Research report in the project "Preventing post-COVID Social Exclusion Together"

Remote education and its effects in selected peripheral areas in Poland

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1 Introduction

This document is one of four research reports (from all the V4 partner countries). It is the output of the project titled "Preventing post-COVID Social Exclusion Together" (Strategic Grant No. 22110213). The project is co-financed by the Governments of Czechia, Hungary, Poland and Slovakia through Visegrad Grants from the International Visegrad Fund. The mission of the fund is to advance ideas for sustainable regional cooperation in Central Europe. It is implemented by a transnational Research Team composed of:

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- Dr. Damian Liszka, Project Coordinator, Researcher's Assistant in Poland
- Dr. Paweł Walawender - Reports Author, Poland

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The main goal of this project is to support social integration of young people, and their families, residing in rural areas and small towns in less developed regions of Central and Eastern Europe during periods of epidemic threats. This goal is to be achieved through the development of recommendations for civil society on how to successfully create Local Support Groups - Rapid Response Teams in the local environment. This project aims to help reduce the scale of educational and social inequalities in peripheral areas where the introduction of remote education had far more negative effects than in urbanized areas and metropolises.

Each of the project partners developed a separate report based on completed student survey in the country they represent. The preparation of the documents summarizing the student survey data is a necessary stage for the development of further recommendations in this project. This document covers the situation in Poland.

1.1 Purpose of the research and research issues

Although research has been conducted on the impact of the COVID-19 pandemic on education and social inclusion of young people, there are very few studies focusing on youth from rural areas, small towns, and less developed regions of the Visegrad Group countries.

Therefore, between June and September of 2021, as part of this project, an analysis was conducted on the effect of the pandemic on teachers, young people, and their families from different groups and backgrounds living in the four Visegrad Group countries using the desk research technique. One of the purposes of the qualitative research was to identify in each country (Poland, the Czech Republic, Slovakia, and Hungary) one administrative region that can be classified as the country's "periphery". Four regions were identified:

1) Podkarpackie voivodeship (in Polish – województwo), one of 16 administrative regions in Poland
2) Eastern Slovakia consisting of Prešov and Košice self-governing regions (in Slovak— kraj)
3) Ústecký region (in Czech— kraj), and
4) The Northern Great Plain region (in Hungarian - régió).

The main portion of the research was carried out in all four countries using a survey method (the technique of the auditorium survey). The study aimed to provide answers to the following research problems:

1) Has remote education (2020-2021) increased inequalities among pupils / students?
2) What problems had pupils / students from periphery areas faced?

The research results should help to answer the following questions:

3) What should be done to prevent educational and social exclusion of young students during a pandemic?
4) How to support students without IT equipment during periods of remote education?

The research provided insight into the students' experiences during the COVID-19 pandemic (in 2020 and 2021) in the areas of:

- level of technical availability of equipment during remote education,
- assessment of the quality of classes during remote education,
- positive and negative features of this form of education,
- mental health problems,
- social support,
- educational aspirations and willingness to stay in stationary school learning.

The structure of this document is determined by the questions and areas listed above.

The first chapter describes the methodology of the completed research including: the research technique used, the research tool, the sample selection, and the method of research organization.

The second chapter characterizes the studied community. This was done through the prism of socio-demographic variables such as inter alia: gender, age, place of residence, and number of siblings.

The third chapter provides information on the psychosocial condition of students. Issues such as psychological well-being, distress experienced by students during distance learning, life satisfaction and social support were taken into account.

Chapter four describes the process of educating students in a peripheral area during the COVID-19 pandemic. References are made to the technical possibilities available to students in the course of distance education, evaluation of distance education, etc. The chapter also provides information on the educational aspirations of students.

The research report ends with a summary, conclusions, and recommendations.

1.2 Methodology of the research

The research was carried out in four countries of the Visegrad Group using the questionnaire method (the technique of auditorium research). This allowed for self-completion of the questionnaire in the school room. The filling time did not exceed 40 to 45 minutes (1 school lesson). In the "peripheral" region of each country, smaller territorial units (see desk research report) have been selected as areas for survey research. In Poland, the Strzyżów poviat was selected as the area for the survey (selected on the basis of indicators characterizing the level of socio-economic development).

Subsequently, a transnational team from all four countries of the Visegrad Group developed a questionnaire consisting of 31 questions. The team also developed a common research methodology with research guidelines for selected research performers (contractors can be an individual or a company in each country).

The research sample consisted of students (ISCED'97 Level 2) of public schools located in selected peripheral sub-regions (not less than N = 300 in each country). The other criteria are: assessment of students and their place of residence: in rural areas / housing estates up to 5,000 inhabitants (minimum N = 150) and in urban areas / over 5 thousand, but less than 20,000 inhabitants (minimum N = 150).

Before the research begun, a positive opinion of the Ethics Committees was obtained. In Poland it was number: DNk.0047.1.7.2021.

Purposeful selection of the sample and data collection was realized by the research contractor. In Poland the contractor was: dr hab. Piotr Długosz, prof. UP.

The research in Poland was carried out in seven schools in the Strzyżów poviat. The schools were located in Strzyżów (2 schools), Wiśniowa, Frysztak, Żyznów, Wysoka Strzyżowska and Dobrzechów. The research was conducted in the schools in person, after prior arrangement with the management.

2 Characteristics of the sample

This section summarizes the sociodemographic characteristics of the sample in the Poland, such as gender composition, age, number of siblings, place of residence, parental education and occupation, property status etc.).

2.1 Gender

Boys took part in the study slightly more often than girls, constituting slightly more than half of the total number of students surveyed (Figure 1).

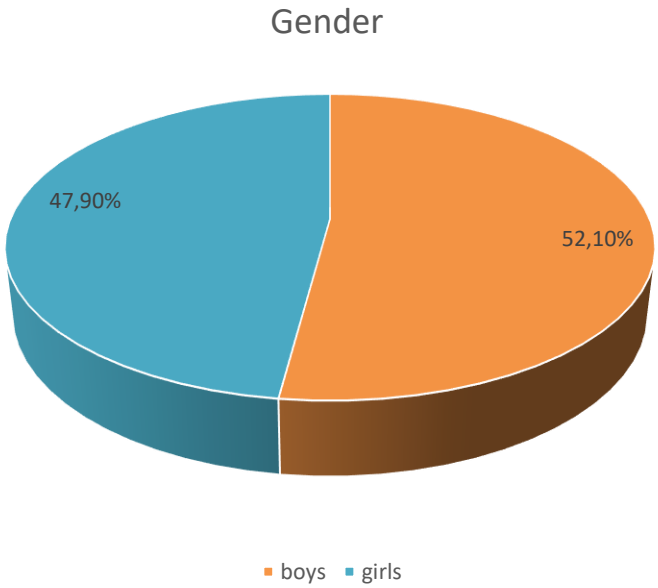


Figure 1. Gender of respondents (Source: PCSET 2021, N = 376)

2.2 Age

The age structure of the respondents covered the age range from 12 to 15 years of age. The average age of the respondents participating in the survey was slightly over 13 years old. The median age of the respondents was 13 years old. Characteristics of the detailed results is shown in Table 1.

Table 1. Basic descriptive statistics on the age of respondents (PCSET 2021, N = 370)

	Number	Mean	Median	Minimum	Maximum	Dev. std	Coefficient of var.
Age	370	13,2	13,0	12,0	15,0	0,8	0,1

Source: PCSET 2021

2.3 Number of siblings

Most of the respondents have siblings. Slightly more than one-tenth of the respondents did not have any siblings (Figure 2).

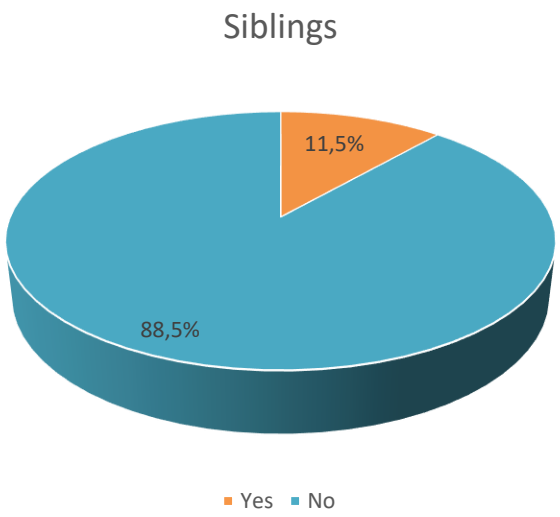


Figure 2. Siblings of respondents (Source: PCSET 2021, N = 400)

When asked about their siblings, the respondents indicated both older and younger ones. Over one third of the surveyed students had no older siblings at all. Nearly two-fifths of the respondents had an older brother or sister and this was also the most frequently given answer (Figure 3).

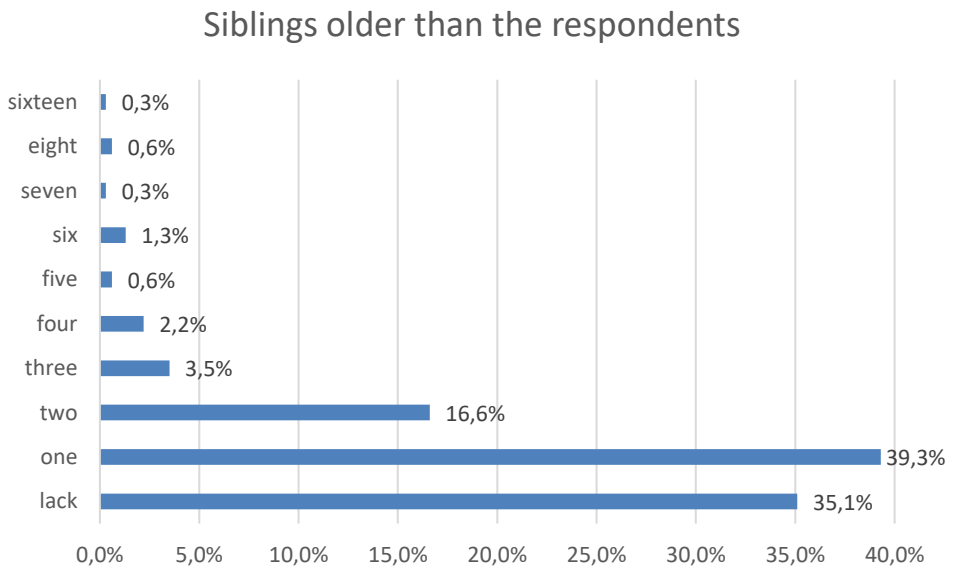


Figure 3. Siblings older than the respondents (Source: PCSET 2021, N = 313)

More than two fifths of the total number of surveyed students declared having one younger brother or sister, and this was - similarly to having older siblings - the most frequently given answer. Nearly two fifths of the respondents had no younger siblings at all. The third most common answer was to have two younger siblings (Figure 4).

