SUPPORTING DIGITAL TRANSFORMATION IN SCHOOL EDUCATION AT INDIVIDUAL, COMMUNITY AND INSTITUTIONAL LEVEL

Research carried out by:

TEMPUS PUBLIC FOUNDATION

EXPANZIÓ HUMAN CONSULTING

Part One: Research Plan & Methodology

1. Introduction

Research concerning digital education and digital transformation could not be more relevant than nowadays. In 2020 and 2021, a drastic change took place in the world, including the education system, which has undoubtedly drawn attention to the importance of digital education, the essential need for conscious, goal-oriented use of digital tools as well as the fundamental need for digital competences.

The Call for Proposal (published in June 2021) has defined the research topic clearly: SUPPORTING DIGITAL TRANSFORMATION IN SCHOOL EDUCATION AT INDIVIDUAL, COMMUNITY AND INSTITUTIONAL LEVEL.

The Call consisted of two parts: a desk research as well as a complex field research.

This part of the research report describes the desk research, but provides some relevant pieces of information regarding the field research, too.

2. Requirements of the TOR[1]

Field research:

- what expectations had national education management had of institutions?
- how schools were supported by national education management?
- what was the pre-COVID situation regarding digital education?
- what competence gaps were typical / obvious at different levels of education?
- what regulatory environment is prevalent in Europe at the national level?

Desk (or secondary) research

The aim is:

- to review previous research findings to gain a broad understanding of the field;
- to create a shared repository of knowledge;
- to identify gaps to be bridged regarding the Erasmus+ project applications.

Proposed research methodology:

- Reviewing research carried out by relevant organisations and institutions.
- Reviewing relevant research carried out by others on the internet.
- Examining the Erasmus+ platforms (eTwinning, School Education Gateway, EPALE).

Questions to be answered:

- What research has been done on the European level?
- What topics are the most common amongst project holders in partner countries?
- What supporting mechanisms operate effectively in the E+ countries regarding digital transformation? Are there reports available that contain impact analysis?

[1] Terms of Reference

- What current trends and hot topics in digital transformation in school education are there?
- What E+ platforms are used and not used by beneficiaries effectively, and why are they not?
- What are the risks of digital teaching and learning that need to be considered?
- What key factors make digitalisation sustainable in school education?

3. General context of post-COVID digitalisation in school education

The digital educational system in the world – present status and vision

The World Bank has commissioned a number of significant research, and – in support of digitalisation in education –, trends and phenomena related to the transformation in public education, a searchable database has been published on the European Data Portal. Results are very similar to the 3-point system of requirements published by the UNESCO in 2020:

- Appropriate level of internet access;
- Appropriate technology;
- Skills to use the appropriate technology.

Based on the results of our research and the data provided by the examined countries, it can be stated that both the necessary administrative (restrictive as well as regulatory) procedures and the minimum expected technology were available. Research institutes, professional groups and ministries supporting national education have carried out strategic work on a variety of topics, conducted in-depth research and facilitated the creation of several studies. However, only a small number of materials that are truly comprehensive and contain relevant findings have been produced. Two major research materials stand out, funded by the European Commission:

The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets which found that:

However, students are involved at different levels in terms of state regulations (school closures), in the longer term, **the aggravation of the effects is expected to be the accumulation of negative consequences**. Based on this, the study draws attention to the fact that *decision-makers must take into account all the functions of the education system and find a solution to replace them and move them online*. Solutions should not be limited to maintaining the educational work process.

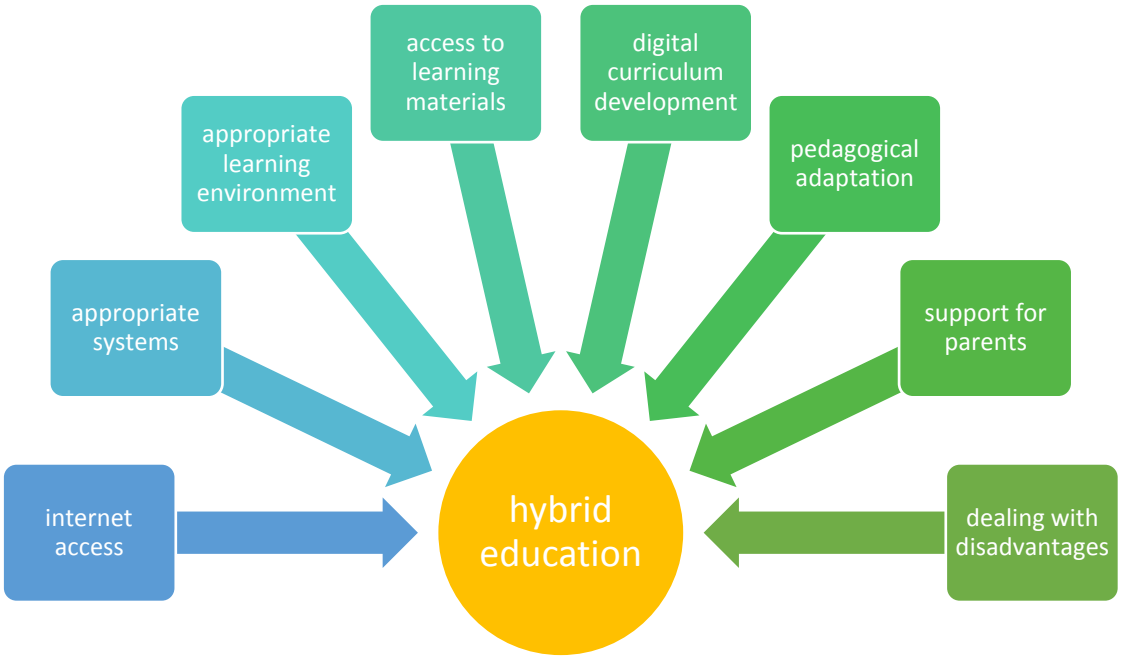
The main considerations in support of the online transition:

In the case of disadvantaged students (who have insufficient or no access to the online infrastructure), it must be ensured that they have the opportunity to make up for the amount of curriculum loss due to **absentee education**. Interventions must be effective in preventing disadvantaged students from incurring individual, educational, or economic disadvantages as a result of the hybrid education.

When traditional education is not feasible (during the pandemic), it must be ensured that alternative methods and hybrid solutions work, and

1. new learning / teaching methodologies are developed;
2. curricula are adapted to the needs of students and the opportunities of institutions;
3. additional problems of younger learners should also be taken into account when using online learning units;
4. managing health risks (of mandatory distance learning and of increased screen time) should be a priority, too.

The most important elements to ensure functional hybrid education are:



According to a UNESCO (2020) study titled Guidance on Open Educational Practices during school closures, **digital transformation can be discussed along the following problem groups**:

1. Due to the unexpected situation, there was no time to get prepared. The curricula developed for the traditional teaching system had to be immediately adapted to online interfaces, which – in many cases – have taken place without real planning or adequate control, no previous experience has been available.
2. Isolation, the weakening of extracurricular relationships, the feeling of loneliness have caused frequent difficulties for students. Online optionshave been limited to the delivery of curriculum and have not been – by nature – adequate to the social needs of students.
3. New, effective pedagogical approaches have proved to be needed to prevent dropout, radically different from pedagogical approaches necessary in the offline classroom.

The studies above can provide a new vision in the context of pedagogical processes.

Whether or not absentee / hybrid education persists or reoccurs in the long run, the sudden change has helped expert groups provide a complex picture of challenges that the educational system faces, the adaptability and the structural problems underlying the functioning of the previous (traditional) education system. The picture is more or less positive, the COVID-19 situation has contributed to the change of the structure of education, to strengthen private and public education institutions, to remove taboos, thus, played a part in creating 21st century education.

4. The theoretic framework of the research

Digital transformation had started long before the pandemic, partly due to **extremely rapid technological development** (broadband internet, smart devices, open platform developments, etc.). However, the period of the coronavirus epidemic has served as a catalyst for transformation, e.g., regarding practical implementation. Organisations at different levels of operation have used **different adaptation techniques to introduce digital education** that had previously existed almost exclusively in theory.

In this research, examining both aspects have appeared to be essential. In addition to examining the static and dynamic characteristics, our intention has been to extend the research to two different levels.

On one hand, problems concerning students come up, so it is worth paying special attention to:

- Has there been any organised needs analysis regarding students conducted?
- What forum has students been provided with to share and circulate their problems to appropriate levels?
- Has there been a person or organisation unit appointed to be responsible for managing signals?
- How long does it typically take from reporting to investigating and solving a particular problem?
- What problems have exceeded the framework of certain institutions?

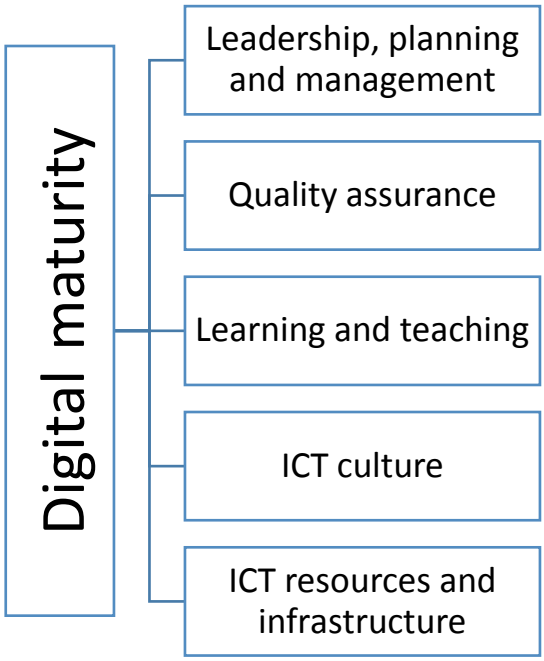
Parallelly examining individual and institutional levels as well as presenting correlations can provide a complex, multi-level analytical framework to evaluate results.

The table below, closely related to the hypothesis of the research, shows **hypothetical relationships between the individual level and the institutional level**. In the course of the research, the hypothetised correlations can be confirmed or refuted. If the connection is proven, the closeness of the connection can be examined during the research, and the examination of the time interval between the exploration and the solution of the problem gives an insight into the dynamism and efficiency of the institutional operation.

Individual challenges of digital well-being	Institutional solutions of digital well-being
Mental / emotional problems	Employing school professionals
Immature IT system	Hardware / software developments
Obstacles to preparation	Developing online study materials
Barriers to student assessment	Developing online audit / evaluation system
Circumstances hindering school administration	Administrative developments
Lack of information	Operating new communication channels

The level of digital funds available in institutions (digital maturity) can be determined as follows, with some modifications, based on the study titled Methodology for Developing the Digital Maturity Model of Higher Education Institutions.

Basic elements of digital maturity in secondary education institutions:



Areas identified in the research framework continue with

- the search for materials available on the internet during the secondary analysis of research materials;
- the presentation of connections and synergies based on a thorough analysis of scientific results.

The following phrases and keywords are suitable for understanding materials and documents on which the research is based.

Leadership, planning and management

- Advanced management
- Management solution
- Strategic management
- Education planning
- Leadership and school improvement
- Developing emergency plans
- Strategic planning
- Management of distance education
- School management system

Quality assurance

- Responsibilities
- Project management
- Implementation
- Analysis
- Communication
- Operations
- Testing
- Documentation

Learning and teaching

- Accessibility
- Change management
- Hybrid courses
- Hybrid learning

- Student support
- Teacher support
- Participation
- Building community of practice
- Pedagogical concepts
- Curriculum design

ICT culture

- Collaboration
- Discovery
- Engagement
- Course management system
- E-learning environment
- Instructional design
- Interaction
- Adaptation

ICT resources and infrastructure

- Administrative support
- Facilitating conditions
- ICT Infrastructure
- Network System
- Availability of equipment
- Technical support
- Adopting new technologies
- User perceptions
- Digital exclusion
- E+ platform usage

Preparation and competences of teachers play a decisive role in the adaptation of technologies. The publication titled the **European Framework for the Digital Competence of Educators** provides a basis for measuring preparedness.

Assistive technology

„Assistive technology (AT) is a generic term used to refer to a group of software or hardware devices by which people with disabilities can access computers. They can be specially developed and marketed devices or off-the-shelf products that have been modified. Assistive technology can include devices such as alternative keyboards and mice, voice recognition software, monitor magnification software, multiple switch joysticks, and text-to-speech communication aids.

Continuous professional development (CPD)

CPD is the means by which members of professions maintain, improve and broaden their knowledge and skills and develop the personal qualities required in their professional lives, usually through a range of short and long training programmes, some of which offer accreditation. This job-related continuing education and training refers to well-organised, systematic education and training activities in which people take part in order to obtain knowledge and / or learn new skills for a current or a future job.

Keywords:

Digital resources

- Selecting
- Creating and modifying

- Managing
- Protecting
- Sharing

Teaching and learning

- Teaching
- Guidance
- Collaborative learning
- Self-regulated learning
- Learning environment

Assessment

- Assessment strategies
- Analysing evidence
- Feedback and planning

Empowering learners

- Accessibility and inclusion
- Differentiation and personalisation
- Actively engaging learners

RESEARCH HYPOTHESES

Based on the desk research, we have formulated the following research hypotheses:

The pandemic has challenged traditional ways of teaching and learning, and helped realise a range of pedagogical and organisational innovations.

Teachers have faced many challenges unknown before. A key element in their development is the establishment of the school as a learning organisation.

School management has played a key role in shaping the school as a learning organisation.

The regulatory environment surrounding the school has played a crucial role in the development of school-level innovations and the sharing of good practices. The innovation-friendliness of the regulatory environment varies greatly from one Member State to another.

The return to traditional face-to-face education has set off a strong wave of restoration and oblivion in Member States' education systems. Only a small number of Member States have a systematic processing of online learning experiences.

Main topics of the secondary analysis are:

- What current trends and hot topics in digital transformation in school education are there?
- What topics are mentioned most frequently in research materials?
- What areas for development have been identified by impact assessments?
- What issues have been identified to have the greatest impact on risk analysis in impact assessments?

Which E + platforms are used and not used effectively by beneficiaries, and why not?

- Which Erasmus+ platforms can be identified from available documents?
- How is it possible to rank platforms used by beneficiaries based on quantifiable data?

- What issues can be identified in the analysis regarding the use of applied platforms? What conclusions can be drawn from the findings?
- If they don't use E+ platforms, what do they use instead?
- How can Erasmus+ platforms be grouped by use?
- How can opinions on less used platforms be summarised? What are the risks of digital education and learning that need to be considered?
- What risks can be identified in the materials processed during the secondary analysis?
- What pedagogical risks can be identified?
- What human resource risks can be identified?
- What IT tool risks can be identified?
- What management, process management and administration issues have been raised in research materials?
- What success stories can be identified regarding the use of the platforms?

What are the key factors that make digitalisation sustainable in school education?

- What are the short- and long-term goals of ensuring sustainability?
- What complete set of tools for digitisation can be found in the human, material, IT, pedagogical, communication, management and administrative fields?
- How uninterrupted accessibility for the actors involved can be ensured?
- How is digital transformation possible regarding spatial, temporal and technical conditions? How continuous content development can be ensured?
- How can the feedback process that provides flexibility and development be operated?
- What set of tools can be used to ensure sustainability?

In addition to the secondary analysis of the research materials, it is also necessary to apply the methodology of interviewing stakeholders and publishing surveys. In the interviews, we are looking for the answer to the question of the relationship between the experience of the organisations implementing Erasmus + projects, the effectiveness of the projects and the platforms and online technologies used. Precondition for professional support of programmes is that all problems and opportunities experienced during the implementation need to come to surface so that effective development directions and methods can be identified.

Applicability should also be considered when selecting a methodological tool. In addition to personal **interviews**, **focus group discussions**, and **data collection with surveys**, alternative methods need to be applied to collect a sufficient amount of information in cases where personal questioning and data collection is not possible.

Target groups of our interviews are professional education managers and project managers of organisations implementing Erasmus+ projects, staff managing digital transformation and, if possible, experts and researchers participating in earlier research in the field.

Practical application of the tools:

1. Personal or online interviews and focus group discussions

The interview is a manageable tool available both in person and online. Due to different locations of target group members and expected travel restrictions related to the pandemic, most interviews are to be conducted online.

2. Online surveys

This data collection tool will be used online. When compiling the questionnaire, we create a compact tool for gathering information that is closely related to the topic, using a multiple-choice structure in most questions,

giving pre-formulated alternatives to respondents so that they can complete the survey quickly and smoothly. This type of questioning also supports the efficacy of data processing by shortening the required time interval to process responses.

The main issues of the interviews / focus group discussions / surveys:

- Content issues;
- Issues related to project implementation;
- Platforms being used;
- IT tools, need for further development;
- Background processes and higher level interventions supporting digital transformation.

Questions regarding content:

- What is the main purpose of your project?
- In what areas (e.g., sports, culture, health, society) is it being relaised?
- Who is your target group?
- Which competences does it aim to improve?
- What services do you provide the target group with?
- What methods are being used to reach and involve the target group?
- What tools are used to implement the project (events, mentoring, publications, professional circle, other school activities, etc.)

Issues related to project implementation:

- When did / does the project start?
- When is it going to be finished?
- How many people are involved in the implementation?
- What difficulties have you experienced during the planning and the implementation?

Questions regarding platforms used:

- What online platforms / applications do you use?
- What Erasmus+ platforms do you know?
- What experience do you have regarding the applicability of available platforms?
- What platform have you planned to use?
- Does the chosen platform cover the services of the project, or is it necessary to use other tools as well?
- What problems have occurred when using these platforms?
- What developments do you suggest to create more user-friendly applications?

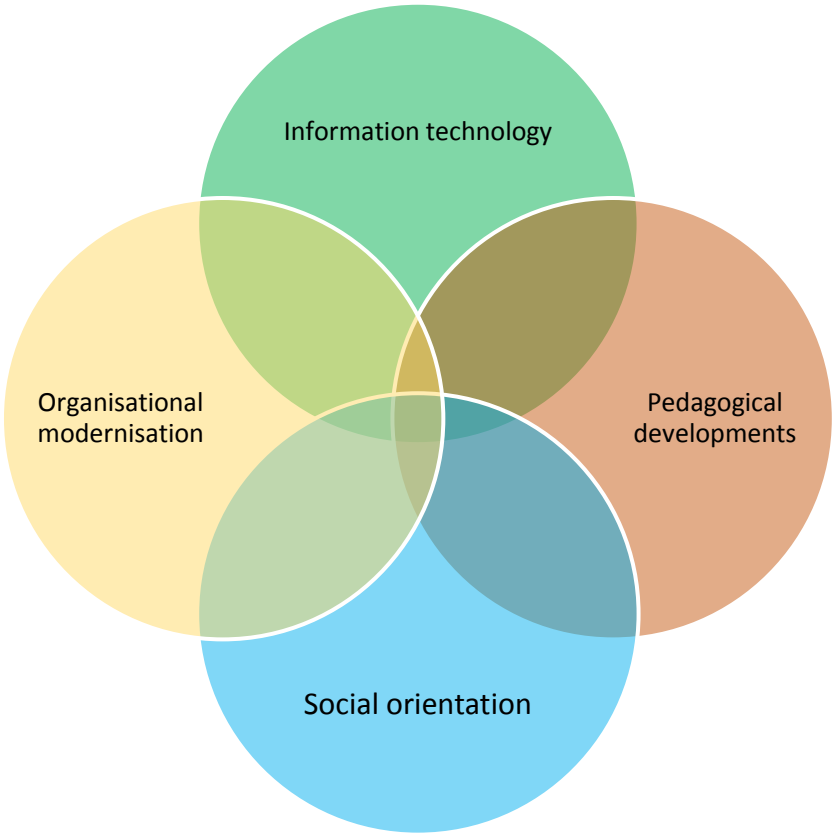
Questions regarding IT tools, the internet and further developments:

- What kind of IT tools are being used during the implementation of the project?
- Is the provision of the instrument considered appropriate from an institutional point of view?
- Is the availability of tools adequate at the learner level?
- Is there adequate stable internet access available to support project activities?
- Are you planning to develop applications during the project?
- In what areas is it necessary to develop new applications?
- Are there difficulties regarding the use or ongoing use of tools?
- Do you consider current IT tools appropriate for long-term, sustainable operation?

Background processes and higher level interventions supporting digital transition:

- What major educational / school / community / individual innovations have led to the COVID-19 crisis in your country?
- What institutional changes characterise the digital transformation process?
- What experiences can be filtered regarding support of transition?
- Are institutional changes sufficient to manage the transition?
- What main factors of success can be identified regarding institutional transition? (support, management, actors, etc.)
- Do you consider the speed of change to be appropriate?
- What higher-level changes in education policy and legislation support the transition process?
- Do you consider the field of education policy interventions to be appropriate?
- Do you consider the speed of changing the education policy framework to be appropriate?

Thematic grouping of relevant ERASMUS + application materials:



Countries included in the analysis

It is important to point out that in target countries (LTA countries such as the Czech Republic, Estonia, Germany, Greece, Hungary, Ireland, Lithuania, Malta, the Netherlands, Poland, Italy, Spain, etc.), data collection is to be assisted by the National Agencies to support better access and ensure completion.

Among the countries implementing Erasmus + projects, we recommend that the data of two Central and Eastern European countries: Estonia and Hungary, and two Western European countries: Germany and the Netherlands

be examined more thoroughly to get a comprehensive picture of results, to identify areas of development in school education that support digital transformation.

In the course of the survey, we distinguish between individual, project and institutional levels, but we would like to get an insight into the areas of higher level (institutional, policy, state) actions, the cornerstones of the efficacy of interventions.

Topics covered by E+ projects

Information technology	Pedagogical developments	Social orientation	Organisational modernisation
Introduction of new technologies	Digital competence development	Labour market	Quality improvement
Digital competencies	Innovative curricula	Young unemployment	Management; methodological development
Open and distance learning	Early school leaving	Equal opportunities	Development of administrative tools
Software and hardware application	Research and development	Environmental awareness	Institutional responsibility
	Training methodology	Preservation of cultural traditions	
	Intercultural or intergenerational dialogue education	Social / civic involvement	
	Lifelong learning	Health and well-being	
		Disadvantages / Special needs in education	
		Integration	
		Energy policy	
		Climate change	
		Creativity and culture	
		Democracy	

Focus areas of E+ projects

Information technology and social orientation		
Project title	**Participating countries**	**Related international research**
The world of international work in a changing way	DE,FI	
Moving Together Into A Digital Future - A Sound Mind In a Sound Body	AT,DE	
Forest 3.0 - our natural heritage	DE,SK,PL	
Digital ambassadors of cultural heritage	TR,PT,LV,RO,LT	
From Facebook to Tik Tok. Become a savvy digital citizen.	PL,FI,EL,CY,BG,PT	
360 degrees	DE,EL,PT,IT,FR	
Well-being and inclusion promotion continuum - healthy school life in a healthy Europe	DE,FR,IE,CZ,BG	

Information technology and social orientation		
Project title	**Participating countries**	**Related international research**
Arts for Future	DE,ES,SE,EL,FR,HR	
Explaining Europe	DE,SK,PL	
There is no Planet B	DE,UK,BE,HU,EE	
Digital Days: Digitalisation in Upper Secondary School	DK,SE,NO,BE	
#ShareEurope: Sharing interactive education in virtual and mixed reality	BG,CZ,AT,HU,EL	
Artificial Intelligence in Education - challenges and opportunities of the new era: development of a new curriculum, guide for educators and online course for students	HR,NL,PT,PL	
Schools for a green future - How can we protect the environment and save resources in our daily life?	DE,CY,EL,ES,IS,IT	
Improving students' social participation in primary and secondary schools across Europe	AT,EL,DE,PT	
Anpassung der Fachkompetenzen - Fit für die Zukunft	DE,FR	
Demokratieerziehung in digitalisierten Gesellschaften	DE,DK	

Information technology and pedagogical developments		
Project title	**Participating countries**	**Related international research**
Knights of the European Grail - creating a game-based approach for learning Italian, Spanish, French, English, Portuguese and German	DE,ES,UK,PT,IT,FR	Digital Transformation in Education during the COVID-19: a Case Study
Sustainable Usage of IT-devices	DE,EE,SI	
European Digitalised Idioms Or Sayings	ES,NL,TR,DE,FR,UK	
On the Move	DE,IT,FR,PL,ES	
Learning and digitalisation in home economics education	EE,NO,SE,FI	
GEOCAD-Design Geometry with Computer Aid	SI,TR,PT,EE,SK,EL	
Realistic Education Among Digital Youth	TR,PT,CZ,PL,SK,NO	
Glomma and Kinzig - language skills, digitalisation, art and natural science	NO,DE	
Stories Bring Us Closer	HR,IT,SE,EL,ES	
Outside the box - Possibilities of digitalisation with regard to space and time	DE,BG,LV,FR	
Transdigital Education - Developing Key Competences through Holistic	DE,PL,DK,LT,SE,ES	

Information technology and pedagogical developments		
Project title	**Participating countries**	**Related international research**
Learning and Teaching in the Digital Age		
Innovative ICT-based training approach to reshape school education and training	BG,CY,PT,IT,NL	
Augmented Reality Enhanced Toolkit for Sustainable Education	MT,HR,FI,IT	
Digitalisation goes Schools	AT,ES,HR,PT,IT	
Digital learning in Hospitals	AT,DE,BG	
Cooking with Colour	SE,IT	
GRENZENLOS - digitales Lernen in EINEM Europa OHNE Grenzen	DE,RO	
Digitale Unterrichtsmaterialien für Digital European Natives	DE,HU,RO,AT	

Information technology and organisational modernisation		
Project title	**Participating countries**	**Related international research**
Quality in Early Childhood Education	SE,LV,FI,SK	
Digitalisation: Promoting the use of e-learning tools and learning critical handling of social media	AT,DE,PL,LU	
Schools for a green future - How can we protect the environment and save resources in our daily life?	DE,CY,EL,ES,IS,IT	

Pedagogical developments and social orientation		
Project title	**Participating countries**	**Related international research**
School building for better everyday school life	FI,IT,PT,CZ,PL	
Kids against plastic pollution	NO,HR,DK,TR,RO	
Tiles - A Cultural Journey from the Past to the Future	DE,HR,PT,LT,TR	
Integration and cultural identity	DE,PL	
Working together tomorrow?	FR,DE	
Who am I? Who are you? Who are we? - Working towards an inclusive European identity	DE,DK,LT,FR	
Be ACTIVE, Be Happy!	DE,HR,TR,LT,ES,SE	
Puzzle up - Get ready for the future	AT,BE	
Career opportunities in Europe	DE,ES,FI,IT	

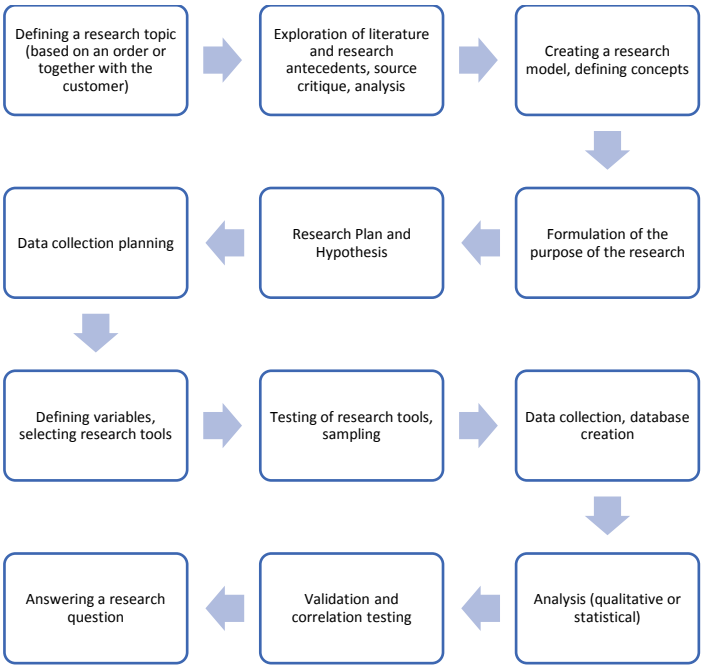
Pedagogical developments		
Project title	**Participating countries**	**Related international research**
Journey Together: Families, Schools, and Communities	EE,IT,DK,PT,RO	Pedagogical models for the facilitation of teachers' professional development via video-supported

		collaborative learning. A review of the state of the art
Schools are changing – School prinicipals are driving the change - Develop good schools with everyone	DE,FI	

Information technology developments		
Project title	**Participating countries**	**Related international research**
Online Learning using the example of Environmental Education	DE,ES,EL,PT	
Robotics through sign language: ensuring access and engagement of students with disabilities (deaf or with hearing impairment) to the digital world of coding and robotics – robotics4deaf	PL,EL,SK,IT,LV,CY	

5. Research tools

Specific research methodological tools can be interpreted in the current research process. The following diagram illustrates the general process:



Research methods are partly based on the PRISMA-P 2015 protocol (Moher et al., 2015; adapted version of Shamseer et al. 2015)

1. Eligibility criteria: Specify the study characteristics and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review.
2. Information sources: Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage.
3. Search strategy: Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated (definition of keywords).
4. Data management: Describe the mechanism(s) that will be used to manage records and data throughout the review.
5. Selection process: State the process that will be used for selecting studies.
6. Data collection process: Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators.
7. Outcomes and prioritisation: List and define all outcomes for which data will be sought, including prioritisation of main and additional outcomes, with rationale (Overview, suitability, acceptance).
8. Data synthesis, analysis.
9. Confidence in cumulative evidence.

Part Two: Relationship between the epidemic period and education

1. Background

The aim of our proposed survey is to identify strengths as well as areas for improvement, based on the pandemic experience of current Erasmus+ projects. We aim at providing some useful information for planning and implementing better and more effective Erasmus+ projects. During the preliminary research, information from three levels of analysis have been taken into account (institutional, community, and individual levels).

Data collection activity will cover all participating LTA countries to gather as much information as possible regarding solutions, challenges and encouraging phenomena related to digital transformation. The phenomena brought to the surface by the COVID-19 pandemic have further amplified questions concerning currently available practices of online education. Several studies, research, and reports address these phenomena, concerning the impact and context that have affected society and education system during the epidemic.

Due to rapid technological development and a growing need for sustainability, digital teaching and learning in education had already been in focus for a while prior to the pandemic – a paradigm shift towards digitalisation in education was already underway. Current events have accelerated the paradigm, making way for a "new normal." The Covid-19 pandemic and the *physical distancing* that followed have deeply affected education. In order to keep education running, educational institutions have been constrained to quickly adapt to the situation. This has resulted in an unprecedented push to digital teaching and learning.

Digitalisation offers many opportunities, but also presents many challenges, such as an occasional marginalisation of disadvantaged / vulnerable groups. The coronavirus is permanently reshaping the way we live, teach and learn. Some patterns developed during the crisis — including wide-scale digital adoption — will outlast the pandemic well after restrictions being lifted.

Digital transformation in education has been more necessary during the crisis, not less. Resources — both in terms of talent and public funds — will likely be constrained. Digital initiatives may need to be reprioritised based on relevance in the current environment. New problems and opportunities may come to light with greater urgency. *Digital transformation roadmaps* are needed. It is key to continue to experiment and innovate with digital solutions. It is vital to train target groups to use existing digital methods more effectively and create new ones as well.

The Digital Education Action Plan (2021-2027) has outlined the European Commission's vision for high-quality, inclusive and accessible digital education in Europe. It is a call to action for stronger cooperation at European level to:

- foster the development of a high-performing digital education ecosystem;
- enhance digital skills and competences for digital transformation.

The Digital Education Action Plan have been published and is available on the website of the European Commission. A great deal of knowledge and experience has been accumulated recently across Europe. It is essential to

- build on the priorities of the Digital Education Action Plan;
- map and synthesise available data (the latest OECD, CEDEFOP, Eurostat, etc. data);
- collect and share good practices of partner countries;

- adapt good practices.

In order to respond to circumstances created by the COVID-19 pandemic, in 2020, the *KA2 Erasmus+ Strategic Partnerships programme* exceptionally supported Partnerships for Digital Education Readiness in the fields of school education, vocational education and training, and higher education (KA226). These projects are to aim at

- equipping education and training systems to face the challenges presented by the recent sudden shift to online and distance learning;
- including supporting teachers to develop digital competences and safeguarding the inclusive nature of learning opportunities.

1.1. Hypotheses identified on the basis of short literary review preceeding research

The pandemic has challenged traditional ways of teaching and learning, and helped realise a range of pedagogical and organisational innovations.

A considerable part of European schools and school-systems have showed very mixed results in the most critical period.

Teachers have faced many challenges unknown before. A key element in their development is the establishment of the school as a learning organisation.

School management has played a key role in shaping the school as a learning organisation.

The regulatory environment surrounding the school has played a crucial role in the development of school-level innovations and the sharing of good practices. The innovation-friendliness of the regulatory environment varies greatly from one Member State to another.

The return to traditional face-to-face education has set off a strong wave of restoration and oblivion in Member States' education systems. Only a small number of Member States have a systematic processing of online learning experiences.

Erasmus+ programme management and several of its projects have showed intelligent adaptation during the critical period.

1.2. Questions to be answered during the research

- What research has been done on the European level?
- What topics are the most common amongst project holders in partner countries?
- What supporting mechanisms operate effectively in the E+ countries regarding digital transformation? Are there reports available that contain impact analysis?
- What current trends and hot topics in digital transformation in school education are there?
- What E+ platforms are used and not used by beneficiaries effectively, and why are they not?
- What are the risks of digital teaching and learning that need to be considered?
- What key factors make digitalisation sustainable in school education?

1.4. Classification of research materials

During the processing of research materials, we have tried to define analytical frameworks, groups and categories.

In principle, documents can be grouped according to their geographical relevance

- global;
- continental;
- nation / state;
- *or* regional

levels.

In principle, the grouping can be done according to the elements examined within the education system in terms of the topic of the research: e.g.

- nation / state policy;
- system of educational institutions;
- basic, intermediate or advanced levels;
- *or* research within a specific type of institution.

There may be several types of research materials concerning:

- state-level measures regarding the pandemic and school closures;
- management;
- IT equipment;
- labour market consequences;
- territorial differences;
- mental health, well-being;
- disadvantages.

Different stakeholders have also received distinct emphasis in the research materials.

- policy leaders;
- collaborators;
- leaders of institutions;
- teachers;
- students;
- parents and family members;
- disadvantaged students.

In practice, a significant part of available research materials is a comprehensive, cross-disciplinary and multi-faceted study.

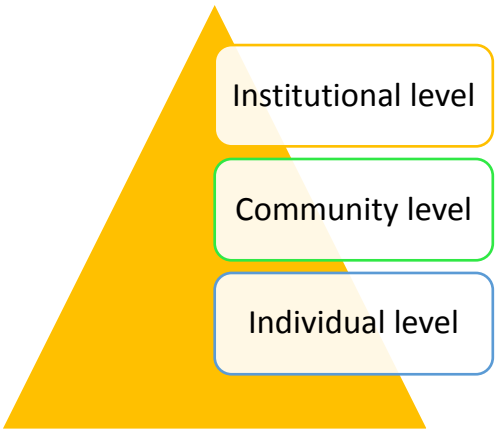
In the course of our present research, we have grouped materials available as follows:

- general research, studies;
- research by country;
- research initiated by international organisations.

1.5. Levels of desk research analysis

- 1st (individual) level: key actors, teachers, school staff, students;
- 2nd (community) level: communities of teachers in the online space;
- 3rd (institutional) level: school leaders, education managers and decision-makers.

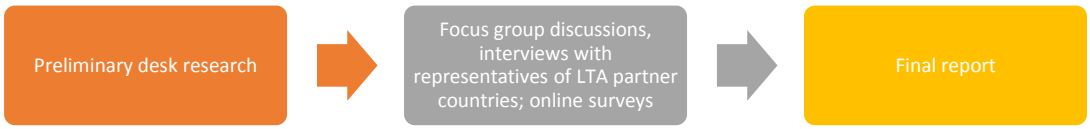
1. Figure: Levels of desk research analysis



1.6. Countries covered by the research

The research covers LTA partner countries such as the Czech Republic, Croatia, Estonia, Germany, Greece, Hungary, Ireland, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Romania, etc. The actual focus of further research (at least three Member States from the LTA partners) will be decided by the Hungarian Tempus Public Foundation.

2. Figure: Major steps of the research project



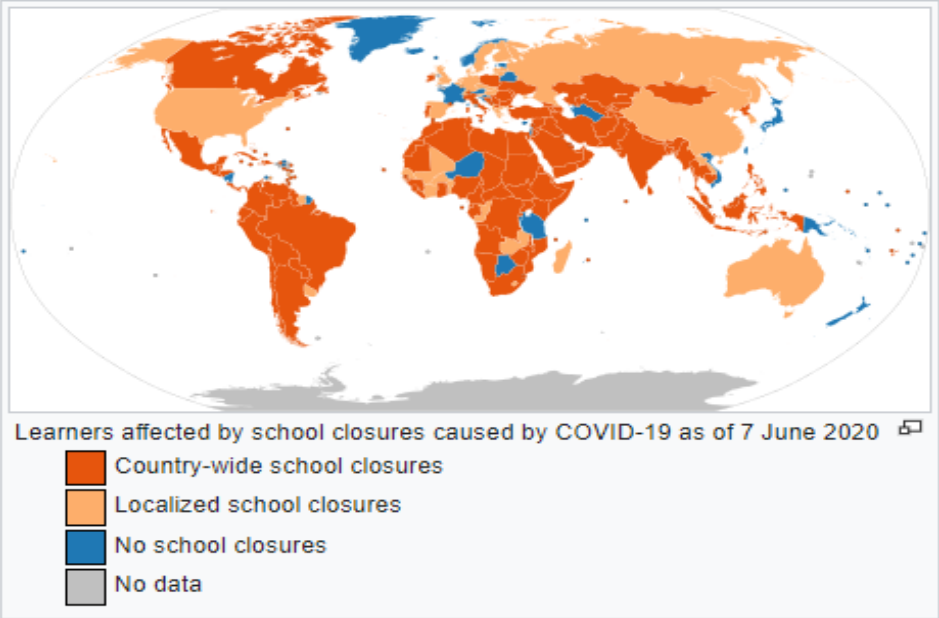
2. Summary of results of preliminary desk research

Apart from the traditional topics of educational research, the most significant event in recent years has been the shock of the COVID-19 epidemic. The pandemic has forced rapid reaction from governments, education policy-makers, schools, and educators.

> *"The COVID-19 pandemic has created the largest disruption of education systems in history, affecting nearly 1.6 billion learners in more than 190 countries and all continents. Closures of schools and other learning spaces have impacted 94 per cent of the world's student population, up to 99 per cent in low and lower-middle income countries."*[2]

3. Figure: Learners affected by school closures caused by COVID-19 as of 7 June 2020

[2] United Nations: Policy Brief: Education during COVID-19 and beyond AUGUST 2020



Source: https://www.ecepaa.eu/the-impact-of-covid-19-on-schools-in-europe/

Responses to the challenge cover a wide range, but mostly cover the areas of education policy, institutional functioning, curriculum development, teaching methodology, and more broadly affect the administration of education systems, the supportive environment for teachers, educators, students and their families.

