p*-value is lower than the significance level α (α = 0.05), $p < 0.05$. ** χ-squared test *p*-value is lower than the significance level α (α = 0.01), $p < 0.01$.

3.3. Results of the Research of the Factors Influencing Pupils' Learning Outcomes during Distance Learning: From the Pupils' Perspective

Pupils' knowledge, motivation, and grades. The results of the study revealed that according to the pupils' assessment, their subject knowledge did not change during distance learning (47.7%). 22.8% of respondents indicated that their subject knowledge had deteriorated and 20.5% said that it had improved. In terms of learning motivation during distance learning, 34.9% of respondents indicated that it did not change. However, 42.5% of them reported worsening and complete deterioration, while 14% reported an improvement in motivation. 55.6% of the surveyed pupils believe that their grades have remained stable, 24.7% state that they have improved, and only 13.4% say they have deteriorated (Figure 4).
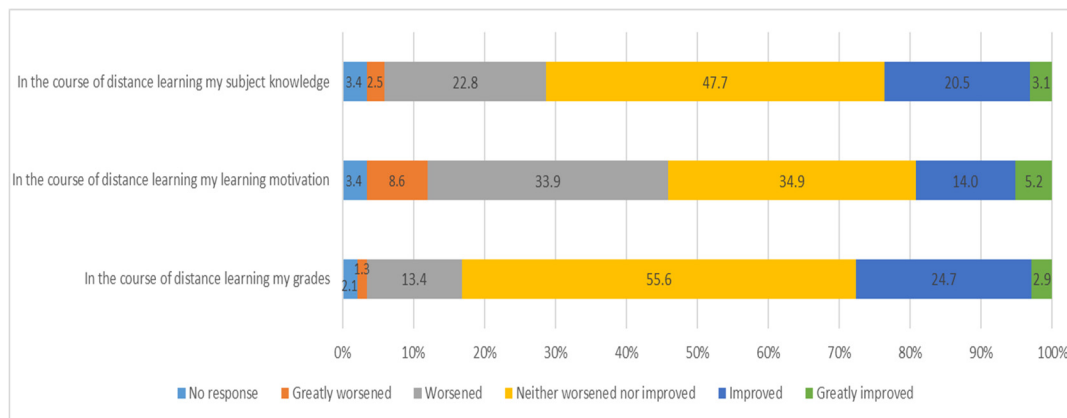
Figure 4. Changes in subject knowledge, motivation, and assessments from the pupils' perspective.

Time spent learning, learning workload, and feedback were also assessed from the pupils' perspective. 34.5% of respondents agree (agree and strongly agree) that the learning workload has increased during distance learning, 36.4% disagree with this statement, and 25.7% of respondents chose neither agree nor disagree. The results of the survey showed that distance learning was more time-consuming. This was confirmed by 39.3% of the respondents (agreeing and strongly agreeing), but 28.7% disagree with this statement and 27.2% of the respondents have not noticed any changes. Through distance learning, the pupils' learning outcomes were also influenced by the feedback provided by the teachers. Assessment of the survey results showed that 57.3% of pupils agree and strongly agree that teachers assessed them and provided feedback to them during distance learning, while only 6.9% disagree with this statement (Figure 5).
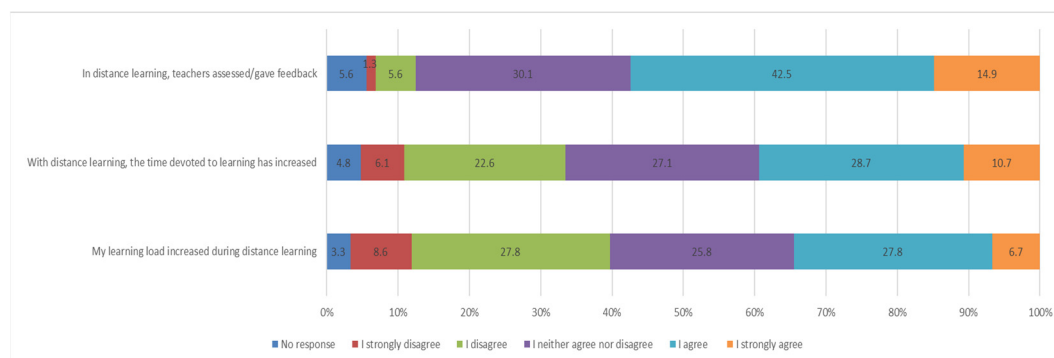
Figure 5. Assessment of the time spent learning, learning workload and feedback from the pupils' perspective.