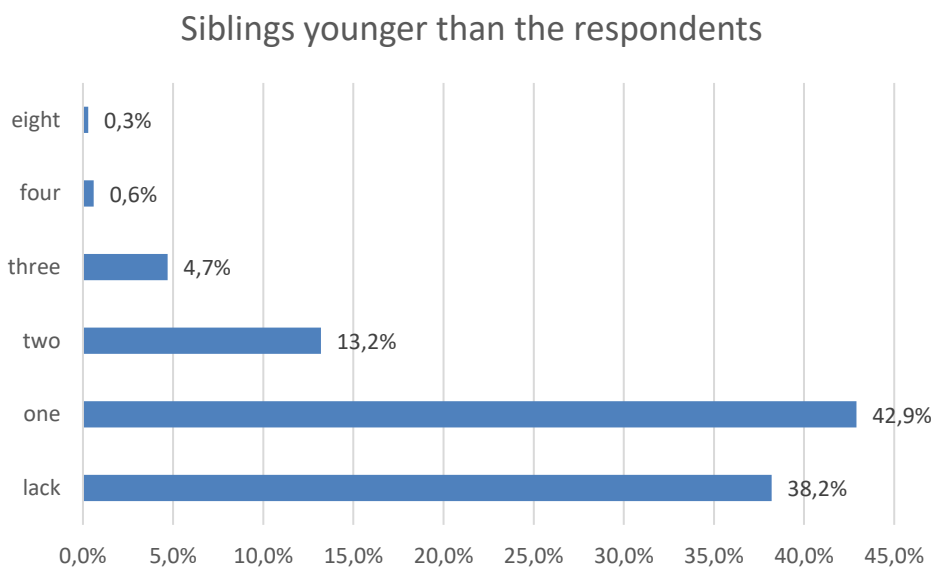


Figure 4. Siblings younger than the respondents (Source: PCSET 2021, N = 319)

2.4 Place of residence

The surveyed students most often lived in rural areas. Most of the respondents (nearly three quarters) indicated rural areas as their place of residence. Slightly more than a quarter of the respondents chose the "city" category (Figure 5).

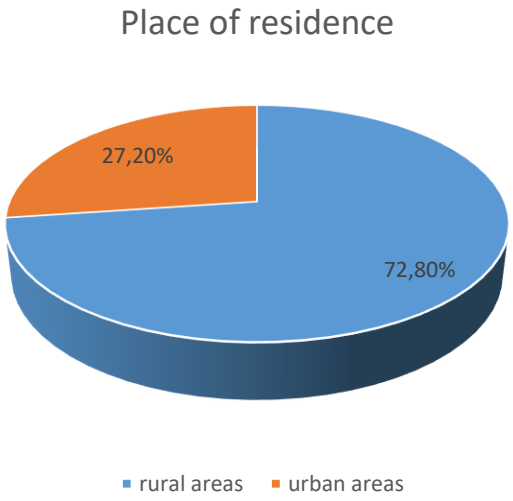


Figure 5. Place of residence (rural area, urban area) (Source: PCSET 2021, N = 367)

2.5 Socio-economic status (parental education, professional status)

Another element the respondents were surveyed about was the education of their parents. Among the fathers of the surveyed students, secondary education (general or vocational) dominated. Almost one fourth of the fathers had education below the secondary level, while one third of the respondents' fathers had education above the secondary level. Most of the mothers had secondary and above-secondary education. Research has shown that students' mothers are better educated than their fathers (Figure 6).

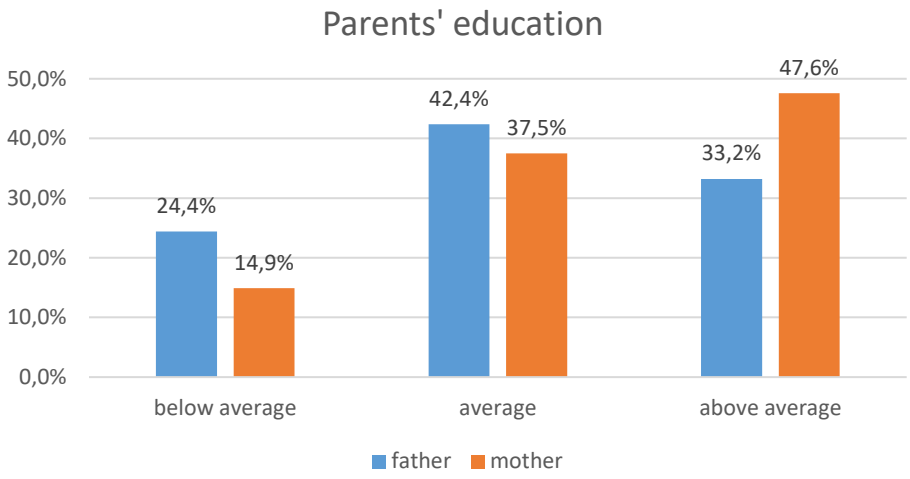


Figure 6. Parents' education (Source: PCSET 2021, Nojcowie = 205, Nmatki = 208)

The type of work performed by the parents of the students was also examined. The fathers of the respondents most often worked as skilled workers or owners of a private company. The third type of work most often performed by fathers was in the category of "sales and service worker". Every fourth student could not determine what kind of work the father does. The respondents' mothers most often worked as specialists with higher education or a freelance profession. Every ninth mother was employed as a low-level white-collar worker (secretary, cashier, clerk, telephone operator), and every tenth mother worked as a technician, a specialized administrative and office worker, or white-collar worker. Exactly the same number of mothers were unemployed. Slightly more than one-fifth of the surveyed students were unable to determine what kind of work their mother does. Detailed results of research in this area are presented in Table 2.

Table 2. Parents' or guardians' job (PCSET 2021, Nojcowie = 311, Nmatki = 309)

	Mother		Father	
	Number	Percent	Number	Percent
Director, president of the company, high-ranking government official or parliamentarian	4	1,3	11	3,5
A specialist with a university degree or a freelance profession (e.g. scientist, lecturer, teacher, doctor, lawyer, writer)	52	16,8	29	9,3
Technician and specialized administrative and office worker, white-collar worker	32	10,4	18	5,8
Low-level white collar worker (secretary, cashier, clerk, telephone operator)	36	11,7	11	3,5
Owner of a private company	11	3,6	49	15,8
Sales and service worker	27	8,7	31	10,0
Unskilled worker	7	2,3	4	1,3
Skilled worker	29	9,4	54	17,4
Farmer	11	3,6	14	4,5
Unemployed	32	10,4	5	1,6
Pensioner	3	1,0	5	1,6
It's hard to say, I don't know	65	21,0	80	25,7
Overall	**309**	**100,0**	**311**	**100,0**

Source: PCSET 2021

2.6 Property status

As part of the assessment of the students' financial situation, the surveyed students were asked about various aspects of their families' economic life. The most numerous group of respondents indicated that their family had a computer / laptop and a car. Nearly nine out of ten students also declare no heating problems as well as owning at least two pairs of appropriate size shoes (including a pair for winter). The smallest number of students indicated regular participation in recreational activities (such as sports, cinema or concerts) and receiving weekly pocket money. Detailed research results in this area are presented in Table 3.

Table 3. Material status of the respondents' family (PCSET 2021, N = 387)

	Number	Percent
My family can afford one week of vacation a year (away from home)	226	58,4
My family can afford to eat meat, chicken or fish every other day	309	79,8

	Number	Percent
My family has no heating problems	338	87,3
There is a car in my family	353	91,2
There is a computer or a laptop in my family	355	91,7
Used furniture can be replaced with new ones	254	65,6
We can replace used clothes with new ones	290	74,9
I have at least two pairs of appropriate size shoes (including a pair for winter)	335	86,6
I get pocket money every week	136	35,1
I regularly participate in recreational activities (such as sports, cinema or concerts)	161	41,6
My family meets friends or relatives at least once a month (for a drink or a meal)	274	70,8

Source: PCSET 2021

In the context of identifying material status, the respondents were also asked to assess the way money is managed at home. The data shows that the vast majority of students assessed their material living conditions at a good level ("We live well, we have enough without any special savings"). Every seventh student declared an average standard of living, and every tenth said that his family, compared to others, lived at a very good standard and could afford luxury goods. A small percentage indicated a modest or very modest standard of living for their family. Detailed research results in this area are presented in Table 4.

Table 4. Managing money at home (PCSET 2021, N = 390)

	Number	Percent
We live very modestly, with not even enough money for our basic needs	1	0,3
We live modestly, we have to be very economical on a daily basis	11	2,8
We live averagely, we have enough money every day, but we have to save for larger purchases	64	16,4
We live well, with enough money for us not to have to save much	275	70,5
We live very well, compared to others, we can afford luxury	39	10,0
Overall	**390**	**100**

Source: PCSET 2021

The data presented in Table 5 describes the material standard of the respondents through the prism of items or devices present at home. Among the devices / items most often owned at home, students mentioned a smartphone, a study desk, a laptop or a notebook. Most of them also had permanent access to the Internet, although it is worth emphasizing that in the case of distance learning, almost every tenth student did not have the possibility to use the Internet permanently. Pupils declared having their own study room or printer a little less frequently. A scanner turned out to be a relatively rarely owned device.