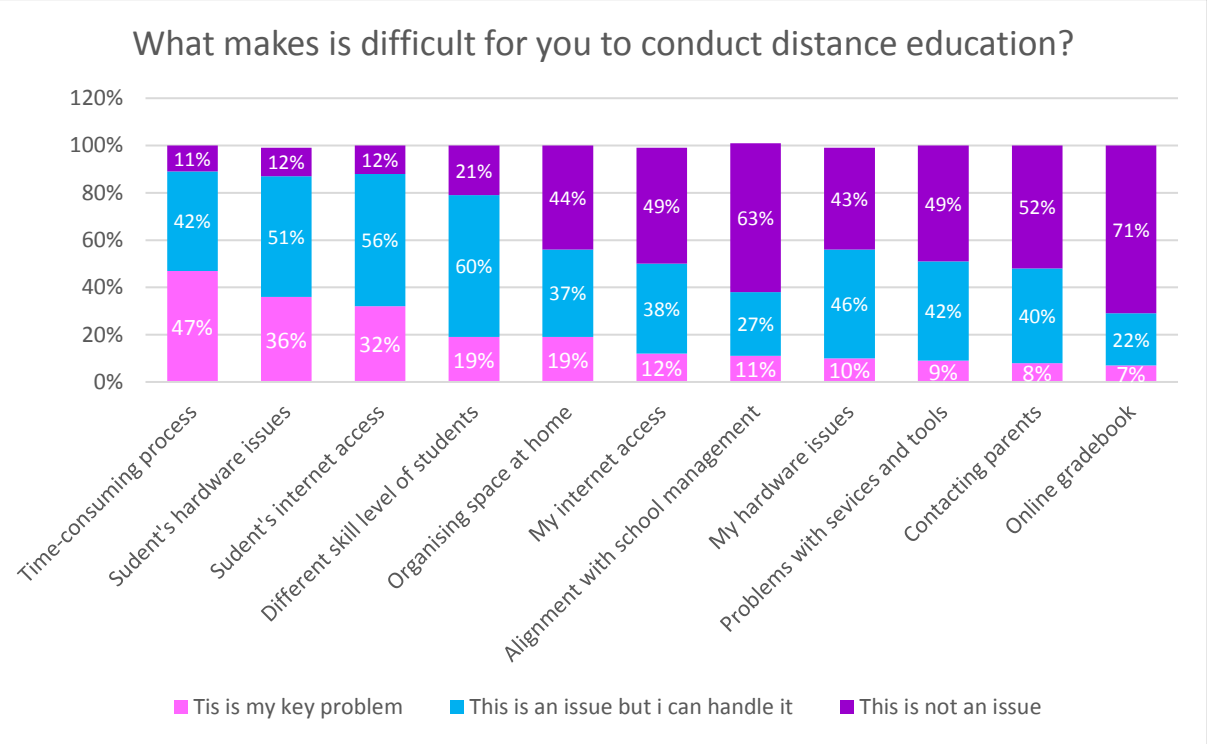
"Governments and policymakers should create a framework for each level of education—primary, secondary, and higher—that will equally focus on the implementation of online education, the required methodologies, and the desired outcomes of the practice. Good practices, methodologies, and common goals should be cocreated with and communicated to all groups of stakeholders. National experts in the field can play a key role in codesigning these frameworks with local, regional, or national authorities, for example, ministries of education. Although each institution should be given the flexibility in how to implement online learning, a validated framework and some common goals are necessary to ensure consistency, learning, and achievement."[3]

Based on the analysed documents, it can be said that the process of digital transition, which had lasted for many years, has gained momentum during the epidemic situation. Most research materials raise the question as to whether the pandemic period poses a threat or an opportunity to the process of digital transformation. The answer is not clear, although most of the materials conclude that the changes are positive, the protracted problems inherent, and the sudden change can have a negative impact on the whole process.

Interviews with educators can provide the most relevant information about online education and related issues. The figure below is based on the research material Remote education in Poland during the COVID-19 pandemic.

[3] Vlachopoulos, D. COVID-19: Threat or opportunity for online education? High. Learn. Res. Commun. 2020

4. Figure: Key issues and their weight based on teachers 'responses[4]



"Emergency remote teaching has given a significant boost to online learning, opening up new opportunities and reflections for the educational system. According to the discussion carried out within the forum, the COVID-19 crisis experience is presenting different challenges that should be addressed to develop new methodologies and pedagogical approaches, infrastructure and platforms specifically designed for online teaching. These new methodologies need to be developed in an interdisciplinary and holistic perspective that (following the responsible research and innovation approach) will anticipate and assess potential implications and social expectations"[5]

Lightning-fast technological changes cannot be ignored by the education system, either. The proliferation of smart devices, the almost infinite amount of knowledge available on the Internet, and learning developments, applications and methods (i.e., problem-based learning) have also created opportunities for educators and learners that can support the effectiveness of education and increase acceptable subject knowledge and increase the efficiency of the education system.

„Education could have benefited from better and more digital education solutions during the coronavirus crisis; thus, it is time to reflect on the role digital technology should have in the future of education. Governments and educational authorities have been deploying distance learning solutions: delivering content, supporting teachers, providing guidance to families, and addressing connectivity challenges in order to facilitate online instruction and distribution of learning material.

4 Remote education in Poland during COVID-19 pandemic

[5] Fernando Ferri, Patrizia Grifoni and Tiziana Guzzo: Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations

But a danger loom: a new type of digital divide is bound to arise as students need laptops, tablets, or phones, as well as some type of internet access, in order to benefit from access to online material."[6]

Properly selected tools can increase learners' motivation, improve their outcomes, and make the learning process more convenient and "customisable."

The global epidemic has also raised fundamental questions such as, "Where is the school?"; "Who is the teacher?"; "What are the functions of education outside the school?"; and, furthermore, "What is the school at all?" Seemingly, online education has sharply divided (a) *learning* and (b) *schools*, which had seemed to be inseparable earlier.

There have been several answers to the above-mentioned questions by country and institutional level. The core task of a school is to perform education, even outside the physical walls of the institution, it has also turned out that *school* as such is "not a place" since the educational activity is happening in the distance, at home or elsewhere: a screen, an application; and can also be done using available digital curriculum. The educator can either be the person who teaches the given subject in the school, or it can also be the best educator in the given country accessible to anyone, e.g., in a video material, explaining concepts and tasks of the given object in an eye-catching and professional way. In extreme situations, parents have substituted educators, too (especially in primary education).

However, the sudden introduction of online education in a very short time, has highlighted that education systems, schools have many other functions, their social impact is much deeper than passing on the knowledge having been accumulated over generations.

In addition to implementing their pedagogical programmes, institutions have provided supervision for pupils. And supervision is crucial for pupils in terms of their physical, mental, and emotional development and safety. The "child-centredness" of the physical design of pedagogical institutions reduces the risk of accidents, and supervision provided by educators orients pupils in social behaviour, supports the emergence of positive behaviours, and reduces potential areas of exclusion or abuse.

In the online space, supervision is much less assured.

"The social challenges are mainly related to the lack of human interaction between teachers and students as well as among the latter, the lack of physical spaces at home to receive lessons and the lack of support of parents who are frequently working remotely in the same spaces. Based on the lessons learned from this worldwide emergency, challenges and proposals for action to face these same challenges, which should be and sometimes have been implemented, are provided."[7]

Perhaps the most important role of schools is to provide community and related experiences. Among the studies processed, several mention that online education systems have not been able to replace the community-building role of *school*. Personal relationships, friendships that develop at school are an invaluable experience, , but it cannot, or can appear only to a very limited extent in the online space. From this point of view, distance education using electronic devices was an even greater challenge and difficulty for first graders.

"Disadvantages of Distance Learning

[6] Hans d'Orville: COVID-19 causes unprecedented educational disruption: Is there a road towards a new normal?

[7] Fernando Ferri, Patrizia Grifoni and Tiziana Guzzo: Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations;

- ***Lack of Social Interaction***

Learning in a brick-and-mortar institution presents students with the opportunity to meet and interact with people from different locations on a personal level. Distance learning only limits students to classes and learning materials that are based online. Though students can interact through chat rooms, discussion boards, e-mails and / or video conferencing software, the experience cannot be compared to that of a traditional campus.

- ***High Chances of Distraction***

With no face-to-face interaction with instructors and other students, those who are enrolled on an online programme might find it hard to keep track of their course work and assignments. That's because there are no constant reminders about pending assignments and / or deadlines. It only requires one to be self-motivated and focused to be able to complete a course successfully. Hence distance learning cannot be a good option for students who keep procrastinating things or those who aren't able to stick to deadlines."[8]

In addition to providing oversight, community, and a secure environment; evaluation and administration are also areas that have not received sufficient emphasis in the transformation process. Assessing pupils performance in conducting oral and written exams has generally been a difficulty in the digital space. Document analysis has shown that *available online tools are not suitable for dealing with all situations properly*. Recording class attendance and activity, dealing with difficulties arising from technical issues, educating, administering, and evaluating larger online groups cannot yet be solved with a single app or tool. In practice, **the use of multiple, independent platforms by both the educator and the learner is required**, which *slows down and in some cases makes it difficult to make processes transparent*.

The transition to online education has been a major challenge for educators. Non-traditional systems, applications, and methods required extra time and attention from educators. They also had to supplement the day-level professional preparation with technical and methodological preparation. From technological constraints, there are communication problems with parents and pupils at school, but psychological problems cannot be neglected either. **The responsibility felt for their pupils, ensuring the level of knowledge to be achieved in the new circumstances and keeping in touch with colleagues is also a burden for teachers.**

"Teachers experience tremendous tension associated with distance learning. The stress associated with the pandemic felt by everyone is superimposed by the stress resulting from their work, which in a pandemic situation some compare to PTSD. They feel lonely, negatively assessed, exposed to extremely difficult conditions, and without any institutional support. Some teachers experience resulting psychosomatic disorders."[9]

In addition to providing oversight, community, and a safe environment, evaluation and administration are also areas that are not given. The difficulty regarding digital transition derived from lack of experience, too. Prior to the obligatory transition, most educators had only encountered digital education systems indirectly, on a theoretical level, and only few of them had had solid, practice-based experience.

"It is necessary to implement clear steps in applying online learning, such as preparing facilities, training with current technology, providing guidelines for teachers and students, offering interactive

[8] Brown, C. Advantages and Disadvantages of Distance Learning.
[9] Research report: Distance education during pandemic

multimedia materials in line with the current curriculum and ensuring an evaluation system with a question bank."[10]

In addition, their experience had been ***limited to a few technical tools and applications***, but there had been very little experience with online reporting tools, for example. Nevertheless, this general conclusion hides a wide variety of digital maturity among Member States.

It has also been a significant difficulty to provide the right device (hardware). In the context of digital transition, research materials and studies often refer to the lack of adequate equipment. Providing the right tools has been less of a problem for educators but more of a problem for pupils. In families where Internet access is provided through a single device, the necessary application, and the infrastructure for online communication (for instance camera, microphone) at a time, only one pupil can participate in education at a time. The situation is even more serious in those (poor, dysfunctional) families where no device or network (electrical, internet) infrastructure are available.

„In half of 21 European countries examined, Grade 4 pupils from lower socio-economic backgrounds were half as likely to have access to the internet as their more advantaged peers. 18 In 7 low income countries, less than 10 per cent of the poorest households have electricity."[11]

For them, online education is currently not suitable to replace face to face education. Often, however, physical conditions are no longer given, i.e., the apartment itself where the pupil lives, is not suitable for creating a background for online learning. Disability can result from physical size, location, or even congestion, and this barrier can be two-way, *not only can circumstances hinder online learning, but providing the conditions for online learning can hinder a pupil's family from performing activities at home*. The use of certain tools for educational purposes raises data security and personal rights issues.

"In most European countries, children from lower socio-economic backgrounds are more likely to lack reading opportunities, a quiet room, and parental support during school closure. In low income and upper-middle income countries alike, children in the poorest households receive significantly less help with their homework."[12]

Effective online education can be ruled out without digital skillset and literacy: the use of word processors, spreadsheets, and browsers, or even the use of the operating system or platforms. The minimum level of IT competencies is not evident to all students. Longer-term developments specifically targeting these areas would be needed to catch up, apply on a practical level, and create routine.

"Complicated Technology

Any student seeking to enrol in a distance learning programme needs to invest in a range of equipment including computer, webcam and stable internet connection. There is absolutely no physical contact between students and instructors as instruction is delivered over the internet. This overdependence on technology is a major drawback to distance learning. In case of any software or hardware malfunction, the class session will come to a standstill, something that can interrupt the

[10] Fernando Ferri, Patrizia Grifoni and Tiziana Guzzo: Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations.
[11] United Nations: Policy Brief: Education during COVID-19 and beyond AUGUST 2020
[12] United Nations: Policy Brief: Education during COVID-19 and beyond AUGUST 2020

learning process. Moreover, the complicated nature of the technology used in distance learning only limits online education to students who are computer and tech savvy."[13]

Research also raises issues of communication and collaboration as significant problems. The widespread involvement of parents in home education has been accompanied by **a dramatic expansion of communication channels**. Instead of the traditional forms of contact (reception hours, parental meetings), it has become natural (based on research) that parents demand immediate contact with teachers in all communication channels, i.e. questions regarding urgent administration or learning are sent during and after working hours, as well as resting periods. The exponentially rising need for communication is causing significant frustration on both sides. The other extreme, though, have proved to be even more dangerous. Some parents and relatives do not have the necessary communication interfaces and technical tools, therefore they cannot exchange information on a daily basis, or due to the emergency they do not consider it important to participate in education. Students where communication with parents is inadequate may lag behind their peers who are actively involved in online education in the longer run.

„Although proved very advantageous, distance education has also some biases contrary to learning. Among these was conducted a survey of some major, namely:

- *You must have considerable self-discipline in these circumstances. It can also represent a disadvantage to students who do not have enough discipline to meet required activities without the presence of a teacher to guide and supervise them;*
- *Do not make the teacher to take questions at the very moment they arise: in regular classes, students can have the opportunity to ask questions in the very moment they arise, while in distance courses that does not happen so easily, causing the student to save his questions for some future time meeting or another contact with tutors and teachers."*[14]

The transition of schools to online education can also be hampered by *management-type problems*. Not only teachers, but also school leaders and management of the institutions have to cope with new challenges. Quick, timely decisions can help educators' work, while a lack of firm leadership can severely dampen performance. **One crucial issue is the use of one platform within the school.** If it is left to the teacher to decide which interface to use, how often, to what depth, then there will be a lot of different procedures within an institution, which will make interoperability difficult, organise possible substitutions, but will fundamentally place a much greater burden on students than at least pedagogical work would be carried out with uniform applications in each institution.

3. Suggestions for addressing current challenges of online education, and promoting digital transformation

Based on international research, studies supported by global organisations and Member States, some recommendations for technology-assisted learning and teaching can be clearly articulated:

- **The use of jointly developed online platforms** according to the needs, with appropriate systems for conducting measurement and evaluation in the process of education organisation, administration,

[13] Brown, C. Advantages and Disadvantages of Distance Learning.
[14] Mayra Martins Santana de Oliveira: Distance education: advantages and disadvantages of the point of view of education and society

and learning / teaching. Even Member States with advanced national e-diaries (Finland's Wilma, Estonia's eKool and Stuudium or Hungary's KRÉTA) suffered because of the lack of flexible learning management systems (LMS) or platforms.

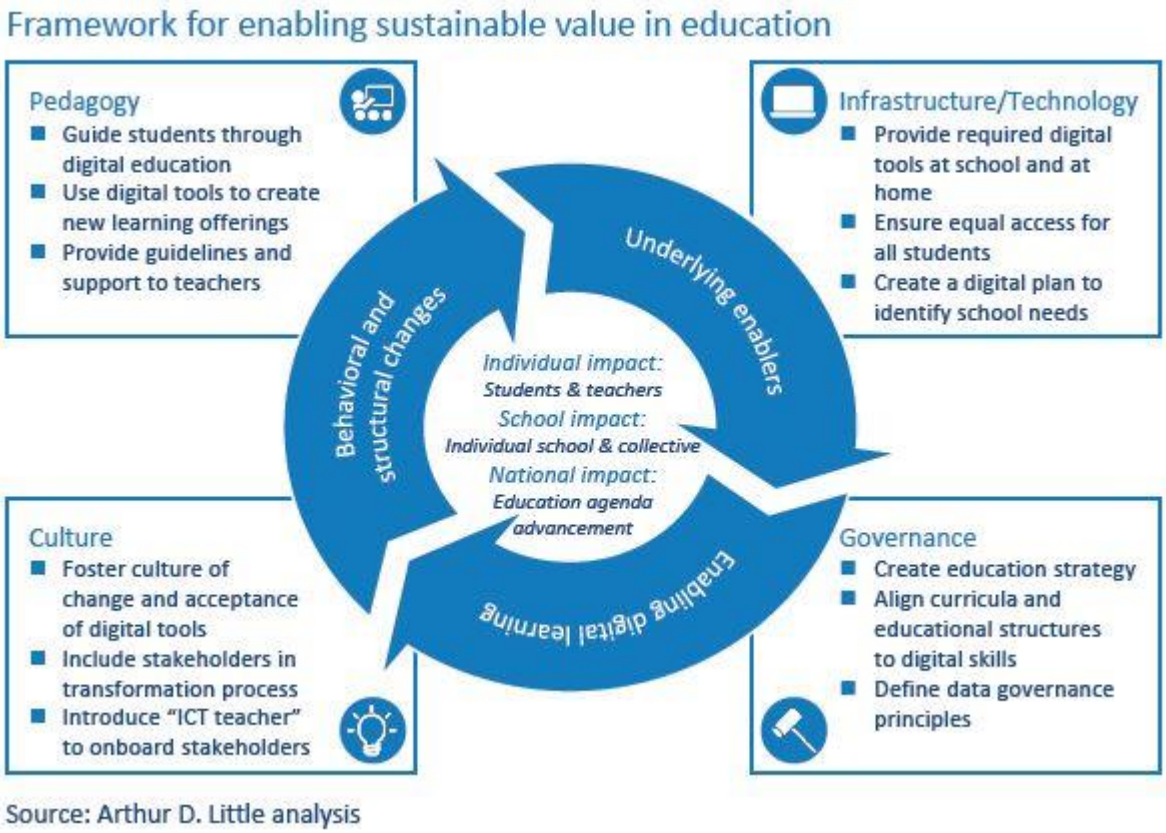
- **Integration of social networks, applications known and liked by students**: use of interfaces and solutions used in everyday life (e.g. Facebook, YouTube, Twitter, Wikis, Podcasts) in an educational context. Applying familiar interfaces simplifies or makes many processes routine, while associating new activities to perform additional activities. It can also lay the groundwork for preparing for the world of work, because the existence of skills and competencies will be important and useful for young people after leaving school.
- **Wide dialogue about data security of learning data produced by EU Member States**. In the critical period of digital transition, global platforms (operated by non-European multinationals) provided help for schools and governments. In the future more secure solutions are needed for European schools.
- **Cooperation and sharing of common knowledge between students and educators**. Joint use of applications ensures joint content creation and editing as well as their sharing (on content-sharing interfaces). Collaboration becomes simple, with the importance of the teacher being able to provide ongoing support to students. The role of the educator is transformed in this modern learning-teaching idea: teachers become mentors providing continuous support and feedback.
- **Social equity requires an almost universal use of mobile technologies**, preparation for their use, and development of basic digital competencies. In addition to recent emergence of low-cost computers developed for education, it must be ensured that devices that are adequately secure and used exclusively for educational purposes are available to all students. Equipping students growing up in poor or dysfunctional families with IT tools, while the digital transition is costly, pays off in the long run, both for the learner and the funder.
- **Personalised learning, measurement and evaluation**. Knowledge repositories, learning resources and task banks available free of charge on the Internet from anywhere, anytime can make education more personalised. Monitoring learners' learning, evaluating their actual performance, and operating interfaces for continuous feedback are essential.
- **Blended learning**. A wide dialogue is needed about the systemic incorporation of the first positive results of digital transition to the normal working of European schools. **A post-COVID restoration of the *ancient regime* should be avoided.**

In parallel with the transformation of the learning environment; additional benefits of *face to face* education must be ensured. Traditional authority or lecture style teaching is partly replaced by styles that support collaboration and community building, that can be translated to the online space as well.

A smaller proportion of research reports no longer analyse the effects of the pandemic but outline the education system of the future. These visions are already based on the experience gained during the COVID-19 epidemic and set out further steps needed for a successful digital transformation. Of the many recommendations, we illustrate the issue here with the digital transition model of Arthur D Little, a management consultancy.[15]

[15] Lasku, A et alia: Accelerating post-pendemic e-learning.

5. Figure: Framework for enabling sustainable value in education



Source: Arthur D. Little analysis

3.1. Presentation of research results by study level

1st (individual) level: KEY ACTORS, TEACHERS, SCHOOL STAFF, ETC.

At the individual level, we have grouped issues that affect educators, programme implementers, and school leaders:

- crisis management, timeliness, extremes;
- lack, inadequate number or quality of IT tools;
- inadequate level of IT applications, lack of comprehensive systems covering all aspects;
- access to Internet, regional and economic differences;
- weakness of platforms and applications to support school administration;
- difficulties in student evaluation;
- negative mental and emotional effects emerged in the transition.

2nd (community) level: COMMUNITIES OF TEACHERS IN THE ONLINE SPACE

- management of shared interfaces and unregulated forms of communication;
- areas of collaboration in the online space;
- interfaces for knowledge sharing and information exchange among schools;
- problem-solving in the period of delay or temporary lack of central control and support.

3rd (institutional) level: SCHOOL LEADERS, DECISION MAKERS

- low level of operation of management and decision support systems;
- short time to manage changes;
- development of online teaching / learning content and introduction of new pedagogical methods in an extremely short time;
- underdeveloped systems of communication and cooperation among schools ;
- putting institutions' external relations on a new footing requiring extra investment of time and energy;
- non-educational activities of educational institutions cannot be directed to online interfaces in a short time period;
- extra organisational tasks for management.

3.2. Solutions suggested based on secondary analysis of research

1. Communication within each level, between levels and in the school-system should be supported. Planning communication tasks of the digital transition, a new type of communication is needed between educators, programme implementers, students, parents and professional support people. Communication should take place primarily on online interfaces, within a regulated framework. All actors need to be provided with the right tools and network infrastructure, as well as access to the necessary applications.
2. Adequate digital skills should be provided for all partners involved in education. None of the students can be disadvantaged due to the fact that their parent, teacher or himself / herself does not have the appropriate digital competence.

3. There is a need to support the development of applications that can provide support in all related areas of learning. Supervision, administration, evaluation, educational, leisure, community-building and other functions are an integral part of traditional face to face education. Instead of online education, it is proposed to introduce the concept of online school, which would cover the functions of education systems much more broadly.
4. Online education is unthinkable without providing the necessary bandwidth, reliably available anywhere, free and secure internet. The offline solutions (television, radio) that often arise as alternatives to online educational tools and applications can no longer satisfy the needs in current circumstances, they are not fully suitable for supporting the educational process. The only forward-looking solution is to provide high-quality internet access that connects all stakeholders.
5. Adequate time and information should be provided for all actors involved in education to acquire the knowledge and competencies needed for the online transition. At the time of the pandemic, it was not possible to acquire the skill set needed for the online transition, all the difficulties had to be faced at once. The necessary knowledge needs to be collected, systematised, updated and widely shared in order to ensure that all participants already have the appropriate knowledge in the event of a sudden changeover or a certain technological transformation.
6. **Despite the high quality of online education, practice shows that there is a need for serious mental and emotional support for the learning community and for teachers and school staff.** Support should be professional, regular, well-organised and practical in order to eliminate negative effects, but also use all possible online and offline tools to ensure students' positive social and community experiences.

4. Responses to research hypotheses based on reviewed research materials

Before validating the hypotheses, it is important to indicate that the vast majority of the available research material is qualitative. ***Research results* on the COVID-19 driven digital transition in education at Member State or European level *with large databases are still lacking***. Therefore, current validation has been built on qualitative studies of the first wave of academic reflection. Consequently, the following findings may change at a later date in the light of several quantitative reports.

The pandemic has challenged the traditional ways of teaching and learning and helped bring to life a range of pedagogical and organisational innovations.

The hypothesis has been confirmed by the reviewed research materials. Based on the review of the documents, it can be said that there has been a significant change in the development of curricula, the use of online tools and educational infrastructure at all levels of education systems.

Teachers have faced many challenges unknown before. A key element in their development is the establishment of the school as a learning organisation.

The hypothesis has been confirmed by the reviewed research materials. Transformation of the school is essential for effective online education, and sudden transformation has brought many new challenges for educators. The situation of compulsion, urgent problems and tasks were burdensome, but they also provided teachers with extra knowledge and competencies. In the post-epidemic situation, much will depend on the quality of the

regulatory environment of schools. The regulatory environment in some Member States is more conducive to the creation of a learning organisation than in others.

School management has played a key role in shaping the school as a learning organisation.

The hypothesis has been confirmed by the reviewed research materials. School management had to take on a heavy administrative burden to enable educational institutions to shift smoothly to online education, but typically sought to achieve the best possible outcome for the institution, educators, students, and parents using all available information.

The regulatory environment surrounding the school has played a crucial role in the development of school-level innovations and the sharing of good practices. The innovation-friendliness of the regulatory environment varies greatly from one Member State to another.

Both national and European systems reacted quickly to sudden changes in the future, but in some cases, decision-making at the local level may have felt that there was no quick decision on all issues. The events triggered by the pandemic occurred much faster than anyone had anticipated before, which is why issues and problems to be resolved appeared almost simultaneously, at the same moment. In the post-epidemic situation, much will depend on the quality of the regulatory environment of schools. The regulatory environment in some Member States is more conducive to the creation of a learning organisation than in others. Consequently, schools with wider space and more resources to change are better equipped for the next challenges.

The return to traditional face-to-face education has set off a strong wave of restoration and oblivion in Member States' education systems. *Only a small number of Member States have started an open and systematic processing of online learning experiences.*

5. Answers to research questions

What research has been done on the European level regarding this topic?

This survey has uncovered 107 research materials on the topic during the literary survey. The short summary of the materials is presented in the *Relevant research, and results* section.

What are the most frequently mentioned topics in research materials?

Desk research has reported interesting changes in adapting to pandemic shock. Since E+ programmes put a special emphasis on physical mobility, the lockdown in Europe was an extreme challenge. In this situation,

- special measures to support exchange students and teachers were made by all partners;
- existing programmes have shifted the focus from physical mobility to digital networking;
- in order to respond to the circumstances, in 2020 the Erasmus+ programme exceptionally supported two additional formats of Strategic Partnerships;[16]
- smart adaptation and partial innovation, in which digital networking and strengthening international dimension of networks have become a priority instead of mobility.[17]

What supporting mechanisms regarding digital transformation operate effectively in E+ countries? Are there reports available that contain impact analysis?

Support mechanisms vary from country to country, but in the analysis of research materials, the **Estonian approach** seems to be effective. For several years now, support for the digital transition has begun on a national level and with the provision of necessary infrastructure and funds. By the time the

[16] ERASMUS+: Two additonal calls for strategic partnerships in response of the COVID-19 situtation.
[17] INCOMA: Report on the impact of COVID-19 in KA2-CBHE ERASMUS+ projects.

government ordered online education, a professional, IT, and administrative framework had already been made available. In general, the farther you went in the field of online education, the less the sudden change caused by the pandemic was a shock to it. **Differences between individual Member States were basically determined not by the quality of the applied methodologies, tools and developments, but by the level of availability and the degree of preliminary preparedness.**

What are the latest issues related to the digital transformation in school education? What challenges seem to be hot topics?

The transition to digital education has not gone smoothly in any Member State. It can also be argued that while solutions for the delivery of content to ensure the basic level of teaching and learning processes were developed relatively quickly, the importance of other school functions was experienced only by students and parents during school closures due to the pandemic. Several documents reviewed suggest to expand the use of online space, i.e. moving important school functions to the online space. **The most important lesson to be learned is to break away from the view that the school has only served and continues to serve the curriculum.** Online education can be provided almost anywhere with the development of specialised curricula, the publication of high quality lectures and the right infrastructure. **The real problem is shifting the social, socio-cultural, ergonomic and communication role of the school to the online space.** Its roles in addition to its educational tasks are much more difficult to replace and manage, yet the lack of these functions causes the majority of mental and emotional disorders among students.

What E+ platforms are used and not used by beneficiaries?

Unfortunately, there was not a sufficient amount of documents and research materials available to answer this question. Most of the Member States surveyed have used self-developed applications fundamentally different from one another to support educational activities. ***Although E+ platforms are known, they are generally used by few educators concerned by E+ projects.***

What are the risks of digital teaching and learning that need to be considered?

Three types of risks of digital learning and teaching are worth highlighting. One is infrastructure, which also includes infrastructural elements of the built, IT device, Internet access and condition maintenance. The equipment requirements of online education are in principle much lower than those of face to face education, as the school building, the classroom and the gym can be replaced by relatively inexpensive devices. At the same time, inadequately supported infrastructure can cause a fatal backlog for poorer students from poorer backgrounds. **Equity is considered to be the most important risk factor**.

The other risk is if an online alternative to the school's support functions does not emerge. Students play at school, play sports, eat, participate in leisure activities, form a community, build relationships and nurture with contemporary groups. These roles cannot be replaced at the current level or only at a very low level by online education.

Thirdly, **security of learning data must be ensured in every Member State in the forthcoming period**.

What key factors make digitalisation sustainable in school education?

The most important factor is **long-term forward planning, strategy-making** covering all elements and aspects, which takes into account all circumstances and impacts and creates the conditions for digital education.

6. Review previous research findings

6.1. Research, studies

Research materials outlined below provide a broad, comprehensive view of forced digital transitionduring the pandemic.

Studies cover several areas (economic, social, educational policy) and provide a detailed account of opportunities and difficulties inherent in sudden changes. Most of the processed materials were prepared during the course of the year 2020, thus, they contain the interpretation of up-to-date data and phenomena, moreover, they point into the direction of topics for further research.

Pawel Poszytek: Relational and Networking Character: Threat or Savior for the Sustainability of European Erasmus+ Projects in the Times of COVID-19 Pandemic? In: https://www.mdpi.com/2071-1050/13/16/9338/htm
Topic:

Flexible management of ERASMUS+ projects in the period of lockdowns

Overall, 21.2% of best digital performers suspended or prolonged their Erasmus+ projects, whereas 29.1% suspended or prolonged their projects in the worst digital performers group. The results are very similar in the subgroups of best and worst social performers, with the ratio of 21.9% to 30.3%. This proves that **both digital and social competences have an impact on a project's sustainability**. Additionally, since Erasmus+ projects are typical, temporary international organisations of relational and networking characteristics, the challenges in relation to effective cooperation and communication in the times of the COVID-19 pandemic can be compensated or facilitated by broadly understood digital competences. Digital competences provide remedial tools in the case of a breakup of personal contacts and along with social competences, constitute a specific protective shield for Erasmus+ project leaders against negative effects of the COVID-19 pandemic for international cooperation.

The data presented show that 45.9% of the best digital performers and 35.9% of the worst digital performers stated that their project activities were realised successfully in range of 75% or more during the COVID-19 pandemic. **This means that the Erasmus+ project leaders with higher digital competences turned out to be more effective in the realisation, management, and sustainability of their projects. Consequently, the observed relation here is positive: the higher the digital competences, the higher the effectiveness in project sustainability.** Analogically, the ratio for social competences is even higher: 52.3% to 23.1%, respectively. This proves that social competences impact Erasmus+ project sustainability to a substantial extent, and on the other hand, it also proves the consistency of the obtained results. In general, Erasmus+ project leaders scored slightly worse in social competences than in digital ones, and for this reason, **the worst social performers should be expected to have the lowest project sustaining capability**, which is reflected in the data. Accordingly, the first research question, namely "*Do best performers in digital and social competences among Erasmus+ project leaders perform better in sustaining their projects in the times of the COVID-19 pandemic?*", has been answered positively on the basis of the provided data.

Ramos, José L. ; Cattaneo, Alberto A. P. ; de Jong, Frank P. C. M. ;Espadeiro. Rui G.: Pedagogical models for the facilitation of teacher professional development via video-supported collaborative learning: A review of the state of the art

(José Luís Ramos, Alberto A. P. Cattaneo, Frank P. C. M. de Jong & Rui Gonçalo Espadeiro (2021) Pedagogical models for the facilitation of teacher professional development via video-supported collaborative learning. A review of the state of the art, Journal of Research on Technology in Education, DOI: 10.1080/15391523.2021.1911720)

Topic:

Pedagogical models of teacher professional development

The growing use of video technologies has revealed the need for pedagogical models to support collaborative learning as part of teacher professionalisation processes. We conducted a state-of-the-art review of 120 empirical studies from 2003 to 2019 to identify pedagogical models for the facilitation of teachers' professional development via video-supported collaborative learning. The study identified four pedagogical models: observation and collaborative analysis of video-recorded professional practices, collaborative video-supported authoring, collaborative learning based on video content, and video-supported synchronous collaboration. The study provides an initial contribution toward the construction of an evidence-based video pedagogy. **Such pedagogies can help respond to the constant need for appropriate education** and training for professionals in the areas of teacher education and professional development, higher education, and vocational education and training.

Azzi-Huck, Kaliope – Shmis, Tigran (2020) Managing the impact of COVID-19 on education systems around the world: How countries are preparing, coping, and planning for recovery.

(https://blogs.worldbank.org/education/managing-impact-covid-19-education-systems-around-world-how-countries-are-preparing)

Topic:

Managing the impact of COVID-19 on education systems

Many client countries are implementing various forms of these strategies, including:

- Enhancing preparedness while keeping schools open: This involves enforcing and supporting preventive actions in schools (Afghanistan); establishing protocols for schools' handling of illnesses and potential cases (Egypt, Russia, Belarus); using the education system's infrastructure and human resources to address the spread of infections in communities (Liberia and Sierra Leone); and limiting physical contact by reducing social and extra-curricular activities (Singapore, Russia)
- Selective closing of schools: Choosing to isolate treatment areas, some governments have opted for localized school closures as an interim measure (for example India). In half the cases thus far, we have seen these localized approaches subsequently expand geographically (Brazil, India, Canada, Australia).
- National closing of schools (the most used option globally): As the virus has spread, many countries are announcing national school closures. Many are concerned that children and youth, while seemingly less susceptible to the virus and have a much lower case-fatality ratio, may serve as carriers for the disease, putting at risk older family members in communities across the globe where multi-generational households are the norm.
- **Using remote learning and education resources to mitigate loss of learning: many countries have turned to distance learning as a means of mitigating for lost time in school (fully online in China, Italy, France, Germany and Saudi Arabia;** mobile phones or television in Vietnam, Mongolia). In addition to infrastructure and connectivity, teachers' and administrators' familiarity with the tools and processes are also key factors in providing distance learning (Singapore). Other countries send kids home with

lessons as homework (Lebanon). In Bulgaria, more than 800,000 accounts have been created for all teachers and parents, publishers have been mobilized to open the digital textbooks and learning materials for grades 1 to 10, and two national TV channels will broadcast educational tv. As more countries close schools, more creativity will be needed. For instance, adapting existing platforms for use in smartphones, and/or agreeing with telecom companies to eliminate the cost of accessing material from a Ministry of education site could be part of the mitigation efforts.

García-Alberti, M. — Suárez, F. — Chiyón, I. — Feijoo, J. C. M. (2021) Challenges and experiences of online evaluation in courses of civil engineering during the lockdown learning due to the covid-19 pandemic.

(García-Alberti, M.; Suárez, F.; Chiyón, I.; Mosquera Feijoo, J.C. Challenges and Experiences of Online Evaluation in Courses of Civil Engineering during the Lockdown Learning Due to the COVID-19 Pandemic. Educ. Sci. ***2021****, 11, 59.)*

Topic:

Challenges and experiences of online evaluation in courses

The closure of university classrooms caused by the advent of the recent global health emergency has prompted numerous efforts and adaptations to the remote teaching– learning system. Some measures, practices, and changes might be here to stay, including the use of digital tablets in remote teaching, pre-recorded videos with inserted questions to ensure follow-up, preset questionnaires and quizzes for online use, and the capability to meet with students and colleagues. The adaptability to the constraints imposed by remote teaching has emerged as a key feature: good-achieving students during the face-to-face stage of the semester performed well during the distance-learning phase, whereas low-achieving students became more affected. The dropout rate in fundamental subjects reached 22%, which was notably higher than in technological modules, which was lower than 10%. Regarding the digital divide and the lack of inclusion as shortcomings, deep reflection is required about setting policies to support and counsel students in order to facilitate their integration and adaptability so that they can better meet their learning outcomes. Lastly, the impact of this health crisis on higher education has shown the potentials of distance teaching, either synchronous or asynchronous. **Conversely, the remote evaluation process still raises technical, functional, and ontological controversies that need to be addressed and improved.**

Ferri, Fernando — Grifoni, Patrizia — Guzzo, Tiziana. (2020) Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations

(Ferri, F.; Grifoni, P.; Guzzo, T. Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations. Societies ***2020****, 10, 86. https://doi.org/10.3390/soc10040086)*

Topic:

Online Learning and Emergency Remote Teaching

The technological challenges are mainly related to the unreliability of Internet connections when thousands of students and workers are simultaneously connected as well as the lack of technological Societies devices for many students.

Here we reflect on the summary of opinions by experts coming from the online discussion forum and the data analysis of the Italian case study which served to substantiate the following proposals for action to respond to the identified challenges.

- Reliable network **infrastructure needs to be developed**. Teachers, students and parents must have connectivity that allows them to be able to take lessons remotely even when other people in the same house are doing other online activities. In fact, the results of the online discussion forum underlined that the intensive use of networks during the pandemic crisis has produced connection failures in several countries, including Estonia, which is technologically advanced. One suggestion of experts was to develop 5G.
- More **affordable devices must be provided**. Devices such as tablets or computers to be connected should be less expensive and Governments should give households incentives to buy them. All the involved actors must have suitable devices to follow a lesson remotely in the most comfortable way. This issue was underlined by the experts, in particular for families with more than one child. Moreover, for the Italian case study, the DESI Index shows that many families do not have a laptop or PC, even though this country has the highest rate of ownership of mobile phones in the world. The European Commission (EC) can play a key role in boosting facilities and infrastructure for online learning. This is also in line with the EC action plan to help individuals, educational institutions and education systems to better adapt for life and work in an age of rapid digital change.
- Diverse modalities (telecourses, TV, radio, online courses) should be used to provide accessible learning experiences for students in remote areas, as already seen in some countries. The experts provided examples of Croatia and Serbia as countries where these modalities have been successfully implemented. This challenge has also been suggested by Eder [26].
- Systematic **training initiatives should be provided to improve teachers' and learners' technological skills** in relation to new emerging models and approaches encouraging the effective use of online learning. The results of this study revealed that in various countries there are challenges related to gaps in digital literacy in education among teachers, students and parents. For example, in Hungary, there is no digital education and/or online education.
- A clear and consistent plan should be developed, **providing structured and planned educational material** (content, methodologies and common goals) and more adequate e-learning platforms by using interactive suitable digital learning resources (video, animations, quizzes and games) to maintain students' attention. For example, in Italy, there emerged on one hand a wide choice of technological platforms and on the other very poorly organised and certified content for online learning. Co-creation platforms could be developed and made available, encouraging students' participation in content creation and their inclusion in the learning process.
- **Strategies for communication and digital education assessment need to be created**. The lack of student feedback has also been underlined by According to the experts who participated in the forum, teachers should communicate consistently and often with students so that they do not feel isolated and confused. They should maintain constant contact with students, for example by creating a community group, sending them e-mails twice a week and setting up a frequently asked questions section so that all students can benefit from other students' questions. The experts emphasised that a community of learners and teachers can be built by increasing "human" cyber interaction.
- A **blended approach should be used** whenever possible to reinforce a feeling of community belonging, thereby improving social interaction and collaboration among learners and between learners and teachers. According to experts, students need face-to-face interactions, so face-to-face lessons should complement online lessons.

- **Technologies that use virtual and augmented reality need to be improved**, making them widely accessible and therefore more engaging and inclusive, in order to stimulate students' involvement and interaction. According to experts, some issues include students' online motivation and involvement. The implementation of these new technologies in online teaching could help in this regard. The use of intelligent technologies for remote teaching, like artificial intelligence, needs to be reinforced to encourage personalised, inclusive and participatory online learning paths. This can open up new possibilities and provide added value to online learning, as long as it is integrated with the pedagogical methodologies used by teachers. In fact, in this study a need to personalise learning and make it more effective emerged. More inclusive tools, platforms and devices considering different web content accessibility guidelines (e.g., WCAG 2.0) need to be developed in order to make digital learning resources accessible to a wider range of people with disabilities.

Kellermann, David: Academics aren't content creators, and it's regressive to make them so

(https://www.timeshighereducation.com/opinion/academics-arent-content-creators-and-its-regressive-make-them-so)

Topic:

Content is not the core value (higher education)

Education should be better than ever, as we are now able to point at myriad incredible resources, possibly on the web, perhaps in our library, where we act as content aggregator, not creator.

The students are part of our community, our team, and we are there to manage them, coach them, guide them, to be mentors, to help teach them over a longer journey, and to corral them through this common goal of thought, understanding and mastery.