The analysis of the cross-tabulation tables (Table 6) shows that there are statistically significant differences between the evaluation of the analyzed statement and the demographic variables, such as the sex, age, grade, and place of residence of pupils.

Table 6. Statistically significant differences between the evaluation of the analyzed statement and the demographic variables.

Question	Sex	Age	Grade	Place of Residence
During distance learning my grades	258.763 (0.000) **	371.960 (0.000) **	445.940 (0.000) **	436.033 (0.000) **
Learning motivation of pupils during distance learning	160.824 (0.000) **	282.253 (0.000) **	340.778 (0.000) **	271.947 (0.000) **
Pupils' subject knowledge during distance learning	166.212 (0.000) **	278.792 (0.000) **	332.166 (0.000) **	273.805 (0.000) **
My learning workload increased during distance learning	165.417 (0.000) **	270.560 (0.000) **	315.124 (0.000) **	272.845 (0.000) **
Time spent learning increased during distance learning	121.059 (0.000) **	161.472 (0.000) **	195.389 (0.000) **	191.062 (0.000) **
Teachers assessed/provided feedback during distance learning	96.127 (0.000) **	137.578 (0.000) **	171.707 (0.000) **	160.388 (0.000) **

** χ-squared test *p*-value is lower than the significance level α ($\alpha = 0.01$), $p < 0.01$.

Men are more likely than women to feel that distance learning has improved their learning outcomes (50.8%). Women are more likely than men to feel that their learning outcomes have neither improved nor deteriorated (56%) or greatly improved (57%). In terms of learning motivation during distance learning, women more often than men reported that their motivation had greatly deteriorated (61%). Women were more likely than men to say that their knowledge of the subject had deteriorated (58%). Men were more likely to report an improvement (57%). When looking at the increase in learning workload, men were more likely than women to agree that there was no increase at all (63.4%), while 58.6% of women agreed that there was an increase.

Assessing the distribution of responses according to the age of the respondents, it was found that pupils aged 11–13 years more often than others believe that the grades have greatly deteriorated (50%), and their motivation for distance learning has improved in the course of distance learning (67%). Pupils aged 11–13 are more likely than others to feel that their workload has not increased (56%), respondents aged 14–16 agree that it has increased (39%), and respondents aged 17–18 strongly agree (40%).

Problems encountered by pupils during distance learning. The assessment of the pupils' responses showed that respondents were more likely to miss communication with friends (18.8% agreed, 29.5% strongly agreed), difficulty focusing and maintaining attention (23.6% agreed, 24.5% strongly agreed), a large number of self-study assignments (27.2% agreed, 19.5% strongly agreed), and lack of motivation and will to learn (23.0% agreed, 21.8% strongly agreed). Respondents more strongly disagreed with statements such as the difficulty of observing the daily routine (25.5% strongly disagreed, 17.4% disagreed), distant learning was stressful (29.9% strongly disagreed, 16.1% disagreed), lack of feedback after examinations (22% strongly disagreed, 25.7% disagreed), lack of individual work skills (27.2% strongly disagreed, 25.9% disagreed), Figure 6.

Men were more likely to strongly disagree (30.4%) that it was difficult to comply with the daily routine, distance learning was stressful (38%), women strongly agreed that there was a lack of communication with friends (36.7%), that it was easier to cheat in tests or imitate work (25%), strongly agreed that it was difficult to focus and maintain attention (25%), agreed that there was a lack of motivation (28.2%), and agreed that there was large

number of self-study assignments (31%). 28.6% of men disagreed that there was a lack of feedback from teachers and 37.8% disagreed that distance learning was stressful (Table 7).

Table 7. Statistically significant differences between the evaluation of the analyzed statement and the demographic variables.