Table 5. Objects or devices in the respondents' home (PCSET 2021, N = 387)

	Number	Percent
Scanner	166	42,9
Printer	336	86,8
Desktop computer (PC)	245	63,3
Laptop or notebook	358	92,5
Tablet	250	64,6
Smartphone	373	96,4
Permanent access to the Internet	356	92,0
Study desk	359	92,8
Own study room	332	85,8

Source: PCSET 2021

2.7 School achievements

When answering the question about school achievements, slightly more than two-fifths of the respondents assessed themselves at an average level. Every fourth student surveyed claimed to to be clearly higher than average, and just over one fifth of all respondents claimed to be the top of the class. Detailed results of research in this area are presented in Table 6.

Table 6. Perception of academic achievement (PCSET 2021, N = 390)

	Number	Percent
I am at the forefront of our class	87	22,3
Clearly above average	99	25,4
Average	163	41,8
Less than average	21	5,4
Weak	20	5,1
Overall	390	100,0

Source: PCSET 2021

2.8 Number of books

People who grow up in homes filled with books tend to have more developed literacy and numeracy skills. Every third student reported having between 26 and 100 books at home, and this was the most frequently given answer. Every sixth surveyed student indicated having 11-25 books, and the least numerous were two groups of students, i.e. those growing up in a home with over 500 books or in a home where there are only up to 10 books (Figure 7).

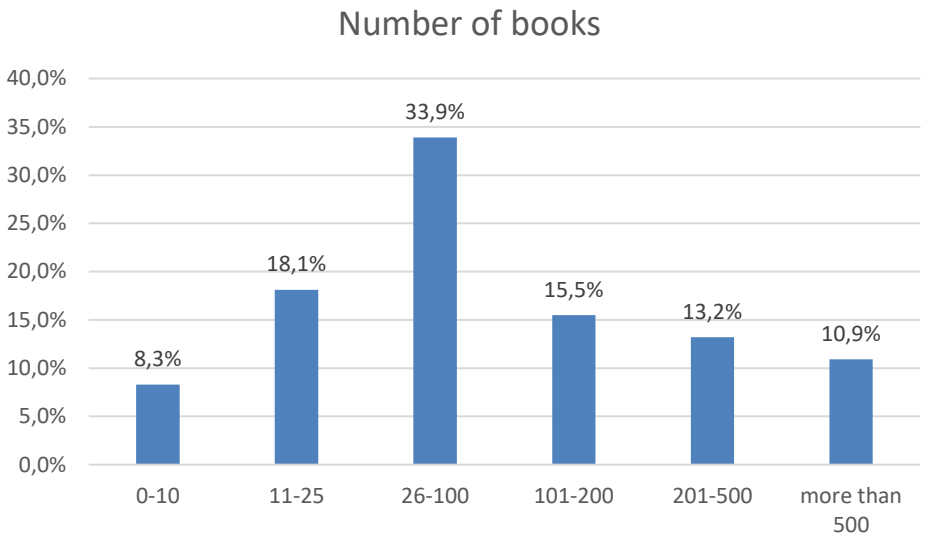


Figure 7. Number of books in the students' home (Source: PCSET 2021, N = 386)

2.9 Summary of the section

Summing up, it should be stated that the studied sample is characterized by a very slightly skewed gender distribution in favour of boys over girls. Most of the respondents lived in rural areas, and their average age was just over 13 years. The research showed that the respondents came from homes where parents mostly have secondary and higher education, while the students' mothers were better educated than their fathers. The fathers of the respondents most often worked as skilled workers and owners of private companies, while mothers most often worked as specialists with higher education or a freelance profession. It is worth adding that the mothers of the surveyed students were more often unemployed than the fathers. The vast majority of students assessed their material living conditions as good. The respondents most often indicated that their family had a car, a desktop / laptop computer, a smartphone and a study desk. Most of them had permanent access to the Internet, although it is worth emphasizing that in the case of distance learning, almost every tenth student did not have the possibility to use the Internet permanently. It is also worth adding that the majority of students positively assessed their school achievements (at an average and higher level).

3 Psychosocial condition and Imponderabilia

3.1 Psychological well-being

The World Health Organization - Five Well-Being Index (WHO-5) is a short self-reported measure of current mental wellbeing. The instrument measures wellbeing through five items where respondents have to evaluate the statements on a Likert scale from 0 to 5. While scales measuring health-related quality of life are conventionally translated to a percentage scale from 0 (absent) to 100 (maximal), it is recommended to multiply the raw score by 4 (Topp et al., 2015, p. 168). The instrument can be used for screening depression too: following the WHO-5 recommendation, the cut-off score is ≤ 50. Therefore, reaching 50 point or less may indicate depression.

Table 7. Basic descriptive statistics on the well-being of the respondents (PCSET 2021, N = 397)

	Number	Mean	Median	Minimum	Maximum	Dev. std	Coefficient of var.
Well-Being Indicators	397	50,3	48	0	100	27,2	54,0

Source: PCSET 2021

As Table 7 shows, the value of well-being varies between 0 and 100. The average well-being score is 50 points, which is exactly the cut-off point. When creating groups based on the cut-off point, we can see that slightly more than half of the sample belongs to those scoring less than the cut-off value. This means that 51,3% of the pupils have depressive symptoms (Figure 8).

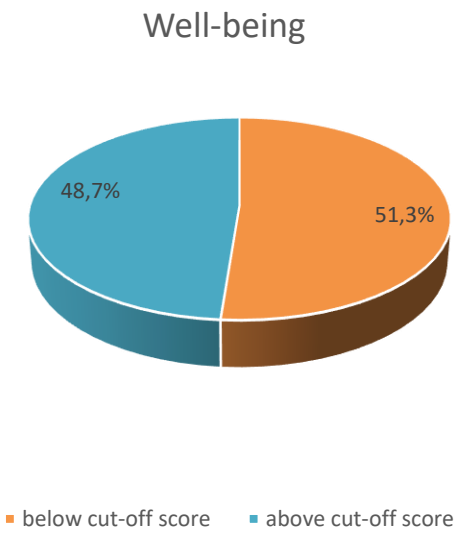


Figure 8. Percentage of students above and below the cut-off score (Source: PCSET 2021, N = 397)

3.2 Perceived stress

The Perceived Stress Scale (PSS) was used to determine how the participant "perceived" stress. The original survey asks 14 questions about stressful situations and helps determine what stress the participants experience and how stressful they feel their life to be. Higher

scores indicate higher levels of stress. In our study, we used 8 questions of which 3 are reversed items:

Q18.2: How often did you have enough time to do what you wanted?

Q18.6: How often did you feel happy?

Q18.7: How often did you get enough sleep?

The modified questionnaire is proved to be reliable based on the value of Cronbach's alpha (0,801). Table 8 introduces the item-total statistics of the items.

Table 8. Total statistic for the position of the modified stress perception scale (PCSET 2021)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
How often did you feel rushed or hurried?	13,41	28,295	0,35	0,781
How often did you have enough time to do what you wanted?	14,07	27,986	0,34	0,775
How often did you feel worried about being too busy?	13,62	27,781	0,35	0,784
How often did you feel nervous?	13,39	26,067	0,31	0,754
How often did you feel angry?	13,67	26,574	0,31	0,756
How often did you feel happy?	14,21	28,241	0,34	0,776
How often did you get enough sleep?	13,99	26,530	0,33	0,772
How often did you have fights with friends?	14,66	31,094	0,40	0,816

Source: PCSET 2021

Based on the original questionnaire, we created categories based on peer evaluation, which have resulted in two dimensions: time-related stress and mental health. The characteristics of these dimensions are presented in Table 9.

Table 9. Basic descriptive statistics on the dimensions of the perceived stress of the respondents (PCSET 2021)

	Number	Mean	Median	Minimum	Maximum	Dev. std	Coefficient of var.
Time related stress	392	5,3	5	0	12	2,8	53,3
Mental health	388	4,7	4,5	0	8	2,1	45,6
Overall stress	380	15,8	16	0	31	5,9	37,5

Source: PCSET 2021[1]

The average level of time-related stress is slightly lower than the midpoint of the subscale. Therefore, it indicates slightly lower level of time-related burden shouldered by the pupils.

[1] *In the case of the group from Poland, based on the factor analysis, only these the above areas came out (without "physical health" factor). It was necessary to conduct a factor analysis and was indicated that even only two areas can come out, here three areas came out and the fourth one did not work out.*

The mean value of the mental health subscale is slightly above the midpoint of this subscale. So, this indicates a greater stress load in this dimension. Mental health is below the desired level. The total score of the questionnaire also presents an average level of stress.

Also, based on the overall stress level, we created categories for the level of stress, including the following:

- Low Stress (scores 0 - 10)
- Moderate Stress (scores 11 - 21)
- High Stress (scores 22- 32)

The distribution of the above specified groups can be seen in Figure 8. Almost two-thirds of the pupils have a moderate stress level. The proportion of students who reported a low stress level is very similar to students who reported high stress.