Koós Bálint et al: (2020) Epilógus. In: Czirfusz Márton (szerk.): Az új koronavírus-járvány társadalmi-gazdasági hatásai és ezek területi következményei.

(Czirfusz, Márton (szerk.) Területi kihívások és területi politikák Magyarországon, 2010-2020 Budapest: Közgazdaság- és Regionális Tudományi Kutatóközpont Regionális Kutatások Intézete, 2020 pp. 123-131. (ISBN 978-615-5754-45-6))

Topic:

Socio-economic effects of a coronavirus epidemic and their territorial consequences

Digital services that minimize face-to-face encounters have also come to the fore, forcing the epidemic in a particular way to reduce the country's digital gap. In a few months, a gap of up to two decades in some areas has been brought in, with the use of digital services, whether bus ticketing or appointment booking, becoming commonplace for a wider range of people. At the same time, the conditions for adaptation are provided in a territorially differentiated way. In the more favourable, typically urbanized areas of the country (metropolitan agglomeration, county capitals and their catchment areas), the digital switchover posed little difficulty for the general public, as conditions were provided (info-communication tools, internet access, digital competencies). **In contrast, in less developed, rural areas of the country**, especially those belonging to the external and internal peripheries, broad social groups may have faced the usual inaccessibility of various public and private services, and epidemic-preferred digital services for such reasons (info-communications). **lack of tools and digital competences**).

Ramírez-Hurtado, J. M. — Hernández-Díaz, A. G. — López-Sánchez, A. D. — Pérez-León, V. E. (2021) Measuring online teaching service quality in higher education in the covid-19 environment

(Ramírez-Hurtado, J.M.; Hernández-Díaz, A.G.; López-Sánchez, A.D.; Pérez-León, V.E. Measuring Online Teaching Service Quality in Higher Education in the COVID-19 Environment. Int. J. Environ. Res. Public Health ***2021****, 18, 2403. https://doi.org/10.3390/ijerph18052403)*

Topic:

Measuring online teaching

The challenges posed by online teaching should be more related to the effectiveness of learning and human relations than to the technical characteristics of the systems used. Aspects such as improving interaction between students or between student/teacher, improving concentration or aspects of assessment must be taken into account in order to improve student satisfaction. The situation with COVID-19 should not be seen as a threat by students and educational institutions based on conventional teaching but should serve to adapt the benefits of the online education system to their teaching. **At the societal level, online education also has important implications.** Aspects such as travel costs and time savings are drastically reduced. On the other hand, for online learning to be effective, students must have reliable access to technology. This **requires the development of social and economic policies** to break the digital divide in many households and improve access to technology.

Mayra Martins Santana de Oliveira: Distance education: advantages and disadvantages of the point of view of education and society

(Mayra & Penedo, Antonio & Pereira, Vinícius. (2018). Distance education: advantages and disadvantages of the point of view of education and society. Dialogia. 139-152. 10.5585/dialogia.N29.7661.)

Topic:

Distance learning, benefits and disadvantages

To the profitability of this type of education, it is necessary to pay attention to that. The overall costs of distance education are actually lower than those of traditional education, but the cost per student can be the same or even higher. The reason is correlated with the quality of the teaching provided. A **poor-quality program will have a high dropout rate, and this will not reduce the costs if most of them are considered fixed**. At the end, the cost per student will be greater than in traditional school, even if the total cost is not, due to the smaller number of students present and active in the distance education programs. Because of this, a constant assessment of the costs and the quality of such education should be carried out by educational institutions.

Brown, C. Advantages and Disadvantages of Distance Learning.

(https://eztalks.com/elearning/advantages-and-disadvantages-of-distance-learning.html)

Topic:

Distance learning

Advantages of Distance Learning:

- Greater Flexibility

  With distance learning programs, students can pursue and complete their desired courses from anywhere with the use of computer and internet connection.

- No commuting

Distance learning takes place online, which means students don't need to spend money and time commuting to and from class venues. Students can take lessons and complete assignments from the comfort of their home.

- Significant Cost Savings

  The cost of online-based education programs is generally lower compared to those offered in brick-and-mortar institutions.

- Convenient Learning

  For most of the working-class students, going back to the classroom is rather intimidating. Asking questions about a hard concept about a given topic can also be embarrassing for shy students. But that's not the case with distance learning.

Disadvantages of Distance Learning:

- Lack of Social Interaction

  Learning in a brick-and-mortar institution presents students with the opportunity to meet and interact with people from different locations on a personal level.

- High Chances of Distraction

  With no face-to-face interaction with instructors and other students, those who are enrolled on an online program might find it hard to keep track of their course work and assignments.

- Complicated Technology

  Any student seeking to enrol for a distance learning program needs to invest in a range of equipment including computer, webcam and stable internet connection.

- Questionable Credibility of Online Degrees

  Despite its convenience and affordability, distance learning is still not the best option for many due to lack of lack of quality faculty members.

Despite its numerous drawbacks, distance learning still provides better learning options for students wishing to enjoy greater convenience and flexibility in pursuing a course. The greatest benefits of distance education is that it allows students to access numerous learning tools using minimum financial resources. Studying online is even made more interactive with the use of video conferencing software. That improves the ability to acquire and retain knowledge on a given subject.

However, **distance education limits social interaction, involves use of complex technology and has a negative perception among some employers**. Any student wishing to enrol for distance learning diploma or degree should weigh between its pros and cons to determine whether it's a good option. Generally, distance education can be the perfect option for working students.

Eyles, A.; Gibbons, S.; Montebruno, P. Covid-19 school shutdowns: What will they do to our children's education? A CEP Covid-19 analysis Briefing note

(Centre for Economic Performance; London School of Economics and Political Science; May 2020; http://eprints.lse.ac.uk/104675/3/Eyles_covid_19_school_shutdowns_published.pdf)

Topic: **School closures**

The best available evidence from the economics of education shows that, at least in the short run, the closure of schools is likely to impact on student achievement and **the costs of putting this right are likely to be high**. And this is before we start to think about the impacts of lockdown on children over and above school achievement, for example, on **their mental health and physical health**. Or the impacts from disruption to exams and progression to higher levels of education. There may be some benefits too, if a switch to online education encourages greater interaction with technology and more efficient teaching practice, but these benefits are as yet unknown and unquantifiable. It is also clear that children from more advantaged backgrounds attending schools where technology is in place to substitute for classroom teaching, and whose parents have both the time and skills to plug the deficit, are likely to be less adversely affected.

Montacute, R. Social Mobility and COVID-19.

(The Sutton Trust, April 2020; https://dera.ioe.ac.uk/35323/2/COVID-19-and-Social-Mobility-1.pdf)

Topic:

- Early Years
- Schools
- Apprenticeships
- Higher Education (including access to university and student finance)
- Access to the Workplace

Abstract:

- Widening access to private and online tuition, both during and after the school closures, in order to minimise the impact on the attainment gap.
- Ensuring access to technology and online resources for pupils from disadvantaged backgrounds while schools are closed.
- Fair access to higher education and making sure this year's changes to A levels and the admissions process do not impact negatively on the prospects of young people from less well-off backgrounds.
- Protecting apprenticeships, making sure that current apprentices are protected financially, and trying to ensure that the apprenticeship system is ready to bounce back when restrictions are lifted.

Hodges, C.; Moore, S.; Lockee, B.; Trust, T.; Bond, A. The difference between emergency remote teaching and online learning.

(Charles Hodges, Stephanie Moore, Barb Lockee, Torrey Trust and Aaron Bond; Published: Friday, March 27, 2020; https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning)

Topic:

Remote teaching and online learning

The threat of COVID-19 has presented some unique challenges for institutions of higher education. All parties involved—students, faculty, and staff—are being asked to do extraordinary things regarding course delivery and learning that have not been seen on this scale in the lifetimes of anyone currently involved. Although this situation is stressful, when it is over, institutions will emerge with an opportunity to evaluate how well they were able to implement ERT to maintain continuity of instruction. **It is important to avoid the temptation to equate**

ERT with online learning during those evaluations. With careful planning, officials at every campus can evaluate their efforts, allowing those involved to highlight strengths and identify weaknesses to be better prepared for future needs to implement ERT.

Rudnick, A. Social, psychological, and philosophical reflections on pandemics and beyond

*(Rudnick, A. Social, Psychological, and Philosophical Reflections on Pandemics and Beyond. Societies **2020**, 10, 42. https://doi.org/10.3390/soc10020042)*

Topic:

Social, psychological, and philosophical (ethical and epistemological) reflections regarding the current (COVID-19) pandemic and beyond

Social, psychological, and underlying philosophical issues that are pandemic-related may have a considerable and lasting impact on societies and on particular individuals. Some related practice suggestions are to address the moral distress of health care providers who have to make particularly difficult—sometimes life or death—decisions due to very scarce health care resources, and to provide additional emotional support such as to (self) quarantined people and to people who have pre-pandemic mental challenges (preferably provided by their significant others and/or mental health care providers). Some related policy suggestions are to **secure additional income support** for socially disadvantaged people during and soon after the pandemic, and **to provide additional protections for special social groupings** that are considered socially undesirable by some if the pandemic results in disruptive political change (that may last after the pandemic).

Vlachopoulos, D. COVID-19: Threat or opportunity for online education? High. Learn. Res. Commun. 2020,

(Vlachopoulos, D. (2020). COVID-19: Threat or Opportunity for Online Education? Higher Learning Research Communications, 10 (1).DOI:10.18870/hlrc.v10i1.1179)

Topic:

Flexible ways of studying

Governments are advising citizens to be prepared for an outbreak in their community. Today, we are globally experiencing closures in schools and universities, postponements or even cancellations of conferences and other organised events, and social distancing. In addition, we have also seen the promotion of flexible ways of studying and working to hinder the rapid spread of the virus. This position paper aims to reflect on where exactly online education figure into this crisis situation focusing on 4 important pillars:

- **policy-making,**
- **access to resources,**
- **training opportunities and**
- **ongoing evaluation and monitoring**.

Outhwaite, L. Inequalities in Resources in the Home Learning Environment

(Laura Outhwaite, 2020. "Inequalities in resources in the home learning environment," CEPEO Briefing Note Series 2, Centre for Education Policy and Equalising Opportunities, UCL Institute of Education, revised Apr 2020.)

Since 23rd March 2020, UK schools have been closed for most children due to the COVID-19 pandemic. Consequently, there is a greater emphasis on the implementation of children's education by parents at home, as

well as perhaps a greater reliance on access to educational technologies. There are concerns that the impact of school closures will disproportionally impact children from lower socio-economic backgrounds and widen the attainment gap between them and their peers from more affluent backgrounds (Montacute, 2020). This briefing note summarises the empirical evidence on inequalities in 1) the home learning environment and 2) resources, including educational technologies, which may affect access to education during these challenging times.

The outbreak of the Corona virus **has led to unprecedented measures in education**. From March 16, all schools in the Netherlands are closed, and children must keep up with their schoolwork from home. Parents are expected to take a crucial role in this 'homeschooling': they are primarily responsible for ensuring that their children follow the curriculum. In this article I report the first results of a module in the LISS Panel that was designed to map how parents school their children in primary and secondary education. Data on a nationally representative sample of 1,318 children in primary and secondary education were gathered in April. **The results show marked differences between social groups.** Whereas all parents find it important that their children keep up with the schoolwork, children from advantaged backgrounds receive much more parental support and have more resources (e.g., own computer) to study from home. Differences in parental support are driven by the ability to help: parents with a higher education degree feels themselves much capable to help their children with schoolwork than lower educated parents. Parents also report that schools provide more extensive distant schooling for children in the academic track in secondary education (vwo) than for children in the pre-vocational track (vmbo). Finally, there is a clear gender gap: **parents feel much more capable to support their daughters than their sons**.

Thomas, M.S.; Rogers, C. Education, the science of learning, and the COVID-19 crisis

*(Thomas, M.S.C., Rogers, C. Education, the science of learning, and the COVID-19 crisis. Prospects **49,** 87–90 (2020). https://doi.org/10.1007/s11125-020-09468-z)*

In the COVID-19 crisis, the science of learning has two different responsibilities: first, to offer guidance about how best to deal with the impact of the current situation, including lockdown and home-schooling; and second, to consider bigger questions about what this large-scale educational experiment might mean for the future. The first part of this Viewpoint summarises **advice for parents on mental health, and on becoming stand-in-teachers**. The second part, taking the longer view, considers the potential negative impact of the COVID-19 crisis in **increasing inequality in education**; but also the potential positive impact of driving innovations in technology use for educating children

Doyle, O. COVID-19: Exacerbating Educational Inequalities?

(https://publicpolicy.ie/downloads/papers/2020/COVID_19_Exacerbating_Educational_Inequalities.pdf)

To ensure that COVID-19 does not exacerbate educational inequalities further, it is important that resources are in place to support all families, particularly children in DEIS schools (Delivering Equality of Opportunity in Schools). The DES, in conjunction with the Department of Employment Affairs and Social Protection, the Department of Children and Youth Affairs, and Tusla Education Support Service (TESS), have already initiated the delivery of food parcels to the 250,000 children who avail of the School Meals Programme. If school closures are to be further extended, similar initiatives targeting educational outcomes may be required. For example, one simple and feasible initiative is to include workbook exercises and educational activities along with the food parcels to ensure that **children without access to online resources can engage with educational materials on a regular basis.**

Yusuf, B.N.: Are we prepared enough? A case study of challenges in online learning in a private higher learning institution during the covid-19 outbreaks

(Advances in Social Sciences Research Journal, 7(5), 205–212. https://doi.org/10.14738/assrj.75.8211)

Online learning is a learning methodology implemented during the recent COVID-19 outbreaks. Lecturers and students need to use appropriate online platforms arising from the Movement Control Order (MCO) restrictions with effect from March 18, 2020, in Malaysia. In essence, the MCO prohibits Malaysians from attending to or organizing mass events or public gatherings, and where public and private educational institutions are concerned, they are not allowed to conduct any classes in situ. The only possible continuation of classes is via online learning. This case study had two research objectives:

1. What were the challenges faced by educators when implementing online learning?
2. How to overcome these challenges faced by educators in online learning? This study had applied the qualitative approach method, where researchers had distributed surveys, through a google platform, to a total of 20 educators. The results **showed six (6) major challenges** faced by educators in online learning, these being
    1. students were **less focused** on online learning;
    2. the platform/medium of learning was **not satisfactory**;
    3. **students left behind learning tools** such as books and laptops in residential colleges;
    4. students' **internet access was less satisfactory** to the extent that the lectures had to be extended from the actual time allocated;
    5. educators' **unstable internet access** which disrupted the momentum of teaching; and
    6. students did **not attend the online courses**.

    There were four (4) means to overcome these challenges

    7. institutions to provide more comprehensive and e-learning platforms for online learning;
    8. internet access for educators and students should be good to ensure smooth and uninterrupted online classes;
    9. providing workshops or training programs on management of online classes for educators; and
    10. for courses involving mathematical computation, in addition to a more suitable platform for teaching, the student population per group to be small in size to accommodate 10 educators while teaching. The results of this study shall benefit the management of private higher learning institutions and educators involved in online learning.

Omodan, B.I. The vindication of decoloniality and the reality of COVID-19 as an emergency of unknown in rural universities

(International Journal of Sociology of Education ; 9:1-26, 2020.; Artigo em Inglês | Web of Science | ID: covidwho-1097514)

COVID-19 was adjudged as a pandemic by the World Health Organization in February 2020. This deadly, contagious, and easy-to-spread virus has plunged the world into a tentative cul-de-sac, inclusive of the university education system. By implication, the abrupt national lockdown in South Africa cut rural universities unaware as an insurgence against its operationalisation, teaching, and learning process. In my argument, it further confirms the **need to decolonise rural universities, to be able to respond to every unforeseen emergency**, as an

underside of coloniality. This study is lensed through Transformative Paradigm (TP), Participatory Research (PR) was used as a research design. The participants consisted of 15 people, five management staff, five lecturers and five students in a selected rural university. Online and phone interviews were used to collect data from the participants because the participants are under national lockdown, and the data were analysed using Thematic Analysis. Low technology and innovative space in rural universities and students, lecturers and university's disadvantage background were found as the major challenges vindicating the quest for decoloniality in rural universities. Also, the compulsory used of technological innovation within the university and contingency plan for/by the stakeholders are achievable with Assets-Based Approach.

Verawardina, U.; Asnur, L.; Lubis, A.L.; Hendriyani, Y.; Ramadhani, D.; Dewi, I.P.; Sriwahyuni, T. Reviewing online learning facing the Covid-19 outbreak

(https://www.iratde.com/index.php/jtde/article/view/281)

Online learning is urgently needed to keep up with the development of the world of education which is supported by information technology that leads to the digital era both process and content in the era of the industrial revolution 4.0. With online learning, learning process can happen anywhere and anytime flexibly. Referred to as the emergence of the covid-19 outbreak that threw the world away, so **it is necessary to maintain vigilance, which is through the interaction of direct contact with other humans, so that the impact on learning disrupted at school can therefore be overcome by implementing online learning**. This article discusses online learning to deal with the covid-19 outbreak. The results of the study found that the need for preparation, clear steps in applying online learning, the role of the teacher, the role of the students, the benefits of online learning and overcoming the limitations of online learning.

Bernard, R.M.; Abrami, P.C.; Borokhovski, E.; Wade, C.A.; Tamim, R.M.; Surkes, M.A.; Bethel, E.C. A meta-analysis of three types of interaction treatments in distance education

(Volume: 79 issue: 3, page(s): 1243-1289; Article first published online: September 1, 2009; Issue published: September 1, 2009; Robert M. Bernard, Philip C. Abrami, Eugene Borokhovski, C. Anne Wade, Rana M. Tamim, Michael A. Surkes, Edward Clement Bethel; Concordia University, Montreal, Quebec, Canada)

This meta-analysis of the experimental literature of distance education (DE) compares different types of interaction treatments (ITs) with other DE instructional treatments. ITs are the instructional and/or media conditions designed into DE courses, which are intended to facilitate student–student (SS), student–teacher (ST), or student–content (SC) interactions. Seventy-four DE versus DE studies that contained at least one IT are included in the meta-analysis, which yield 74 achievement effects. The effect size valences are structured so that the IT or the stronger IT (i.e., in the case of two ITs) serve as the experimental condition and the other treatment, the control condition. Effects are categorized as SS, ST, or SC. After adjustment for methodological quality, the overall weighted average effect size for achievement is 0.38 and is heterogeneous. **Overall, the results support the importance of the three types of ITs and strength of ITs is found to be associated with increasing achievement outcomes.** A strong association is found between strength and achievement for asynchronous DE courses compared to courses containing mediated synchronous or face-to-face interaction. The results are interpreted in terms of increased cognitive engagement that is presumed to be promoted by strengthening ITs in DE courses.

Eder, R.B. The remoteness of remote learning

(Vol. 9 No. 1 (2020): Journal of Interdisciplinary Studies in Education; https://www.ojed.org/index.php/jise/article/view/2172)

Background/purpose--Higher education institutions worldwide rapidly switched to emergency remote teaching with a sustainable quality education approach in response to the global health threat caused by the COVID-19 virus. The sudden and largely unprepared transition to emergency remote teaching placed serious pressures on not only students, but also academics, the families of both, and also other stakeholders as well. This study aims to discuss the potential effects of emergency remote teaching due to COVID-19 on disadvantaged students in higher education. Materials/methods--This study is a review article, which presents a brief literature review on the potential impact of emergency remote teaching due to COVID-19 on disadvantaged students in higher education. Practical implications--This study may help to provide researchers and practitioners with a roadmap for potential future work on the impact of emergency remote teaching in response to the COVID-19 pandemic on disadvantaged groups. From this perspective, the potential effect of emergency remote teaching on disadvantaged students in higher education is examined and recommendations put forwards for solutions aimed at educational administrators and decision-makers. Conclusion--The emergency remote teaching put in place due to the COVID-19 pandemic has led to the widening of the digital divide among higher education students. Therefore, **integrating the digital and distance education** approach into the higher education system correctly and effectively may both facilitate the achievement of instructional goals and also **help to eliminate digital inequality** in the higher education student population.

D'Andrea, A.; Ferri, F.; Fortunati De Luca, L.; Guzzo, T. Mobile devices to support advanced forms of e-learning. In Multimodal Human Computer Interaction and Pervasive Services; Grifoni, P.

(Ferri, Fernando & D'Andrea, Alessia & Grifoni, Patrizia & Guzzo, Tiziana. (2018). Distant Learning: Open Challenges and Evolution. International Journal of Learning, Teaching and Educational Research. 17. 78-88. 10.26803/ijlter.17.8.5.)

The evolution of Information and Communication Technologies has changed the learning sector by stimulating the development of distant learning based approaches (electronic, mobile, ubiquitous and blended learning). Distant learning consists of delivering lessons remotely without a face-to-face contact between a teacher and the learners. It produces many changes to conventional learning in classroom. The paper discusses the open challenges in distant learning by classifying them in the perspective of actors involved teacher, institution and learner. A discussion on the evolution of the different distant learning approaches is also provided in the paper. Technologies, characteristics, advantages and limitations of each approach have been analysed. By considering future perspectives, the analysis of the literature **underlines the need**

- to **support distant learning with multimodal interaction facilities** and
- to **test the learning opportunities offered by other channels of communication** such as digital cable, satellite and web TV although with significant differences in targets involvement (in relation to age, status, etc).

Guzzo, T.; Grifoni, P.; Ferri, F. Social aspects and Web 2.0 challenges in blended learning

(Tiziana Guzzo (CNR - Istituto di Ricerche sulla Popolazione e le Politiche Sociali, Italy), Patrizia Grifoni (CNR - Istituto di Ricerche sulla Popolazione e le Politiche Sociali, Italy) and Fernando Ferri (CNR - Istituto di Ricerche sulla Popolazione e le Politiche Sociali, Italy); Source Title: Blended Learning Environments for Adults: Evaluations and Frameworks; Copyright: © 2012 |Pages: 15)

The term e-learning is revolutionizing learning way and it is having a large impact on knowledge society is rapidly evolving into a Blended Learning method, which blends online learning with more traditional learning. **Blended Learning can contribute to enhance learning and teaching opportunities worldwide**. The chapter analyses the features that impact the success of the blended learning methods, evaluating their potentialities and characteristics. Moreover, an analysis of future challenges and perspectives represented by the mobile devices, the collaborative technologies of Web 2.0, and of multimodal interfaces, are explored. Finally, a qualitative study that the authors carried out by means of open interviews to Italian teachers in order to analyse their perceptions and experiences of Blended Learning methods is described.

6.2. Research by country

The studies presented below provide a presentation of the education-training policy phenomena induced by the epidemic. Based on the data and knowledge explored within a country, the studies focus on the individual, institutional and educational policy levels of the transformation of education systems, including the dimensions of mental health, territorial differences and economic aspects. The level and amount of academic reflection in the Member States is very different and it is currently impossible to give a complete picture. Therefore, the studies processed here can only be the beginning of a systematic review of digital transition in school education.

Greece

Vlassopoulos, G., Karikas, G., Papageorgiou, E., Psaromiligos, G., Giannouli, N. and Karkalousos, P. (2021); Assessment of Greek High School Students towards Distance Learning, during the First Wave of COVID-19 Pandemic

*(Creative Education, **12**, 934-949. doi: 10.4236/ce.2021.124067; https://www.scirp.org/journal/paperinformation.aspx?paperid=108857)*

Introduction: COVID-19 pandemia induced dramatic consequences worldwide bringing also enormous changes and trends in the field of education. Teachers and students were found quite unprepared with the arrival of the first COVID-19 wave, in March, April, May 2020 in Greece, as regards the immediate and obligatory implementation of distance learning through modern/advanced net technologies.

Aim: To study and analyze statistically the assessment of secondary school students, on how they received distance learning, during the first outbreak of COVID-19 pandemia.

Method: We conducted quantitative research with a properly structured questionnaire which was filled in by 462 high school and senior high school students (both in general and vocational education sectors) after the school's "reopening". The proposed questionnaire was focused on three different groups of project questions. Following the reduction of factor variables by using factor analysis, the important parts were further looked into, with the help of the chi-square method.

Results: 33.5% of the students were very satisfied with the distance learning. 18.2% of this group was interested in modern distance learning ($P< 0.001$), while only 12.3% of those considered asynchronous distance learning (exercises and material) ($P< 0.001$) as an interesting approach. In addition, 23.8% reported that teachers had difficulty in implementing distance learning ($P< 0.001$). 78.1% of the students were actually dissatisfied with the degree of their theoretical knowledge improvement ($P< 0.001$), while only 0.2% reported an improvement in laboratory lessons ($P\leq 0.05$). A 13% of the students wished future implementation of distance learning. Of those, only 6.9% were satisfied with digital education ($P< 0.001$) and only 2.8% believed that conventional teaching can be enhanced in the future with distance learning ($P< 0.001$).

Conclusions: The **majority of students were not satisfied with the distance learning**, believing that they had not received the degree of the expected benefit in terms of knowledge and skills. Therefore, distance learning seems, for the time, being not favored, by them, for its future implementation.

Post-pandemic Pedagogy: Distance Education in Greece During COVID-19 Pandemic Through the Eyes of the Teachers

(Hatzichristou, Chryse; Georgakakou-Koutsonikou; Niki; Lianos, Panayiotis; Lampropoulou, Aikaterini; Yfanti, Theodora;August 2021; School Psychology International 42(29):014303432110416; DOI:10.1177/01430343211041697)

Distance education had already appeared since 1970. During the first implementation period it mainly concerned adults and education at university level. In the recent years, through the internet development, distance education has acquired a new hypostasis, as innovative applications have facilitated its implementation in multiple contexts. Despite this, education remained mainly on a physical level (face to face interaction), while distance education was rather complementary (hybrid or blended learning). However, during the COVID-19 pandemic, **the first pandemic in the digital era, an urgent need that led to a universal and "violent" transition to distance education arose**, often without assuring the necessary preconditions. This research aims to capture the experience of teachers in Greece during this transition.

Managing Open School Units Amid COVID-19 Pandemic through the Experiences of Greek Principals. Implications for Current and Future Policies in Public Education

(Spyropoulou, E.; Koutroukis, T. Managing Open School Units Amid COVID-19 Pandemic through the Experiences of Greek Principals. Implications for Current and Future Policies in Public Education. Adm. Sci. ***2021****, 11, 70. https://doi.org/10.3390/admsci11030070)*

The purpose of this study was to examine the experiences of primary and secondary Greek school principals, regarding the management of their school units at the beginning of the school year 2020–2021, amid the COVID-19 pandemic. A qualitative study of 57 principals was undertaken, in order to explore the following questions: (a) What were the difficulties and obstacles that principals faced during the management of the school unit from the beginning of the school year? (b) What factors helped them to manage these difficulties? Written answers were analysed using thematic analysis. Several key findings emerged, indicating that, in general, the principals had to respond to an unprecedented crisis context, under tremendous pressure, with limited resources. They **faced a variety of difficulties**, both on a **personal level and in** the context of their **professional role**. They also encountered difficulties above their role, which had to do with the general impact of the extended sanitary crisis on the emotional state and perceptions of the members of the school community. The results of the research have implications for the policy that is applied in schools in the context of the COVID-19 pandemic.

Poland

Poland: Union fighting to reduce challenges posed by COVID-19 crisis

(*https://www.ei-ie.org/en/item/23315:poland-union-fighting-to-reduce-challenges-posed-by-covid-19-crisis)*

Delays in remote teaching platforms

In Poland, despite repeated assurances, it has not been possible to create remote teaching platforms and systems that include all students. "Announcements by successive governments about investing in education, computers

and modern school equipment were just that – announcements," stated Sławomir Broniarz, ZNP President. "Today, we are paying a high price for that kind of inactivity."

Expenditure on education must be increased to fully use the potential of teachers and adequately meet the needs of students with state-of-the-art tools.

The digital divide

The ZNP's position is that universal, equal, and free access to quality education should always be the norm, including during this crisis. In Poland, like in many other countries, **access to remote learning is often conditioned by wealth**. According to Broniarz, "this goes against the idea of equal educational opportunities for all and creates dangers for the future, for a sustainable and just society."

On 19 March, the Education International affiliate launched an online campaign calling for equal access to education. The union reiterated its appeal to the government to urgently provide free internet for students and teachers working remotely on 25 March.

Youth and COVID-19 in Poland: Impacts on jobs, education, rights and mental well-being

(https://www.ilo.org/budapest/whats-new/WCMS_753138/lang--en/index.htm)

The findings of this study call for urgent, targeted and smarter investments in decent jobs for youth, including the protection of young people's human rights; employment and training guarantee programmes; social protection and unemployment insurance benefits for youth. **Greater efforts should be made to boost the quality and delivery of online and distance learning as well as mental health and psychological support services, including to young people facing barriers in accessing digital services.** Mindful of the lessons learnt during the 2008-09 global crises, the ILO has been very vocal with its member States in Central and Eastern Europe about the risks of an emerging "lockdown generation" and the need for immediate and concerted action. Only by working together, with and for youth, we can prevent COVID-19 from having not only a negative but also a potentially long lasting impact on young people's lives

Opinions of parents* on online education introduced due to the coronavirus (COVID-19) outbreak in Poland in 2020

(https://www.statista.com/statistics/1111272/poland-assessment-of-online-education-due-to-covid-19/)

In connection with the emergence of the coronavirus in Poland, Internet education was introduced in 2020. The opinions of parents of primary school students were more favourable than those of parents of high school students. As for primary school, 38 percent of parents rated Internet classes as good or very good. Regarding secondary schools, **only 30 percent of parents were satisfied**.

Remote education in Poland during COVID-19 pandemic

(https://oerpolicy.eu/remote-education-during-covid-19-pandemic/)

- Before the outbreak of the pandemic, 85.4% of the surveyed teachers did not have any previous experience with distance learning, although 48% have no difficulties using digital tools;
- **36% of teachers indicate the lack of equipment** in students as one of **the key problems** with distance education;

- For some teachers, parents' **conflicting expectations are often problematic**. According to one surveyed teacher: The very same day I can answer a few calls from very satisfied and thankful parents, while other parents are angry with exactly the same issues;
- Teachers point out that **children started to suffer badly from isolation** already after the first month. Exemptions from the obligation to follow the core curriculum would give teachers the opportunity to be flexible and adapt to the needs of various students in this aggravating situation (also, mentally);
- Unfortunately, some voices were raised that perhaps the **entire curriculum** – just covered by the common effort of the teachers – **will have to be revised**

Lithuania

Policy responses for Lithuania

([*https://eacea.ec.europa.eu/national-policies/eurydice/content/national-reforms-school-education-50_en)*](https://eacea.ec.europa.eu/national-policies/eurydice/content/national-reforms-school-education-50_en)

The updated draft Government Resolution also provides for changes in the organization and implementation of educational activities. Until 8th November, education in schools under primary and secondary education programs will be carried out remotely. Non-formal education for children and adults will be distance-learning or should be discontinued. **It is recommended to pursue higher education study programs also remotely**. From November 9th, pre-school, general education, non-formal education of children and adults, vocational training, higher education studies (except for those municipalities which fall into the so-called "red" zone and are subject to quarantine) will be carried out, ensuring required safety measures.

The Ministry of Education, Science and Sport announced that from October 26 until November 8 non-formal education providers operate remotely, and if this is not possible, activities must be suspended. Institutions that provide training, as well as competitions for highly skilled athletes (including professional youth sport) may organize activities ensuring safety measures.

From 3rd of November until 8th November the educational process of children studying in special schools and special classes of general education schools will be continued in a contact manner.

Basic principles of organizing free meals for school-children during quarantine: When regular contact education takes place in a school, such as pre-schoolers, first-graders or special school children, pupils are also fed normally, following all the recommendations of the operations manual: that is, the flow of pupils, organized for separate classes without mixing children of different classes with each other, avoiding grouping of students. When children are educated remotely, such as students in grades 5-12, then families of children receiving free meals can be provided with food rations or prepared meals based on the individual family situation. **Cooked food is relevant for children growing up in social risk conditions and not receiving warm food at home**. Municipal administrations, which cooperate with the heads of educational institutions, are responsible for organizing free meals. About 90 thousand meals are provided free of charge throughout Lithuania

Digital Competence Improvement by Lithuanian School Teachers During Covid-19

(Estela Daukšienė; Elena Trepulė; Airina Volungevičienė; DOI: https://doi.org/10.38069/edenconf-2021-ac0021; https://www.eden-online.org/proc-2485/index.php/PROC/article/view/1874)

Distance teaching and learning in Lithuanian schools during COVID-19 pandemic was a booster for teacher digital competence development. The paper analysis the experiences of Lithuanian school teachers to reveal the challenges schools and teachers faced while switching from traditional face to face teaching and learning to

distance education. The research revealed existence of **different level teacher digital competences** at a school and uneven competence development in each school. The analysis of experiences of Lithuanian school teachers through the lens of DigCompEdu framework revealed that professional development competence was the background for other competence areas to develop. The need for digital resources for teaching online contributed to the teacher digital competence development of this area. Digital assessment was indicated as the main challenge that **remained unsolved in many cases**. Research found that technological peculiarities were easier to learn and showed the need to develop teacher social and didactical competences which are necessary for distance teaching. Lack of activities to empower learners and develop their digital competences was recorded. Teachers themselves acknowledged great improvement of their digital competence.

Czech Republic

The Impact Of COVID-19 On Czech Education in The Present and Future

(https://www.ei-ie.org/index.php/en/item/23348:the-impact-of-covid-19-on-czech-education-in-the-present-and-future-by-david-navratil)

The teachers faced up to the following questions - how to proceed with the education process? Who could help them and how? If they were alone, how to get out of it? It was a situation they had never experienced. Does it even make sense to continue teaching? Is it possible to teach without a daily contact with children? Of course, it must continue, they said! The teachers set out to not leave students alone!

They assumed that children needed direction, certainty and goals to head for. All this in a context where the media didn´t inform people clearly and caused panic, broadcasting exaggerated reports, making children perceive scary news from all sides and slowly fell into depression, feeling confused and not knowing what to do, not understanding the essentials and not knowing how to preserve themselves. And the teachers teamed up and started working immediately, communicating electronically with the children, each in their own way. **It was not and it is not very important what the children learn, it was important to communicate with them, not to overload them, but to motivate them to work, entertain them.**

Estonia

Teaching during COVID-19: The Decisions Made in Teaching

*(*Lepp, L.; Aaviku, T.; Leijen, Ä.; Pedaste, M.; Saks, K. Teaching during COVID-19: The Decisions Made in Teaching. *Educ. Sci.* **2021**, *11*, 47. https://doi.org/10.3390/educsci11020047)

The emergency caused by COVID-19 and the transition to distance learning has made teachers face novel decision-making situations. As the teachers' pedagogical decisions have an impact on the students' learning experience, the aim of this study was to describe and explain what influenced the teachers' teaching-related decisions and how these decisions were reflected in the teaching process during distance learning. The study was based on semi-structured interviews with 16 Estonian basic school science teachers. The data were analysed using qualitative thematic analysis. The results show that teachers' teaching-related decisions were influenced by factors that were related to the existence of digital tools as well as to the ability to use them purposefully in the home settings of teachers and students. Teachers' teaching decisions were mostly motivated by short-term goals, such as maintaining students' social interaction and supporting student motivation. The desire of teachers to keep students' and teachers' own workload affordable was also considered as a factor influencing teachers' teaching-related decisions. According to the interviews, **the switch of focus to workload and well-being and**

valuing socialization and student motivation over subject matter competences seems to be unique for this new situation.

Estonia top of the (digital) class

(https://socialeurope.eu/estonia-top-of-the-digital-class)

Among the best-known IT solutions to have emerged are proving identity electronically—together with electronic signatures, this serves as authentication when gaining access to a range of digital services in the public and private sectors—and a nationwide system for secure data and information transfer, called X-Road. According to the SGI country report, over 900 companies and organisations in Estonia use X-Road on a daily basis. It adds: 'X-Road is also the first data exchange platform in the world that allows data to be exchanged between countries automatically.'

Thanks to its high degree of digitalisation, Estonian society therefore already had tools to mitigate significantly the consequences of the coronavirus crisis for various aspects of daily life. Before the pandemic took hold, for example, Estonians already completed most administrative procedures online: registering births, registering cars, applying for state aid, setting up businesses, even voting. Via the internet, all this and much more is possible in Estonia—in a matter of minutes.

Lessons from Estonia: why it excels at digital learning during Covid

(https://www.theguardian.com/world/2020/oct/30/lessons-from-estonia-why-excels-digital-learning-during-covid)

Before the pandemic, most Estonian schools were routinely using digital study materials, including a platform of digital books called Opiq and electronic school management systems such as eKool, which connect pupils, parents and teachers. "All these systems have been set up for years now," said Limperk-Kütaru. When Covid closed school buildings, "it was just moving from classrooms to a virtual environment".

Not every child in Estonia had access to a laptop or tablet, but where they did not, schools, local authorities and voluntary organisations stepped in. **A team of university-trained "educational technologists" who are based in schools worked with teachers to ensure the best use of digital resources**.

The school year 2020-21 in Estonia during the pandemic

(Mägi, E., The school year 2020-21 in Estonia during the pandemic, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-38674-2, doi:10.2760/52883, JRC125454)

This report presents results from a qualitative interview-based study with teachers, students and school leaders (n=15) on the academic year 2020-21 in Estonia, which can be described as the first full year with Covid-19. The study reveals how school staff members were bridging previous experiences from 2019-20 in preparations for 2020-21 resulting in a variety of education modes, including contact learning, hybrid learning and remote education. While the academic year 2020-21 can be characterized by constant reorganizing, creative tailor-made solutions and ad hoc planning, key findings in the study include **instructional practices developed, assessment and feedback, well-being and vulnerability, data protection and privacy**. Potential improvements and future directions for the next academic year 2021-22 and for long perspective planning in education in Estonia are provided.

Austria

A closer look at Austria's digital response to COVID-19

(This case study on the Austrian digital solution Eduthek has been written following the insights provided by Dr Robert Kristöfl and Mag. Stefan Schmid from the Federal Ministry of Education, Science and Research in Austria; https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/document/closer-look-austrias-digital-response-covid-19)

In order to swiftly develop and release a useable version of the platform, the project team behind Eduthek had to address two main challenges:

The first challenge was the definition and order of the metadata to be included on the platform, for which the project team received support from several universities such as KU Leuven (Belgium) and WU-Wien (Austria). The second challenge was the technical development and testing of the platform, as well as the collection of quality content to be offered on it. Regarding content collection, the Eduthek team collaborated with external educational platforms willing to share their content on Eduthek and benefitted from the help of a group of about 40 teachers and university professors who contributed to the review and approval process.

Austria COVID-19 education response

(https://multinclude.eu/2020/05/28/austria-covid-19-education-response/)

The equipment will be loaned out until the end of the year.

There is a wide range of support material and practical tips how parents could actually support home schooling and how their role could be, as well as partial evidence about how parents are perceiving the situation from their perspective. Needless to say **that distance learning which shall take place in private homes** and families has put a massive additional effort and responsibility on the parents, who **are challenged by working home office at the same time** or maintain their professional obligation under other difficulties.

Remote schooling during the covid-19 lockdown in Austria

(Trültzsch-Wijnen, C.W. & Trültzsch-Wijnen, S. (2020): Remote Schooling During the CoVID-19; Lockdown in Austria (Spring 2020). KiDiCoTi National Report)

The majority of **Austrian families with children** between 10 and 18 years was good equipped with digital devices and had a fast internet connection. Still, **20% had a slow internet** connection and a quarter **had not enough devices** for ensuring that everybody in the family was able to do his or her tasks for remote schooling and teleworking.

- Half of Austrian pupils in secondary education had weekly contact with their teachers. Only about one third of the children between 10 and 18 years had online learning activities at least once a week, **daily online learning activities were rare**.
- Primary school teachers hardly made use of digital platforms or any other digital media.
- About **half of the children perceived school work during the lockdown as more than before**. This feeling was strongest among the 16- to 18-years-old.
- The majority of the children learned quickly to participate in online activities and their motivation to participate in online activities was high.
- Many children felt to have improved their digital skills as effect of remote schooling.

- Half of the parents report that their children gained more overall autonomy and more selfregulation with their school activities, and became better in using digital media for school activities.
- The majority of Austrian parents was able to support their children's learning activities. For similar situations in the future **they wish to be provided more activities for the child to interact with classmates**, guidelines how to support their children with remote schooling activities, and guidelines on how to psychologically support their children. **About 40% wish psychological support for the child** as well as the whole family.