Question	Sex	Age	Grade	Place of Residence
It was harder to learn without a direct contact with teachers	103.181 (0.000) *	168.116 (0.000) **	200.371 (0.000) **	152.741 (0.000) **
Learning workload was higher compared to contact learning	81.059 (0.000) **	155.620 (0.000) **	177.340 (0.000) **	127.098 (0.000) **
Lack of self-study skills	87.44 (0.000) **	130.105 (0.000) **	153.326 (0.000) **	145.133 (0.000) **
Large number of self-study assignments	82.534 (0.000) **	159.979 (0.000) **	185.551 (0.000) **	125.548 (0.000) **
Many of the classroom and homework assignments had to be done on a computer, rather than in writing	85.631 (0.000) **	207.501 (0.000) **	259.586 (0.000) **	139.557 (0.000) **
There was a lack of feedback from teachers after the tests	99.950 (0.000) **	146.779 (0.000) **	156.859 (0.000) **	139.383 (0.000) **
Lack of motivation and will to learn	100.653 (0.000) **	187.519 (0.000) **	211.705 (0.000) **	151.236 (0.000) **
It was difficult to focus and keep attention	91.657 (0.000) **	174.091 (0.000) **	199.544 (0.000) **	152.961 (0.000) **
Pupils were able to cheat in tests, simulate work more easily	82.079 (0.000) **	181.528 (0.000) **	207.591 (0.000) **	141.294 (0.000) **
Lack of communication with friends	111.609 (0.000) **	121.500 (0.000) **	145.396 (0.000) **	135.176 (0.000) **
Distance learning was stressful for pupils	104.612 (0.000) **	154.974 (0.000) **	185.678 (0.000) **	134.972 (0.000) **
It was difficult to follow a daily routine	96.220 (0.000) **	168.984 (0.000) **	203.466 (0.000) **	142.842 (0.000) **

* χ-squared test *p*-value is lower than the significance level α (α = 0.05), $p < 0.05$. ** χ-squared test *p*-value is lower than the significance level α (α = 0.01), $p < 0.01$.

The aim of the study was to identify the reasons behind the changes in pupils' performance and assessment of their progress in distance learning from the pupils' perspective. Respondents' answers to an open question "Tell us what you think was the cause of these changes" allowed us to identify the causes of the negative effects, such as the issues with computers and internet, difficulties related to focus and self-study, too much self-study work and low motivation (Table 8).

When assessing the pupils' answers to an open question: what led to the increase in learning workload during distance learning, several main reasons emerged—teachers gave more homework, much more information to find on one's own, making summaries, preparing for tests from a larger volume of information, decreased motivation, spending a lot of time at the computer.
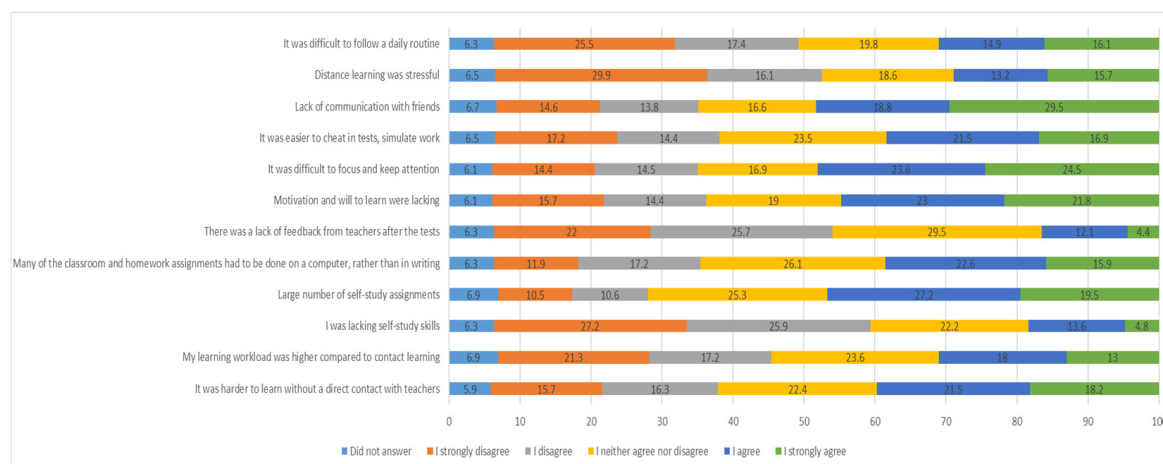
Figure 6. Problems encountered by pupils.