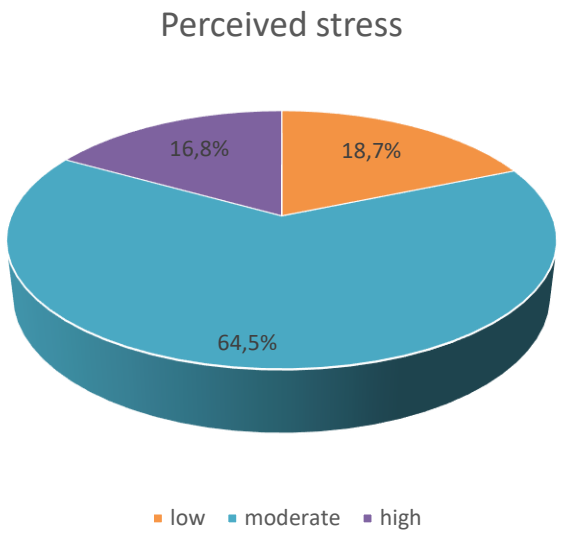


Figure 9. Percentage of students in groups determined by the level of stress (Source: PCSET 2021, N = 380)

3.3 Life satisfaction

To measure the life satisfaction of pupils, we asked them to evaluate their life so far, whether they are rather satisfied or dissatisfied with their life overall. Pupils had to choose one statement out of five (definitely dissatisfied / rather dissatisfied / rather pleased / definitely pleased / I don't know, it's hard to judge).

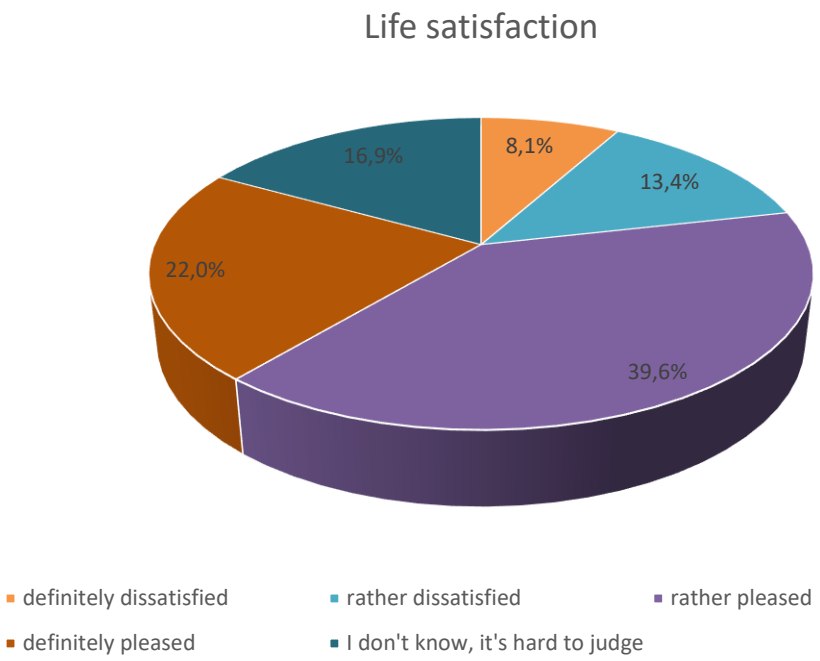


Figure 10. The proportion of pupils according to life satisfaction (Source: PCSET 2021, N = 396)

Figure 10 shows that most pupils (61,6%) are definitely pleased or rather pleased with their lives while approximately 21,5% are definitely dissatisfied or rather dissatisfied. However, approximately 16,9% of the pupils reported that they could not evaluate the level of satisfaction with their lives.

3.4 Social support

First, we used the Short scale of Youth's social support assessment to measure social support. SSYSS is an 18-item questionnaire to measure the impact of parental (5 items), peer (8 items), and teacher (5 items) support on a five-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). The maximum total score is 25 points for the parental and teacher subscales and 40 points for the peer subscale. The instrument covers the most important environments where a young person might live. The questionnaire is a widely accepted, accurate, and valid measure for investigating youth social support (Pluta et al., 2020). The reliability of the questionnaire was appropriate in our study too (parental support: Cronbach's alpha = 0,837; peer support: Cronbach's alpha = 0,884; teacher support: Cronbach's alpha = 0,835; overall questionnaire: Cronbach's alpha = 0,886). The results of the subscales are introduced in the following table.

Table 10. Social support for students (PCSET 2021)

Support	Number	Mean	Median	Minimum	Maximum	Dev. std	Coefficient of var.
Parental support	383	20,5	22	6	25	4,0	19,6
Peer support	375	30,8	32	8	40	6,6	21,3
Teacher support	380	16,0	17	5	25	4,7	29,2
Overall support	399	66,5	68	4	90	12,1	18,2

Source: PCSET 2021

The results indicate a rather positive amount of social support. Especially the level of parental support seems to be high as the mean is just slightly below the maximum of total points that can be given for the subscale. The high level of perceived support received from teachers refers to the high-level engagement of teachers in helping their students in distance education. The level of perceived support received from peers also indicates a high level of collaboration with classmates and counterparts.

We also asked the pupils to mark who helped them with problems during distance education. Figure 11 shows that most support was received from the parents (52,3%) and classmates (36,1%). Also, a significant proportion of pupils noted that they used Internet as a problem-solving technique (31,8%). Siblings can be found in the fourth place, and in the fifth and sixth places are two answers which had similar percentage of responses: "I did not have such problems" and Class teachers. (15,8%). Pupils may have a closer relationship with their parents, siblings and classmates, and it was easier to ask them for help. Receiving support from other family members was reported by approximately 12,5% of pupils. The support received from tutors and school psychologists was quite low, maybe due to the fact that tutors are not available for everyone and school psychologists are usually not so close to general schoolwork. We also have to note that approximately 11,8% of students reported not having any help even if needed.

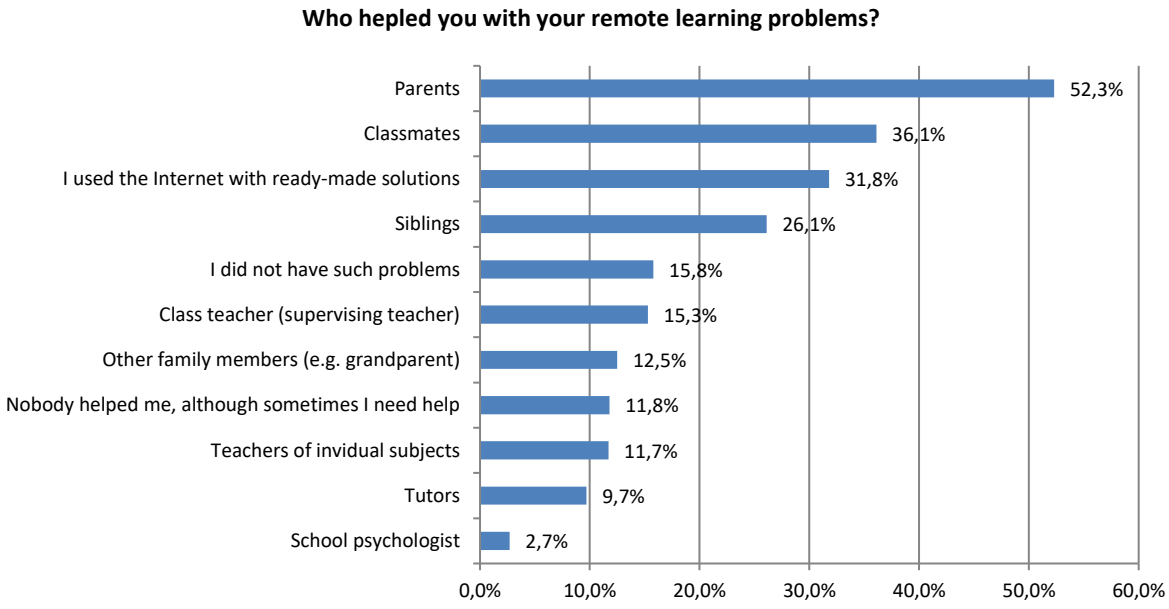


Figure 11. People and tools supporting pupils in dealing with problems during distance education (Source: PCSET 2021, N =397)1

3.5 Summary of the section

As part of the study of the psychosocial condition, the assessment of mental condition (well-being), feeling stressed, feeling satisfied with life, and perception of social support were tested on a scale.

The study found that 51.3% of students had depressive symptoms. Almost two-thirds of students have moderate levels of stress. The proportion of students reporting low stress is very similar to students reporting high stress (one fifth each). Most of the students (61,6%)

are definitely satisfied or rather satisfied with their lives, while 21,5% are definitely dissatisfied or rather dissatisfied. Slightly less than every fifth student said that he or she were unable to assess the level of satisfaction from life. The results show a fairly positive experience of social support. Especially the level of parental support appears to be high. The high level of perceived support received from teachers relates to teachers' high commitment to assisting students with distance learning. The level of perceived support received from peers also indicates a high level of collaboration with classmates and counterparts.

4 Students from peripheral areas in the course of distance education

4.1 Technical conditions for online education

Effective remote education requires access to computer devices that allow you to carry out various activities (e.g. work preparation using text or graphics programs, information search, online access to various sources and materials). Therefore, students were asked about the quality of the equipment and the Internet connections they use. Taking into account the technical equipment of the respondents' home or apartment, it was examined whether it was sufficient to allow students to fully participate in online lessons. The responses showed that a fairly large proportion of the students had access to digital devices. Slightly more than half of the students answered that their technical equipment definitely enabled them to fully participate in distance learning. Two-fifths said that their technical equipment rather allowed them to participate in online education. The other respondents (excluding those who could not express their opinion) did not have technical equipment at home (Figure 12).