Recommendations

- A fast internet connection as well as a sufficient equipment with **digital devices is needed for all families**. Special focus must be laid on those, who have not yet sufficient internet access and equipment.
- **Teachers must be better trained for online teaching activities**.
- **The use of digital media and digital platforms** in regular school activities **should be further promoted and supported**. It should become a normal part of education not only in upper secondary, but also in lower secondary, and in primary education.
- **Digital skills of children must be further supported at school**. Particularly weaker pupils need special support to be better prepared for digital learning activities.
- Schools **must be prepared** for potential remote schooling situations in the future.
- **Guidelines for parents** to support children in remote schooling situations need to be developed.
- In future remote schooling/ lockdown situations families must be offered more **psychological support**.

Austrian teachers' attitudes and self-efficacy beliefs regarding at-risk students during home learning due to COVID-19

(Julia Kast, Katharina-Theresa Lindner, Alexandra Gutschik & Susanne Schwab (2021) Austrian teachers' attitudes and self-efficacy beliefs regarding at-risk students during home learning due to COVID-19, European Journal of Special Needs Education, 36:1, 114-126, DOI: 10.1080/08856257.2021.1872849)

The lockdown of schools in Austria and many other countries due to COVID-19 posed challenges to the school system and especially for teachers of at-risk students. Within the INCL-LEA (INCLusive Home LEArning) study, 3,467 teachers (2,839 females) from all nine Federal States in Austria participated in an online survey after the first school lockdown in early 2020. The main aim of the study was to investigate teachers' attitudes and their self-efficacy beliefs about at-risk students during the first home learning period. Results indicate that teachers' attitudes towards **students with a low socio-economic background are more negative compared to attitudes towards students with low skills in the language of instruction (LLS) and students with special educational needs.** According to teachers' self-efficacy beliefs, the lowest scores were found for teaching students with LLS.

Belgium

The effect of school closures on standardised student test outcomes

(https://bera-journals.onlinelibrary.wiley.com/doi/abs/10.1002/berj.3754)

The school closures owing to the 2020 COVID-19 crisis resulted in a significant disruption of education provision leading to fears of learning losses and of an increase in educational inequality. This paper evaluates the effects

of school closures based on standardised tests in the last year of primary school in Flemish schools in Belgium. The data covers a large sample of Flemish schools over a period of six years from 2015 to 2020. We find that students of the 2020 cohort experienced significant learning losses in all tested subjects, with a decrease in school averages of mathematics scores of 0.19 standard deviations and Dutch scores of 0.29 standard deviations as compared to the previous cohort. This finding holds when accounting for school characteristics, standardised tests in grade 4, and school fixed effects. Moreover, we observe that inequality within schools rises by 17% for math and 20% for Dutch. Inequality between schools rises by 7% for math and 18% for Dutch. **The learning losses are correlated with observed school characteristics as schools with a more disadvantaged student population experience larger learning losses.**

Romania

The school year 2020-2021 in Romania during the pandemic – country report

(Published: 2021-06-30; Corporate author(s): Joint Research Centre (European Commission); Personal author(s): Velicu, Anca)

This report presents the educational response to COVID-19 crisis in Romania during the2020-2021 school year, a summary in Romanian is found in the annex. Through a qualitative methodology, the project aimed to understand how different educational systems adapted to the pandemic situation in the 2020-2021 school year and to map some good practices in this regard. The report relies on 29 semi structured interviews conducted between March and April 2021 with Romanian stakeholders (e.g., school staff, students, parents, NGOs representatives), with a focus on the compulsory Romanian educational system. **The main conclusion is that the 2020-2021 school year was marked by ad hoc decisions guided mainly by the public health authorities though centralised approach and less or at all has it answered to education-based reasons**. In this context, remote schooling prevailed, and it mostly took the form of synchronous online classes. This marks a plain transition of traditional classes in the new, screen mediated environment. Whereas the main issue discussed in the public space, and partially addressed by authorities**, was inequality in access –understood as having access to a digital device and an internet connection– less visible but important issues were neglected**. Some of these issues discussed in the report are: the lack of educational digital content and genuine digital pedagogies, lack of curriculum adjustments, lack of profound, systemic and effective inclusive approach for vulnerable students. A hybrid system was also tried, but despite its very promising opportunities, various issues in infrastructure made its implementation flawed. The first consensus among the interviewees was that although the Romanian educational system managed to take an important step forward on the digitisation path, there is still much more to be improved. Secondly, there was a consensus on how different this school year impacted students, the phrase that best described the situation being: the rich get richer, and the poor get poorer. The report ends presenting some proposals for improving education in a similar situation.

Romanian Educational System Response during the Covid-19 Pandemic

(HOLOTESCU, Carmen; GROSSECK, Gabriela; ANDONE, Diana; GUNESCH, Laura; CONSTANDACHE, Liviu; NEDELCU, Violeta Daniela; IVANOVA, Malinka Spasova; DUMBRĂVEANU, Roza. Romanian educational system response during the covid-19 pandemic. In: eLearning and Software for Education Conference eLSE 2020. Ediția a 16-a, Vol.3, 30 aprilie - 1 mai 2020, București. București, România: National Defence University - Carol I Printing House, 2020, pp. 11-19.)

While people were shutting the doors to their homes and countries were closing their borders, the virtual realm was opening up. The necessary social isolation measures mean the disruption of school-based education for several months in most countries around the world. According to UNESCO, this nationwide lockdown is impacting over 91% of the world's student population, from 191 countries; several other countries have implemented localized closures impacting millions of additional learners. Just in a few days, pupils, students, teachers and all the other educational actors were forced to make a quick transition towards online learning and teaching. In fact, what we now experience is an "emergency remote teaching" (ERT), which means an adjustment for a temporary period of time, that involves alternative ways of delivering instruction, fully remote teaching solutions "that would otherwise be delivered face-to-face or as blended or hybrid courses and that will return to that format once the crisis or emergency has abated"

Without an effective strategy to protect the opportunity to learn during this period, this disruption will cause severe learning losses for students. The continuity of the learning process for students, respectively support for students who lack the skills of independent learning should be ensured with priority. On March 11, 2020, the Romanian Ministry of Education and Research (MER) has suspended the courses in all the schools, encouraging and supporting the continuation of the educational activities for 2.8 million pupils in online environment. Having autonomy, the same day, universities have stopped their face-to-face courses, the activity being continued as online courses on virtual learning platforms, for more than 500 thousand students. Since then, there is a high mobilization and collaboration between teachers, students, parents, ministry and the whole society in supporting this Emergency Remote Education process. Romania was not found unprepared, having a good infrastructure, teacher training, Open Educational Resources (OER) repositories created in previous projects and an active Open Education movement, but with problems related to Internet connection in rural areas, the level of teachers' digital skills, also software available in schools?

One Year of Online Education in COVID-19 Age, a Challenge for the Romanian Education System

*(Edelhauser, E.; Lupu-Dima, L. One Year of Online Education in COVID-19 Age, a Challenge for the Romanian Education System. Int. J. Environ. Res. Public Health **2021**, 18, 8129. https://doi.org/10.3390/ijerph18158129)*

The study tried to analyse the implication of one year of online education in the Romanian education system. To achieve this goal, the authors of this study analysed all the levels of education, primary education, lower secondary education, upper secondary education, and even the early childhood system, but also one of the smallest Romanian universities, considered representative for grade 1 universities representing 60% of the Romanian universities. The study is based on four online questionnaires for investigation, first with more than 2500 respondents from the primary and secondary Romanian education system, and the other three applied to more than 800 students and professors from the University of Petroșani. The investigation took place during 29 January 2021 and 11 February 2021. The authors had investigated the main feature of a standard online or a classical e-learning solution, such as the meeting solution or the video conference software, the collaborative work, such as homework or projects, and the testing method or the quizzes from both perspectives of the students and of the professors. The study results could influence the expected future hybrid educational system because these results were not covered in the previous literature but proved to be necessary for relevant knowledge strategies to be implemented in the new pandemic and also in the future context.

Germany

The current state and impact of Covid-19 on digital higher education in Germany

(This paper is based on an article by Olaf Zawacki-Richter in the German journal "Das Hochschulwesen" published under the license CC BY-ND. Open access funding enabled and organized by Projekt DEAL.; https://onlinelibrary.wiley.com/doi/full/10.1002/hbe2.238)

This case study looks at the effects of the Covid-19 pandemic on teaching and learning at universities in Germany. It examines the question of whether the current practice of Emergency Remote Teaching in the online term 2020 will lead to an acceleration of the digitalization of teaching and learning, and on what we can build upon in this development. In the light of the state of digital higher education in Germany and international experience in the field of distance education, as well as organizational support structures, the results of a longitudinal study on the media use behavior of students will be presented. While the acceptance of e-learning tools was slightly declining before the Covid-19 outbreak, **it is to be assumed that the demand for digital offers will rather increase. Despite some reluctant reactions, it can be assumed that the current situation will have a positive effect on digital innovations in university teaching in Germany due to the pressure of the crisis, the great commitment of many teachers, and raised expectations.**

Adapting to online teaching during COVID-19, school closure: teacher education and teacher competence effects among early career teachers in Germany

(Johannes König, Daniela J. Jäger-Biela & Nina Glutsch (2020) Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany, European Journal of Teacher Education, 43:4, 608-622, DOI: 10.1080/02619768.2020.1809650)

As in many countries worldwide, as part of the consequences of the COVID-19 pandemic lockdown schools in Germany closed in March 2020 and only partially re-opened in May. Teachers were confronted with the need to adapt to online teaching. This paper presents the results of a survey of early career teachers conducted in May and June 2020. First, we analysed the extent to which they maintained social contact with students and mastered core teaching challenges. Second, we analysed potential factors (school computer technology, teacher competence such as their technological pedagogical knowledge, and teacher education learning opportunities pertaining to digital teaching and learning). Findings from regression analyses show that information and communication technologies (ICT) tools, particularly digital teacher competence and teacher education opportunities to learn digital competence, are instrumental in adapting to online teaching during COVID-19 school closures. Implications are discussed for the field of teacher education and the adoption of ICT by teachers.

Using e-learning to deliver in-service teacher training in the vocational education sector: Perception and acceptance in Poland, Italy and Germany

(Hofmeister, C.; Pilz, M. Using E-Learning to Deliver In-Service Teacher Training in the Vocational Education Sector: Perception and Acceptance in Poland, Italy and Germany. Educ. Sci. ***2020****, 10, 182. https://doi.org/10.3390/educsci10070182)*

For teachers in vocational education and training (VET), lifelong learning and related further training is important to meet the growing demands of the teaching profession. This paper analyses the perception of technology and e-learning of teachers in Poland, Italy and Germany. The innovative aspect of this study lies in its combination of general perceptions of online learning and technology on the one hand and findings in relation to a specific online Teacher Training Tool on the other hand. The aims of this study are to show the relevance of e-learning in teacher training and to measure the perception and acceptance of this form of further training by VET teachers. The results should provide support for the further design and development of online education formats for teachers.

The evaluation was carried out using a quantitative cross-cutting study using a standardised questionnaire. The results of an online questionnaire show that the approach of online learning as a form of teacher training was met with great interest among VET teachers and that the perception of one's own benefit from such a training option was positive. **The quality of the online learning units is decisive for the acceptance of e-learning opportunities**. One limitation of this study is that the diverse country-specific cultural aspects and systems of teacher training could only be taken into account to a limited extent. This paper enables international comparative research on teacher training to be integrated using e-learning formats.

Hungary

Digital Revolution in Education – Perspectives and Dilemmas

(Molnár Gyöngyvér, Turcsányi-Szabó Márta, Kárpáti Andrea; DOI: 10.1556/2065.181.2020.1.6)

Because of the rapid development of education technology in the past decades, nowadays it is beyond doubt that **the application of technology has an effect on the effectiveness of learning**. The question is how the use of technology could be maximized to increase learning effectiveness, support differentiated instruction, boost student concentration, raise their limits of endurance, and maintain their motivation. **An important recent result is that by exploiting the opportunities offered by technology, both the quantity and the quality of the** data set we have regarding the complex phenomenon of learning has changed. This advance has induced the qualitative change of earlier theories and practical methods as well as the development of new theories and methods. Also, by asking and answering new research questions, it facilitated the deeper understanding of the learning processes. There lies a great potential in using mobile devices, serious games and simulations in primary and secondary education as well as disseminating the application of MOOCs in higher education or taking advantage of big data and learning analytics. Several examples of development in a national context build on all these technologies, for example, eDia online assessment system devised by the Centre for Research on Learning and Instruction at the University of Szeged, the projects of the T@T lab of the Faculty of Informatics at ELTE University or the ongoing work of the MTA–ELTE Visual Culture Research Group. We are at the beginning of a qualitative change. It is unclear yet which direction the possibilities outlined in the study will move the education of the future.

The Netherlands

Distance mathematics teaching in Flanders, Germany, and the Netherlands during COVID-19 lockdown

(Drijvers, P., Thurm, D., Vandervieren, E. et al. Distance mathematics teaching in Flanders, Germany, and the Netherlands during COVID-19 lockdown. Educ Stud Math (2021). https://doi.org/10.1007/s10649-021-10094-5)

The COVID-19 pandemic has confronted mathematics teachers with the challenge of developing alternative teaching practices—in many cases at a distance through digital technology—because schools were closed. To investigate what distance practices in secondary mathematics education have emerged and how teachers experienced them, we set out online questionnaires in Flanders—the Dutch-speaking part of Belgium—, Germany, and the Netherlands. The questionnaire focused on teaching practices, teacher beliefs, didactics, and assessment. Data consisted of completed questionnaires by 1719 mathematics teachers. **Results show that the use of video conferencing tools increased massively, while the use of mathematics-specific tools that teachers used before the lockdown reduced substantially**. Further findings are that teachers' confidence in using digital technologies increased remarkably during the lockdown and that their experiences and beliefs only marginally impacted their distance learning practices. Also, we observed some differences between the three countries that

might be explained by differences in educational policies and in technological facilities and support. For future research, it would be relevant to investigate long-term changes in teachers' practices, as well as students' views and experiences related to the teacher's practices.

Inequality in home schooling during the corona crisis in the Netherlands. First Results LISS Panel 2020.

(Bol, T. (2020, April 30). Inequality in homeschooling during the Corona crisis in the Netherlands. First results from the LISS Panel. https://doi.org/10.31235/osf.io/hf32q)

In the COVID-19 crisis, the science of learning has two different responsibilities: first, to offer guidance about how best to deal with the impact of the current situation, including lockdown and home-schooling; and second, to consider bigger questions about what this large-scale educational experiment might mean for the future. The first part of this Viewpoint summarises advice for parents on mental health, and on becoming stand-in-teachers. The second part, taking the longer view, considers the potential negative impact of the COVID-19 crisis in increasing inequality in education; but also **the potential positive impact of driving innovations in technology use for educating children.**

6.3. Research carried out by global organisations

Research supported by global organizations usually involves large-scale, multi-country, comprehensive reports. The research materials process recent highlights using available statistics and data collection. These data-intensive materials help to plan state-level policies and interventions, as well as provide a larger perspective for researchers and developers working in certain fields of education.

UNESCO

UNESCO Distance Learning Solutions

(https://en.unesco.org/covid19/educationresponse/solutions)

Topic:

Educational applications, platforms and resources

- Resources to provide psychosocial support
- Digital learning management systems
- Systems built for use on basic mobile phones
- Systems with strong offline functionality
- Massive Open Online Course (MOOC) Platforms
- Self-directed learning content
- Mobile reading applications
- Collaboration platforms that support live-video communication
- Tools for teachers to create of digital learning content
- External repositories of distance learning solutions

UNESCO COVID-19 Educational Disruption and Response

(https://scholar.google.hu/scholar?q=UNESCO+COVID-19+Educational+Disruption+and+Response.&hl=hu&as_sdt=0&as_vis=1&oi=scholart)

Topic:

Digital learning tools, international cooperation

The COVID-19 crisis may well change our world and our global outlook; it may also teach us about how education needs to change to be able to better prepare young learners for what the future might hold. This is the challenge for the Global Education Coalition. Resilience and adaptability will be crucial for the next generations. **Future employers will highly value creativity, communication, and collaboration, alongside empathy and emotional intelligence. We also need to train students to work across demographic differences, so as to harness the power of the universal collective through effective teamwork and global collaboration**. The corollary of such education is pursuing multilateralism in all fields of human activities, especially in the interconnected world we are inhabiting, as so tragically evidenced by COVID-19.

UNESCO The global learning crisis: Why every child deserves a quality education

(https://unesdoc.unesco.org/ark:/48223/pf0000223828)

To achieve improved learning and teaching in all learning environments, we need to:

1. **Transform classrooms** and diversify learning sites: invest in changing stagnant environments where students receive information passively **into active environments where students direct their own learning** in collaboration with teachers, peers, the curriculum, learning resources and the local community.
2. **Improve teachers' working conditions** and provide them with ongoing support and **training both locally and centrally**, so that they can effectively lead student-centred learning. A systematic programme of school-based professional support and development must be implemented comprehensively.
3. **Revise school curricula** to reflect the skills, knowledge, attitudes, and values, relevant for the well-being and valuable employment of all groups in the 21st century.
4. **Provide engaging learning materials in the classroom** that reflect relevant skills, knowledge, attitudes, and values and that facilitate students' self-directed, active learning. Technological resources need to be encouraged to keep pace with their increasing use in other areas of life.
5. **Expand learning outcomes** to include competencies and skills that go beyond basic reading and math, and reflect local values, needs and expectations for education.
6. **Increase global investment in education** by governments, aid donors and private corporations.

United Nations

United Nations. Policy Brief: Education during COVID-19 and Beyond

(https://www.un.org/en/un-chronicle/education-during-covid-19-and-beyond-commentary-secretary-general%E2%80%99s-policy-brief)

Topic:

Crisis has stimulated innovation within the education sector

- Ensure the **safety of all**: the un and the education community have developed guidance to help countries through the timing, conditions, and processes for reopening education institutions.
- Plan for inclusive reopening: the needs of the most marginalized children should be included in reopening strategies and **adequate health measures** need to be provided for students with special needs.
- Isten to the voices of all concerned: given the role that parents, caretakers, and teachers have played since the onset of the crisis, an essential part of the decision making process is consultation and joint planning for reopening with communities and education stakeholders.
- Coordinate with key actors, including the health community: measures to mitigate the risks of transmitting covid19 will be likely be needed in the medium term, so it will be important to reflect on the impact of various reopening strategies, by using whatever information is available and by learning from other countries.
- **Strengthen domestic resource mobilization**, preserve share for education as top priority and tackle inefficiencies: as widening the tax base in countries with a large informal sector takes time, other measures (fighting tax avoidance and evasion, revising tax incentives and treaties, etc.) Need to be explored without delay
- **Protect official development assistance** (oda) for education: given the scale of the global education emergency, donors need to ensure that aid commitments to education are, at the very least, kept stable, if not increased, and **focus on the most at risk, including children in emergency** situations.
- Strengthen international coordination to address the debt crisis: g20 countries have already agreed to a "debt service standstill" for least developed countries until the end of 2020
- **Focus on equity and inclusion**: measures to "build back resilient" and reach all learners need to understand and address the needs of marginalized groups and ensure they receive quality and full-term education.
- Ensure strong leadership and coordination: the multitude of actors needed to respond to and mitigate the impact of crises can lead to duplication, inefficiency, and confusion, in the absence of strong leadership and coordination.
- Reinforce capacities for risk management, at all levels of the system: **capacities are needed at the individual, organizational, and institutional levels to withstand emergencies**.
- Enhance **consultation and communication** mechanisms: education directors, teachers, parents and caregivers – all played a critical role in the response to the covid-19 crisis and took on additional responsibilities in uncharted territories.

CEDEFOP

CEDEFOP Responses to the Covid-19 outbreak

Poland

(https://www.cedefop.europa.eu/en/news)

Topic:

Regulation on the temporary suspension of the functioning of education institutes

- Distance learning in VET
- Apprenticeships and juvenile workers

- VET exams
- Distance learning in general education

Regulations for assessment in distance learning were adapted and specified. School directors had to determine, in consultation with teachers, new forms of monitoring and assessing learners' knowledge and progress. Exams after the eighth grade of primary school were postponed from April to June, the Matura exam from May to June, and the oral part of the exam was cancelled.

Czech Republic

(https://www.cedefop.europa.eu/en/news)

Topic:

The Resolution of the Czech Government

- Online learning
- Practical training
- Admission to and completion of education programmes

Following the declaration of a state of emergency, the physical presence of students in basic, upper secondary and tertiary professional schools was prohibited by the Resolution of the Czech Government of 12 March 2020. The state of emergency was declared for 30 days and subsequently extended until 17 May 2020. From 12 March 2020 until the end of the school year, 30 June 2020, online forms of learning have been used.

Greece

(https://www.cedefop.europa.eu/en/news)

Topic:

Suspend the operation of education institutions at all levels nationwide.

- Supporting learners, teachers and trainers
- Modern distance learning: synchronous
- Asynchronous learning
- Educational television
- Public post-secondary VET institutes (IEK)
- Universities/ tertiary education institutions

All schools (including VET) nationwide were swiftly provided with tablets and laptops by the education ministry; the initiative was supported by European funds and private donations. This equipment is used by teachers and learners to ease the implementation of distance learning. In the long term it will also contribute in enhancing learners' digital skills. **Priority was given to supporting low-income families, unemployed parents, single families, families with three children, families with many children or orphaned families, learners with special needs or excellent achievements.** The equipment was distributed according to the number of learners and the existing technological equipment at each school; the specific number of tablets and laptops was subject to the total amount of donations.

Estonia

(https://www.cedefop.europa.eu/en/news)

Topic:

Lessons from two months of distance learning

- Regulatory flexibility
- Provision of practical training at a distance and online
- Reorganise work-based learning
- Guidelines for distance-learning environments
- Sufficient digital skills among students and teachers to cope with the new situation;
- Adequate digital infrastructure in VET schools and at homes;
- Information and clear messages for organising distance learning;
- Good governance, cooperation, partnership and information-sharing between stakeholders.
- Evaluate the impact the two months of distance education

Lithuania

(https://www.cedefop.europa.eu/en/news)

Topic:

Challenges and new opportunities

- Systematic VET works: an effective State response to Covid-19 challenges
- Vocational education and training resumes in distance learning
- Changes in VET content: guaranteed quality assurance
- VET community: the lessons learned

All VET institutions, through a dedicated online platform, have access to a Moodle virtual learning environment adapted to VET needs. This was developed through the ESF funded project Development of information systems and registers for VET and lifelong learning.

Austria

(https://www.cedefop.europa.eu/en/news)

Topic:

Vocational education and training

- Schools closed, short-time work at companies
- Development boost for distance learning
- Digital teaching
- Digital training portal
- Completion of VET ensured
- Conclusions
- Upcoming challenges

Romania

(https://www.cedefop.europa.eu/en/news)

Topic:

Guidelines for creating / strengthening online learning capacity

- Monitoring the participation in online teaching and learning;
- Relevant information for teachers, school managers and inspectorates to support and improve access to online teaching and learning; this was uploaded in the education database.
- Analyses on the access of learners, teachers and schools to resources for online learning;
- Teacher obligation to provide feedback to each student on his/her online work;
- Delegation to the school management and teachers of decisions on selecting platforms/applications and open education resources for online learning;
- The digital portal
- Online resources
- Vulnerable groups
- Informing learners about hygiene and safety
- Practical training in companies
- Assessment and final exams
- Main challenges and conclusions

Ireland

(https://www.cedefop.europa.eu/en/news)

Topic:

Identifying good practice, issues and solutions

Approaches to support the continuation of teaching and learning in FET included the fast-tracking of professional development in technology-enhanced learning and promotion of digital champions to build capacity for online learning. There has also been significant increase in the use of digital platforms including Microsoft Teams, Moodle, and web portals. Devices have been loaned to learners to facilitate continued access to course content which has been moved online. A new digital library serves as an online resource for FET providers and their learners.

eCollege (an online learning service) has been made available free of charge as a support to learners who have been affected by the current containment measures. **The aim is to support registered FET learners to augment their learning, as well as individuals who have recently become unemployed or had their hours reduced to upskill or reskill.** There has been significant take up of the offering and from 24 March (since the online learning service became free of charge); up to 14 May, 12 851 'public referrals' had been made to eCollege.

The 16 education and training boards' teachers, tutors and instructors are maintaining contact with the most vulnerable groups (such as young people on Youthreach ([2]) programmes, students with literacy difficulties and learners in community education) to militate against drop-out.

Germany

(https://www.cedefop.europa.eu/en/news)

Topic:

Securing the remuneration of apprentices, organising learning and examinations according to safety regulations

- Special regulations on short-time work for apprentices
- Solutions for final examinations
- Impact on VET schools
- Post-crisis prospects offer concerns and optimism

The Netherlands

(https://www.cedefop.europa.eu/en/news)

Topic:

Carry on as much as possible, adapt where necessary

Education and training institutions had to operate within the framework of safety measures announced by the National institute for public health and the environment (RIVM). **Education has been offered via distance learning and face-to-face internet contacts between learners and teachers**, as VET schools have been closed for almost all learners. VET colleges have made a considerable effort to keep contact with learners, **particularly with disadvantaged ones such as those in unsafe home situations, with multiple problems, or with no access to distance learning**. VET colleges could host these learners in their own venues provided that both they and their teachers do not have Covid-19 symptoms.

Learners in the dual track have an employment contract with a company. If a contract was terminated because of the Covid-19 crisis, practical training was also terminated.

VET colleges have mostly defined their situation as 'holding the line', once the most acute problems had been solved and procedures adapted to the circumstances. **This permits time for damage assessment and a first glance into the future.** The first impression is that VET colleges have generally been able to keep almost everybody on board and have adapted themselves to distance learning needs at a surprising speed.

Solutions taken under great stress may not be the best ones: it is important to discuss how to improve them and how to share experiences and learn from others. It is expected that, in finding the answers to these questions, VET colleges will not aim to restore the past but instead to rethink the provision of VET in a more flexible and sustainable way, less dependent on transport facilities and buildings/classrooms.

Luxembourg

(https://www.cedefop.europa.eu/en/news)

Topic:

National education during the interruption

Survey of teachers and parents

Suspension of internships and apprenticeships

Resumption of school activities in IVET programmes

Assessment of the school year 2019/20

- a Webinar was held to support VET teachers to develop knowledge on distance learning for practical courses. This interactive online event was offered in cooperation with several stakeholders: the VET directorate of the Education Ministry, the National Institute for Research in Pedagogical Innovation (SCRIPT) and the Training Institute of National Education (IFEN) ;
- a contest on Instagram #Fopro2020 My profession, my talent! was organised for VET learners by the Education Ministry. As part of the Schouldoheem.lu initiative, learners are asked to produce a five-minute video showing themselves doing a specific project and explaining step by step what they do and which competences and learning outcomes they apply;
- a special procedure was implemented allowing identification **of learners isolated at home and not participating in distance education**. In cases where it proves impossible to establish or maintain remote contact with these pupils or their parents, psycho-socio-educational professionals have provided those concerned with prompt assistance in the school premises since 20 April 2020. An e-learning support service is also offered through a helpline. Once learners return to school, additional resources will be allocated to schools enabling them to provide support to students who need it, during or outside school hours.

Hungary

(https://www.cedefop.europa.eu/en/news)

Topic:

National vocational education and training (VET) responses to Covid-19

- Legal arrangements for VET delivery during the Covid-19 epidemic
- Digital tools and methods to teach differently
- Online learning offers advantages. In Redmenta, assessment could be customised: a learner can correct and resubmit homework several times within a given time period, thus improving performance and grades. This has been excellent motivation for learners. Self-learning and increased flexibility also apply: learners can receive feedback on their mistakes and make corrections themselves, and deadlines for delivering school assignments can be extended.
- Support to disadvantaged VET learners
- Specific arrangements put in place in formal VET
- Cooperation in VET: turning a problem into an opportunity

Main challenges

- To begin there was some uncertainty among teachers who did not know which online platform to use for uploading teaching materials (Google drive, classroom.com, KRÉTA). **This was agreed in school meetings held in the premises which allow the teaching process to run as a smooth operation**. Optional platforms were also used for remote homework (classroom.com, redmenta.com, wordwall.com, learningatps.com)
- **Remote learning was difficult within family circumstances**, mainly for primary school students when parents also had also to work remotely and help their children connect to the school platform. Upper secondary (VET) learners could easily adapt to online learning.

- **The teaching** experience for those **with small children at home was difficult** (giving online lectures through Skype, Webex, Teams, Zoom, etc.). Video calls suffered from technical issues which created delays for learners to connect into the virtual classroom.
- For **families with more than one child of school age, having access to one digital device was problematic**. According to teachers, the parents' positive attitude towards remote learning and their active engagement in the learning process helped children stay focused and motivated. From a longer-term perspective, learners felt the absence of personal contacts, teacher guidance and explanation, and the classroom community.
- It is a **positive aspect that multiple digital learning materials have been prepared**. Teachers intend to include these into their own teaching practice after the pandemic.

Croatia

(https://www.cedefop.europa.eu/en/news)

Topic:

Skills competitions during the COVID-19 pandemic

2021 national skills competition goes live again following a strict health and safety protocol

Following the cancellation of the 2020 WorldSkills Croatia competition after the pandemic outbreak, the Agency for VET and Adult Education (ASOO) prepared the Rules and instructions for the organisation and implementation of IVET learner competitions in 2020/21 (in Croatian) and a health and safety protocol, involving detailed physical distancing and sanitary measures, including facemasks and mandatory testing for SARS-CoV-2 for all participants. As visitors were not allowed to the event, the entire competition was delivered via live streaming over social media to ensure promotion of VET – one of the core missions of the skills competition in Croatia. Online voting was organised to raise attention of virtual IVET fairs for learners with disabilities, practice firms and a cross-sector fair, engaging 7 000 voters, who selected the best learner product/project in IVET. A new central information competition system, introduced at the WorldSkills Croatia competition in 2021, allowed easier application to competitions and smoother data management.

Malta

(https://www.cedefop.europa.eu/en/news)

Topic:

VET response to the Covid-19 emergency

Measures for compulsory education

The MEDE set up a compulsory education working group comprising representatives of the State, the church and independent stakeholders – including the Malta Union of Teachers (MUT) – to **explore possible methods of online teaching and to study the impact of the present situation on the curriculum**.

Measures for further and higher education

Arrangements were made for students at the University of Malta and the two main VET institutions in further and higher education – the Malta College for Arts, Science, and Technology (MCAST) and the Institute of Tourism Studies (ITS) – to benefit from online learning. The main digital tools used for online tuition and communication with students at these VET institutions were Moodle, Microsoft Teams, Schoology, and Classter Management Information System.

The MEDE, with the participation of all partners, has published comprehensive plans that will lead to the opening of the 2020/21 academic year. The plan details how learners will progress from year to year, all the way to further and higher academic and vocational institutions.

OECD

OECD Education Policy Outlook Country Profiles

Czech Republic

(https://www.oecd.org/education/profiles.htm)

Topic:

Education policy

- Equity and quality: growing ecec enrolment, but inequities have persisted across the system
- Preparing students for the future: high educational attainment and adult skills, with transitions to be strengthened
- School improvement: efforts have been undertaken to improve working conditions for teachers
- Evaluation and assessment: efforts to establish and further develop consistent mechanisms and frameworks
- Governance: balancing education policy in a fragmented system
- Funding: low levels of education expenditure, with changes to allocation mechanisms

Estonia

(https://www.oecd.org/education/profiles.htm)

Topic:

Education policy

- Equity and quality: comparatively stronger, but also some gaps to be tackled
- Preparing students for the future: an ongoing need to promote positive labour market outcomes for all
- School improvement: sustained efforts to raise the status of teachers and school leaders
- Evaluation and assessment: strengthening a culture of evaluation and feedback
- Governance: a highly decentralised system evolving in a context of demographic change
- Funding: ensuring resources sustainability for the education system

Greece

(https://www.oecd.org/education/profiles.htm)

Topic:

Education policy

- Equity and quality: ensure equitable access to quality education from an early age, and as a first entry country within the EU
- Preparing students for the future: high educational attainment, but also comparatively high youth unemployment

- School improvement: efforts to strengthen school leadership, with a need to ensure a classroom environment conducive to learning
- Evaluation and assessment: a system in the making
- Governance: a highly centralised system
- Funding: with comparatively low levels of spending, greater efficiency is needed

Germany

(https://www.oecd.org/education/profiles.htm)

Topic:

Education policy

- Equity and quality: above-average performance, but equity challenges persist for disadvantaged students
  Preparing students for the future: growing levels of tertiary attainment, with room to improve transitions for vet students
- Ecec and school improvement: increased teacher shortages to be addressed in the coming years
- Evaluation and assessment: system-level evaluation is being strengthened
- Governance: a well-established structure of engagement with subnational actors
- Funding: high spending, with growing pressure as student numbers rise across the system

Hungary

(https://www.oecd.org/education/profiles.htm)

Topic:

Education policy

- Equity and quality: declining student performance and barriers to equity
- Preparing students for the future: tackling dropout and increasing attainment
- School improvement: fostering better teaching conditions
- Evaluation and assessment to improve student outcomes: building an integrated framework
- Governance: balancing centralisation and autonomy
- Funding: decreased public investment in education

Ireland

(https://www.oecd.org/education/profiles.htm)

Topic:

Education policy

- Equity and quality: a high-performing system with several practices in place that have favoured equity
- Preparing students for the future: ongoing repositioning for future labour market relevance

- School improvement: greater focus has been placed on structured approaches to professional development
- Evaluation and assessment: a growing culture of improvement focused evaluation
- Governance: a system with high autonomy for education institutions
- Funding: demographic change and national targets have placed mounting pressure on resources

Luxembourg

(https://www.oecd.org/education/profiles.htm)

Topic:

Education policy

- Equity and quality: systemic barriers to equity
- Preparing students for the future: high educational attainment
- School improvement: favourable teaching conditions for a young teaching workforce
- Evaluation and assessment to improve student outcomes: focus on school self-evaluation
- Governance: moving towards greater autonomy
- Funding: investing in the early stages of education

The Netherlands

(https://www.oecd.org/education/profiles.htm)

Topic:

Education policy

- Equity and quality: a strong start in education for all students
- Preparing students for the future: effective transitions to the labour market
- School improvement: fostering better teaching and leadership
- Evaluation and assessment to improve student outcomes: trusting schools to provide quality education
- Governance: centralised policy implemented by school boards with a high degree of school autonomy
- Funding: public funds allocated to all education levels with equal funding for public and private schools

Initial education policy responses to COVID-19 pandemic: Country snapshots

Czech Republic

(https://www.oecd.org/education/policy-outlook/covid-19-responses-snapshots.htm)

Topic:

Strengthening adaptability and resilience in the context of COVID-19 pandemic

- Ensuring continued access to learning and smooth educational pathways
- Strengthening the internal world of the student:

- Providing targeted support and interventions for vulnerable children and families:
- Harnessing wider support and engagement at local and central level,
- Collecting, disseminating and improving the use of information about students.

Estonia

(https://www.oecd.org/education/policy-outlook/covid-19-responses-snapshots.htm)

Topic:

Strengthening adaptability and resilience in the context of COVID-19 pandemic

- Ensuring continued access to learning and smooth educational pathways
- Strengthening the internal world of the student:
- Providing targeted support and interventions for vulnerable children and families:
- Harnessing wider support and engagement at local and central level,
- Collecting, disseminating and improving the use of information about students:

Greece

(https://www.oecd.org/education/policy-outlook/covid-19-responses-snapshots.htm)

Topic:

Strengthening adaptability and resilience in the context of COVID-19 pandemic

- Ensuring continued access to learning and smooth educational pathways
- Strengthening the internal world of the student:
- Providing targeted support and interventions for vulnerable children and families:
- Harnessing wider support and engagement at local and central level:
- Collecting, disseminating and improving the use of information about students:

Ireland

(https://www.oecd.org/education/policy-outlook/covid-19-responses-snapshots.htm)

Topic:

Strengthening adaptability and resilience in the context of COVID-19 pandemic

- Ensuring continued access to learning and smooth educational pathways
- Strengthening the internal world of the student:
- Providing targeted support and interventions for vulnerable children and families:
- Harnessing wider support and engagement at local and central level:
- Collecting, disseminating and improving the use of information about students.