Table 8. The reasons behind the changes in pupils' performance and assessment of their progress in distance learning from the pupils' perspective.

Reasons	Justification
Issues with computers and Internet connectivity	Computer was working very badly it was just trouble to join the lessons, Technical Teams was crashing Sometimes the Internet connection goes down Internet interference, several pupils muted the teachers as they were speaking. It was difficult to hear what teachers were saying, Internet connection
Difficulty concentrating	Difficulty concentrating, constant staring at the screen is tiresome, lack of so-cial contact Difficulty concentrating Difficulty concentrating when doing distance learning, lack of contact (you un-derstand better through contact) boring lessons hinder concentration
Lack of self-learning skills	I don't know how to learn on my own
Too much self-study work	Too much self-study work, therefore self-studied subjects were not always as accurate and clear as those presented by the teacher, comprehension has deteriorated No motivation to learn, high fatigue at the computer, high workload
Lack of motivation	Loss of motivation, difficulty in concentrating and assimilating learning materials There was no motivation, all things were distracting, psychological malaise, fatigue

4. Discussion

In Lithuania, before the COVID-19 pandemic, distance learning was not widespread, and the legal acts stipulated that it could be implemented in the form of group and individual learning. Pupils with various problems related to health disorders or special educational needs, as well as pupils participating in the training of highly skilled athletes, preparation for international subject olympiads, international student mobility or exchange programs, students who have temporarily gone abroad had the opportunity to undergo distance learning. Special conditions have been established for schools wishing to organize distance learning.

Before the COVID-19 pandemic in Lithuania, more than 50 different educational institutions provided services through the organization of the distance learning process, however, only a few schools in the country had officially recognized programs [33].

When at the beginning of 2020 there was a need for all pupils in the country to switch to the method of organizing distance learning due to the spread of the COVID-19 pandemic, few schools met the established criteria for organizing such education, therefore measures were urgently taken to adapt to the new situation. First of all, the existing legislation was supplemented, which no longer regulates distance education for target groups of pupils. Measures were also taken at the national and municipal level in order to provide technical means and create infrastructure conditions for all Lithuanian schools to organize distance learning and for pupils to learn remotely (IT tools were purchased, and conditions were created for the free use of online training platforms, etc.). At the same time, other necessary elements of the organization of distance education were taken care of, i.e., educational content, and pedagogical competencies. As a result of this, distance learning in Lithuania turned from a relatively rare phenomenon into a universal practice at the beginning of 2020. This was done in an effort to minimize pupil learning losses as much as possible. However, without a doubt, such a sudden transition to forms of teaching/learning that were unusual for teachers and pupils had an impact on the teaching/learning process and its results.

The completed survey revealed that distance learning during the COVID-19 pandemic, in the opinion of the surveyed respondents, had an impact on the changes in their learning process and thus on the learning outcomes. Although the analyzed scientific sources mainly found problems caused by distance teaching/learning during the COVID-19 pandemic and the negative influence of distance learning on pupils' learning process and outcomes [8,10,22], this study revealed that distance teaching/learning during the COVID-19 pandemic, in the opinion of respondents, had both positive and negative influence on pupils' learning process and learning outcomes. The teachers' and pupils' opinions were not the same in all the factors studied, but when looking at the individual factors, the opinions of these groups of respondents coincided.

As regards the negative consequences of distance teaching/learning, the results of the study showed that in the teachers' opinion, the pupils' learning outcomes as a whole deteriorated. It was the opinion of as many as 71.8% of the surveyed teachers. These findings correlate with the results provided by previous studies that emphasize deterioration of students' educational achievements [9,11,24,34]. The teachers also mentioned that in their opinion, pupils' motivation to learn decreased during distance teaching/learning (71.8%). A lack of motivation was previously mentioned by other scientists, for example, Kruzewska et al. [23].