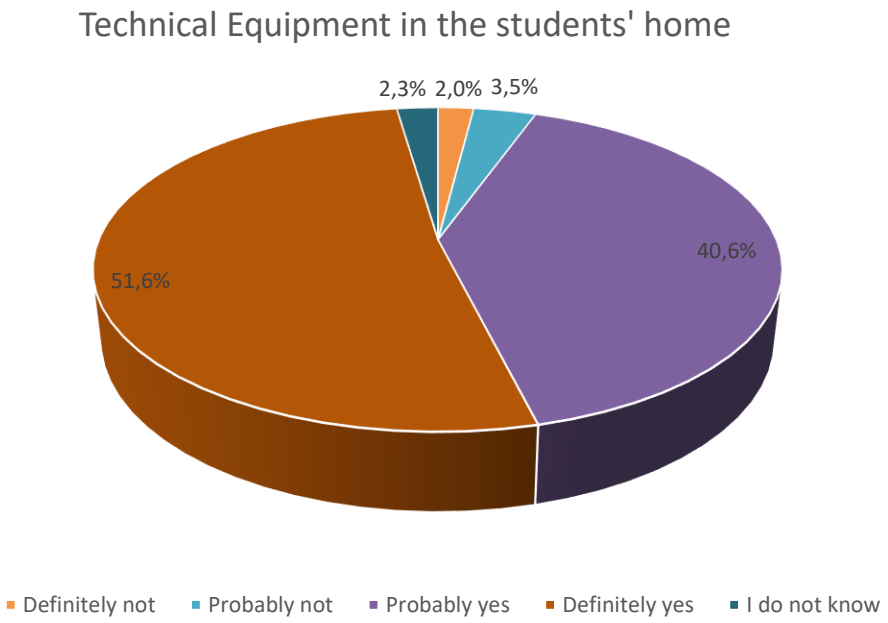


Figure 12. Technical equipment in the students' home (Source: PCSET 2021, N = 400)

The students were also asked about the devices they usually used for distance learning. The categories among which they could choose were: laptop, tablet, smartphone and desktop computer. The respondents most often declared using a laptop (two thirds of all respondents), followed by a desktop computer (one fifth of the students) (Figure 13).

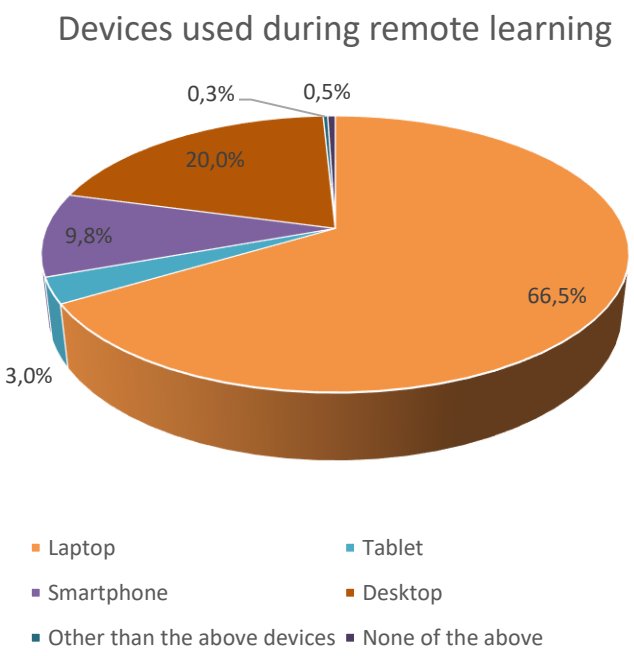


Figure 13. Devices used during remote learning (Source: PCSET 2021, N = 400)

The research showed that the devices that the respondents usually used when learning online were mostly owned by them (almost four fifths of the students indicated this). It is worth adding that nearly one fifth of all surveyed students shared the device with other people, i.e. with parents or siblings. The necessity to share a laptop / computer with other members of the household could be a problem, especially in the case of other activities taking place at the same time. Devices borrowed from external entities constituted a small percentage (Figure 14).

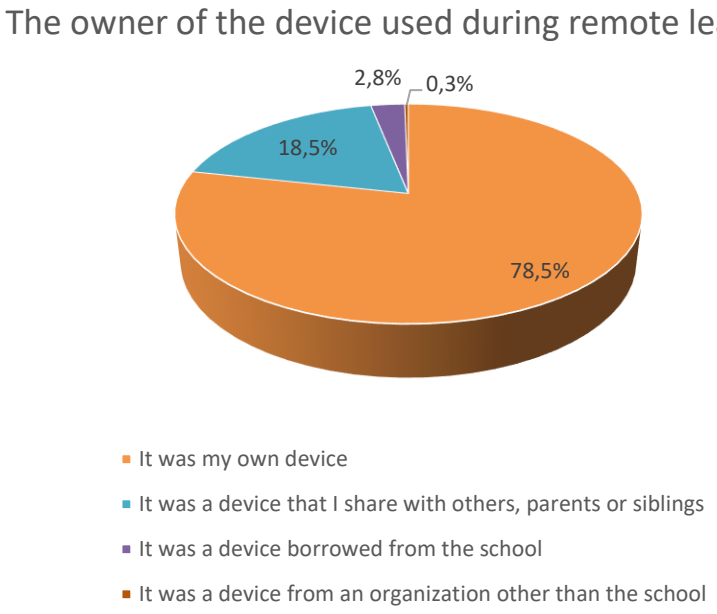


Figure 14. The owner of the device used during remote learning (Source: PCSET 2021, N = 400)

Slightly over four fifths of the surveyed students declared having their own room, which certainly allowed them to comfortably participate in online classes. However, almost every

tenth student surveyed had to share a room with siblings, which could generate stress and discomfort. A small percentage of participants partook in online lessons staying in a room shared by all household members (e.g. living room, kitchen, dining room) (Figure 15).

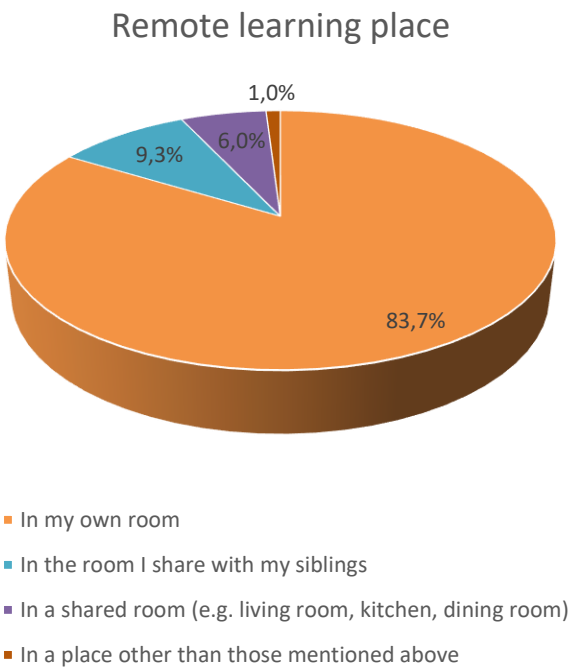


Figure 15. Remote earning place (Source: PCSET 2021, N = 399)

4.2 Online education assessment

A relative indicator was used when assessing the quality of online lessons. The respondents were asked to rate the quality of online lessons compared to traditional school lessons. The data show that more than half of the students assessed the quality of online lessons as being somewhat or much lower than face-to-face lessons (two fifths of the surveyed students rated the quality of online lessons slightly lower, and slightly less than one fifth of the students believed that online lessons were of much lower quality compared to traditional lessons). On the other hand, one fourth of the students stated that they did not notice a difference in the level of online and traditional classes, and every tenth student said that online lessons are at a much higher level than traditional classes at school (Figure 16).

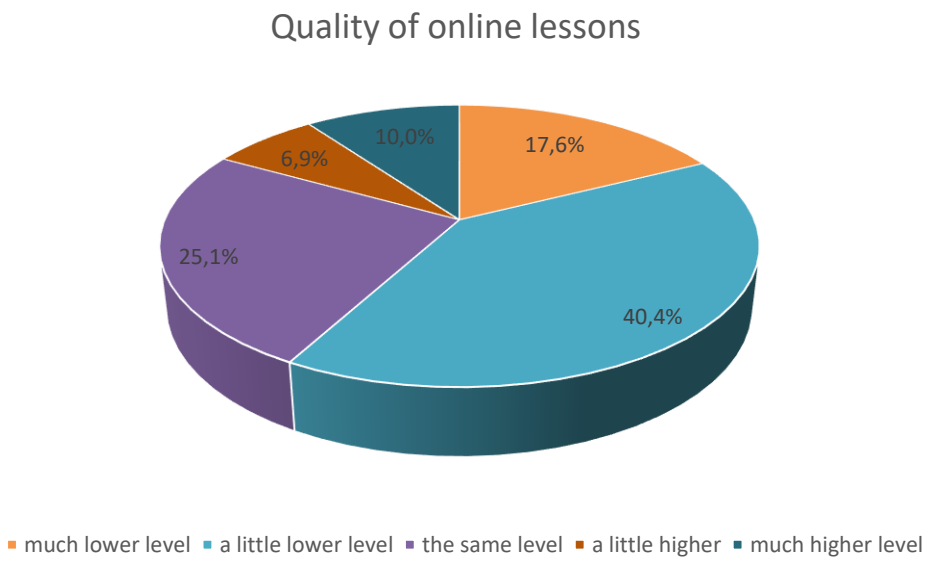
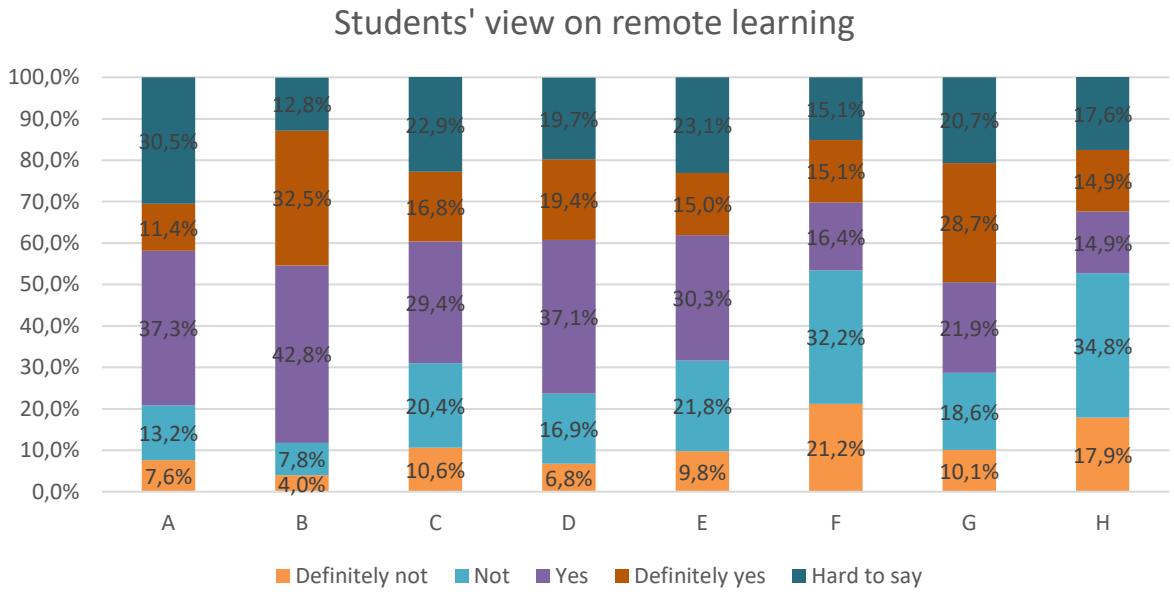