European Commission

European Commission Eurydice National Reforms in School Education

Czech Republic

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- National tutoring plan
- Revision of curricular documents for the subject of informatics in basic education Temporary changes in enrolment proceedings and VET final and Maturita examinations in 2021
- Amendment to the Decree on Education of Pupils with Special Education Needs and of Gifted Pupils
- New Strategy for Education Policy of the Czech Republic 2030+ approved
- Distance education as an official form of education and the manual for operation of schools in the 2020/21 school year
- Development and Grant Programmes 2020

Poland

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- Laboratories of the Future
- Inauguration of the Council for information and communication technologies in education and higher education and science systems
- Possibility to increase the number of hours of supporting classes - amendment of the regulation
- Strengthening the role of the school superintendent - proposals for change
- The "Forest School with Climate" programme is launched
- Supporting classes for pupils - complete regulations
- IT Talent Development Programme 2019-2029
- Timetable for the return to class-based learning in schools
- Rules for organising and conducting external examinations in 2021-2023
- Temporary return to online teaching
- Psychological and pedagogical support programme for students and teachers in the pandemic
- Teenage depression educational campaign do not let the child log out of life
- Education for all – a comprehensive support for every child, pupil and their family
- Classroom based teaching for the youngest children as of 1 February, on-line teaching for students of other classes - the regulation has been signed
- Pupils back at school - guidelines for grades I-III

Estonia

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- Estonian-speaking teachers help to raise the quality of Estonian language studies for non-Estonian students
- Despite COVID, basic school final examinations and upper secondary school state examinations will be held in spring 2021
- Additional state exams for upper secondary school graduates took place in autumn

Greece

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- Upgrading the school, empowering teachers
- Greater autonomy in schools
- Freedom in the organisation of teaching:
- Strengthening the role of teachers in educational management positions:
- Greater transparency and accountability
- Evaluation of teachers & education managers
- Education Support Structures

Lithuania

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- Transition to online learning
- Safe return to learning according to the primary education programme
- Help for those with learning difficulties
- Measures to help school leavers prepare for exams
- Vaccination
- 2021-2022 school year
- Going into lockdown and switching to online learning
- Support to education institutions.
- Support for parents and pupil
- Relaxing the quarantine conditions
- Knowledge assessment

- Organization of the 2020 - 2021 school year in general education institutions

Austria
(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

Vocational education and training

- iKM PLUS: Individual Competence Assessment
- Safe school in autumn - the 4 point plan of the BMBWF
- Laptops and tablets for 150,000 students
- Corona support package for students
- Package of measures for graduating classes
- Feel Good Zone School - Psychosocial Health and (Cyber-)Bullying Prevention in Schools
- 100 schools - 1,000 opportunities
- Summer School
- Introduction of Ethics as Mandatory Object
- 8-Point Plan for Digital Learning
- New Upper Level / Semestrial Upper Level

Belgium
(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Belgium - Flemish Community

Topic:

National Reforms in School Education

- New attainment targets in the third year of secondary education
- New admission requirements for mainstream primary education
- Every pupil from the fifth year (primary education) onwards gets their own laptop
- Teachers can be appointed permanently from 360 days
- Strengthening mainstream primary education
- Additional guidance for gifted learners
- Student coaching and remedial courses
- School infrastructure
- Measures relating to the teaching profession
- Dual teaching
- Language integration programmes for children with limited Dutch language skills
- Language-oriented activities
- Standardised tests
- SRSP project to support initial guidance

- A new support and guidance decree
- Autumn and winter schools
- Courses of study: a simple and uniform matrix
- Guidance for gifted pupils
- Modernisation of secondary education: step-by-step modernisation: 2nd year of the 1st grade.
- Basic education attainment levels

Belgium - French Community

Topic:

Mobility in Higher Education

- Student mobility
- Exchanges
- Equivalence
- Academic staff mobility

Belgium - German-Speaking Community

Topic:

National Reforms in School Education

- IT officer
- Duty of confidentiality and duty of discretion
- Subsidies
- Compulsory education from 5 years
- Dismissal of staff members due to negative evaluations
- Adaptation of the conditions of access to the office of primary school principal
- School medical examinations of children and adolescents enrolled in home schooling

Romania

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- The context of the COVID-19 pandemic
- Curricular policies
- The quality of the educational act
- The ROSE Project regarding the Secondary Education
- Social programs
- Vulnerable groups
- The quality of the educational act

- Social programs
- Curricular policies
- The ROSE Project regarding the Secondary Education

Croatia

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- Ordinance on Amendments to the Ordinance on methods, procedures and elements of student evaluation in primary and secondary schools.
- Amendments to the Education Inspection Act
- Ordinance on amendments to the Ordinance on conducting excursions, excursions and other educational activities outside the school
- Ordinance on amendments to the Ordinance on the promotion of teachers, professional associates and principals in primary and secondary schools and student dormitories
- Public consultation on the Draft Proposal of Amendments to the Education Inspection Act
- Public consultation on the Draft Decision on Adoption of the Curriculum for the Subject Geology for the 4th Grade of the Natural Science Gymnasium in Croatia
- Adopted Education Support Program for Members of the Roma National Minority for the period 2021-2023

Germany

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- Agreement on the Common Basic Structure of the School System
- Recommendations for special needs education with the special educational focus on mental development
- Measures for handling the Corona virus

Hungary

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- Renewal of the general requirements of upper secondary school leaving exams
- COVID-19 testing of staff members in kindergarden and schools
- Children living with diabetes get help in public education institutions

- Public education and cultural institutions maintained by local ethnic minority governments are supported

Luxembourg

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- Extension of state-funded European schooling
- Secondary education: organisation of the current school year by semesters
- National measures related to the Covid-19 pandemic
- 'Simply Digital': a strategy for the development of digital competences in school education

Malta

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- Summer Catch up educational programme
- Artificial Intelligence (AI) in Education pilot project
- Public consultation on A National Literacy Strategy in Malta and Gozo 2021-2030
- Public consultation on Early Leaving from Education and Training (ELET) - The Way Forward

The Netherlands

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- Primary schools and daycare to reopen
- Primary schools and childcare will not reopen sooner
- Changes in the education sector as of 1 January 2021

Poland

(https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en)

Topic:

National Reforms in School Education

- Laboratories of the Future
- Inauguration of the Council for information and communication technologies in education and higher education and science systems
- Possibility to increase the number of hours of supporting classes - amendment of the regulation

- Strengthening the role of the school superintendent - proposals for change
- The "Forest School with Climate" programme is launched
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- Timetable for the return to class-based learning in schools
- Rules for organising and conducting external examinations in 2021-2023
- Temporary return to online teaching
- Psychological and pedagogical support programme for students and teachers in the pandemic
- Teenage depression educational campaign do not let the child log out of life
- Education for all – a comprehensive support for every child, pupil and their family
- Classroom based teaching for the youngest children as of 1 February, on-line teaching for students of other classes - the regulation has been signed
- Pupils back at school - guidelines for grades I-III

ERASMUS+ national agencies

(https://erasmus-plus.ec.europa.eu/national-agencies)

Content:

- Providing information on Erasmus+
- Selecting projects to be funded
- Monitoring and evaluating Erasmus+
- Supporting applicants and participants
- Working with other National Agencies and the EU
- Promoting Erasmus+
- Sharing success stories and best practices

European Journal of Education Studies

Planning and evaluation during educational disruption: lessons learned from covid-19 pandemic for treatment of emergencies in education

(https://www.oapub.org/edu/index.php/ejes/article/view/3047)

The aim of this paper is to formulate a proposal for responding to emergencies in education, either at the level of the education system at a national or regional dimension (macro level) or at the level of an organization (meso level). The impetus of this proposal stemmed from the crisis caused by the COVID-19 pandemic in education systems and educational/training organizations worldwide, which has resulted in the disruption of educational function. It should be clarified in advance that this proposal does not concern crises of the education system itself, **but situations where a major crisis at another level of public life creates a secondary crisis in education, an emergency in which education cannot fulfil its function.**

World Bank

World Bank (2020). The COVID-19 pandemic: Shocks to education and policy responses. Washington, DC:

("World Bank. 2020. The COVID-19 Pandemic: Shocks to Education and Policy Responses. World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/33696 License: CC BY 3.0 IGO.")

Even before the COVID-19 pandemic, the world was living a learning crisis. Before the pandemic, 258 million children and youth of primary- and secondary-school age were out of school. And low schooling quality meant many who were in school learned too little. The Learning Poverty rate in low-and middle-income countries was 53 percent—meaning that over half of all 10-year-old children couldn't read and understand a simple age appropriate story. **Even worse, the crisis was not equally distributed: the most disadvantaged children and youth had the worst access to schooling, highest dropout rates, and the largest learning deficits.** All this means that the world was already far off track for meeting Sustainable Development Goal 4, which commits all nations to ensure that, among other ambitious targets, "all girls and boys complete free, equitable and quality primary and secondary education." The COVID-19 pandemic now threatens to make education outcomes even worse. The pandemic has already had profound impacts on education by closing schools almost everywhere in the planet, in the largest simultaneous shock to all education systems in our lifetimes. The damage will become even more severe as the health emergency translates into a deep global recession. These costs of crisis are described below. But it is possible to counter those shocks, and to turn crisis into opportunity. The first step is to cope successfully with the school closures, by protecting health and safety and doing what they can to prevent students' learning loss using remote learning. At the same time, countries need to start planning for school reopening. That means **preventing dropout, ensuring healthy school conditions, and using new techniques to promote rapid learning recovery in key areas once students are back in school.** As the school system stabilizes, countries can use the focus and innovativeness of the recovery period to "build back better." The key: don't replicate the failures of the pre-COVID systems, but instead build toward improved systems and accelerated learning for all students.

World Economic Forum

World Economic Forum (2020). 4 ways COVID-19 could change how we educate future generations.

(Written by Poornima Luthra, Founder and Chief Consultant , TalentED Consultancy ApS, and External Faculty at Copenhagen Business School.; Sandy Mackenzie, Director, Copenhagen International School; https://www.weforum.org/agenda/2020/03/4-ways-covid-19-education-future-generations/)

1. Educating citizens in an interconnected world

COVID-19 is a pandemic that illustrates how globally interconnected we are – there is no longer such a thing as isolated issues and actions. Successful people in the coming decades **need to be able to understand this interrelatedness** and navigate across boundaries to leverage their differences **and work in a globally collaborative way**.

2. Redefining the role of the educator

The notion of an educator as the knowledge-holder who imparts wisdom to their pupils is no longer fit for the purpose of a 21st-century education. With students being able to gain access to knowledge, and even learn a technical skill, through a few clicks on their phones, tablets and computers, we will need to redefine the role of the educator in the classroom and lecture theatre. **This may mean that the role of educators will need to move towards facilitating young people's development as contributing members of society.**

Resilience and adaptability will be crucial for the next generations entering work.

3. Teaching life skills needed for the future

In this ever-changing global environment, young people require resilience and adaptability – skills that are proving to be essential to navigate effectively through this pandemic. Looking into the future, some of **the most important skills that employers will be looking for will be creativity, communication and collaboration**, alongside empathy and emotional intelligence; and being able to work across demographic lines of differences to harness the power of the collective through effective teamwork.

4. Unlocking technology to deliver education

The COVID-19 pandemic has resulted in educational institutions across the world being compelled to suddenly harness and utilize the **suite of available technological tools to create content** for remote learning for students in all sectors. Educators across the world are experiencing new possibilities to do things differently and with greater flexibility resulting in potential benefits in accessibility to education for students across the world. These are new modes of instruction that have previously been largely untapped particularly in the kindergarten to Grade 12 arena.

Most importantly, it is our hope that for Generation Z, Alpha and the generations to come, these experiences of isolation and remote learning away from their peers, teachers and classrooms will serve as a cautious reminder of the importance of our human need for face-to-face social interaction.

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Using e-learning to deliver in-service teacher training in the vocationaleducation sector: Perception and acceptance in Poland, Italy and Germany	https://www.mdpi.com/2227-7102/10/7/182
Digital Revolution in Education – Perspectives and Dilemmas	https://mersz.hu/dokumentum/matud__727
Distance mathematics teaching in Flanders, Germany, and the Netherlands during COVID-19 lockdown	https://link.springer.com/article/10.1007/s10649-021-10094-5
Inequality in home schooling during the corona crisis in the Netherlands. First Results LISS Panel 2020.	https://osf.io/preprints/socarxiv/hf32q/
UNESCO Distance Learning Solutions.	https://en.unesco.org/covid19/educationresponse/solutions
UNESCO. COVID-19 Educational Disruption and Response.	https://scholar.google.hu/scholar?q=UNESCO+COVID-19+Educational+Disruption+and+Response.&hl=hu&as_sdt=0&as_vis=1&oi=scholart
UNESCO The global learning crisis: Why every child deserves a quality education.	https://learningportal.iiep.unesco.org/en/library/the-global-learning-crisis-why-every-child-deserves-a-quality-education
United Nations. Policy Brief: Education during COVID-19 and Beyond.	https://www.un.org/en/un-chronicle/education-during-covid-19-and-beyond-commentary-secretary-general%E2%80%99s-policy-brief

CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Poland
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Czech Republic
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Greece
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Estonia
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Lithuania
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Austria
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Romania
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Ireland
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Germany
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	the Netherlands
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Luxembourg
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Hungary
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Croatia
CEDEFOP Responses to the Covid-19 outbreak	https://www.cedefop.europa.eu/en/news	Malta

OECD Education Policy Outlook Country Profiles	https://www.oecd.org/education/profiles.htm	Czech Republic
OECD Education Policy Outlook Country Profiles	https://www.oecd.org/education/profiles.htm	Estonia
OECD Education Policy Outlook Country Profiles	https://www.oecd.org/education/profiles.htm	Greece
OECD Education Policy Outlook Country Profiles	https://www.oecd.org/education/profiles.htm	Germany
OECD Education Policy Outlook Country Profiles	https://www.oecd.org/education/profiles.htm	Hungary
OECD Education Policy Outlook Country Profiles	https://www.oecd.org/education/profiles.htm	Ireland
OECD Education Policy Outlook Country Profiles	https://www.oecd.org/education/profiles.htm	Luxembourg
OECD Education Policy Outlook Country Profiles	https://www.oecd.org/education/profiles.htm	the Netherlands
Initial education policy responses to COVID-19: Country snapshots	https://www.oecd.org/education/policy-outlook/covid-19-responses-snapshots.htm	Czech Republic
Initial education policy responses to COVID-19: Country snapshots	https://www.oecd.org/education/policy-outlook/covid-19-responses-snapshots.htm	Estonia
Initial education policy responses to COVID-19: Country snapshots	https://www.oecd.org/education/policy-outlook/covid-19-responses-snapshots.htm	Greece
Initial education policy responses to COVID-19: Country snapshots	https://www.oecd.org/education/policy-outlook/covid-19-responses-snapshots.htm	Ireland
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-	Czech Republic

	policies/eurydice/national-description_en	
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Poland
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Estonia
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Greece
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Lithuania
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Austria
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Belgium_Flemish
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Belgium_French
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Belgium_German

European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Romania
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Croatia
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Germany
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Hungary
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Luxembourg
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Malta
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	the Netherlands
European Commission Eurydice_National Reforms in School Education	https://eacea.ec.europa.eu/national-policies/eurydice/national-description_en	Poland
ERASMUS+ national agencies	https://erasmus-plus.ec.europa.eu/national-agencies	

ERASMUS+: Two additonal calls for strategic partnerships in response of the COVID-19 situtation.	https://epsi.eu/news/erasmus-two-calls-for-strategic-partnerships-covid-19/
Planning and evaluation during educational disruption: lessons learned from COVID-19 pandemic for treatment of emergencies in education	https://www.oapub.org/edu/index.php/ejes/article/view/3047
World Bank (2020). The COVID-19 pandemic: Shocks to education and policy responses	https://openknowledge.worldbank.org/handle/10986/33696
World Economic Forum (2020). 4 ways COVID-19 could change how we educate future generations.	https://www.weforum.org/agenda/2020/03/4-ways-covid-19-education-future-generations/

Part Three: Primary research implementation

Context

1. Complementing desktop research

The tasks specified in the contract consisted of desk and field research. The methodological description of the desk research and the longer analysis of the literature have been submitted earlier, but the latter did not provide a satisfactory answer to all preliminary questions. However, these questions may be important for the Tempus Public Foundation, as they have included questions to be answered in the Call. Thus, work will continue by publishing a survey and supplementing the report based on the findings.

2. Methodology of field research

In the following chapter, we present the main topics of the field research.

Content of the submitted tender proposal

In the context of the current Call for Proposals, our approach is based on our previous research on the digital transition and the content of the current Call for Proposals, while also taking into account the results of the desktop research. To this end, we:

- identify success factors concerning digital transition;
- identify the biggest challenges for participants;
- identify external and internal support processes that have helped the successful transition;
- show how participants in school education have managed the transition to digital education;
- identify what data is available across Europe (use of data from desktop research).

The aim and antecedents of the research

The aim of this research is to assess and gather among each actor the experience gained in previous years in digital education. The main focus of our study is on the education system, as its actors (education managers, school leaders, teachers, students, parents) cover a wide range of society.

Based on our plans, we want to involve the following target groups in the planned research.

Target groups

- Education managers
- Heads of institutions (ie. school directors)
- Teachers

Sample

We will include educational institutions from the Czech Republic, Estonia, the Netherlands and Hungary in the sample.

- Interviews with education managers (we aim to involve 1-2 people per country. Taking into account what organisations in different countries are dominant: ministries, educational interest groups, districts, etc.).
- Interviews with school leaders (2-3 people per country).

- Focus group discussions with teachers (2-3 teachers per country).
- Online survey for teachers (500-600 teachers) In the case of the survey, the success of digital education differs by age group and subject. While digital education worked better for upper and secondary school students, this form of education is difficult to manage for the lower age group, especially in the lower grades. Therefore, it is recommended that teachers who teach 14- and 18-year-olds in school education be included in the sample (50-50%).

Main topics of the field research

- Expectations of national education administration regarding institutions.
- Supporting schools by national education authorities.
- Time periods when complete or partial digital education was implemented.
- Proportion of schools that implemented digital education.
- Situation of pre-epidemic digital education.
- Competence gaps characteristic at different levels of education.
- Supportive / blocking regulatory environment of digital education in Europe at national level (case studies).

Methods, areas to be examined according to each target group

Our research methods include both qualitative and quantitative research. In the case of the first, we use the methods of interviews and focus group discussions. In the case of quantitative research, we use questionnaire-based survey, the aim of which is to get to know the practice of as many participants as possible. At the same time, qualitative research can help us: to set up research hypotheses, which we can validate later in a quantitative research.

There are several ways to find the actors in each country to be sampled. We would like to get answers to the questions formulated above primarily through interviews. This can be done through individual and focus group interviews. The interview is suitable to gain more knowledge about the specific questions from the respondents, and it can also contribute to the success of the research by changing the questions of the questionnaire research before the questioning. The interviews are also suitable for conducting case studies of the developments in each country, highlighting similarities and differences. As

- education managers (decision-makers on various administrative levels);
- school leaders;
- teachers (focus group discussions and online survey);

The following are the main topics of the interviews and questionnaires to be conducted with each actor.

Questionnaire for Project Owners

Beneficiaries of KA226 and other Erasmus + projects on *digitalisation in school education*

Dear Colleague!

Digitalisation LTA is a long-term activity initiated by the Hungarian Erasmus+ National Agency operating within the Tempus Public Foundation (the TPF), coordinated by the SALTO E&T TCA Resource Centre in cooperation with the Knowledge Centre (of the TPF).

Within this LTA, the TPF is carrying out a research with more than 10 E+ countries titled: *Supporting digital transformation in school education at individual, community and institutional level*.

The purpose of the research is to gain data regarding project implementation experience regarding Erasmus+ platforms (eTwinning, School Education Gateway, EPALE, Erasmus+ Project Result Platform), particularly, regarding the willingness to use them, operational challenges, support / additional functions needed for more active use in order to share products and results developed during projects, regarding compliance with the Erasmus+ open access rule; obstacles encountered during the implementation of projects (either managerial, methodological, or regarding partnership), etc.

Data collection activity will cover all participating LTA countries to gather as much information as possible about solution alternatives, experience difficulties and encouraging phenomena related to digital transformation.

The first phase of the research is a desk research (the second one will be a field research), the objectives of which are:

- to review previous research findings to gain a broad understanding of the field in the last two years;
- to create a shared repository of knowledge;
- to identify gaps to be bridged regarding Erasmus+ project applications;
- to collect information from E+ countries regarding the use of certain platforms.

We hope that our results (to be published later on this year) can assist respondents around Europe to implement their running E+ projects in the field of *digitalisation in school education* more effectively, and encourage the creation of more projects in institutions as well.

Please, support our work by filling in the questionnaire! If possible, set up working groups within your organisation to answer the questions.

Thank you very much for your kind collaboration in advance!

Information concerning the person filling in the questionnaire:

- Where do you work?
- What position do you have in your institution?
- At what level(s) are you involved in the implementation of the project? (project manager, teacher, team member, other)

Project implementation:

- What type of project are you currently implementing?
- What is the area you are currently active in?
- Why did you choose this area?
- What group(s) is your project targeting?
- What results are you expecting from the implementation of your project?
- What additional support would you need to implement your project more effectively? What specific example(s) could you give?
- What key challenges have you identified (if any) regarding the implementation of your project so far?
- What application(s)/platform(s)/forum(s) do you know that support your work?
- What application(s)/platform(s)/forum(s) do you use that support your work?
- How, on what application(s)/platform(s)/forum(s) do you prefer to communicate throughout the implementation of your project?
- What communication channels do you know?
- What communication channels do you use?
- Do you need support for using any of those? If yes, do you know who/where to turn to?

Support mechanisms

Considering digital education during the pandemic, what problems do you face regarding the objectives of your project, at

- individual,
- community and
- institutional level?

Regarding the levels listed above, what kind of problems have you faced so far in the following areas? Please, give specific examples:

- Security
- Technical problems of digital use
- Personal data management
- Involvement of participants
- Application of quality management systems
- Institutional / managerial support
- Process control

- Peer learning
- Collaboration

- What solutions have been used to deal with those problems?
    1.
    2.
    3.

- Based on your experience, what supporting mechanisms regarding digital transformation operate effectively in your country?

Use of digital platforms

- Do you know the eTwinning community? What is it used for?
- Did you use any online educational platform during the pandemic? Was there anything compulsory to be used?
- Do you know any of the eTwinning platforms? What are they used for? (eTwinning Live, Twinspace, Esasmus+ Project Result Platform)
- Do you use any of the above mentioned or other official platforms on a regular basis? If YES, elaborate your answer regarding each of them: what is your user experience like – what challenges hinder your work, etc. If NO, please, explain why not, and what would make you use them.
- What platform do you find the most suitable for organising your educational activity? Why?
- What E+ platforms are NOT used by beneficiaries effectively in your country? Why are they not?

Suggestions for the future

What suggestions would you make for the administrative, financial and professional environment of your project?

- What platforms, communication tools, websites, apps recommended by the EC (e.g. eTwinning Live, Twinspace, Esasmus+ Project Result Platform) would you recommend to others for educational activities?
- What improvements would you suggest in the field of using those platforms?
- What improvements would you suggest in administrative (educational organisation) areas?
- What pedagogical (curriculum) improvements would you suggest?
- What collaborations would you see effective?
- What policy developments would you support?
- Do you know any good practices that you could share with other E+ participants?

Any other important remarks:

THANK YOU FOR YOUR RESPONSES!

Part Four: Summary of the results of the Questionnaires for Project Owners

Introduction

In addition to the review of the research materials, for a more comprehensive review, we had considered it necessary to conduct online interviews among the organisations participating in the programme, which can give a closer look at the practical experience, success, and possible improvements of each organisation.

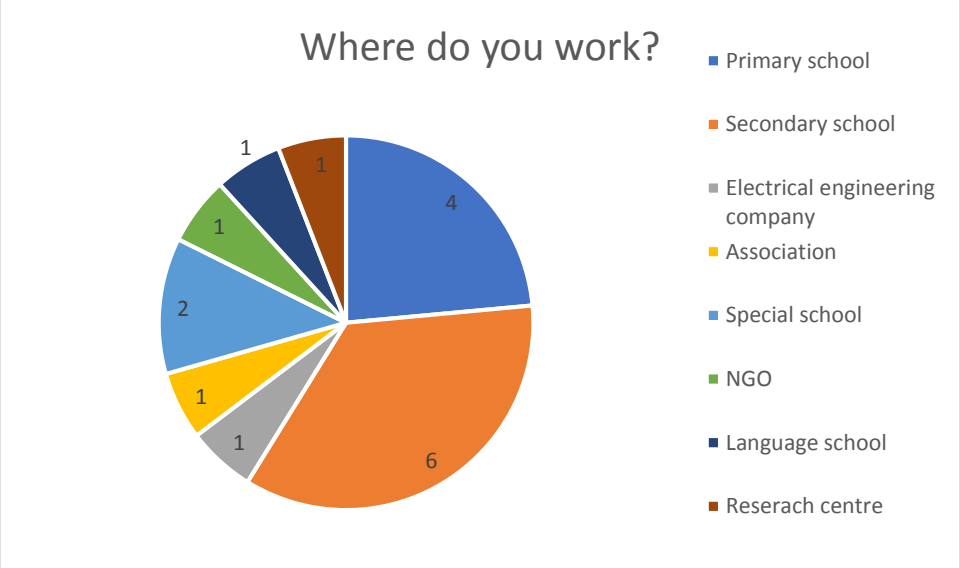
The questionnaire sent to the related organisations (KA201, KA226, KA229 Erasmus+ projects in the field of digitalisation in school education) was filled in online. The survey is not representative. Based on the responses, a few general conclusions can be drawn worth exploring.

The questionnaire was anonymous, not every respondent indicated the name of their institution. The organisations that provided their names at the time of completion are listed in the Annex.

To evaluate responses appearing in the survey, we needed additional data regarding the role of the respondents within the programme.

Results

Where do you work?

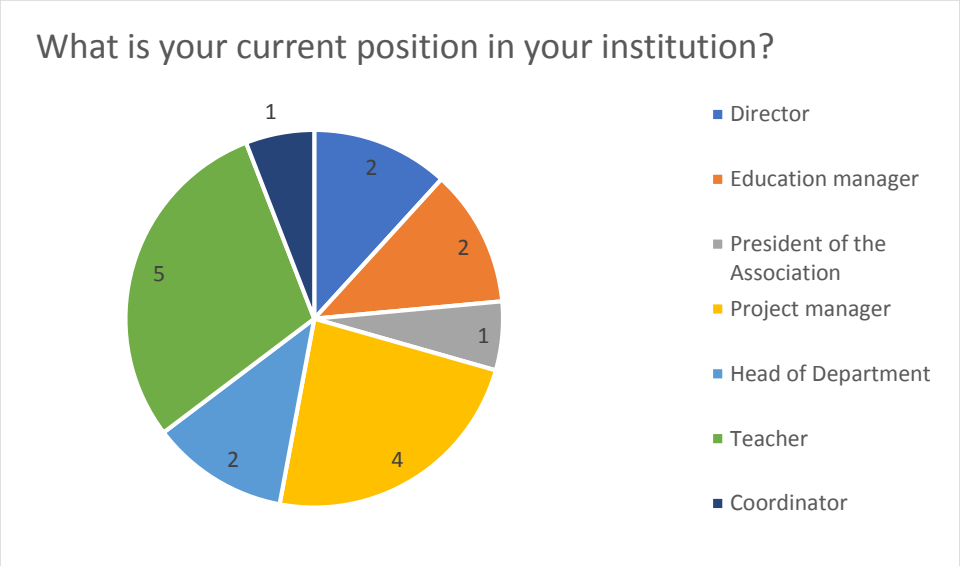


Most respondents work in primary or secondary schools. However, some respondents work at special schools, language schools, or NGOs. The electrical engineering company is somewhat different from the majority.

What is your current position in your institution?

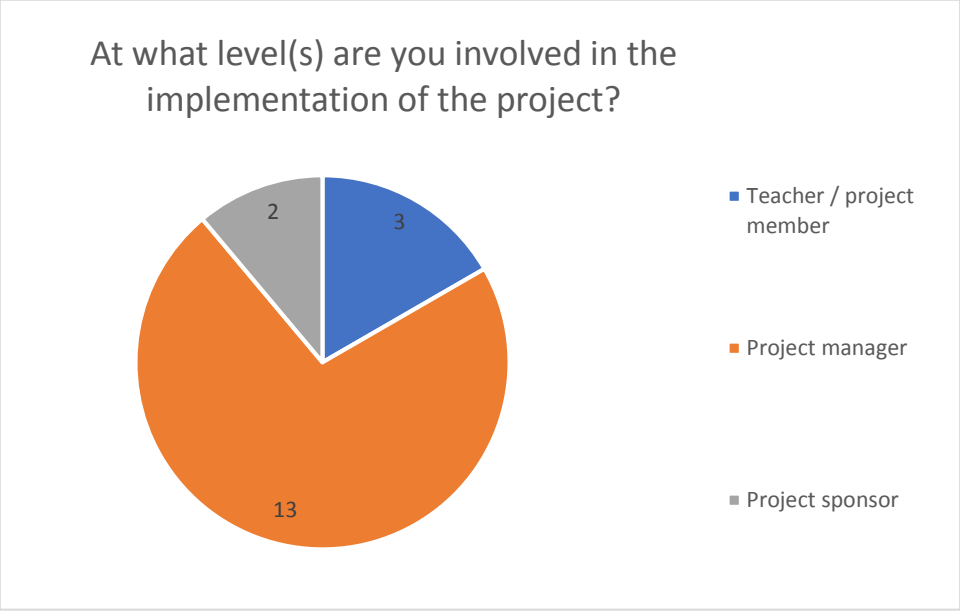
Of course, we also attached importance to the role of the respondent in the activity, because it fundamentally determines his or her view of the area on which he or she forms an opinion.

The position of the respondents within the organisation is shown in detail in the figure below:



Most of the teachers and project managers were involved in the response, but heads of institutions, school leaders and coordinators also contributed to the research.

At what level(s) are you involved in the implementation of the project?



It can be seen from the figure above that the majority of the respondents indicated the position of Project manager, but the Teacher / project member also filled in a significant number of the questionnaire.

The responses to the presentation of the projects and the targeted activity are summarized in the table below:

What project are you currently implementing?	What specific area is your project targetting within the field of digitalisation in school education?
Seven SMART Steps	Supporting digital adaptive learning processes in school education.
Partnership cooperation in public education sector - curriculum development	Innovative curriculum can be used via a unique mobile APP
Social Inclusion (Erasmus plus)	Etwinning
Learning for the future	Use of IT
iBUILD IT	Primary and secondary education, emphasis on English teaching
KA226-SCH	The objectives of this project include enhancing the digital skills of teachers, compiling a digital tool manual, and organizing a set of methodology courses related to digital education in the following areas: 1) presentation tools ((Microsoft, Google, Moodle) 2) apps for the classroom (Padlet, Learningapps, Mentimeter, Contextminds, etc.) 3) testing tools (Google/Microsoft Forms, Quizzes, Quizlet, Kahoot, Actionbound) 4) conferencing tools (Google classroom, Microsoft Teams, Discord, Blizz, eTwinning) 5) GDPR and internet safety 6) 3D Print
Project that helps (inspires) educators to use digital tools in effective and fun way	Digital tools, primary education
KA2	Digital literacy for the lesser privileged
Erasmus+ KA 229 project	Developing pupils' key digital skills Teachers and pupils to learn to use digital production tools Seek excellence while working with ICT
KA201, KA29	Nursing, environment
A productive journey of learning : Achieving and applying new assessment methods aiming at more creative and varied forms of learning outcomes,	Use of digitalisation to turn the school into a learning community where all members will learn, in a spirit of mutual respect and understanding, we will

What project are you currently implementing?	What specific area is your project targetting within the field of digitalisation in school education?
expositing creative expression and emotional intelligence of children.	improve the quality of teaching. Also via digitalization our students will come into contact with the cultural heritage of other European cities and countries. Our teachers want to provoke and keep children's interest undisturbed by applying entertaining and creative ways of learning , while taking advantages of new technologies.
KA2 Project	Our project is targetting on new teaching methods and new learning strategy. We emphasize the versatile use of ICT in teaching. One of the two main goals of the project is to create an online web platform and digital materials via Moodle. The added value is the use of AR and VR tools in teaching, with mobiles.
Citizenship & Development	Use of free educational apps
KA220 SCH	The project deals with developing functional knowledge through outdoor learning. However, outdoor learning activities are being intertwined with the usage web tools such as Geocaching and creation of assessment tools using Scratch. One of the project results is a digital game Out and about- Geocaching in outdoor learning.
STEM Project within DoSE – Development of STEAM Education **Erasmus+ project HET - Hold Everyone Together**	Workshops and activities on web 2.0 and ICT tools in education including eTwinning
Project supports ESL teachers from primary and secondary schools teaching pupils 8 –14 years old at different CEFR levels from A0 to B1, by creating: short videos linked with ready-made, interactive and standalone activities developing productive skills in English	Innovative ideas behind digital teaching of languages - submits teachers digital materials prepared for online teaching, providing instructions how to use, but also tips how to modify and use presented tool for different topic or activity.
A project on the effects of Covid on non-native students as well as the consequences of digitalisation.	Early-school leaving

Based on the table above, it can be said that the majority of respondents implement projects related to school-based education, some to digital devices, applications that facilitate the use of applications and online education, but also to the renewing of educational methodologies and to care for the environment.

Why did you choose this development area?

During the survey, we were curious about respondents 'motives for choosing a particular activity as the goal of the intervention.

The following types of answers have been given to our question (excerpt):

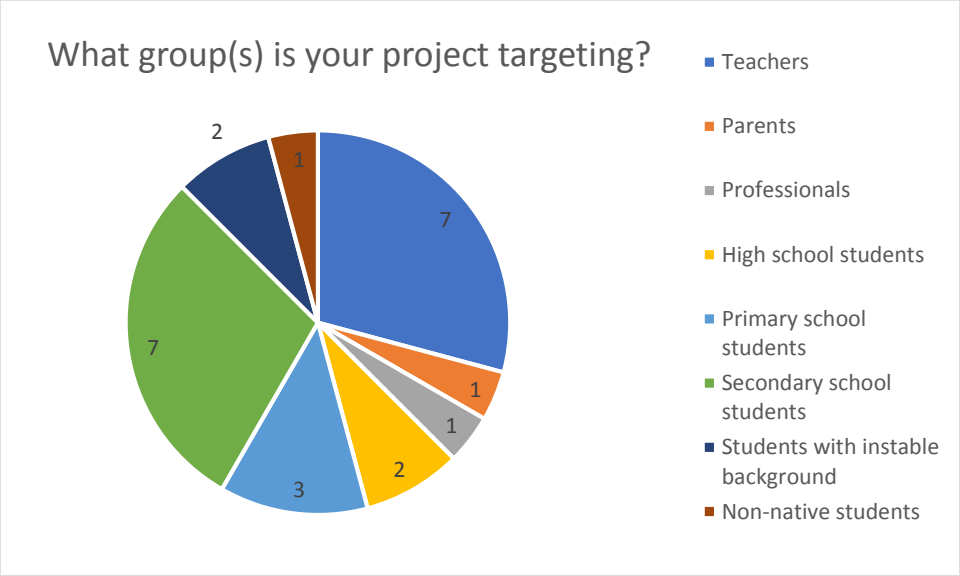
- The methodology is highly useful, under the conditions of online learning.
- There was a niche, and we wanted to make it up with our curriculum.
- It's an important topic.
- To share innovative digital practices.
- Covers biggest population of kids = biggest effect.
- Because these skills are needed not only at the present time, but for life.

Based on the answers received, it can be said that the goal was to overcome the difficulties of the given area, the achievable results and the current shortcomings in the methodologies.

What group(s) is your project targeting?

Based on the responses to the questionnaires, the target group of the projects was mostly primary and secondary students and their teachers, but some projects narrowed their target group and targeted those with more difficult social backgrounds or from other cultures.

The distribution of the target group is shown in detail in the figure below.



What results are you expecting from the implementation of your project?

The answers to the questions can be grouped according to the following concepts:

- professional use of methodology;
- enhanced social integration;
- development of IT skills;
- personalised approach of learning and teaching;
- cooperation of teachers on different educational levels;
- building self-esteem;
- better quality of teaching;
- elimination of differences between target groups.

Based on the list, it can be said that the project implementers have set broad expectations for their own projects. The expected results largely relate to the success, efficiency and applicability of the implemented innovations. The answers included pedagogical and professional results, the expected results regarding the barrier-free application of IT developments, but also the social background and personal development.

What additional support would you appreciate to better implement your project? Please, provide specific example(s) if possible.

Based on the answers, the following groups can be identified (quotations):

Administrative simplification:

„more time to implement the project"

„less paper work"

Financial proposals:

„ESF funds would be redirected to ERASMUS+"

„a better tool to validate finances"

Suggestions for expanding cooperation:

„…conferences, workshops organised by the Tempus"

„…working groups of professionals from education"

„…support of the parentsto involve in the project"

Technical support suggestions:

„A secure and free app for students to record, edit and publish with"

„More technical knowledge when using apps."

Training suggestions:

„Trainings and workshops on using digital tools and platforms in education"

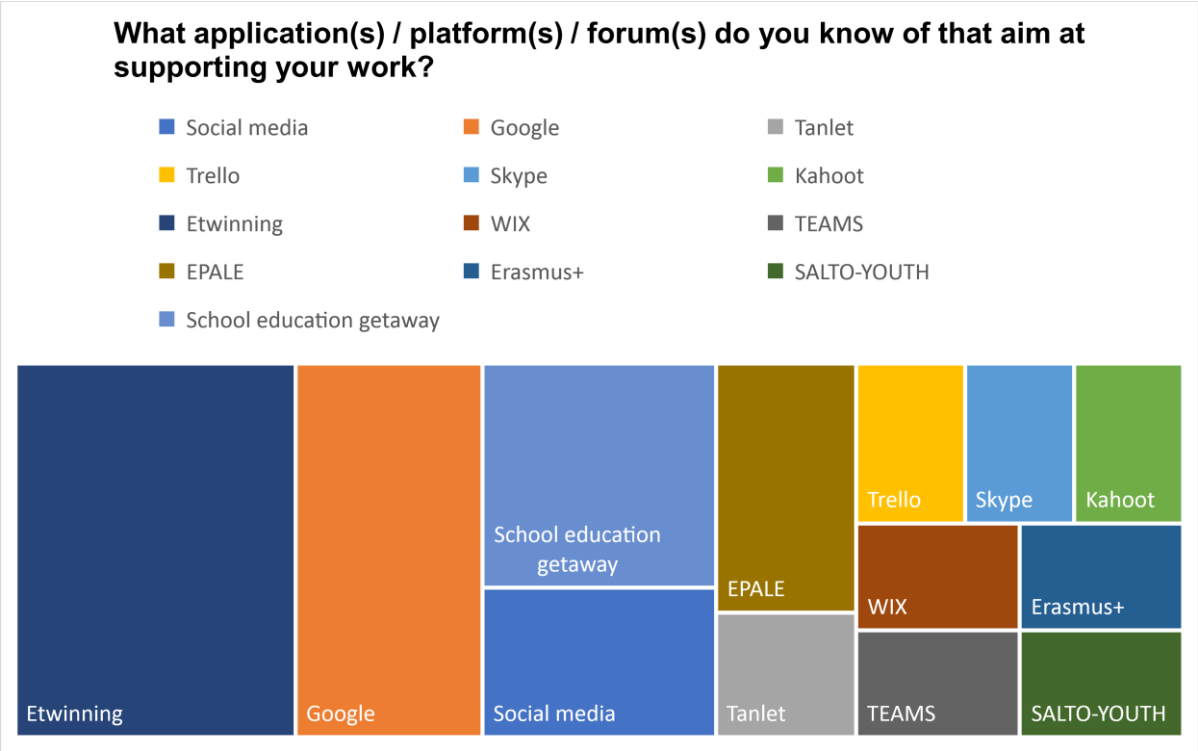
What key challenges have you identified (if any) regarding the implementation of your project?

In the survey, we have wanted to identify potential barriers and threats that could adversely affect the effectiveness of a project. The vast majority of respondents cited the pandemic as the highest risk, but there was

also a lack of parental interest in the programme and a lack of IT skills among students. Heavy workload of teachers and the high administrative time were also mentioned as a risks.

What application(s) / platform(s) / forum(s) do you know of that aim at supporting your work?

Based on the responses, most people have preferred the eTwinning app, but many also use Google apps. As in private life, social media is the most suitable tool for communication with each other.



What application(s) / platform(s) / forum(s) do you specifically use?

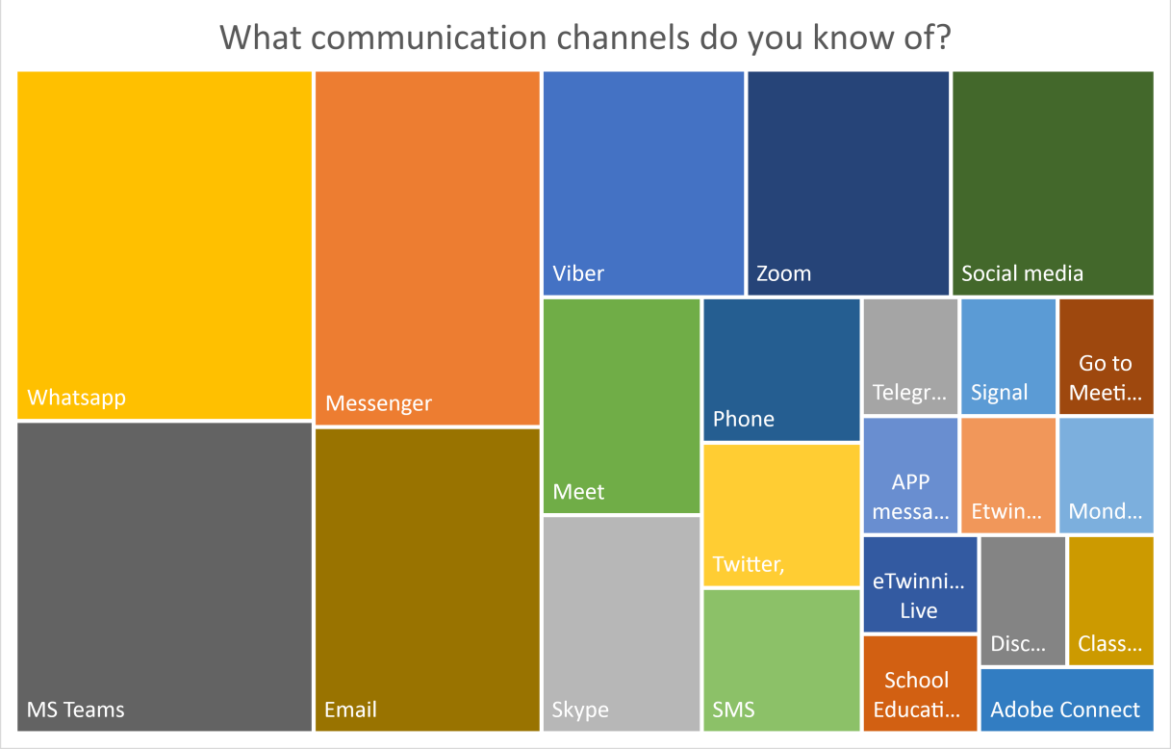
Respondents provided the following answers to the question:

(most highlighted)

- tanlet.classyedu.eu
- social media platforms, pedagogical and local newspapers, relevant websites, national and EU dissemination platforms, own mobile APP.
- **eTwinning**/Teams/Whatsapp/Email
- **eTwinning**
- WIX, **eTwinning,** Monday.com
- **eTwinning,** Google tools, MS Team,
- none
- Google forms, Drive. TikTok. Anchor
- **eTwinning**
- SALTO-YOUTH (not for this project)
- School Education Gateway
- Moodle, **eTwinning** Live, School Education Gateway, Google Cardboard, ClassVR
- REDA
- **eTwinning**
- Publishers (course books)
- Moode, Zoom, Viber

What communication channels do you know of?