To elaborate on what might have influenced this, teachers distinguished certain factors: higher time spent on learning (43.6%), increased learning workload (43.6%). Pupils in the study also agreed with the statement on the increase in learning workload, but the agreement was lower (34.5%). The pupils' view that distance learning was more time consuming was in line with the teachers' view. This was confirmed by 39.3% of the respondents (agree and strongly agree). According to the respondents, the increase in learning workload and time spent on learning could be determined by the specifics of distance work at the computer (different pupils' and teachers' capacity to make proper use of the information technologies), lack of self-study skills, honesty (when the teacher is unable to control the pupil's behaviour), and lack of motivation. Furthermore, the respondents (teachers) distinguished as important factors the main reasons for the increase of learning workload: extra assignments and more self-learning, a lack of time planning skills. An increase in study time was emphasized by Andrew et al. [10] who stated that the time devoted to learning during distance learning was uneven and correlated with availability of the necessary resources and family income.

Teachers also identified other factors that they considered important in the course of distance learning during the COVID-19 pandemic that had an impact on pupils' learning outcomes, which were not mentioned as important by pupils: difficulties in focusing and maintaining attention (74.4%), the possibility of cheating in tests and imitating work (83.3%), and the stress caused by the new way of learning.

Pupils put forward some specific factors that had a negative impact on their learning process, hence also their learning outcomes, which were not mentioned by teachers. These included: lack of communication with friends (48.3% agreed and strongly agreed), difficulty in focusing and maintaining attention (48.1% agreed and strongly agreed), large number of self-study assignments (46.7% agreed and strongly agreed), lack of motivation and willingness to learn (44.8% agreed and strongly agreed).

A statistically significant analysis of the allocated revealed that when assessing pupils' motivation for learning during distance teaching, girls more often than boys reported that their motivation had strongly deteriorated ($p = 0.0001$). Girls were statistically significantly more likely than boys to say that their subject knowledge had deteriorated ($p = 0.0015$).

Assessing the distribution of responses according to the age of respondents, it was found that pupils aged 11–13 years, more often than others, considered that their grades have greatly deteriorated ($p = 0.0012$).

Pupils also mentioned typical distance learning problems, which were also found in the analysis of scientific sources: issues with computers and Internet connection, difficulties of concentration and self-study, too much self-study work, and low motivation.

Teachers felt that distance learning also had positive aspects, which had a positive impact on the pupils' learning process. Teachers mentioned the following factors: "Children feel comfortable at home, they are more focused", "Various aids are available at home", "Possibility to record and view lessons at a time convenient for pupils", "Young people's capacity to make proper use of information technology.", "Some feel better psychologically", "Working in a quiet environment without disturbance".

Attention should be paid to the factors singled out by teachers that were not singled out in the analysed scientific sources and can be used as an object for further scientific research. It was the teachers being well aware of their pupils, who pointed out that the improvement of some pupils' learning outcomes might have been influenced not by the pupils' more responsible attitude to learning during distance learning, but by the fact that the specifics of this type of teaching permitted unscrupulous behaviour "conditions for cheating in tests", "when taking tests remotely, they are using notes, information on the Internet", "alleged assistance from parents and relatives during written examinations and tests".

In summary, the study revealed the factors that influenced pupils' learning outcomes through distance learning from the perspective of teachers and pupils. Motivation, time, workload, technologies, skills of self-study and time planning, and honesty were identified as important factors for successful learning outcomes. Very similar factors such as motivation, extra time for studies, the role of teachers and feedback from teachers, communication and properly working technologies were disclosed from the perspective of pupils.

In relation to future research, it is recommended to conduct a study which has a greater geographical coverage. The study context could cover whole Lithuania or include more countries. It could allow to disclose the specifics of distance learning factors and their impact on pupils' learning achievements in Lithuania as a country. A greater inclusion of different countries in the coverage of the study would allow not only to compare the situation but also to understand the impact of distance education in a wider context. Many stakeholders are involved in the education process. Only teachers and students were included in this study. The value of the study could also be enhanced by the involvement of stakeholders such as parents of pupils and decision-makers such as local authorities, policymakers at the state level. Future research could go beyond quantitative research methods. Qualitative research methods, such as expert evaluation, would allow us to see another point of view, gain a deeper understanding of the investigated problem, and propose solutions to address it. Moreover, economical aspects were not taken into consideration. Distance learning requires additional costs for infrastructure, increased workload, and recovery of learning loss. Finally, it would also be appropriate to conduct research on how distance learning has affected other factors that influence learning outcomes, such as changes in pupils' IQ, changes in physical and mental health.

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