Figure 16. Quality of online lessons (Source: PCSET 2021, N = 391)

In the study of students' opinions about remote learning, the Likert scale was used, which allows to assess the "strength of support" of a given position. Respondents were asked to evaluate eight different positions related to online education (these positions are listed in the legend in Figure 17). Each of the following has been addressed in the analysis below from the elements of the response cafeteria. The information obtained shows that among the surveyed students nearly two fifths felt that they could learn, even if they had other, more interesting things to do, and nearly every ninth respondent declared such a position decisively. Almost one third of the respondents could not assess this issue, and slightly more than one fifth gave a negative opinion. On the other hand, the timeliness of the completion of essays and other tasks recommended by teachers was positively assessed by over two fifths of the respondents, and almost one third responded definitely positively. Only every ninth student did not complete the tasks on time (responses of "no" and "definitely not"). The percentage of people who did not have an opinion on this matter fluctuated within similar limits. Concentration of attention on lessons is one of the factors determining the activity of students and the acquisition of knowledge. In a classroom, the ability to observe students' reactions allows the teacher to respond appropriately to signs of decreased attention span. In the distance learning mode, concentration of attention is subject to various disturbances and is characterized by its intensity fluctuating over time, and the teacher's ability to identify signals of distraction or boredom is quite limited. The results of the research in the field of students' assessment of their concentration on online lessons are not optimistic, as one fifth of the students failed to focus during remote classes, and every tenth surveyed student was definitely unable to concentrate. In total, less than half of the surveyed students managed to focus their attention during remote classes (including those that definitely could 16,8%). More than one-fifth of the respondents did not have an opinion on this issue. Focus and attention on lessons determines the activity of students. More than a third of the respondents felt that they had taken part in remote classes in an active way, and nearly one fifth of the students in a decidedly active way. The lack of activity during online lessons was indicated by a total of slightly less than a quarter of the students (answers "no" and "definitely not"). One fifth of the

respondents did not have an opinion on this matter. Less than one third of the respondents understood everything that was presented in online lessons, and only 15,0% definitely understood it. More than one fifth of the students did not understand the presented content, and one in ten students definitely did not understand it. A position on this issue could not be taken by a little less than a quarter of the students. Slightly less than a third of respondents said they had a lot of catching up with online lessons ('yes' and 'definitely yes' answers combined). In total, more than half of the respondents felt that there is not much to catch up on (including just over a fifth who responded definitely). A relatively small number of students did not have an opinion on this matter. The last two questions asked of the students concerned their concerns about returning to traditional school education. More than one fifth of the respondents were afraid of the requirements set by teachers after returning to traditional education, with a higher percentage that was definitely afraid (28,7%). One fifth did not have an opinion on this matter. Nearly one fifth did not feel afraid of the teachers' demands after returning to school, and every tenth student surveyed was definitely not afraid. More than a third of the students did not feel fear of coping with traditional education, and every sixth respondent was definitely not afraid. Less than one fifth did not have an opinion on this issue (Figure 17).



A. I could learn, even if I had other, more interesting things to do
B. I finished papers and other tasks assigned by teachers on time
C. I was able to focus my attention during remote classes
D. I took an active part in remote classes
E. I understood everything that was presented in online lessons
F. I have a lot of catching up with online lessons
G. I am afraid of the requirements set by teachers after returning to traditional education at school
H. I am afraid that I will not be able to cope with traditional science

Figure 17. Students' views on remote learning (Source: PCSET 2021)

The general attitudes of students to distance learning were also examined. The respondents had four answers to choose from (Figure 18). Less than half of the respondents

felt that they were not able to perform assigned tasks. Slightly less than one fifth of the respondents fully agreed with this position. One in four respondents was not accompanied by this type of feeling, and more or less every tenth surveyed student completely disagreed with the claim that of being unable to complete the assigned tasks. Just over half of the surveyed students were eager to start learning online (answers of "I agree" and "I fully agree"). Slightly less than a quarter of the respondents disagreed or completely disagreed with this statement. In the opinion of nearly a quarter of the students, distance learning was interesting, and 13,3% fully agreed with this position. For two-fifths of students, learning online was not interesting, and more than a fifth fully confirmed the latter position. Slightly over one fifth of the students decided that they wanted to learn a lot, and every tenth student surveyed agreed with this opinion completely. However, more than half of the respondents had the opposite opinion (Figure 18).

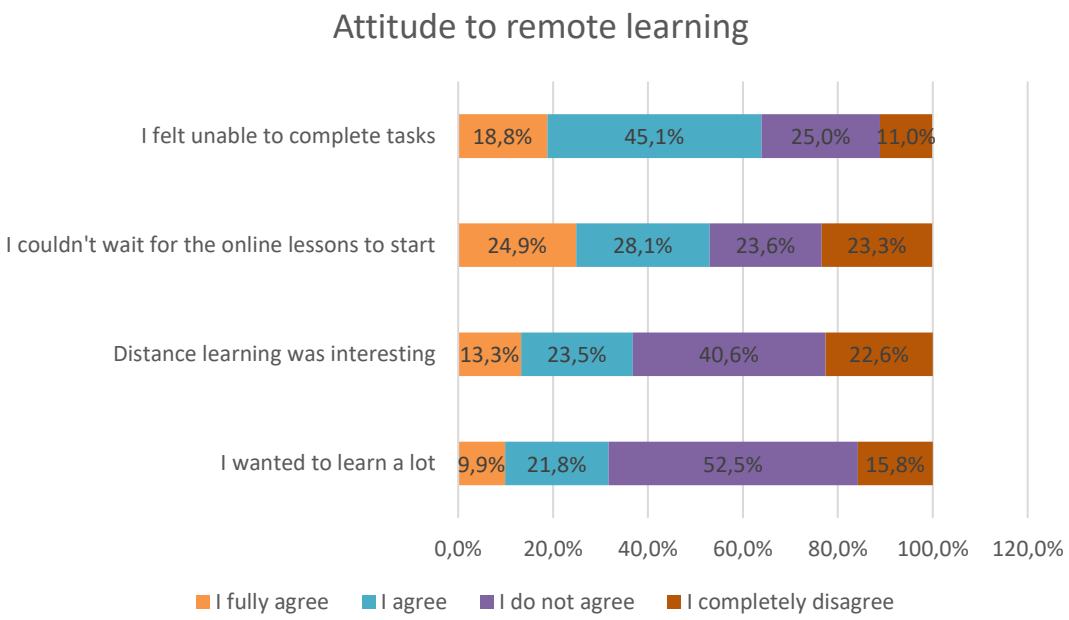


Figure 18. Overall Student Attitude to remote learning (Source: PCSET 2021)

4.3 The pros and cons of online education

The Likert scale was also used in the study of students' views on the benefits and disadvantages of remote learning. Respondents were asked to rate their agreement with sixteen different opinions on online education (these positions are listed in in the legend to Figure 19). The structure of the responses obtained was varied. Due to the large number of variants of the answers, only selected ones are analyzed below, taking into account the opposite extremes, i.e. the most frequently indicated completely positive or completely negative reviews. The students most often strongly agreed that thanks to remote learning they had more time for themselves, and that they did not have to prepare and go to school. The respondents also had an overwhelmingly positive attitude towards the statement that thanks to remote learning they had more time for their family, classmates and friends, and the statement came in second place. Subsequently, the majority of completely positive opinions concerned statements such as: "You can sleep peacefully during remote learning, you don't need to rush anywhere "and" Remote learning is safer as I avoid getting infected with COVID-

19." On the other hand, more than half of the respondents strongly disagreed with the fact that during remote learning they could not fully participate in online lessons due to health problems. Subsequently, the respondents strongly disagreed with the statements that their contact with classmates deteriorated during distance learning, that they were tired during remote learning and physically exhausted, or with the occurrence of such situations during online lessons in which other students, listening to what the respondent said, embarrassed him. Most of the students, nearly a third, were unable to express their own opinion in relation to the phrases: "I am used to remote learning and I do not want to go back to school" and "My contacts with teachers deteriorated during remote learning". The detailed results are summarized in Figure 19.