Most respondents mentioned Whatsapp and MS TEAMS (9 and 8, respectively) Least mentioned Discord, Classroom and Adobe Connect the least (1-1)



The responses related to the platforms used and the support required to use them are detailed in the table below.

How, on what application(s)/platform(s)/forum(s) do you prefer to communicate throughout the implementation of your project?	Do you need support for using any of those? If yes, do you know who/where to turn to?
Skype, Whatsup, Meet, Zoom - but our stakeholders often prefer Messenger so we use that too.	No
Social media seems the most effective and flexible.	---
Teams	nope
Teams	No
Whatsapp, e-mail, phone	No, and yes.
email, SMS, Whatsapp, messenger	I do not need support
With partners we organize regular online (G Meet) meetings, and continuosly communicate via email/phone	no
We would like to use one platform but it is hardly doable due to the difference in hardware used by schools and individuals.	---
email	no
no platforms, personal contact is important	---
email, on line messaging platforms	no
Via email, eTwinning Live, shared documents Google	No, we don´t need it at the moment.
Discord	No need for support; however, in case I need, I call the IT assistant at school.
"With partners, we communicate via WhatsApp and mails, Zoom.	For the moment, we do need any additional support.
eTwinning, Google Meet	No
- so far we were using emails adressing schools and teachers in partners´s databases **- facebook, specialized groups as well as youtube, own web plus European platforms like European School Education Platform (if the acces will be possible)**	for example we don´t have acces to etwinning, because we are language school, not school - so our access was denied... but our results are developed for schools and we know that schools are active in this platform

Considering digital education in schools during the pandemic, what difficulties have you faced – concerning the objectives of your project at individual level?

At the personal level, respondents had to deal in part with communication difficulties, lack of personal contact and feedback, but additional problems with IT equipment and the extra burden and fatigue of adapting to the new situation were additional problems.

The new situation also posed professional methodological challenges, especially for teachers of science subjects, because it is very difficult to carry out demonstrations and experiments online.

Considering digital education in schools during the pandemic, what difficulties have you faced – concerning the objectives of your project at community level?

At the community level, the organisation of the necessary face-to-face meetings and communication was a problem, but in several cases the organisation of the planned events of the project was also delayed.

The lack of IT devices (wifi, PC) also appeared in the answers. Without these tools, it was difficult to keep the community together. With the end of the pandemic, the return of traditional education frameworks has caused refreshment for most students and teachers.

Considering digital education in schools during the pandemic, what difficulties have you faced – concerning the objectives of your project – , at institutional level?

Based on the answers to the question, schools are not prepared for this situation either technically or pedagogically. In the new situation, the pace and pace of education changed, and certain elements had to be postponed or shifted in time. Group discussions were canceled and the number of face-to-face meetings was greatly reduced. The pandemic situation caused fatigue and exhaustion. There was also a project that had to be suspended for a full year. created a new situation in the communication of the school community, changed the administration and school information system related to online learning, curriculum and office administration.

Security

Respondents encountered several security issues:

- IT issues with device security protocol settings
- Some of the programmes used did not comply with security and GDPR rules,
- Students often emailed about their email addresses and were not careful enough about usernames and passwords.

Technical problems of digital use

The most common problems with digital devices are:

- Slow internet access
- Younger students had difficulty using a username and password
- In some cases, handling file types between different devices was not possible. Documents and video files have appeared in poor quality on the user interfaces.
- Compatibility issues (Android / IOS / Microsoft)

Personal data management

The use of personal accounts within the systems in use usually solves this problem, as users cannot be linked directly to the data generated in the system. In addition, the institutions are developing our own GDPR regulations, which they operate on an ongoing basis.

Involvement of participants

Involvement was also a problem for several respondents, and the rejection of the new system of tools for both students and (older) teachers is noteworthy. New energy and extra time would have been needed to deal with the new situation, but in several cases this was missing or inadequate.

Application of quality management systems

One of the respondents indicated a functioning quality management system (ISO 9001)

Institutional / managerial support

Working conditions and workloads have changed significantly in recent times, making them difficult to predict and burdensome. Organizing meetings has also become difficult.

Process control

The majority of respondents did not report a problem on this issue. Linked to previous issues, scheduling may have been a problem in some cases.

Peer learning

In the question, the respondents are clearly of the opinion that the organisation and operation of online education and the accountability and control of the transferred knowledge material is a difficult task. According to opinions, online education does not reach the standard of personal education.

Collaboration

International project meetings had to be implemented online, which, while useful, cannot be a 100% substitute for face-to-face meetings. It is difficult to create a community experience online, and a great many new procedures and communication strategies have had to be applied in a short time. However, collaboration has improved significantly thanks to application development and updates.

What solutions have been used to deal with those problems?

- Scheduling,
- Organising several online meetings,
- Organising personal events if possible,
- Technical solutions gradually, programme updates.

What supporting mechanisms regarding digital transformation operate effectively in your country?

According to respondents, the most important thing is that there are free webinars and online trainings led directly by experts from the practice. The school management has relieved the employees of their job responsibilities so that they can continue their studies in this field. It was even possible to take part in several such online trainings in parallel, which clearly had a positive effect on the educational process. In addition, support for IT tools has a significant positive impact.

Do you know the eTwinning community? What is it used for?

The majority are familiar with and use the system to build and maintain international relationships. The vast majority find it useful and good, but there are also negative opinions about it, saying it is not user-friendly and difficult to use.

Did you use any online educational platform during the pandemic? Was using any platform compulsory in your institution?

Respondents mention the following applications:

- Tanlet.classyedu.eu
- Zoom
- eTwinning
- MS Teams,
- Wiziq
- Cesko.digital
- SGE
- Google Classroom

Do you know any of the eTwinning platforms? What for? (eTwinning Live, Twinspace, Esasmus+ Project Result Platform)

All but one of the respondents know and the majority use the app. The vast majority of respondents were positive about the platform.

Do you use any of the above mentioned or other official platforms on a regular basis? If YES, elaborate your answer regarding each of them: how is your user experience – what challenges hinder your work, etc. If NO, please, explain why, and what would make you use them.

The responses are grouped in the table below:

YES	NO
We use etwinning for collecting material and sharing experience	we are basically not a school, we support schools to use innovative sollutions.
eTwinning works wel. Twinspace is ouddated. Take a look at Monday.com, that is much better. Please invest in this. Result platform is ok. Good be marketed better. Use of awards?	i want more help to use them
Twinspace - to present partial project results **Erasmus+ Project Result Platform - to publish final results** **eTwinning Live - to read news, find inspiration**	explained - no school - no access
Yes I use eTwinning because it is free and somewhat secure for students to go online. Students and new colleagues find it hard to use. The eTwinning infrastructure is not very intuitive. People struggle to find the right buttons to join and publish	Twinspace - basic experience - for dissemination of project activities - do not use regularly
Unfortunately, yes	
YES, I am a user of eTwinning Live, Twinspace and I have to say, that my technical experience are very high. The only obstacle for me is communication language, because I speak mostly German and the platform mainly uses English.	
Formerly, I was the school's Erasmus+ coordinator and I'm currently an Erasmus+ facilitator. Hence, I use social media pages, eTwinning, Education Gateway, our NA to prepare, implement and disseminate the ongoing projects at school and training courses I host.	
I have been implementing eTwinning project since 2016. And have been using web tools.	

What platform do you find the most suitable for organising your educational activity? Why?

Platform	Why
tanlet.classyedu.eu	easy for teachers to manage student groups, to create interactive content, to share content and to use content created by other teachers. We support adaptive learning, so students can get through a curricula using personalised learning paths adapting to their learning needs
eTwinning	it's common use, gives the teachers something extra, a project with the children
MS Teams, Google	in combination with anonymus email addresses. It offers the variety of presentations video meetings forms questionaires, classrooms effective and understandable for both teachers and students, the appointment system, working with the calendar and also the ability to manage a large amount of content
Edmodo	his app can help you organize: Your graphic design, worksheets, bulletin board material, schedules, rosters–anything 'teaching stuff' you created yourself
ClassDojo	This app can help you organize: General organisation of your classroom online
SGE	regional platform
Google Classroom	well designed and we'll organized do the students and I can follow easily the involvement in the activities and grades allocated

To your knowledge, what Erasmus+ platforms are NOT used by beneficiaries effectively in your country? Why is it so?

Teachers are overwhelmed, according to respondents. They have learned that any new project will result in additional administrative burdens and workloads that the education system will never compensate for. So they have less affinity to engage in innovative activity.

eTwinning Live is very ineffective because posts and requests are subject to aquisition from mainly Turkey and can be found on page 16-ish within a day.

What platforms, communication tools, websites, apps recommended by the European Commission (e.g.: eTwinning Live, Twinspace, Esasmus+ Project Result Platform) would you recommend to others for educational activities?

The majority of respondents recommend the Twinspace platform, but some respondents would recommend Facebook and WhatsApp because it is known and easy to use.

What improvements would you suggest regarding the use the platforms?

1. Easier to access and use;
2. Be more personal, motivating and intuitive
3. Revise the eTwinning platform and make it more userfriendly

What improvements would you suggest in administrative (educational organisation) areas?

Respondents suggested that more innovative IT solutions should be used, but that teacher training and the sharing of good practice would also be needed. Applications should be disseminated and applied uniformly across Europe. It would be necessary to reduce paper-based administration and the possibility of linking it to existing administrative programmes should be created.

There are the 5 most effective techniques to improve school management system.

- Adopt Smart School Administration,
- Promote a Stress-Free Student Environment,
- Adopt an Effective Classroom Management,
- Manage Your Staff/Teachers,
- Schedule School Holidays and Leaves.

What pedagogical (curriculum) improvements would you suggest?

- Reduction of data -based educatonal requirements,
- Good communication requires intercultural sensitivity,
- Sharing of good practices,
- Implement mandatory ICT classes till later ages at schools.
- Re-evaluate goals or objectives,
- Keep a trackof employee skills that are sought after,
- Take job trends into consideration,
- Make advanced technology a constant in courses offered,
- Curriculum development and design.

What collaborations would you see effective?

Based on the responses to the questionnaire, NGOs should be given more space in public education because they have a better understanding of certain areas, but international relations are just as important. The other level of

cooperation is the development of a two-way relationship between teacher and student. Collaboration with local startups and scientific research institutes also offers many opportunities.

What policy developments would you support?

- Lower work load for teachers, reduction of the raw data to be memorized in the school curricula,
- Attention to more and highly gifted children, emphasis on primary education institutions,
- Use a variety of tactics to illustrate public support for the proposed policy or related issue.
- Civic, democratic, responsible, conscientious and, above all, balancing differences between all the people of the world.
- Participation in Erasmus and eTwinning should be recognized equally as other accredited National trainings.

Do you have any good practices that you could share with other Erasmus+ participants?

Yes, the majority of respondents have good practice. Some of them are:

- the Seven SMART Steps methodology.
  The methodology's main principle is to lead the learner through the curricula following an adaptive learning path, personalised to the needs of the learner by an AI algorithm. It is supported by our own e-learning system.
- adapted the school's CPD regulations in the way that participation in Erasmus is valued equally to other training and the activities at school.

Other important remarks:

Events like this one is a way to help out teachers!

Annex (number of respondents, responding institutions)

Number of respondents:	
Partial	41
Entire	13
Total	**54**

School	
	Dalton Lentiz Naaldwijk (The Netherlands)
	Stichting Openbaar Primair Onderwijs Hof van Twente
	Jan van Brabant, Helmond the Netherlands
	Gozo College Secondary School
	Gymnázium P. Křížkovského s uměleckou profilací, s. r. o., Brno
	Jerónimo Emiliano de Andrade Secondary School, in Angra do Heroísmo (Terceira Island-Azores)
	Gimnazija "9.maj" Nis, Serbia

Field reaserch --- Schedule within the Digitalisation LTA

1. **Desk research**

The company carrying out the research of this LTA hired by the Tempus Public Foundation is Expanzió Ltd. The tasks specified earlier in their contract consisted of both desk and field research. The methodological description of the desk research and the longer analysis of the literature had been submitted earlier, but the latter did not provide satisfactory answers to all research questions. However, these questions are important for the LTA partnership, so the company has created a questionnaire to be filled in by project owners of KA226 and other projects connected to the topic of *digitalisation in school education*. **All partners will be kindly asked to forward the link to this questionnaire to all project owners relevant to the topic.**

Sending the questionnaire to project owners of KA226 and other projects connected to the topic of *digitalisation in school education*	4 Febr 2022	partnership of the LTA
Collection of data	until 4 March 2022	project owners
Sending data to research company	until 8 March 2022	Tempus
Analysing data	until 18 March 2022	Expanzió
Amending report of desk research results based on new data	14 April 2022	Expanzió

2. **Field research**

The aim of the field research is to assess and gather experience gained in previous years in digital education among each actor. The main focus of our study is on the education system, as its actors (education managers, school leaders, teachers, students, parents) cover a wide range of society.

Our plan is to involve the following target groups in the planned research:

- **education managers;**
- **school leaders;**
- **teachers**

in **school education**.

We want to include educational institutions from **Germany, Estonia and Hungary** in the sample (the reason for this is that – based on the results of the desk research – we expect good practices to be identified in these countries):

• interviews with **education** managers in school education (we aim to involve 1-2 people per country, taking into account which organisations in different countries are dominant: ministries, education authorities, districts, etc.);

• interviews with **school leaders** in school education (we plan to involve 2-3 school leaders per country);

• focus group interviews with teachers in school education (involving 2-3 teachers per country);

• online questionnaire with teachers (500-600 teachers). In the case of the questionnaires, based on the Hungarian experience, the success of digital education differs by *age group* and *subject*. While digital education worked better for upper and secondary school students, this form of education is hardly useful for the lower age group, especially in the lower grades. Therefore, *it is recommended that teachers of school education teaching 14- and 18-year-olds be included in the sample (50-50%).*

Main topics of the field research:

• the expectations of the national education administration regarding the institutions;

• how schools were supported by national education authorities;

• the periods in which digital education was implemented;

• the proportion of schools with digital education;

• the situation of digital education before the epidemic;

• what competence gaps were characteristic at different levels of education;

• how supportive / unsupportive is the regulatory environment in Europe at national level (case studies).

The workload is hoped to be shared by the partnership. All questionnaires and interview questions are going to be validated in advance by the partners.

In case of the field research, the E+ NA of Estonia, Germany, Hungary are kindly asked to contribute to the work with supporting the Tempus and organising the interviews and focus group discussions with education managers, school leaders, and teachers in *school education*, and forwarding the digitalised questionnaires to teachers.

Interviews 1	Education managers	1-2 participants per country/ 3 countries altogether	E+ NAs of Estonia, Germany and Hungary	6-14 Jan 2022	name, institution, e-mail address
		recording the interviews (**3-6**)	Expanzió	2022.01.17. -02.11.	interviews
Interviews 2	School leaders	2-3 participants per country/ 3 countries altogether	E+ NAs of Estonia, Germany and Hungary	2022. 01.06. -14.	name, institution, e-mail address
		recording the interviews (**6-9**)	Expanzió	2022.01.17. -02.11.	interviews
Focus group interviews 3	Teachers	4-5 teachers per country/ 3 countries altogether	E+ NAs of Estonia, Germany and Hungary	2022. 01.06. -21.	name, institution, e-mail address
		recording the interviews (3 focus groups)	Expanzió	2022.01.21. -03.04.	interviews
Case studies	teachers, school leaders, education managers	creating case studies based on answers collected during interviews	Expanzió	2022.03.04-31.	Case studies
Online questionnaire	teachers	finalising and digitalising questionnaires	Tempus-Expanzió	2020.03.04-25.	Link to questionnaire
		list of institutions, and participating teachers	E+ NAs	2022.03.21-04.07.	Excel with the list
		Analysing data	Expanzió	2022.04.07-21.	Tables, charts, etc. based on data
report + recommendations		Creating and sending the TPFsummaries and reports as well as recommendations based on all received data	Expanzió	2022.04.25-2022.05.17.	report + recommendations

QUESTIONNAIRE FOR TEACHERS

Dear Colleague!

Digital change is one of the European Commission's top priorities, as expressed in many initiatives, plans, and proposals. It has also become evident that responses to COVID-19 have accelerated the adoption of digital technologies by several years not only in business, but also in other areas such as *school education*.

The Tempus Public Foundation is carrying out a research with more than 10 E+ countries titled: *Supporting digital transformation in school education at individual, community and institutional level*.

Aims of this research supported by the European Commision are:

- to explore processes and experiences of the *transition to digital education* in SE institutions;
- to draw lessons that can hopefully assist respondents and other teachers around Europe to make *digital transition* more effective in the future.

We hope that our results (to be published later on this year) will encourage more E+ projects in institutions as well as support running E+ projects in the field of *digitalisation in school education*.

Please, support our work by filling in the questionnaire!

Because of the target group of our activities, it is essential that ONLY teachers who work with students (ages 13-18) in SCHOOL EDUCATION (ISCED 24; 34) fill in this questionnaire. If you work with VET students or adults (e.g. in a mixed-profile institution), please, do pass this questionnaire on to a colleague of yours working only with SE students.

Thank you very much for your kind collaboration in advance!

PERSONAL DATA

Name of your SE institution:

Country of your educational institution:

Location of your educational institution:

Type of your SE institution:

1) primary school
2) secondary school
3) other: …….

Number of students in your institution:

Age-group you teach:

1) 6-14 years old
2) 15-18 years old
3) other:…….

Your gender:

1) male
2) female
3) other

You have been in the profession for: …….years

Subject(s) you teach:

BASIC INFORMATION AND EQUIPMENT ISSUES

1. Upon the outbreak of the COVID-19 pandemic, did you receive any training or assistance on transitioning to digital work from any of the following actors or through any of the following channels?

Information	I received general information	I received detailed information and professional help	I did not receive any information or professional help
From the authority / the provider your school's programmes are run by			

From a government organisation			
From colleagues working in other institutions			
From teachers' organisations / unions			
From the leader of your own school			
Through the Internet / social media			
Through any other channel: ……			

2. If you did receive any training or assistance from your owninstitution on transitioning to digital work, in what form did it happen?

3. Was your school adequately equipped with technical equipment?

1 - Yes!

2 - No, if not why? ....

a. What was lacking, or what was inadequate?

4. Did you and do you have the necessary equipment for working from home throughout the pandemic? (multiple responses are possible)

1 - I have a personal computer or/and a laptop provided by my school

2 - I have my own digital device

3 – I've used one of the computers in my family

4 – I've had additional devices that can be connected to a computer (camera / microphone)

5 – I've had good internet access at home

6 - My technical equipment has only been partially adequate

7 - I did not have and do not have adequate technical equipment at all

8 - Other: ……

5. Are the following statements true in your school?

Statements	Not at all true	Rather not true	Rather true	Completely true
The vast majority of our teachers are familiar with the use of digital tools.	1	2	3	4
Digital education is a problem for our older colleagues.				
Colleagues adapt well to different educational backgrounds.				
Colleagues regularly use social networking sites.				

6. How often did you use digital tools for teaching purposes in your school before the outbreak of the COVID-19 pandemic?

1 - Using digital tools for teaching purposes in my school was rather commonplace

2 - We frequently used digital devices during our lessons

3 - We did have a digital learning platform in use prior to the pandemic

4 - Digital devices were used relatively infrequently during teaching in our school

5 - We almost never used digital devices during teaching in our school before COVID

6 – Our school did NOT have a digital learning platform in use before COVID

IMPLEMENTATION OF DIGITAL EDUCATION

7. In each school year, approx. how long has digital education affected your institution?

1 - In the academic year of 2019-2020 ……. months

2 - In the academic year of 2020-2021 ……. months

8. According to your personal experience, how long did transitioning to digital education take in your school?

1 – It was immediately manageable

2 - It took a week or two

3 - It took 1-3 months

4 - More than 3 months was needed

5 - By the end of the school year of 2019-2020, digital education was already working well

9. How often did teachers “meet” their students online (implementation of interactive, online education)?

1 - Daily

2 - Every two to three days

3 - Once a week

4 - We did not “meet” students online

5 - Other

10. What digital platforms / apps have been used in the recent period in your school? What exactly have they been used for? (multiple responses are possible)

Platforms		Used for communication	Used for delivering teaching/learning tasks	Used for testing purposes	Used for other purposes	Not used
Learning management systems and planning apps for teaching	Moodle					
	Microsoft Teams					
	Google Classroom: personal account					
	Google Classroom: G-suite (school account)					
	Other, namely:					
Social media and messaging apps	Facebook					
	Messenger					
	Viber					
	Discord					
	Other, namely:					
Video conferencing platforms and apps	Skype					
	Zoom					
	Other, namely:					

Platforms	Used for communication	Used for delivering teaching/learning tasks	Used for testing purposes	Used for other purposes	Not used
Test sheet-editor apps, namely:					
E-mail / group e-mail, namely:					
Official communication platform at national / territorial level, namely:					
School website					
Other, namely:					

PERSONAL EXPERIENCE IN DIGITAL EDUCATION

11. How burdensome was digital transitioning for you?

1 – It was quite a burden

2 – It was a manageable burden

3 – It was not a burdensome issue for me

12. If you've had problems, please, specify them!

Answers	Yes	No
Constant readiness to keep in touch with students	2	1
Novelty of digital education	2	1
Weakness of my digital skills	2	1
Balancing digital teaching and my private life	2	1
Lack of materials methodologically adequate for the digital space	2	1
Poor condition of available electronic devices	2	1
Liaising with / assisting parents to support their children's learning at home	2	1
Helping students struggling with isolation	2	1
Other:……	2	1

13. Have you personally changed the following in recent times due to digital education? (multiple responses are possible)

1 - Your timetable

2 – Your teaching methods

3 – Your system of assessing your students

4 - Curriculum for the following academic year has been reduced / rescheduled

5 - Teacher-student communication

6 – Teacher-parents communication

7 - Other areas: ……

14. Please, describe how you have been assessing your students in the period of digital education? (multiple responses are possible)

1 – Students have prepared essays and other written tasks

2 - Some students have been assessed orally online

3 – Students have participated in online tests

4 - Students have been provided with tasks to solve on their own

5 - Group assignments have been given to students

6 - Online activity of students during classes have been evaluated

7 - Other: …….

15. Do you think that isolation and the lack of community life have resulted in learning difficulties for some of the students? To what extent has this been apparent in your school? (school classification, where 1 = not at all, 5 = very much)

5 4 3 2 1

16. Do you think that your teacher colleagues have had mental problems due to isolation and the lack of collaboration? To what extent have you experienced this in your school community? (school classification, where 1 = not at all, 5 = very much)

5 4 3 2 1

17. What pedagogical / methodological help have you been using? (multiple responses are possible)

1 - Structured knowledge and experience sharing among colleagues in your school

2 - Support from your school leader

3 - Internet searches

5 - Other sources: …….

6 - I don’tneed any help, I have been using tools I’d used before

18. How effective do you think your work was during the period of digital education? (school classification, where 1 = not at all, 5 = very much)

5 4 3 2 1

19. Has the experience of digital education been evaluated in any forum? (multiple responses are possible)

1 - Yes, in the faculty

2 - Yes, in work communities

3 - Yes, the maintainer had such a meeting

4 - Other forums: ……

5 - There was no such assessment

20. What benefits of digital education can you identify?

Please, elaborate your opinion with your own words:

21. What disadvantages of digital education can you identify? Please, elaborate your opinion with your own words:

22. What digital solutions do you think could make pedagogical work more efficient in the future? Please, mark up to three options of the following:

1 – Open, online collections of methodological guides and lesson plans

2 - Task banks

3 - Digital textbooks

4 – Examples of classroom collaboration with students

5 - Subject-related digital assessment and evaluation tools (worksheets, tests, etc.)

6- Collection of digital visualisation tools (videos, 3D models, etc.)

7– Safe digital interfaces for students to ‘replace’ community life

8– Digital interfaces for teachers to share knowledge and experience

9 - Conferences to share good practices

10 - Other

11 - I don't think any of the above solutions are needed

23. What would you consider optimal for the future?

1 - Hybrid education (online and face to face combined)

2 – Face to face education exclusively with absentees making up school work upon returning to school similarly to pre-Covid practice

Any other comment:…….

Thank you very for your contribution!

Part Five: Summary of results of field research

Research plan

Field research is contracted out

- Summary of the description of the measurement and data collection tools in preparation for the primary research
- Summary of the results of the primary research
- A list of recommended issues that deserve further investigation.

Target groups

- Education managers
- Heads of institutions (ie. school directors)
- Teachers

Sample

We want to include educational institutions from Estonia, the Czech Republic, the Netherlands and Hungary in the sample.

- Interviews with education managers (we aim to involve 1-2 people per country. Taking into account which organizations in different countries are dominant: ministries, educational interest groups, educational districts, etc.).
- Interviews with heads of institutions (- based on the proposals of Tempus - we planned to involve 2-3 heads of institutions per country).
- Focus group interviews with teachers (involving 2-3 teachers per country).
- Online questionnaire with teachers (500-600 teachers) In the case of the questionnaire research, according to various European experience, the success of digital education differs by age group and subject. While digital education worked better for upper and secondary school students, this form of education is hardly useful for the lower age group, especially in the lower grades. Therefore, it is recommended that teachers who teach 14- and 18-year-olds in public education be included in the sample (50-50%).

Main topics of field research

- The expectations of the national education administration regarding the institutions.
- How schools were supported by national education authorities.
- The time periods in which full or mostly digital education was implemented.
- The proportion of schools with implemented digital education.

- The situation of digital education before the epidemic.
- What competence gaps were characteristic at different levels of education.
- What is the supportive /blocking regulatory environment of digital education in Europe at national level (case studies).

Methods, areas to be examined according to each target group

Our research methods include both qualitative and quantitative research. In the case of the first, we use the methods of interview and a focus group interview. In the case of quantitative research, we use questionnaire-based survey, the aim of which is to get to know the practice of as many participants as possible. At the same time, qualitative research can help us: to set up research hypotheses, which we can validate later in a quantitative research.

There are several ways to find the actors in each country to be sampled. We would like to get answers to the questions formulated above primarily through interviews. This can be done through individual and focus group interviews. The interview is suitable to gain more knowledge about the specific questions from the respondents, and it can also contribute to the success of the research by changing the questions of the questionnaire research before the questioning. The interviews are also suitable for conducting case studies of the developments in each country, highlighting similarities and differences. As

- education managers (decision-makers on various administrative levels);
- heads of institutions (ie. school directors);
- teachers (focus group interviews and online questionnaire);

The following are the main topics of the interviews and questionnaires were conducted with each actor.

Topics for interviews with education managers

Rationale for the topic: The aim of the research was to reveal the educational behaviour in each country during the Covid-19 epidemic. We wanted to explore what education governance in each country has seen as a success in the period and what needs to be further developed. Recorded interviews served as a basis for conducting case studies.

- What s your interpretation of digital education?
- In what time periods digital education took place in your country?
- What were the expectations of education managers towards educational institutions in the critical periods?
- How did the education management help the institutions (guidance, preparation, ongoing support, etc.)?
- How were schools prepared for the digital transition?
- How successful has digital education been? What were the success criteria, what did they consider to be effective, were there major pitfalls, mistakes, what did they see behind them?
- What are the lessons of digital education that can be incorporated in the next period if digital education is needed again?

Topics for interviews with school leaders

Rationale for the topic: We planned a more detailed interview with the heads of the institutions. Thus, we covered all the factors that were needed during the digital switchover (material conditions, human resource readiness, methodological assistance). We tried to gain knowledge about how successful the heads of institutions consider the transition to digital education and what they consider to be areas for future development. The answers to the questions asked can serve as a basis for preparing case studies.

Transition to digital education (information, preparation)

- What guidance have you received for the transition to digital education?
- How were the teachers informed?
- How was the teacher prepared?
- How were students informed about the transition?
- How the current digital experience can become a system-wide exercise? Who ensures quality? Who monitors? How is it happening elsewhere? What can we learn from 2021?

Existence of material conditions, facilitation of digital education

- Existence and operability of school networks
- Teachers' home equipment and internet access
- Students' home equipment and internet access
- Problem-solving

Main challenges of digital education

- Digital preparation of teachers
- Students' digital competencies in learning
- Lack of community life and the use of school services
- Increased workload of teachers in the transition to digital education
- Parents' contribution

The effectiveness of digital education

- Overall, what percentage of students were involved in digital education?
- In terms of effectiveness: have students' performance improved or deteriorated during digital education compared to attendance education?
- How effectively have educators been able to cope with change? How did they close the school year?
- Have the experiences of distance learning been evaluated in any forum? How would they summarize the experience: about the success of distance learning in general, for each actor: teachers, students, parents?

Suggestions for the future

- How will the lessons of 2021 be used in 2022? To what extent will the benefits of distance learning be maintained in the new school year? For areas, topics, possibly subjects? And for what age groups?
- Is there a need to develop teachers' digital skills based on experience? If so, how are these planned?
- How do you see the future trend of digital hardware development for education?

Topics for focus group discussions with teachers

Rationale for the topic: With the help of the focus group interviews planned with teachers, we wanted to get as detailed view about the implementation of digital education. In addition to the existence / absence of material and personal conditions, we wanted to get an idea of how the digital transition has changed their daily lives (time management, availability, help parents prepare their children) and how effectively they have closed a school year: improving, stagnant or deteriorating results were observed. What experiences do they have for the future changes?

The answers to the questions asked served as a basis for the preparation of case studies, as well as confirmed the correctness of our digital questionnaire or the need for areas for change.

Presentation of the digital transition in their school (information, preparation)

- How did education management and school leaders support the transition process?

Existence of material conditions, facilitation ofdigital education

- Existence and operability of school networks
- Teachers’ home equipment and internet access
- Students’ home equipment and internet access
- Problem-solving

Problems of digital transition

- What caused the greatest challenges in the implementation of digital transition (speed of transition, lack of technical equipment, lack of digital competencies), and how were the arising contradictions resolved?
- Personal experience: transformation of time management (full-time attendance for students / parents, better time management, free time management).
- What was the most burdensome task for students? (lack of teacher explanation, time management, isolation). How will these risks be reduced in the future?
- Were there sufficient resources for digital education? What type of help / aid was missing (pedagogical, technological, methodological)?

The effectiveness of digital education

- How was the evaluation of student performance carried out? What techniques have been used to ensure that children’s end-of-semester grades reflect their performance in a valid way? Was there a difference between previous (attendance) and digital learning outcomes?
- Was the entire curriculum successfully processed during the school year or did it have to be carried over from the curriculum to the next school year?

Suggestions for the future

- What can you benefit from the experience gained in digital education in the future?

Topics of questionnaire-base survey planned among teachers

Rationale for the topic

Almost all of stakeholders of education faced an unexpected situation in 2020 due to the Covid virus epidemic. We want to explore how long it took for the transition to digital education in the selected countries and how long it took for a kind of digital education to run smoothly.

Schools and teachers had to be prepared for the transition to digital education. The first element of this was information and guidance. For each country, we examined how the information / guidance was provided by the maintainer or the management of the institution during the transition to digital education.

With the transfer of education from the school building to the homes and the digital space, it is important to know what technical equipment schools and teachers have.

Digital knowledge and digital competencies are also needed for education in the digital space. Proficiency in the use of technical tools is typical today, but even for students, it is questionable whether their knowledge is sufficient to use the interfaces required for learning without hindrance and on a regular and safe basis.

Not only has education changed as its location has become the home and the digital space, but in addition to teachers, parents have become more involved in the teaching-learning process than ever before, making education more fragmented. We examined whether educators in each country were involved in answering parents 'concerns.

With education entering the digital space, it has become more impersonal. We want to examine how educators in each country have been able to alleviate this.

With the advent of education into the digital space, the concept of the use of time spent teaching has changed. Both participants (teacher, student) had to transform their time management. The transformation of education into a full-time activity has also had a major impact on the family life of teachers. We examined how much 'lifestyle change' the transition to digital education has required teachers in the countries surveyed, whether they or their students have gained time by saving on travel time, and whether it has benefited them.

The fact that education has moved into homes and into the digital space has greatly influenced evaluation. How was student work assessed in each country: what was assessed? (e.g., did they evaluate students 'diligence and their activities during class work.)

Digital education has forced the wider use of teaching methods and tools. Horizontal learning, the exchange of experiences between teachers and community portals have played a major role in this.

Below, we have compiled a draft questionnaire on these issues, which can be changed as desired based on the literature survey and interview data.

Results of the research

Presentation of the experience gained from the interviews (case study)

According to the previously adopted research plan, in-depth interviews, focus group discussions and a survey have been conducted. We have conducted in-depth interviews with education managers (Hungary and the Czech Republic) and school leaders as well as focus group interviews with teachers. The questionnaire survey was also conducted among educators. The Tempus Public Foundation has coordinated the search for interviewees and the publication of the survey. We have encountered several difficulties: e.g., it was difficult to find interviewees, to reconcile the dates, and although the survey was published on a several platforms, a relatively small number of completed questionnaires were returned by the given deadline. The proportion of Hungarian schools is also decisive among the returned questionnaires; therefore, we disregard the international and Hungarian comparison. In the course of our analysis, the data of the basic distribution are presented. The description of each aspect to be examined is not covered in this chapter, as it was presented in the previous chapter: here the interviewees are presented, and the answers received are summarised.

Sample

Education managers

- Gabriella Hajnal - President, Klebelsberg Központ (Hungary)
- Mr. Jan Břížďala (Member of the Regional Council of the Vysočina Region, responsible for education and also informatics and digital technologies) (Czech Republic)
- PhDr. Irena Borkovcová - Czech School Inspectorate (the Office of the Head Inspector), (Czech Republic)

Respondents (school)

- Fényi Gyula Jezsuita Gimnázium, Kollégium és Óvoda (Miskolc, Hungary)
- Csongrádi Batsányi János Gimnázium és Kollégium (Csongrád, Hungary)
- Közgazdasági Politechnikum Alternatív Gimnázium (Budapest, Hungary)
- Gymnázium Hladnov a Jazyková škola (Ostrava, Czech Republic)
- SintLucas (Eindhoven, The Netherlands) (school for pre-vocational education)
- Lentiz LIFE College vmbo (Schiedam, The Netherlands), (a pre-vocational secondary school (school education 12-16))
- Tallinna Kuristiku Gümnaasium (General Education)- Estonia
- Häädemeeste Keskkool (General Education) - Estonia

In the above institutions, the leaders were usually interviewed with the help of individual interviews, the teachers (2 people per school) were interviewed in a focus group. All interviews were recorded online.

Summary of interviews with education managers, school leaders and teachers in a case study

In the case study, we look at the guidance / assistance given to the heads of institutions in the transition to digital education. We describe the expectations of the education managers towards the heads of institutions, as well as the effectiveness of the digital transition.

We show how the heads of the institutions informed the teachers, in what forums the teachers were prepared for the digital transition. We describe whether, in addition to informing educators, parents and students have been informed about the digital transition.

We also examine the burden of digital education (time management, isolation) on teachers, parents, and students.

Finally, we will have a certain perspective concerning the views of education managers and school directors concerning the future use of digital education.

With the help of the focus group interviews planned with teachers, we wanted to get as detailed view about the implementation of digital education. In addition to the existence / absence of material and personal conditions, we wanted to get an idea of how the digital transition has changed their daily lives (time management, availability, help parents prepare their children) and how effectively they have closed a school year: improving, stagnant or deteriorating results were observed. What experiences do they have for the future changes?

The answers to the questions asked served as a basis for the preparation of case studies, as well as confirmed the correctness of our digital questionnaire or the need for areas for change.

Lessons learned; Educational managers– Hungary

It took only a few days to transition to digital education, so education management set fewer expectations for schools in the beginning than in November of the following school year. In March 2021, the main goal was to select the platform and to avoid dropping out.

The national “Kréta system” was recommended by the education management to the schools, which was suitable for uploading fillets, communicating, and doing homework. In addition, education management has reallocated money to asset purchases so that students are not disadvantaged by a lack of resources, as it was expected that there would be a period in the next school year when educational institutions had to switch to digital education.

The transition to 2021 has already been smooth: in terms of making the use of digital tools more routine, both for the platform and for the tools and actors in education. The maintainer's expectation: in addition to using a single platform, the goal was for schools / grammar schools to hold two-thirds of the hours online. In practice, this meant keeping two hours online and spending one hour on tasks in some places.

The education management initially provided 90-hour in-service training for teachers on the OH and later on the “Kréta interface”, so the provision of assistance to teachers could be considered continuous.

In summary, teachers' ICT competence has greatly improved, and the supply of tools has improved. Digital education cannot replace attendance education, but many of its elements can be used well in attendance education as well. The system will clearly be useful in the future as well, e.g., for the missing. The „Kréta system” has been constantly evolving under Covid, but digital curriculum development still needs to be further developed. However, this curriculum development can also be useful for attendance education. It is certain that within the „Kréta system”, education management wants to address the issue of curriculum market expansion, but the way in which new innovations can enter the system is still to be worked out, presumably a tender system will need to be developed.

Education management strives to gather good practice: it organizes conferences to share experiences. This took place in several tank areas: conferences were organized, where exchanges of knowledge and knowledge could take place between teachers.

Lessons learned; Educational managers– International (Czech Republic)

We received responses from two Czech education managers: one of them was interviewed, while the other education manager responded to our request in writing.

The main lessons of the completed interview:

They manage 36 public educational institutions.

There was already an improvement in digitization before COVID, with all schools buying the Microsoft 365 system (which included Teams), but most schools did not make much use of it.

At school closure, regional management opted for a multiplatform approach, i.e., did not designate any platforms. In the first wave of COVID, this resulted in teachers using 2-3 platforms in parallel in a school. In the second wave in 22, under the pressure of the maintainer, this was simplified to 1 school 1 platform.

The regional organization has a separate IT department, and this has been activated to provide technical support to schools.

Managers were given special advice on the digital switchover.

School IT teachers were connected to a regional network to pass on good practices.

As a result of the above efforts, 98% of students were able to stay in the education system. Parental satisfaction with the digital switchover was also high, above 80%.

It is important to say that the schools participating in the ERASMUS + projects did not stop cooperating in Europe but continued online. They have gained a good experience of online collaboration.

The values of the digital diet will be preserved in the future, and digital technology in school - parent communication has given a lot of new things that they want to continue.

Czech education management (written summary): The concept of digital education first appeared in the digital strategy of the Ministry of Education, Youth and Sport (OIS), which was further developed from time to time. Expectations for digital education were set out in the methodological recommendations of the OIS and the CSI (Czech School Inspectorate). Aug 2020 An amendment to the Education Act promulgated with effect from 25 has already included rules for online education in certain emergencies.

CSI recommends Figure 1-5. for classes, it considers teaching in smaller groups and a one-hour duration ideal, with students then doing individual work or having a joint online summary at the end of the day where the experiences are summarized.

For grades 6-9., the recommendation was that online education should not exceed three consecutive hours. In these grades, the use of elements of social learning and project education is recommended. The document draws attention to avoiding situations that interfere with students 'personal integrity (e.g., appearing in front of a camera, mandatory photography).

The OIS provided information to schools and provided ongoing methodological support with the help of on-site surveyors. The CSI also issued recommendations for the 2020/2021 academic year and processed the experiences of the 2019/2020 academic year (student-teacher surveys). The recommendations made in 2021 not only summarized the experiences but also addressed the mental health of the students. The CSI has issued a thematic report on online education in primary and secondary schools.

(http://www.csicr.cz/html/2021/TZ Distancni vdelavani v ZS a SS/html5/indes.html? &pn=2&locale=CSY; https://www.edu.cz/methodology/eoporucent-k-distancni-vyuce-a-dusevnimu-zdravi).

Prior to the Covid 19 epidemic, only about one-fifth of schools were educated in digital technologies. Teachers 'digital experiences influenced the success of the transition, which stabilized in about three weeks. The majority of students participated in distance learning, but there were differences in the extent and manner of their participation. Some students 'online communication was affected by a lack of ICT equipment or an insufficient internet connection, as well as low motivation to learn (especially in disadvantaged regions).

Based on the experience of the surveys, the reports identified three areas for improvement:

- organization of education
- student feedback
- editing educational content (differentiation).

The changeover, as already mentioned, took place in three weeks, but it was a challenge:

- students' participation in distance learning and problems with their regular participation
- participation of all students in education
- the quality of distance learning and the effectiveness of distance learning.

The quality of distance learning was greatly influenced by the frequency and intensity of feedback. Less results are achieved if digital education is based solely on issuing and returning tasks without real communication.