A. Thanks to remote learning, I had more time for my family, classmates and friends
B. I didn't have to get ready, go to school and I had more time to myself
C. During remote learning, I had fewer learning responsibilities
D. I am used to remote learning and I don't want to go back to school
E. Remote learning is safer as I avoid getting infected with COVID-19
F. My contact with teachers deteriorated during remote learning
G. During distance learning, my contact with my classmates deteriorated

H. I couldn't fully understand the online lesson material
I. During the online lessons, it was difficult for me to focus on what the teachers were saying
J. I was unable to fully participate in online lessons due to health problems
K. During distance learning, other students listened to what I was saying and it made me feel uncomfortable
L. Due to remote learning, I spent too much time at the computer, laptop / tablet / smartphone
M. During remote learning, I was tired and physically exhausted
N. I could learn more from school than at home
O. During remote learning, you can cheat and have the help of parents and siblings
P. During remote learning, you can sleep well, you don't need to rush anywhere

Figure 19. Advantages and disadvantages of online education (Source: PCSET 2021)

4.4 Level of involvement in online education

In the part of the survey identifying the level of student involvement in online classes, respondents were asked about three issues:

1) average number of hours per day spent by students during remote classes to participate in online classes (Table 11)
2) average daily number of hours spent by students during remote classes to prepare for lessons, doing homework (Table 12)
3) average daily number of hours spent by parents / guardians to help students during remote classes (Table 13)

The obtained answers show that the mean daily number of hours spent by surveyed students during remote learning to participate in online classes was just over 6 hours with the median being 7 hours. A negligible part of the respondents declared that they did not devote any time to participating in online classes, while the maximum time declared by students was 9 hours a day. The detailed results are presented in Table 11.

Table 11. Number of hours devoted daily during remote classes to participate in online classes (PCSET 2021, N = 290)

	Number	Mean	Median	Minimum	Maximum	Dev. std.	Coefficient of var.
Number of hours	290	6,3	7,0	0,0	9,0	1,8	28,6

Source: PCSET 2021

The research has shown that the mean daily number of hours spent by surveyed students during remote learning to prepare for lessons and doing homework was about two and a half hours, with the median being 2 hours. A small portion of the respondents declared that they did not devote any time to homework, while the maximum time declared by (a negligible percentage) of students was 9 hours a day. The detailed results are presented in Table 12.

Table 12. Number of hours spent daily during remote classes to prepare for lessons, doing homework (PCSET 2021, N = 321)

	Number	Mean	Median	Minimum	Maximum	Dev. std.	Coefficient of var.
Number of hours	321	2,4	2,0	0,0	9,0	1,8	75,0

Source: PCSET 2021

Many students require the support of their parents / guardians during their distance education. As part of the research, an attempt was made to identify the amount of time devoted daily by parents / guardians to helping children. The obtained answers show that the mean daily number of hours devoted to children by parents / guardians was just over one hour, with the mean being 1 hour. A significant portion of the respondents also declared that their parents did not devote any time to helping them during remote classes, while the maximum time of parental assistance (declared by a small percentage of students) was 6 hours a day. The characteristics of the detailed results are presented in Table 13.

Table 13. Number of hours daily devoted by parents / guardians to help respondents during remote classes (PCSET 2021, N = 333)

	Number	mean	Median	Minimum	Maximum	Dev. std.	Coefficient of var.
Number of hours	333	1,1	1,0	0,0	6,0	1,6	145,4

Source: PCSET 2021

4.5 Attendance in online classes and reasons for absenteeism

The study also focused on the attendance of students in online classes. Just over half of the respondents participated in most remote lessons, and two-fifths of the students participated in all online lessons. Despite the obligation to participate in lessons conducted by teachers via the Internet, some, although a small part of the surveyed students attended only partially or were absent (Figure 20).

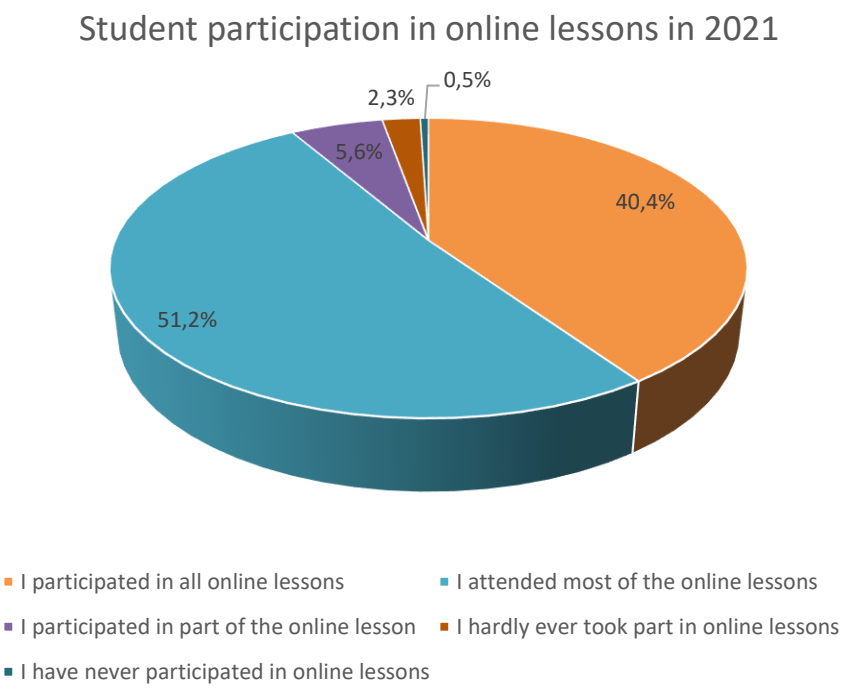
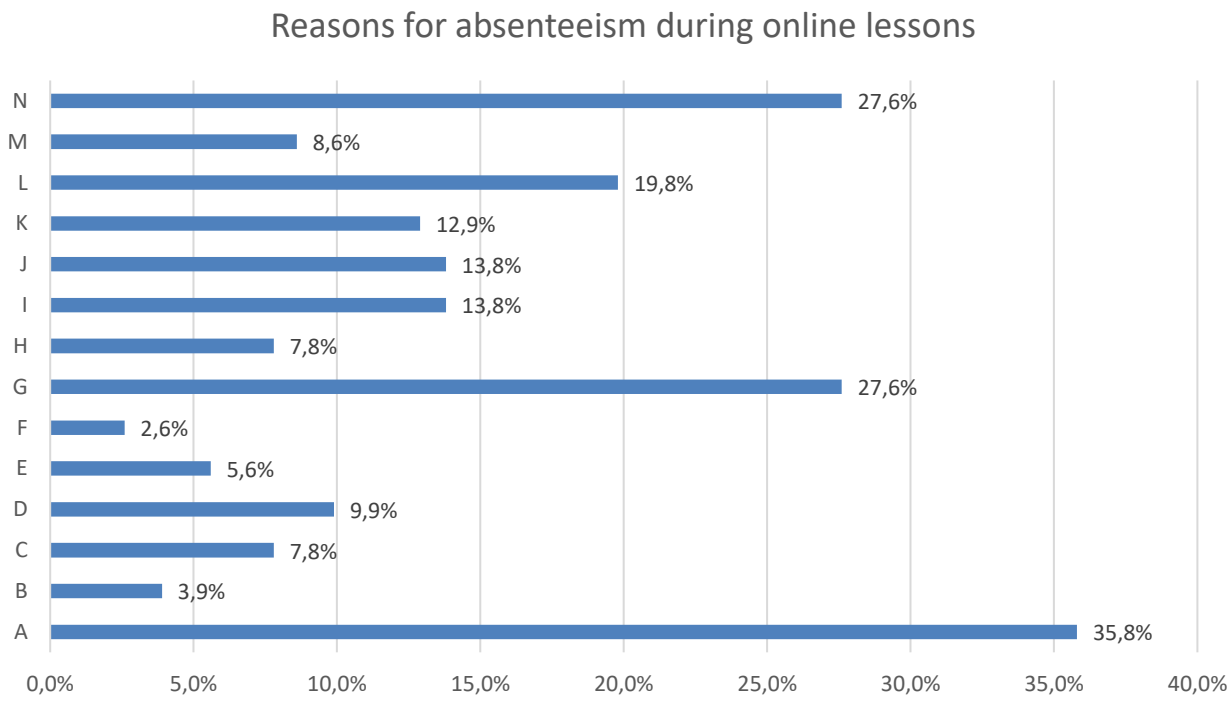


Figure 20. Student participation in online lessons (Source: PCSET 2021, N = 394)

Among the reasons for the absence from online classes poor health (student's illness) was the most common response. For the two next common responses, the respondents mentioned the lack of a functional / free computer / laptop for online lessons and reasons other than those given in the questionnaire. Among the options given, the students quite often considered the fatigue of remote education as the reasons for their absenteeism. Subsequently, they suggested that certain lessons were boring and uninteresting, and declared general boredom at school and inability to cope with the lessons (Figure 21).



A. I was sick
B. My parents or relatives were sick and had to look after them
C. I had to look after my siblings
D. I had to help with the housework
E. I had to help with the farm, seasonal work
F. I had to act to bring money home
G. I did not have a working / free computer / laptop) for online lessons
H. Since I am not interested in school, I have different life plans
I. Because some lessons were boring, uninteresting
J. Because school bores me in general
K. I did not do well during the lessons
L. I was already tired of remote education
M. Remote education gives you nothing, it's a waste of time
N. Another

Figure 21. Reasons for absenteeism during online lessons (Source: PCSET 2021)

4.6 Readiness for school learning

The students' priorities concerning the acquisition of school knowledge were also examined. The opinions of the respondents were quite divided and spread mainly between the three learning modes, i.e. direct, remote and hybrid, with only a few more students in favour of returning to in vivo classes conducted at school than staying with distance learning. In turn, over one fifth of students preferred the hybrid mode, combining distance learning with face-to-face education at school (Figure 22).

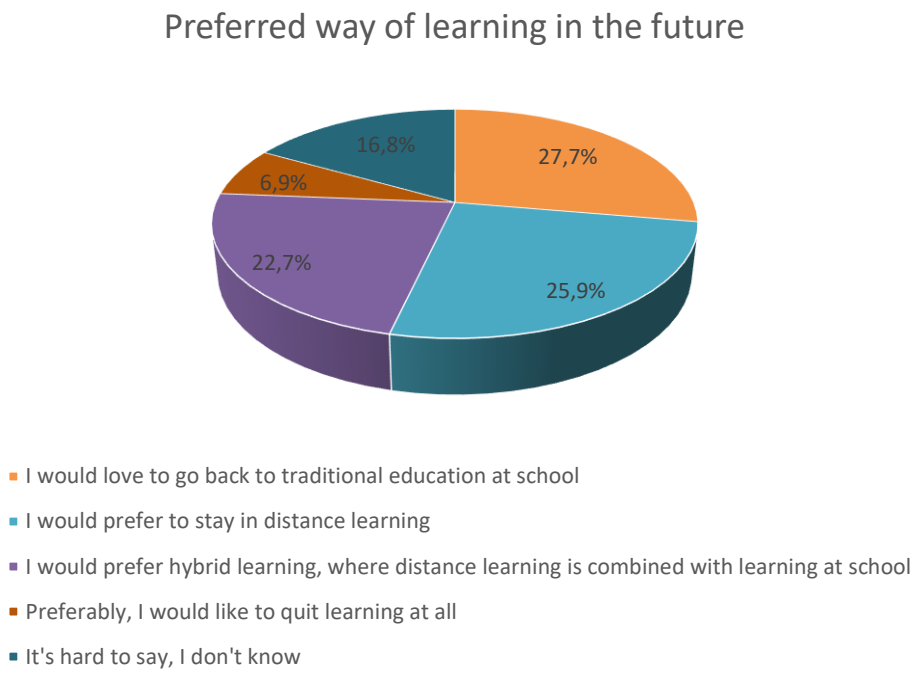


Figure 22. Students' opinion about how they would like to continue learning in the future (Source: PCSET 2021, N = 375)

4.7 Educational aspirations

The study also asked about educational plans after leaving primary school. The respondents did not indicate any clear lead when it comes to further schooling. A similar number of responses was given to two types of schools, i.e. general education school (high

school) and technical school (technical school), and these were the most frequently given answers. Almost every eighth student would choose a trade (vocational) school (Figure 23).

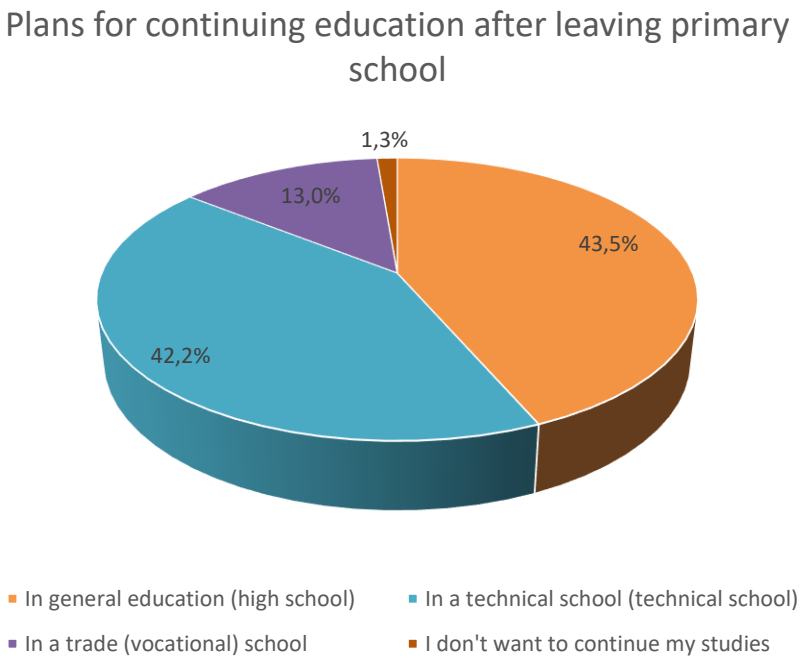


Figure 23. Students' educational plans (Source: PCSET 2021, N = 384)

4.8 Summary of the section

Research on the situation and opinions of students from peripheral areas during distance learning covered a number of research problems. Among others, technical conditions of online education, students were asked about the technical equipment of their home / apartment in the context of the possibility of participating in remote classes. The responses showed that the majority of students had access to digital devices, and the technical equipment they possessed allowed them to participate in distance learning (full or partial). However, some students were also identified who did not have technical equipment at home that would allow them to participate in online lessons. The respondents most often used a laptop, or a desktop computer to participate in distance education. The technical equipment was mostly the property of the students. It is worth adding that nearly one fifth of the respondents shared a device with their parents or siblings. Most of the students had their own study room, but almost one in ten students had to share the room with their siblings, which could be bothersome, stressful and inconvenient. Another examined element was the quality of online lessons. Using a relative indicator to assess the quality of online lessons compared to traditional school lessons, the responses showed that in total more than half of the students rated the quality of online lessons at a level slightly or much lower than face-to-face activities. One fourth of the students did not notice a difference in the level between online and traditional lessons, and every tenth student said that online lessons are at a much higher level than traditional lessons at school. Regarding the students' opinions on remote education, the general assessment of the respondents was that traditional learning at school was viewed more positively. The responses to the pros and cons of remote learning were varied. Taking into account the opposite extremes, i.e. the most often indicated completely positive or

completely negative views, the students most often strongly agreed that thanks to remote learning they had more time for themselves and that they did not have to prepare and go to school. Another decisively positive attitude of the respondents was towards the statement that they had more time for their family, friends, and classmates. On the other hand, the largest number of students strongly disagreed with the statement that during remote learning they could not fully participate in online lessons due to health problems. Subsequently, the respondents strongly disagreed with the statement that their contact with their classmates deteriorated during distance learning. An attempt was also made to identify the level of student involvement in online classes. The results showed that the average number of hours spent by the surveyed students in remote learning participating in online classes was just over 6 hours a day. Additionally, the average daily number of hours devoted by them to preparing for lessons and doing homework was about two and a half hours. Wheras the average daily number of hours devoted by parents / guardians to helping children was just over one hour. The study also focused on the attendance of students in online classes. Nine out of ten surveyed students participated in all or in most remote lessons. It is worth noting that despite the obligation to participate in lessons conducted by teachers via the Internet, a small percentage of respondents did not participate in such classes. Some of the reasons for the absence from online classes were: poor health (student's illness) as the most common, followed by the lack of a functional / slow computer / laptop and reasons other than those specified in the questionnaire. Students' views on their preference for school learning were divided and spread broadly between the three learning modes, i.e. direct, remote and hybrid, with a few more students opting for returning to classroom instruction than remaining with remote education, distance learning, or hybrid learning. The examined students did not indicate any clear lead as far as further education is concerned. A similar number of responses was given to two types of schools, i.e. general education school and technical school with these being the most frequent responses.

5 Main research results and further recommendations

Research has shown that most students had access to digital devices, and their technical equipment allowed them to participate in distance learning (full or partial). Nonetheless, a portion of the students was identified that did not have access to technical equipment permitting them to participate in online lessons. In addition, nearly two-fifths of respondents shared a device with their parents or siblings. A solution worth considering would be the introduction of discounts when purchasing computer equipment for students, as well as lower fees for permanent Internet access.

The study showed that every second student has depressive symptoms. Almost 85% of the surveyed students have moderate or high levels of stress. Almost two thirds of the surveyed students are definitely satisfied or rather satisfied with their life, and every fifth respondent is definitely dissatisfied or rather dissatisfied. The results indicate a poor mental condition of the students. Therefore, quick and decisive action is needed to improve this condition (mental health of children and adolescents).

The results show a fairly positive perception of social support (parental, teachers and peers).

The research also determined the preferences of students in terms of learning styles. The students' opinions about the preferred way of learning at school were quite divided. It is worth considering these preferences when planning and implementing educational activities.

When planning educational activities, attention should also be paid to other educational needs of students, possibilities of receiving help from the parents / guardians, and the actual time needed to prepare for lessons and to do homework.

As part of the research, the level of students' involvement in online classes was identified by determining the average daily number of hours spent by the surveyed students during remote learning for participating in online classes (slightly over 6 hours), the average daily number of hours spent during remote learning to prepare for lessons and doing homework (about two and a half hours), and the average number of hours a day spent by parents / guardians to help students (just over one hour). The obtained results can be taken into account when introducing appropriate solutions in the field of digital hygiene of students and parents in order to reduce the negative consequences of improper use of IT devices. The timetable should carefully select the appropriate proportions of subjects.

Extensive education in digital hygiene is essential (all ages).

As previously noted, some students were identified who did not participate in online lessons despite the obligation to do so. Among the reasons for absences from remote classes were poor health (student's illness) as the most common reason given, followed by the lack of an efficient / free computer / laptop for online lessons. Some of the priorities for future activities should be to care for the students' health (physical and mental), provide professional help when needed, and provide support regarding the availability of IT equipment.

Among the reasons for absenteeism from online lessons, students quite often indicated fatigue with remote education and the fact that certain lessons were boring, uninteresting, or that the students' were generally bored with school. Therefore, it is worth trying to develop new methods and distance learning techniques aimed at arousing greater interest in students, as well as caring for peer relations and student-teacher relations.

Glossary of abbreviations and terms used

ISCED'97- International Standard Classification of Education 1997 - The International Standard Classification of Education (ISCED) is a tool for the development of internationally comparable statistics on education.

Dev. std.(standard deviation) - a classic measure of the variability of the distribution of a feature, the smaller the value of the deviation, the more the observations are focused around the mean.

Coefficient of var.(coefficient of variation) - a classic measure of the diversity of a feature distribution. It is a relative measure (dependent on the size of the arithmetic mean), usually expressed as a percentage.

WHO - (World Health Organization) - World Health Organization

Arithmetic average - a measure of the location of the distribution and at the same time measure of central tendency. Is it classic measure (each change of any element of the examined set results in a change of the mean value).

Median - (middle value) value of the feature in an ordered series, above and below which there is an equal number of observations.

Significance level - the predetermined acceptable probability of making a type I error (recognizing a true null hypothesis as false), allowing to determine above which deviations observed in the sample, the test will decide in favor of the alternative hypothesis.

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