CSI has a positive view of the future of online learning: it found that teachers have successfully taken on the challenges of the digital switchover, taken a creative approach to the use of digital technology, and found these tools useful in education. The use of digital technologies and the sharing of experiences within the teaching staff, but also between schools, has proved very useful. DigCompEdu can make a major contribution to changing methods and preparing teachers.

Digital education can be greatly helped by the OIS methodological portal (https: /www.edu.cz/digitalizujeme/), but they are also involved in asset procurement. Under the MEYs strategy, schools can also receive specific funding for the purchase of digital devices, and even help disadvantaged students to use mobile digital technologies to bridge the digital divide.

OIs has produced a handbook for principals on implementing digital education (httsp://www.edu.cz/digitalizujeme/metodicka podpora/).

Lessons learned; heads of institutions (Hungary, The Netherlands, Estonia, Czech Republic)

In this chapter we summarize the answers to the questions formulated in the research plan (detailed interviews (education managers, heads of institutions, teachers) were submitted to the Tempus Public Foundation. The schools were selected and invited to participate with the help of the Tempus Public Foundation. educators, so we tried not to put what was said by the different actors in two places.

Transition to digital education (information, preparation, equipment)

For a start we would like to mention that the foreign schools taking part in the research are not only of different nationalities (*Czech, Estonian, Dutch*) but also differ in size, type of location, specialisation (for example one *of the Dutch* schools provides special education in the field of IT, while *the Czech* institution focuses on languages) and the age groups they provide education for, thus their experiences regarding the transition to digital education during COVID-19 vary significantly.

In *the Hungarian* schools interviewed (one church, one foundation, and one state institution) - partly due to their nature - the information of the maintainer was not typical, in one case it was reported that they received links from the maintainer; thus, it was largely up to the heads of the institutions to inform the faculty.

In general, all the heads of school interviewed said that at the beginning of the first lockdown they received no central guidance for the transition. In every country however there was a period of typically one week for the schools to prepare for going digital. During this time the schools themselves made the necessary technical and organisational arrangements and it was also the school management that informed the pupils about the upcoming changes through email, webpages or class teachers. The vice head of school of *the Czech* school added that later on both the central and the regional government did some surveys to evaluate digital education and based on them some central guidelines were provided.

All the schools – internationally - had had their IT infrastructure developed (Wi-Fi, laptops, computer labs, other necessary devices) prior to the lockdown–the only problem may be maintenance, as *the Czech* vice head of school pointed out–thus digital education was not entirely unknown to the teachers, yet their relevant skills varied depending on their age, subject and personal interests. Regardless of country typically teachers of the older generation were less experienced and more reluctant when it came to the transition. During the preparation period all the schools provided internal trainings, help and instructions for the teachers and some kind of (mostly) informal support was always available for them (and also for the pupils), mostly with the help of ICT teachers or system managers working in the school. *The Czech* vice head of school mentioned that her school being an eTwinning school actively takes part in international eTwinning and Erasmus+ collaborations and this significantly contributed to their successful transition to digital education, yet they also used webinars available online to help them in the process.
It was also characteristic of some Hungarian schools that they had previously participated in international cooperation.

All Hungarian schools were unexpectedly affected by the rapid introduction of digital education. However, it did not matter what equipment, previous digital practice, the participants had: where they had taken steps to build digital education in the past, and where schools were well equipped, the transition was easier. The Hungarian schools interviewed belonged to the latter group, so if there was a shortage of resources among either teachers or students, they helped the participants with loans. In another institution, the development was done by giving parents support to buy a laptop. The most important question to decide during the migration was what platform to use. They usually chose the one that had been used before, but its use was uniformly mandatory. They also agreed on how many hours would be held as a lesson and how much would be used for consultation. We came

across an interesting case of assigning assignments: in one school, the principal asked for assignments for the following week, summed them up, and sent them out to the students a week earlier with the help of the class teachers. This meant extra work for the principal, but he undertook. How much rationality there was in this, and how much control there was, was not really revealed. Presumably both had a role in it. There was an institution where, in order to alleviate the workload of the teachers, the contact was also regulated: the time frame was set when the parents and students could contact the teachers with their questions. In another institution, the previous practice of parental contact was continued. One institution reported an increase in contact (more people "came" to the online parent meeting and reception hours than before). We asked the teachers more about this question, but one of the heads of the institution raised the question that there would be a need for a central curriculum, which could then be freely developed by colleagues, because curriculum development took a lot of time from teachers.

Almost all of the teachers - based *on both Hungarian and international* experience - had a laptop provided by the schools but when working from home all of them used their own internet access for teaching. The coverage was not a problem in any of the countries. The schools also surveyed their pupils' situation and gave out laptops for those in need due to their social or family status. In one of *the Dutch* schools, they had to purchase approximately 200 hundred new laptops for such purposes (the cost was covered from the school budget). Most of the schools had enough laptops for such purposes. Both *Estonian* heads of school emphasised that the government also helped solving this issue and provided the schools with significant material help in the form of laptops, cameras and other devices needed (in *the Czech Republic* the same help arrived from the Ministry of Education after six months, in time they also started to develop digital learning materials that became very popular). One of them added that the government was also very supportive of the teachers' proposals regarding digital education and acted very fast. After a while, *the Hungarian* education administration also reallocated money to buy digital devices. As a fortunate course of events *in Estonia* prior to the COVID-situation the government had made a survey about the ICT skills of the teachers and based on the results had had organised a two-month training (two hours twice a week) for those who needed it. Interestingly enough, the other head of school *from Estonia* noted that according to his experience smaller schools handled the situation better than the big ones (like his) – they were fast and "pioneers".

In the institutions we interviewed (*Hungarian*), there were digital work groups of 3-4 people (sometimes even before the pandemic), which helped, prepared, trained and were constantly available. Preparatory / supportive work was carried out by both teachers and students by members of the working group. We also met with an institution that took over and further developed another institution's handbook on using portals and taught and published this to teachers.

Digital education in practice and its effectiveness

Based on the interviews with the heads of school we can conclude that it was one of *the Dutch* schools that was the most flexible during the different waves. The teachers of different subjects as well as different years had regular meetings to share their experiences and findings and they also created platforms for such purposes in Teams.

When the second wave hit, they started out with discussing the lessons learnt from the first one and sharing good practices. They kept fine-tuning their methodology based on the shared experiences as well as according to the changing COVID-19 regulations.

They were among the first schools in *the Netherlands* to introduce hybrid education and let some of the pupils back to school. They even rent a place to have enough room for safely managing attendance education.

In some of the schools they did not change the timetable in the beginning but the head of school of the one of *the Dutch* schools said that they had to introduce some changes as out of their 65 teachers only 12 work full-time. Based on the experiences the length of the lessons was shortened (from 50-minute to 40-minute) and instead of frontal education more emphasis was put on teamwork and pairwork. They also decreased the amount of homework given. *The other Dutch* institution determined that there were three 30-minute lessons each day, two online, one for individual work. Beside this the pupils had to do groupwork for three lessons a week.

The Czech school also showed flexibility from the very beginning as for example the school management decided that they wanted to create a teacher friendly environment thus they gave the teachers a lot of time and freedom to adjust to the challenges of digital education according to their own space. This approach proved successful as all of them managed to find their ways and by now it is not a problem at all and she sees a huge improvement (the vice head of school added that the intuitive development processes of Google and Microsoft contributed to the adjustment of the teachers to the new situation). However, the timetables were modified only later as the pupils indicated that the original timetables had been too demanding, so the number online classes was limited to a maximum of four classes a day. They also delayed the beginning of the first class with one hour to 9 a.m. as they realised that pupils liked to work at night thus had difficulties getting up early.

As opposed to what has been said before, one of *the Estonian* heads of school mentioned that *in Estonia* many teachers did not know what to expect and first thought that the only difference between attendance education and digital education is that the pupils do not sit in the classroom but at home in front of the computer. Thus, they had difficulties adjusting to the realities, especially to the timing of online classes. By the third wave (the fall of 2021 when they managed to introduce hybrid education) based on the experiences gained many teachers realised that they had to restructure the classes and the head of school tried "hold them back" and asked them to give less tasks during the classes and less homework in general.

In Estonia some teachers could work from the school already during the first wave, especially if their spouse was also a teacher and had to work from home. This was also indicated by Hungarian colleagues, especially in the case of pupils living in small settlements. The lack of some pupils' access to internet created a problem (not in *the Netherlands*), especially during the first wave. In one of *the Estonian* schools about 30 pupils (20%) had no access during the first wave, those pupils were allowed to go to school during the second wave. The number of such pupils was insignificant in the *other Estonian* school, and they were successfully handled by their class teachers according to the head of school.

In *the Netherlands* the pupils of first line workers were provided in-school education during the lockdown periods by some of the teachers.

In most schools Microsoft Teams was the main platform of digital education, but Google Classroom was also mentioned. Estonian schools also have their own education management platform, but it did not prove sufficient in itself for the purposes of digital education.

The experience *in Hungary* shows a mixed picture. In general, the transition was handled flexibly, but in a Hungarian institution the tasks were "centralized".

In one of *the Dutch* schools questionnaires were sent out to both parents and pupils about the effectiveness of the digital education. In some subjects such as English and skill based subjects the results turned out to be better compared to those from previous years. *In the Czech* school there was a survey conducted about the attendance of online classes. 95% of the pupils had access to internet and it was 80% of them who actually took part actively in the online classes while they had many problems with the remaining 20%. At the end of the first wave however they had a period of two weeks after both the first and the second waves when they could go back to school and the teachers tried to use that time to solve those problems. The performance of the students did not change that much. The head of school from one *Estonian* school said that they did not measure the effectiveness of education

but based on the opinion of those involved pupils mainly had problems with maths, yet the exam results did not change significantly. The other added that they still see the consequences of these two years in the case of students who had had problems with gaming addiction prior to COVID-19. Their performance decreased significantly in parallel with their growing addiction to playing online. According to the latest's personal opinion (not based on any assessment) the overall performance of the students has decreased during the periods of digital education but he emphasised that it was not the fault of the pupils. He even added that he did not believe that the pupils' digital skills improved.

Hungarian pupil's performance has generally improved. The fact that the teachers were more lenient also played a role in this. The evaluation was hampered by the difficulty of checking performance as the camera was not required to be turned on. (They were asked to turn on the cameras during the classification exams and correction exams.) On the other hand, it was not clear in the case of the dissertations to be submitted how much of the student's own work was and how much help was used.

Another head of the institution pointed out that the results had been good, but when he returned to attendance education, they found that the work completed had not paid off much. Efficiency issues arose when returning to attendance education.

There was an institution that reported that the graduation results were somewhat weaker. This is important because it is a more objective measurement, while for other classes teachers could allow more lenient grading, but here there were central expectations.

All the heads of school agreed that the role of parents is very important during digital education especially in the case of pupils in lower grades, but all in all they found them very supportive. One of *the Estonian* heads of school added though that according to his experiences problems may have resulted from the fact that many parents themselves do not have the necessary digital skills to help their children. He believes that this experience may make the parents realise that they also need to improve such skills.

For more information about the course of digital education and the lessons learnt please see the focus group report.

Main challenges and lessons learnt

From the perspective of the heads of school unanimously one of the greatest challenges for both teachers and pupils was the lack of community life.

The biggest problem - also in the case *of Hungarian* students - was the lack of community, the isolation for the students. Institutions have tried to alleviate these problems in several ways: one institution has tried to make students 'lives more bearable by avoiding congestion, and another has tried to provide outdoor programs for students. As for their digital competencies, there was no particular problem, as they had used digital tools and methods in education before. Elsewhere, heads of institutions have reported a mixed picture of the use of platforms: however, it has been emphasized that the most important thing is the attitude of students to education: those who like to study also have a place online, and those who do not have a place in education. Nevertheless, there was drop-out among students: this was mentioned to varying degrees by heads of institutions: some estimated dropout at 1 per class, some called dropout at 1% of all students. (Rather, weaker students have disappeared online.)

The experiences gained during lockdowns shed light on the importance of nurturing the students' social skills: for example, the vice head of school of *the Czech* school explained that when the pupils could finally come back to school in many cases the teachers had to remind them to the rules of basic communication such as greeting

their classmates in the morning. Socialising was the most difficult for those who started their school during COVID-19 times as they never had a chance to get to know their classmates. Everybody said that of course there were students for whom online education was more suitable yet the aftermath of these two years spent among the four walls can still be felt and causes many problems. Another issue was that pupils (especially those coming from disadvantaged background) could not use the services provided by the school.

Digital education increased the workload of the teachers significantly. As *the Czech* vice head of school put it "there were no working hours, […] there were no limits to the teachers' working hours". It is especially true for the ICT teachers/staff, the "social pedagogues" and the head of school.

It is interesting to mention that in one of *the Dutch* schools it created a problem only in the beginning then they got adjusted to the new conditions.

Regarding the topic of workload, it was also a problem for pupils. *The Czech* vice head of school said that they had a lot of work to do and one of *the Estonian* heads of school noted that–understandably–all the teachers thought that their subject was the most important and gave the pupils way too much work to do.

For both *Estonian* heads of school the other main problem was the attitude/mentality of some of the teachers in the beginning. Despite of the training they had just taken part in prior to COVID-19 they were reluctant and did not believe in the success of digital education. They needed some time and support to overcome these feelings. To make such teachers more confident, the heads of school kept organising ad hoc meetings to provide help and even today they regularly organise internal ICT trainings if there is something new to learn (in one of the *Estonian* schools they for example organised a training at the beginning of the latest school year for the new teachers–the trainings were significantly easier to organise and keep as the "trainers" were more experienced).

In one of the *Estonian* schools during the first wave the use of several different platforms and learning management systems also created a problem because it was confusing for the pupils. To solve this issue the ICT teacher worked through the summer to introduce Google Classroom and also organised a training for the teachers about how to use it before the second wave. The same problem occurred in the Czech school where most of the teachers (especially language teachers and teachers who speak English) had already had their own ways of teaching online due to their experiences gained during the international projects mentioned before but the abundance of different platforms and tools was a problem for the students (and for the parents). To solve this issue the school management decided to focus on three basic platforms: the official school management system used *in the Czech Republic* called Bakalari (where several functions and possibilities were added during COVID-19), Google (as it was convenient regarding GDPR), and later they added Microsoft. In the other *Estonian* school the opposite tendency can be seen as teachers are encouraged to use different platforms and tools and are even provided informal trainings to learn the relevant know-how.

As already discussed above both *the Dutch* and one of *the Estonian* heads of school mentioned that the timing as well as the structuring of the classes can be challenging when having an online class so teachers have to adjust to the realities of digital education where it is more difficult to keep the attention as well as the motivation of the students. This way pairwork and teamwork have more relevance and this is also a conclusion for the future to consider. All in all for *the Czech* vice principle the biggest challenge was the adopting to the ever changing situation: new rules, new restriction, unexpected events.

The question of camera usage of pupils was also a reoccurring problem for which there was no clear solution provided in any of the schools. *The Czech* vice principle mentioned that in the beginning they insisted on turning the cameras on however later on they dropped it as they understood that it can also be seen as an intrusion of the pupils' privacy.

All the heads of school interviewed agreed that the lessons learnt from digital education can be applied in the future. Schools can have a couple of days of digital education in a month or when pupils are unable to attend the class the teacher can organize a hybrid class. In *the Czech* school even today the Google Classrooms created at the beginning of the lockdown are "open" and used for communication and sharing learning material and replace the previously used "Ask your classmates" method.

The team manager substituting the head of one of *the Dutch* schools emphasised that in their school the most important finding was that digital tools can be used to "customise" the content of the classes according to the levels of the different pupils. He also mentioned that during the COVID-period teachers realised that the best way to contact pupils is through apps like WhatsApp and after the lockdown they kept using this way of communication.

A *Hungarian* head of the institution drew attention to the lack of a unified evaluation system: the problem of attendance education is also true, but it has become even more important than digital education.

The other part of the assessment is when teachers discuss experiences and continuously monitor school activities and intervene where necessary.

The improvement of the teachers' as well as the pupils' digital skills will ensure that the role of digital education can increase. One of the heads of school from *Estonia* noted that the crisis and its management made the decision makers realise that it is worth putting money into the digitalisation of the schools as this way schools can be more fun as well as up-to-date and so the improvement of the digital infrastructure of schools continues to be on their agenda.

In one of *the Dutch* schools after the pandemic they assessed the level of the digital competences of their teachers and are organising courses for them based on the results.

For one of *the Estonian* heads of school the main lesson learnt was that if you have good people you can achieve anything, however it is also essential to have an ICT expert in the school (however it can be a problem there is a lack of human resources). The other noted that the COVID-situation accelerated the digitalisation of schools that had already started before.

One of *the Dutch* heads of school added that new technologies can make our life easier and create more time for us to do things we like, however there are dangers hidden, thus we have to teach the pupils how use them. This idea was supported by one of *the Estonian* heads of school too, who said that the problems faced during digital lessons made them realise the importance of teaching pupils digital skills, digital literacy as well as of teaching them how to learn. *The Czech* vice head of school said that in *the Czech Republic* the biggest added value of the crisis was flexibility that they try to keep.

The *Hungarian* heads of institutions find digital education useful, for example, on Saturday workdays to be worked out. They see the potential for knowledge sharing on different platforms. It also serves a good purpose in implementing knowledge sharing between teachers. Digital progress is useful for those who are missing out, for athletes. It is still necessary to operate a digital workgroup. However, for certain improvements: e.g. financial resources would be needed for the production of homesteads and better sharing of platforms.

Lessons learned: teacher-focus group interviews – (Hungary, The Netherlands; Estonia; Czech Republic)

In this chapter, we show how difficult it was for teachers and students to transition to online education, what problems they had in online education, and how they considered it to be followed for the future. Focus group interviews were conducted in 3 institutions *in Hungary*, in the same institutions where the heads of the

institutions were interviewed, so the experiences described there are not repeated in this chapter. *Internationally* there were four full focus group interviews conducted, and one of the teachers (from the Czech Republic) gave us a "double" interview as she was not only the vice head of school but also a practising English teacher.

Transition to digital education (information, preparation)

Regardless of country the situation was very much similar in all the schools. The teachers interviewed found their school management very supportive, especially considering the fact that everything happened so fast. There was no problem regarding the flow of information between the management and the teachers' staff. In all the schools there were a few days (or a week) to prepare for the new situation where cooperation among the management and the teachers worked well. This short period was used to prepare the teachers for digital education, however in the schools from the Netherlands they also put emphasis on the preparation of the pupils. All in all *the Dutch* teachers kept emphasising that during the COVID-period the main focus was on the well-being of the children as well as on getting everybody back to school as soon as possible. In one of *the Dutch* schools during this time the teachers were allowed to go to the school buildings but later on they also had to work from home apart from those who taught the children on first line workers.

Of course, the tasks to be solved were slightly different depending on the characteristics of each institution. Based on the interviews with the heads of school, all the schools had had sufficient IT infrastructure prior to the lockdown. It was only one school *in Estonia* where the teachers said that in the beginning there had been a shortage of the necessary digital equipment and it had been just later that the government had made up for it. They were the ones who did also not have an IT specialist in the beginning, but the position was created and filled in in 2020. The schools selected the necessary platforms (mostly Microsoft Teams), created the accounts for the teachers and pupils if needed (in most of the schools such accounts had been in use before).

According to the experience *in Hungary*, all teachers and students who did not have a computer could borrow from the school. It can be said that where they have been involved in digital education in some way in the past (Erasmus, pilot classes), the transition to digital curricula has been easier, as both teachers and students have had experience in these institutions and even the equipment.

All the schools organised–mostly informal–trainings for the teachers depending on their needs, however, in some countries there were also external trainings (eg by consultants). This was the time when the system of providing IT support was organised. In one of the Estonian schools pupils could apply to become a voluntary "IT-support pupils" to help both pupils and teachers with problems arising during online education and organise IT related events, competitions. In one of *the Dutch* schools there was a so called communication tree set up for the teachers so they knew who to turn to in case of questions or problems. *In Hungary*, mostly system administrators, IT specialists and IT teachers helped with the smooth operation. Similarly to the trainings the sharing of ideas and findings was also informal among the teachers. Typically it happened among those who taught the same subject or those who taught in the same grade.

Digital education in practice and its effectiveness

Digital education had been not entirely new in any of the schools, however *the Dutch* and *the Czech* schools had had the most experience, the formers being specialised in media, design (and ITC), the latter taking part in international projects. We experienced a similar situation in the case of Hungarians.

In one *Dutch* school for the teachers the first thing to do was to teach the pupils how to behave during online classes (after making sure they knew how to use the devices and tools). During the interviews all the teachers

said that they had to adapt to teaching online as it was different from using ICT during teaching in the school. We understood that this was a process where teachers learnt from their own experience and they also shared what they had found out. The use of cameras was a prevalent issue.

One of *the Dutch* teachers as well as one of *the Estonian* teachers said that they used the camera on and off, the pupils had to check in at the beginning of the class than they could turn it off while doing teamwork or pairwork, then they had to put it on again for the last few minutes.

All agreed that rules had to be made. One of *the Estonian* teachers noted that it happened that the internet connection of some pupils was not strong enough, in such cases they had to inform the teacher that they could not turn the camera on. (Hungarian colleagues also encountered Internet problems.)

Regarding methodology those with prior experience in digital learning had an advantage, but even they had to learn a lot in practice. The first main issues to be dealt with were the structure and the length of the classes. Most teachers realised that frontal education did not work, and the role of cooperation in the form of teamwork and pairwork increased, while the role of individual work and homework changed, thus online classes had to be restructured. Most teachers found that the traditional timeframe of 40–50 minutes was too long, especially if it was frontal teaching as the nature of interaction with the pupils is different online. Some schools changed the timetable already at the beginning when they went online while for others it took some time to do so.

In *Estonia* already at the beginning there were all kinds of online e-learning materials available in the forms of video lessons, booklets or textbooks. In one of *the Estonian* schools teachers also received information about how to manage online lessons and how to use video lessons. Later on Opic (an Estonian start-up) made it possible to digitalize all the textbooks which helped online education a lot. Although–according to one of *the Estonian* teachers–the material created this way was not interactive enough it made their job significantly easier. During the first year it was free because the government subsidized it but later on schools needed a subscription. A teacher interviewed from one of the schools said that it became too expensive and did not worth the price. She believes that now it is only 10% of the schools that use it, for example they only apply Opic in 6th grade. Some teachers also had some prior experience regarding the development of online material so they could use and improve those skills.

The biggest burden for teachers *in Hungary* was content development. They used multiple times their time for this activity in the beginning. Although the situation has improved since then, the problem is that there are still few digital curricula and some existing curricula have been pointed out that they are 'rigid', cannot be changed or shaped as needed. Also mentioned as a problem by some colleagues are the language difficulties for the tasks on the social network.

In one of *the Dutch* schools, they had an educational advisor to share ideas as well as novelties in the market with the teachers and advise them about digital education. The teachers also created a so called “digital playground” where they shared their ideas or material they found online. One of *the Dutch* teachers noted that they were lucky because they in the creative sector what makes their job a bit easier as this sector has a digital advantage. In the other *Dutch* school interviewed they started to use the already existing school management system more actively in the COVID-period. *The Czech* teacher shared with us that being an eTwinning school provided them with a unique opportunity during lockdown: they were able to organise English conversation classes with one of the Swedish schools taking part in the same program.

Many teachers said that during the lessons they had to be flexible and very often they intentionally talked about issues of topic that concerned the pupils. One of *the Dutch* teachers emphasized that he found it important to make sure that his pupils were fine and for that purpose he even called them, and he also made phone calls to the parents. In this school each class had a mentor who was responsible for contacting the parents of each pupil

once a week in order to discuss any occurring problems. If a pupil did not attend the classes regularly their mentor contacted a so called “youth worker” who visited the pupil in question at home or even drove around town to find them.

Although *the Hungarian* heads of the institutions also mentioned it, it is worth highlighting again the lack of community: since, as many have put it, learning is a community process, and it is not very inspiring to talk to the camera. The initial enthusiasm on the part of the students was also replaced by a sense of lack of community. They tried to break the confinement with outdoor classes and trips.

The opinions of the teachers about the results of digital education are very much similar to those about attendance education in the sense that all agree that those pupils who performed well in the classroom did so online. The diligence of the Hungarian students was not influenced by whether it was digital or attendance education: those who did well continued to perform well, but there were also backlogs. The backlogs were made up in September, and attempts were made to remedy the backlogs by visiting the parents.

In other words, there was no significant change in their attitude and performance. All added that, of course, digital education was more suitable for some than for others and there were pupils who especially enjoyed it.

Although *the Hungarian* results improved in non-graduation classes, attendance training revealed that there was room for improvement, and the effectiveness of teaching was inadequate in many cases. In some cases, the results of graduation have deteriorated somewhat, and in other institutions the proportion of those admitted is the same as in previous years.

The teachers from one of *the Dutch* schools noted that there was a general drop in grades as it is difficult to teach learning skills online. It was very much felt regarding for example Dutch language.

A teacher from one of *the Dutch* schools noted that the content is originally made for attendance education, and it had to be adapted to digital education. It means that the content and thus the expected results became different.

As for how much of the curriculum the teachers could cover during online education not much information was provided. As mentioned before *the Dutch* teachers found it difficult to teach learning skills digitally. One of the *Estonian* teachers said she could finish all the curriculum all the time, while *the Czech* teacher said that in her opinion about 50-60% of the curriculum was covered. We received a little bit more information about the evaluation of the pupils. According to the teachers of one of *the Estonian* schools the pupils did not receive grades but were given verbal evaluation.

In the Netherlands there were central regulations regarding the testing and grading of the pupils’ performance. During the two years of the pandemic there were no final exams. The graduating pupils were evaluated based on their grades and tests. They also changed the evaluation system a bit and regarding the basic subjects it was the teachers’ responsibility to decide whether pupils could go on the next year. The system became more flexible and for example pupils could choose to drop their exams or split them up into two separate parts. During that time the main focus was on the so-called basic subjects (such as Maths, Dutch, English, Media and ICT, or Science) and less attention was given to for example Spanish. The main goal was to make sure that pupils learn the basics of the subject in which they will have to take exams at the end of their studies. For this purpose, in the school year 2021-2022 *the Dutch* government provided resources for extra classes in the basic subjects and also for sports (600 €/pupil). One of *the Dutch* schools mentioned that they organised diagnostic tests after the pandemic to assess the pupils’ level of knowledge and competences to identify their needs for extra classes.

The Czech vice head of school explained that *in the Czech Republic* the government centrally changed the content of the exams.

Main challenges and lessons learnt

For the teachers (*apart* from *the Dutch* ones) one of the main challenges was the management of their working hours and workload as they significantly increased. It took more time to prepare for the classes and also to correct the homework. As *the Czech* teacher noted they had to be available almost all the time. The teachers from Estonia found the online lessons more stressful and tiring. Time management was also a problem during the online classes as there often seemed to be too much time.

According to *Hungarian* opinions it cannot be ignored that some subjects can be taught online at almost no or only to a limited extent: such as the compilation of skills subjects and tasks measuring logical skills from mathematics, but rather using tools capable of basic tasks. There was also a perceived problem with the mapping of geography and history objects. Teachers also drew attention to another difficulty that could be solved by development: one of the colleagues reported that he had a collection of 200 tasks (math), but the interface did not allow easy sharing with colleagues: it could only be sent to them one by one. in one of the schools. Digital education has also meant a workload and a freer organization of learning. Continuous availability was a problem for many educators, as they even had to use the afternoons to prepare curriculum. This has been defended in some institutions by setting a timetable for when teachers can be sought from students and parents. Interestingly, one head of the institution used digital education for even stronger centralization: it was aimed at both efficiency and control of teachers. Incidentally, educators had a strong knowledge sharing, who had something to share with colleagues and even colleagues teaching in other schools.

All of them found the lack of interaction challenging as they could not always assess whether the pupils could follow and understand the content of the class. According to one of *the Estonian* teachers she very often found it hard to achieve the cooperation of the pupils.

Also, it was often difficult to see whether the pupils logged in were really there. In one of *the Estonian* schools, it was the pupils' social counsellors task to check upon the children and see if they attended the online classes.

The Estonian teachers also mentioned that the fact that most of the times the whole family was at home (the parents had to work from home) that resulted in technical and organisational problems for them that also affected the pupils' attendance of the online classes. In addition, in larger families, not everyone had access to computers and laptops.

The Czech teacher noted that for her one of the biggest challenges was that everything happened so fast, and the conditions and central (COVID-19) regulations were changing all the time.

From the pupils' perspective teachers agreed that the overall management of the situation depended on the individual pupils. By now it is clear that the isolation has a long-term effect on their mental health that can still be felt. It was especially difficult for those who just started a new school. One of the Estonian teachers said that many pupils found independent work difficult and often they lost the sense of time in front of the computer.

The most serious problem was the review and evaluation. This also varied from subject to subject, but teachers sought to include individual project work in addition to the papers to be submitted. The measurement of the result could not be exact, as the survey was not always held in front of the cameras: some educators said that they saw the class work when evaluating a task.

Also noteworthy is *the Hungarian* remark that drew attention to the deterioration in students 'writing skills as well as their ability to express themselves orally. This in itself can be a problem, but if we add to this the fact that it is done on a graduation paper basis, this fact may have contributed to the deterioration of the results.

On a positive note all the teachers said that (as one of *the Estonian* teachers put it) in a way it was a "positive crisis" because it accelerated the digital transition of education and the lessons learnt can be used in the future.

From now on hybrid lessons are an option if some pupils cannot attend the school. One of *the Dutch* teachers said the streaming of the classes can also be used in the future. More teachers mentioned that their schools decided to continue the provision of trainings for the teachers. He also said that his experiences gained regarding the structuring of the classes made him realise that pupils prefer if there are more "steps" (e.g., frontal teaching, individual/pairwork, common conclusions, summary with frontal teaching again) and he thinks that there is no need for homework.

He as a history teacher also realised that other related topics such as daily news can be added to the content of the curriculum. Another *Dutch* teacher said that for her as an international coordinator digital technology (such as Zoom) opened up new possibilities.

One of *the Estonian* teachers said that she will definitely use digital material during her regular classes as there are many useful worksheets, platforms etc. She believes that the technologies used in education will constantly evolve. To give an example she told is that one of the chemistry teachers used VR-glasses during the online lessons and this is just the beginning of the digital explosion in education. Interesting to note that the teacher form *the Czech Republic* said that for her the biggest lesson learnt was that skills (especially communications skills) are more important than knowledge. This realisation is reflected by the words of one of *the Dutch* teachers who said that she believed that the mindset of people had changed: now there are no boundaries. As one of the *Estonian* teachers put it: "We have to get ready for whatever."

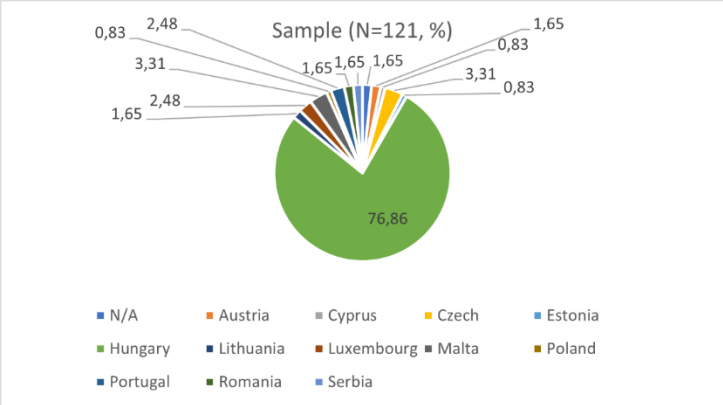
According to *Hungarian* opinions it can be said that the digital skills of both teachers and students have developed. They can use certain elements in attendance education. Online education can also be useful in educating those who are absent (competitive athletes, sick students).

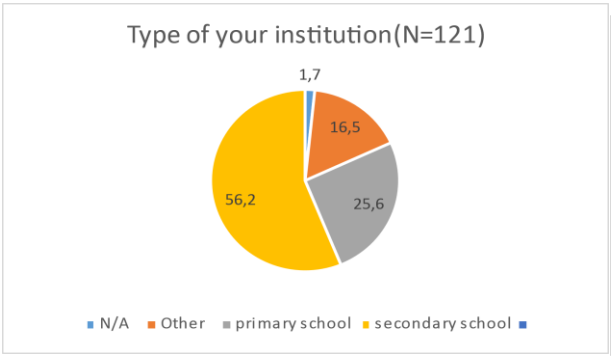
Results of the questionnaire-base survey among teachers

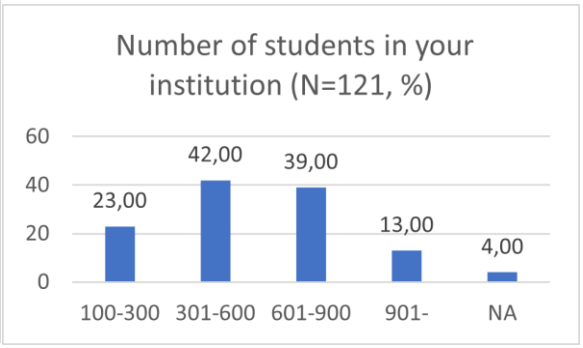
In the questionnaire research, we examined what training / information was provided to educators for the transition to online education, and whether educators and students had the necessary equipment for online education. We tried to track what changes were made in education during online education and what problems were perceived in the changed educational situation. We also looked at how stressful online education was for them and how the transition to online education helped them. We asked what they see as the advantages and disadvantages of online education, and how and in what areas online education will be held in the future.

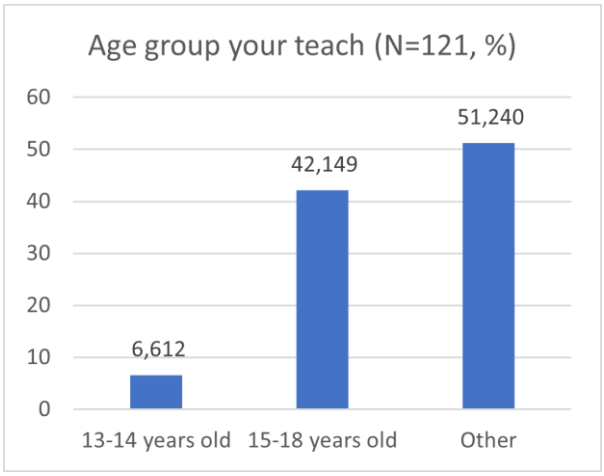
Sample

1. Figure: Sample

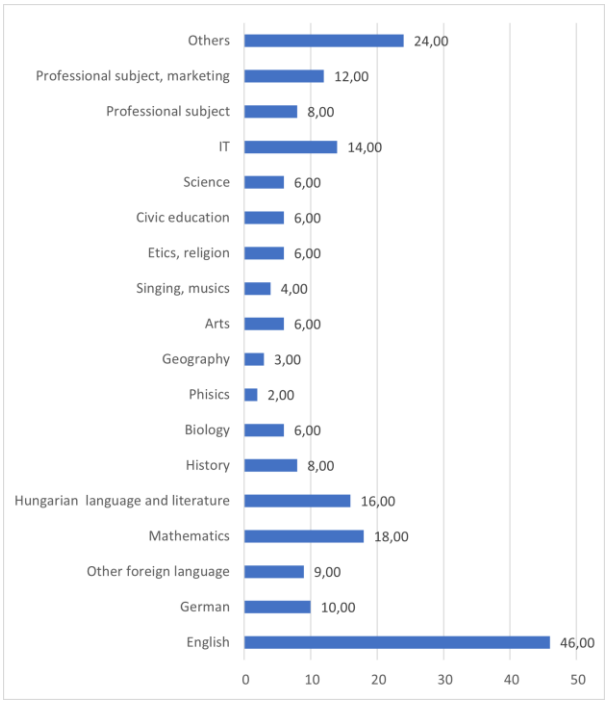








2. Figure: Subjects (N=204)

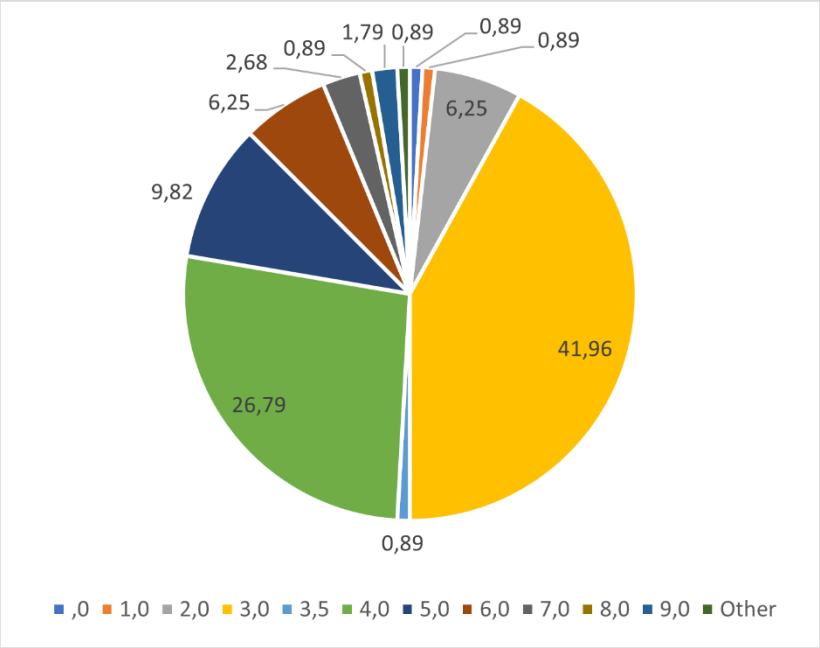


Note: It was typical for a teacher to teach multiple subjects.

According to the figures, the participation in Hungary among the respondents is decisive. High schools with 300-900 students (of different ages) are predominant in the survey. Most teachers have longer teaching experience and the vast majority have language skills.

The duration of digital education in two academic years

3. Figure: The duration of digital education in two academic years (2019-2020), (N=112, %)

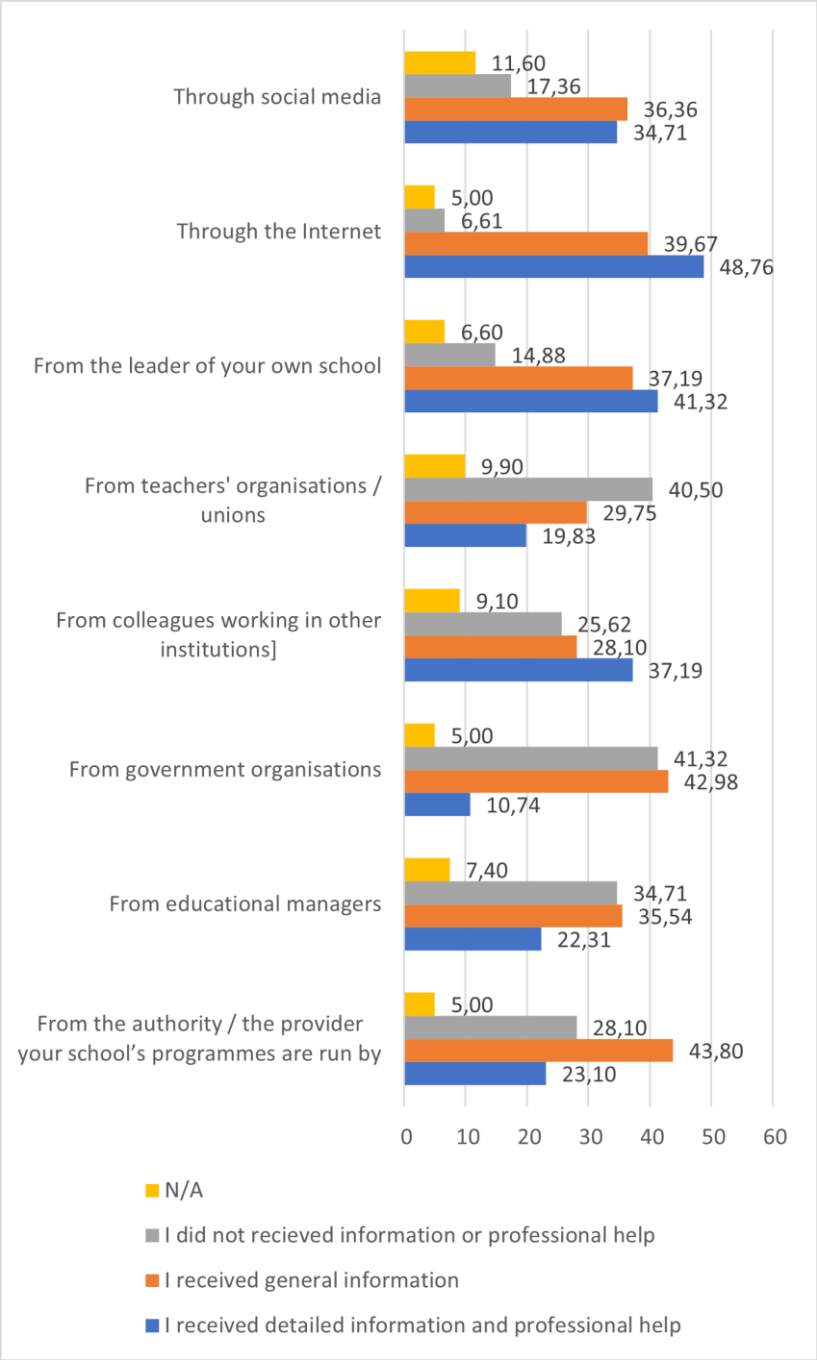


The duration of digital education varies. Looking at the averages, 4.1 months were spent in digital education in the first school year and 5.1 months in the second school year.

The beginning of digital education: information, equipment

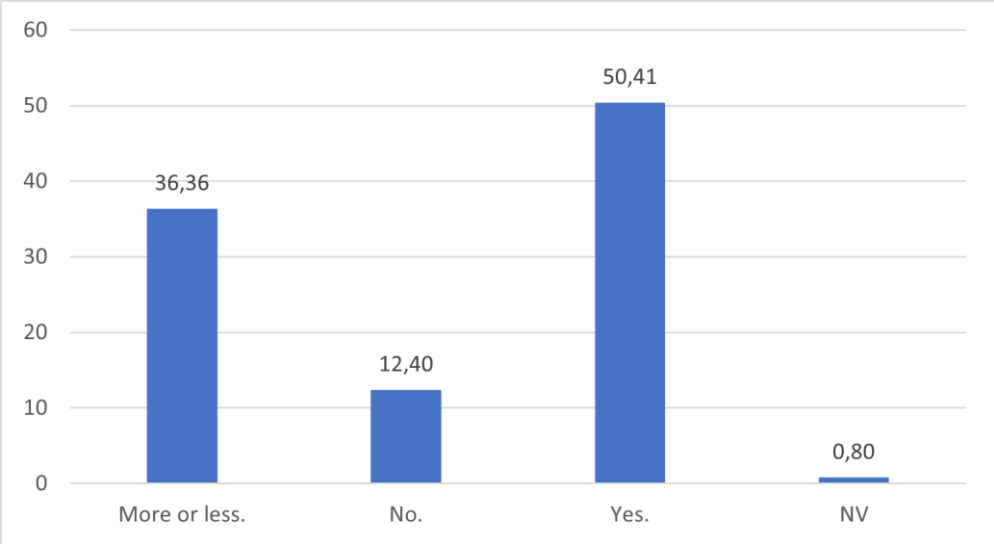
As the transition to the digital curriculum took place unexpectedly and quickly, we asked what information / preparation each participant received about the transition. We also examined whether teachers were adequately equipped at school and at home. In addition, the digital skills that educators had at the time of the transition are essential. The following illustrations provide information about these issues:

4. Figure: Upon the outbreak of the Covid-19 pandemic, did you receive any training or assistance on transitioning to digital work from any of the following channels? (N=121, %)

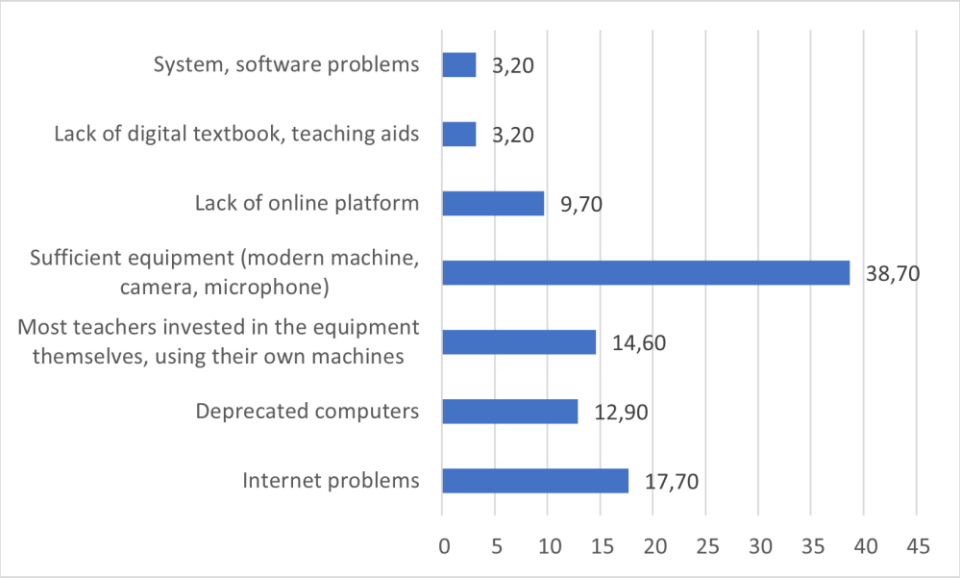


As you can see, the Internet was the main guideline in the information, in addition, the assistance of the heads of the institutions and colleagues was decisive. Respondents received general information about other locations.

5. Figure: Was your school adequately equipped with technical equipment? (N=121, %)

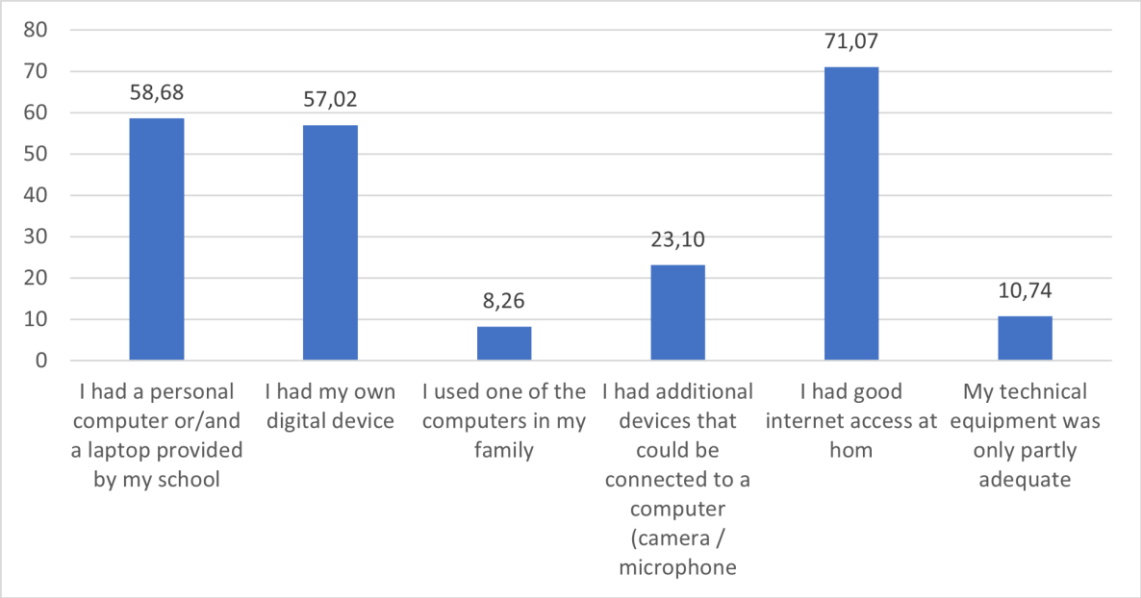


6. Figure: Type of problems (N=62, %)



Half of the respondents answered yes to the question, and a good third said that schools more or less had the tools to use digital education. The latter mentioned the lack of sufficient and modern tools as a problem.

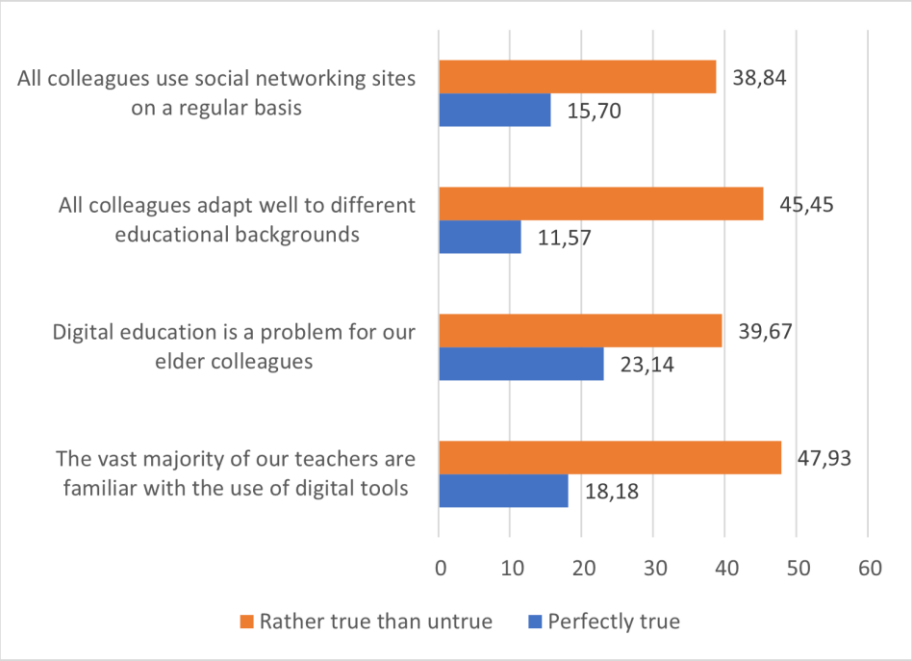
7. Figure: Did you have necessary equipment from home at the beginning of the pandemic? (N=121, %, Multiple answers)



Teacher colleagues solved digital education either with their own or with machines borrowed from school, but nearly a third had problems with the Internet.

In addition to the technical equipment, we also examined the existence of teachers' digital skills. The figure below shows a mixed picture. Among the statements, the partially true answers are more dominant. According to the data obtained, the use of digital devices was also influenced by age.

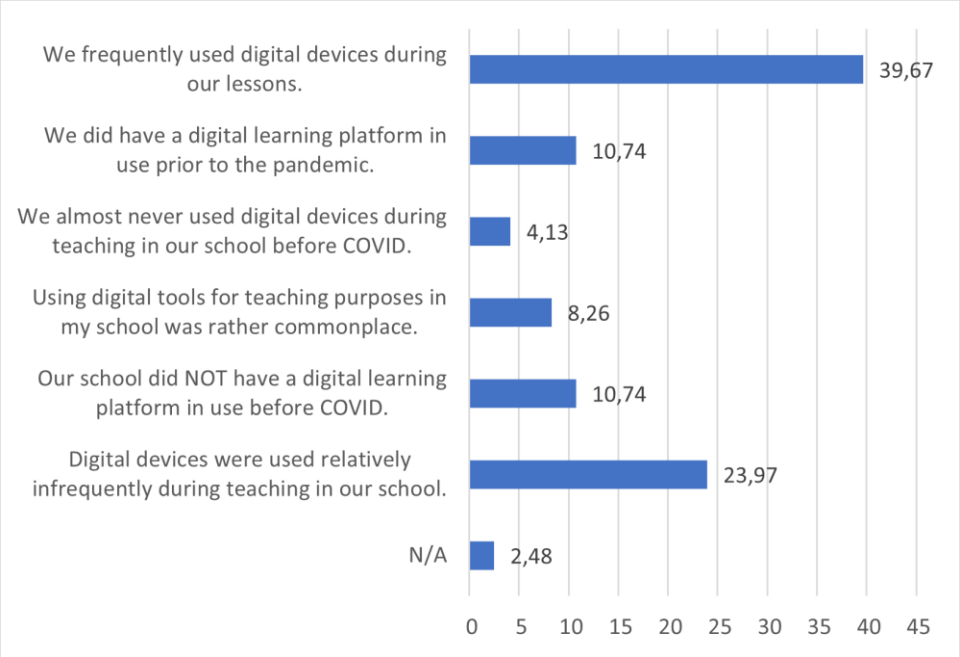
8. Figure: Are the following statements true in your school? (Perfectly true and rather true than untrue), (N=121, %)



Note: The distribution of all answers is given in the Annex.

Regarding previous digital platforms, it can be said that the majority of respondents used them more or less often, but there were also institutions where it was not or rarely used to have a unified platform.

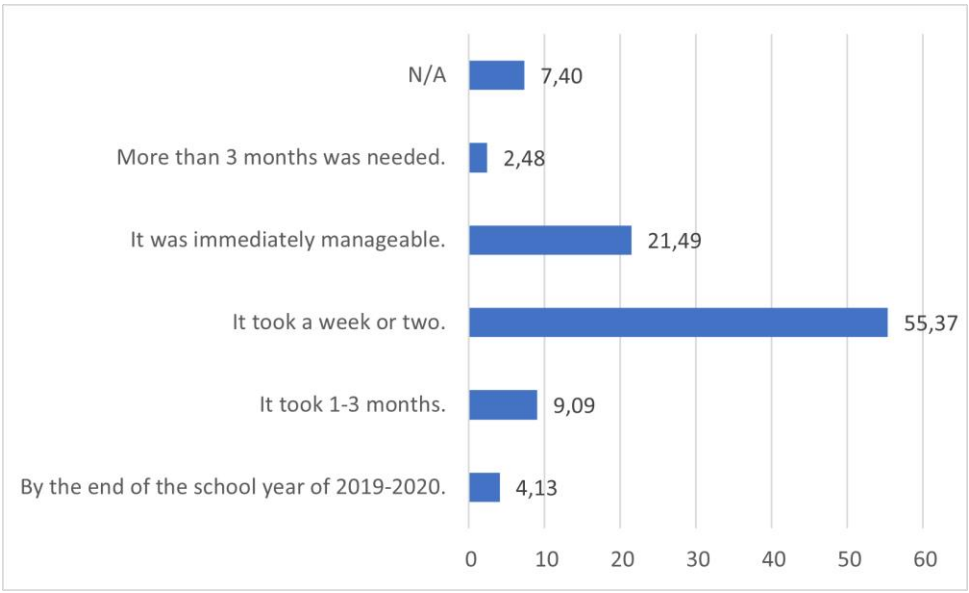
9. Figure: Did you have an official learning platform in use before Covid? (N=121, %)



Transitioning to digital education

As this was a rapid transition, we asked how long it took for the transition to digital education in the respondents ’institution.

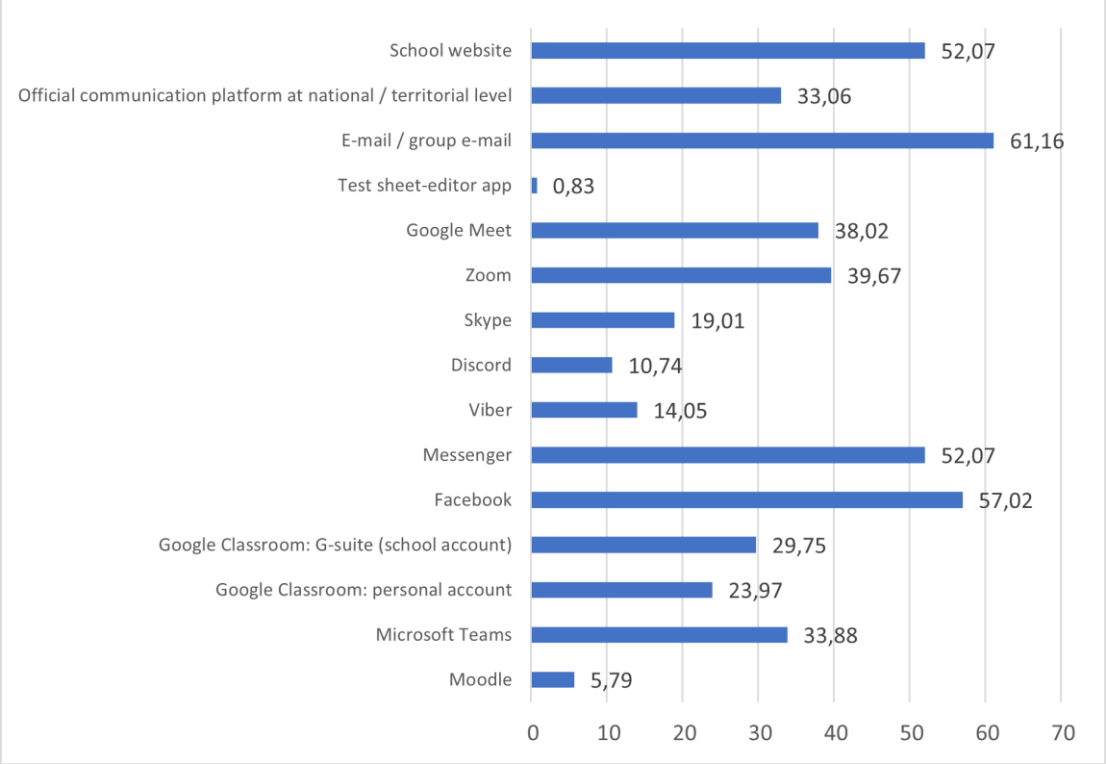
10. Figure: How long did transitioning to digital education take in your school? (N=121, %)



Three-quarters of respondents were able to switch immediately or within a week or two.

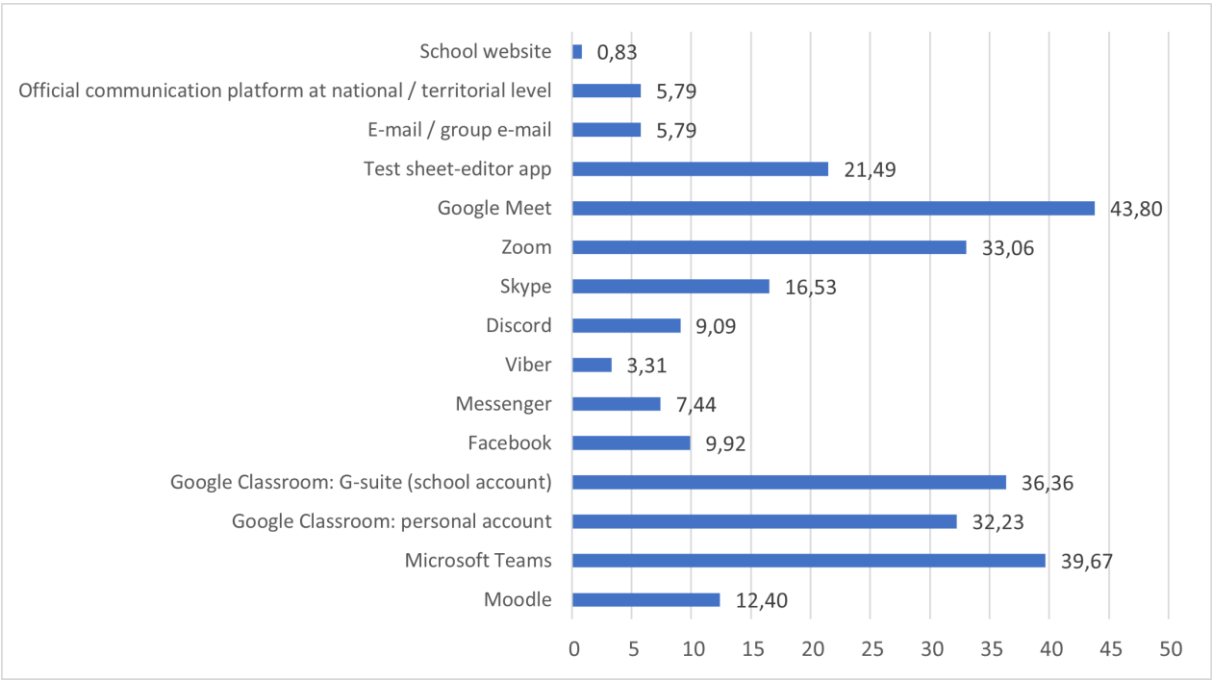
Respondents were also asked what platforms they used for communication, learning, and other purposes. The answers to the platforms used for communication and learning are presented below, the rest of the data is given in the Annex.

11. Figure: Used for communication (N= 121, %, Yes answers)



Participants most often used email, the school website, Messenger, and Facebook to communicate.

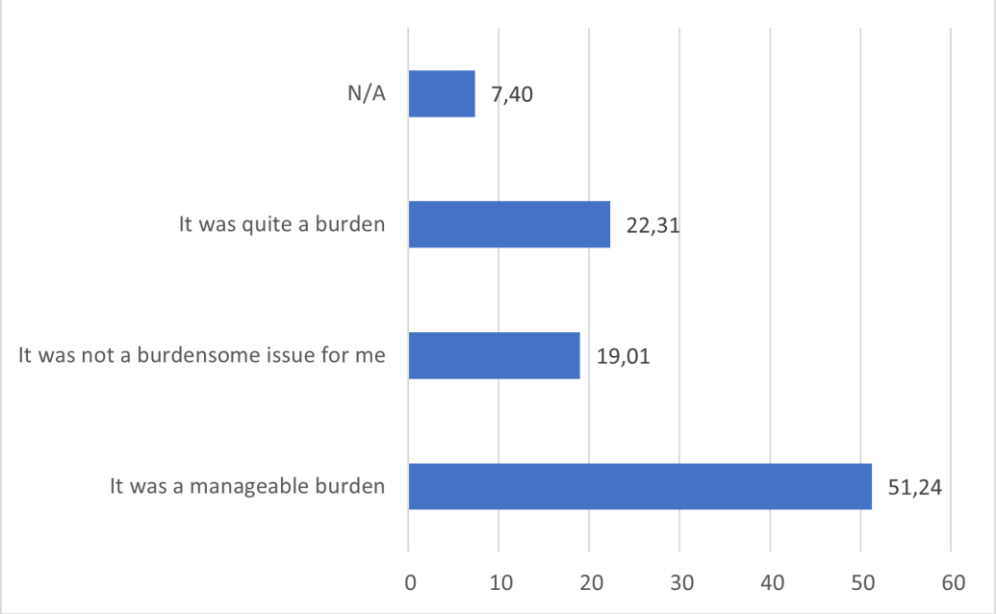
12. Figure: Used for teaching/learning tasks, (N=121, %, Yes answers)



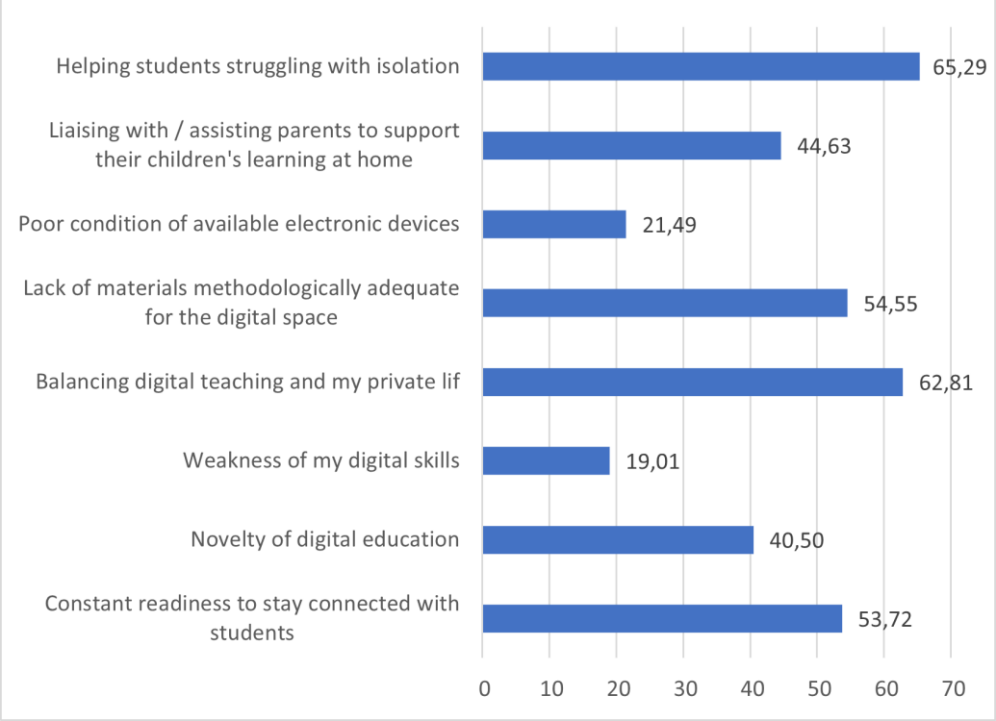
For learning purposes, most people used Google Meet, Microsoft Teams, Google Classroom.

Next, we asked participants how they personally experienced the transition to digital education, if it was a problem for them, and if so, what problems it posed.

13. Figure: How burdensome was digital transitioning for you? (N=121, %)



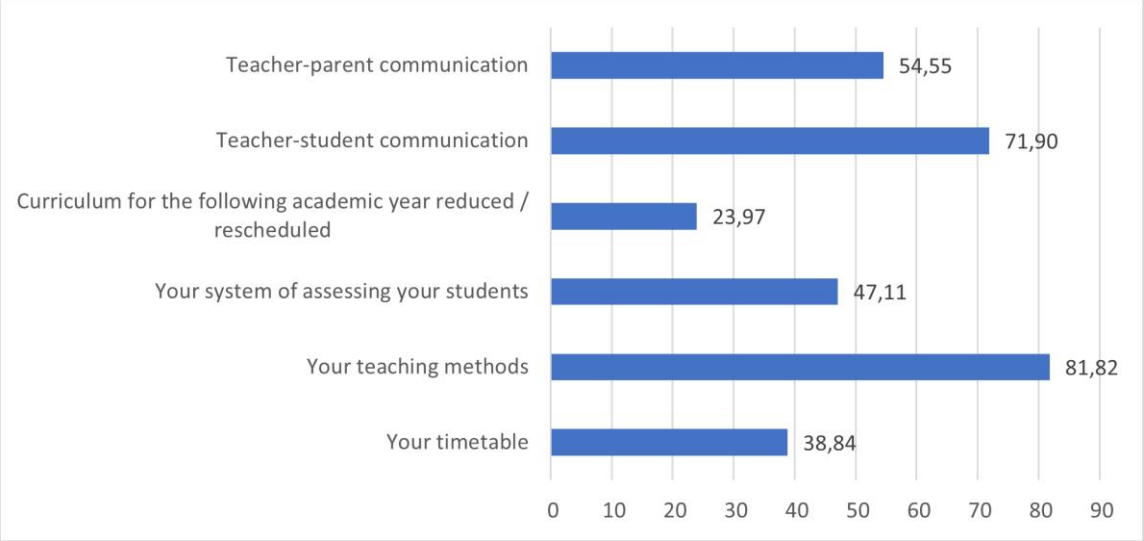
14. Figure: If you've had problems, please, specify them (Yes answers) (N=121, %)



As can be seen from the data, almost three-quarters of them had no problem or the transition was manageable. Most of those who had concerns mentioned reconciling with private life, keeping in touch with students, helping students avoid isolation, and the lack of methodological materials.

It is clear that digital education was different from attendance education, so we asked what areas teachers / schools needed to change during their teaching.

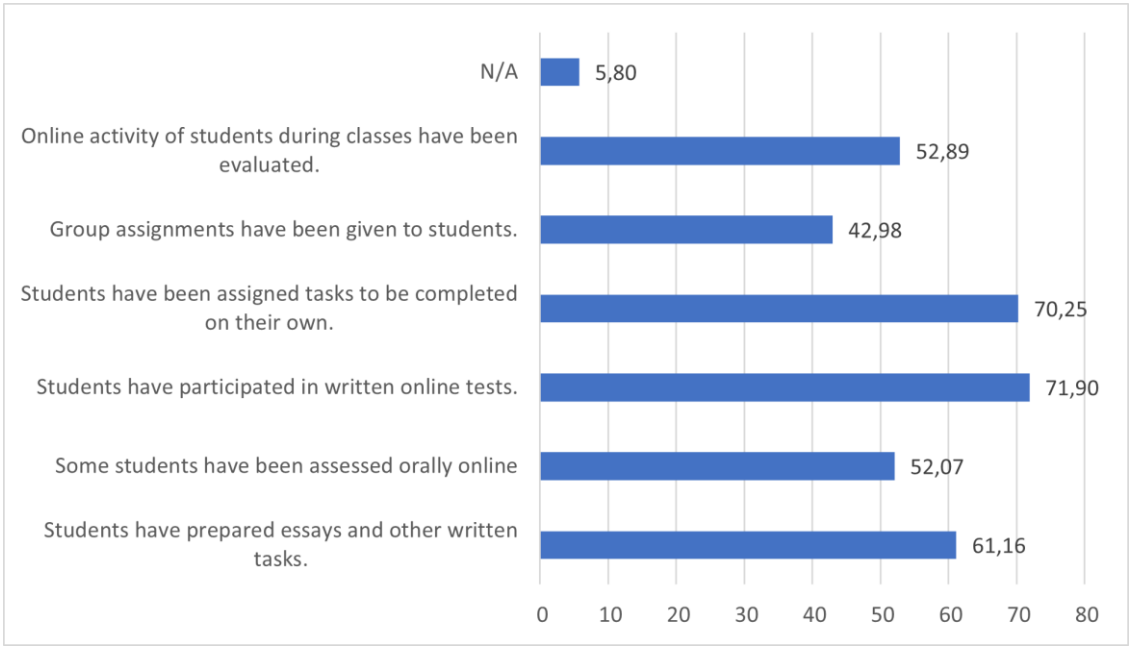
15. Figure: Have you personally or your institution changed the following in recent times due to digital education? (N= 121, %, Multiple answers)



By the way, most of them had to change the teaching methodology, the relationship with the students and the parents, but they also had to change the assessment methods significantly.

Evaluation

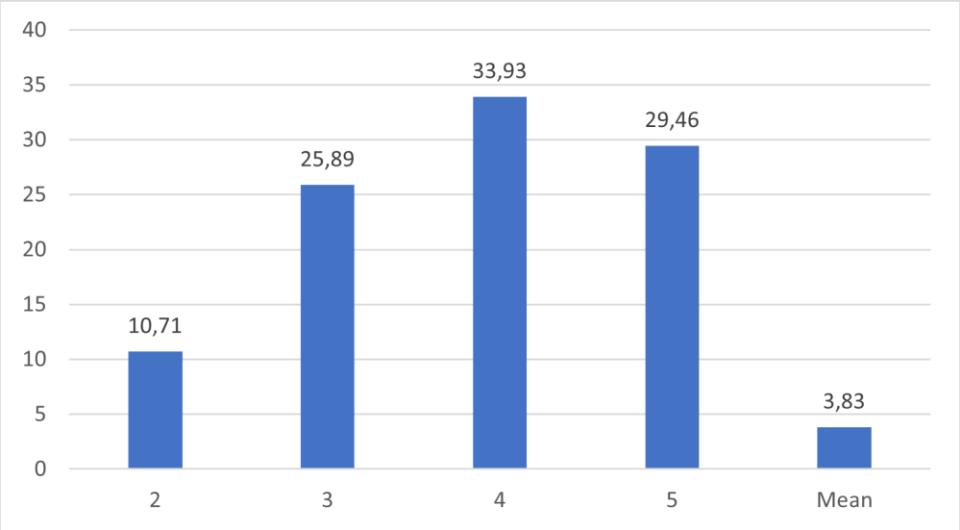
16. Figure: Please, describe how you have been assessing your students during periods of digital education since the outbreak of the pandemic? (Yes answers, N=121, %)



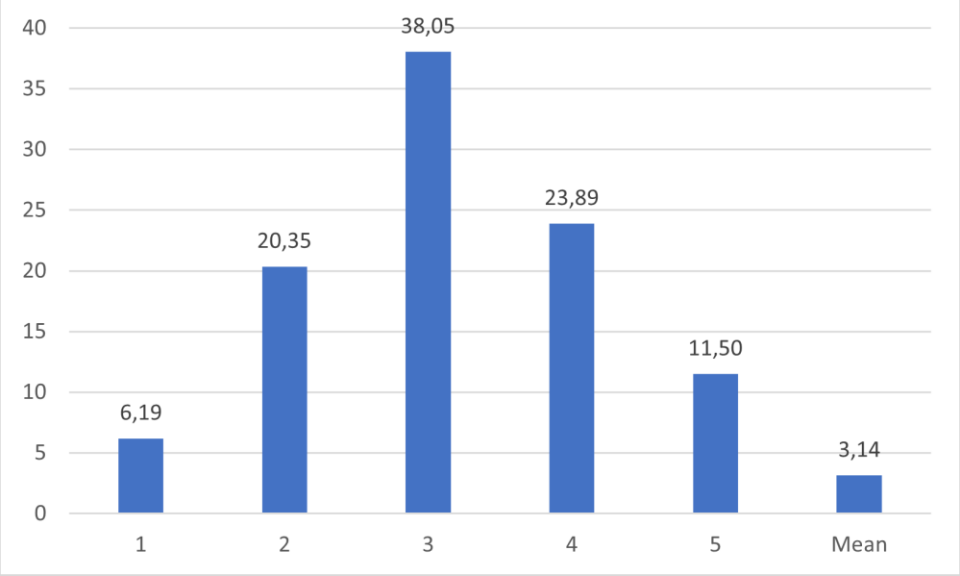
The two most common forms of assessment were individual assignments (students have been assigned tasks to be completed on their own), tests (students have participated in written online tests), and essay preparation, but teachers took into account the students' class work. they were also given group assignments, and of course there was an hourly assignment.

One of the biggest problems with digital education is the lack of schooling, the lack of community, which may have resulted in learning difficulties. Of course, the lack of isolation and cooperation could also have caused mental problems for teachers, so we asked how much of a problem this was for students and teachers. For students, this meant an average of 3.83, while for teachers we had an average of 3.14.

17. Figure: Do you think that isolation and the lack of community life have resulted in learning difficulties for some of the students? (N=112, %)

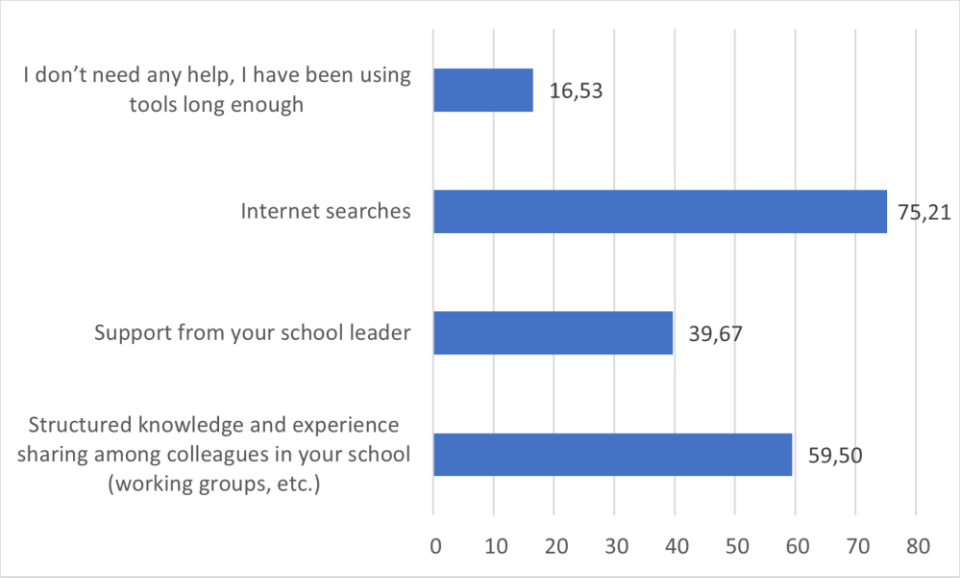


18. Figure: Do you think that your teacher colleagues have had mental problems due to isolation and the lack of collaboration? (N=113, %)



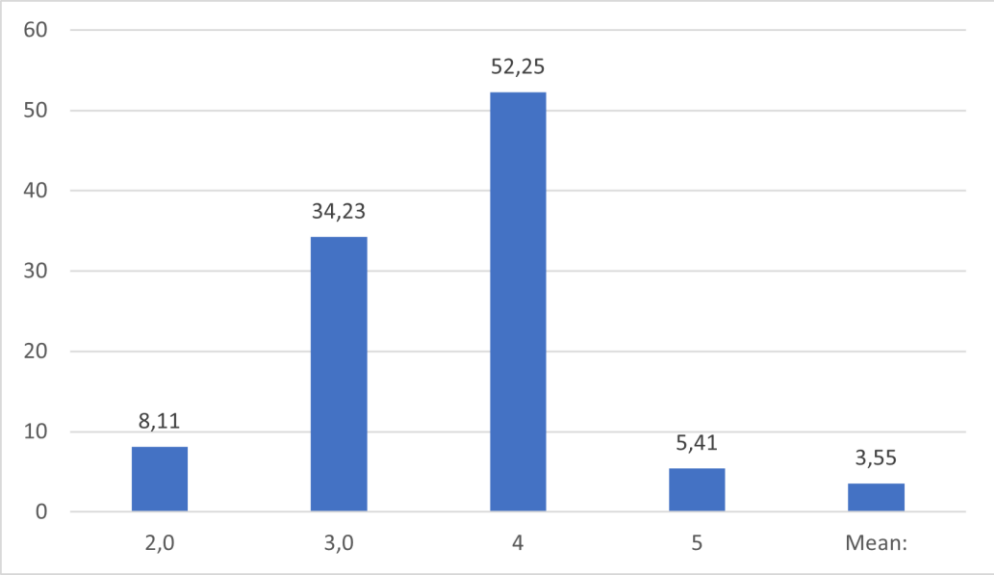
We also asked what methodological help teachers used during Covid. According to the data in the figure below, the main source was the Internet, they also took the opportunity to share their knowledge with colleagues, and some turned to the head of the institution. However, there were also teachers who did not require any help.

19. Figure: What pedagogical / methodological help have you been using? (N=121, Yes answers, %)



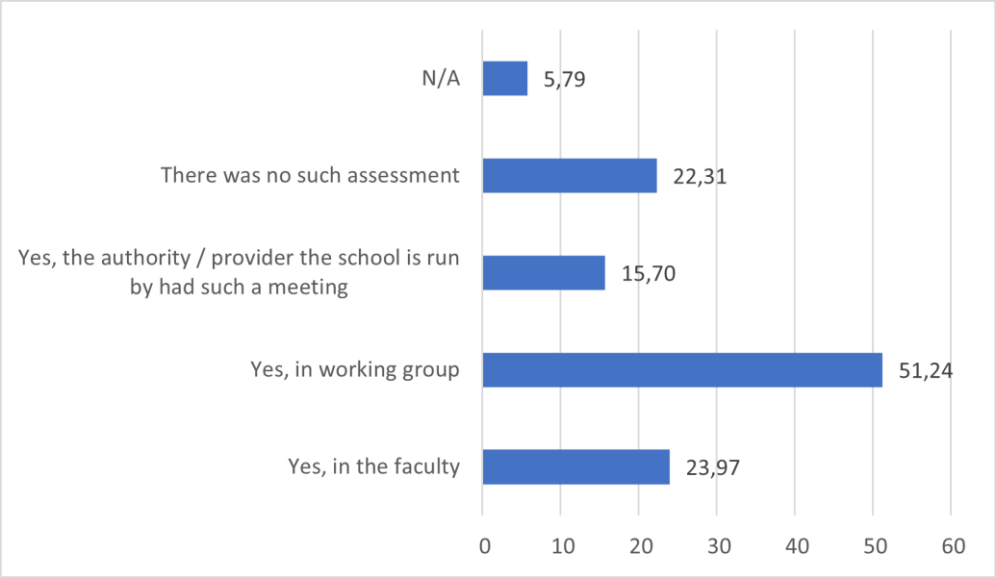
We then asked teachers to evaluate the effectiveness of their work under Covid. This was rated as an average of 3.55 by respondents.

20. Figure: How effective do you think your work was in periods of digital education since the outbreak of the pandemic? (N=111, %)



We also asked if the experience of digital education was discussed in some forum.

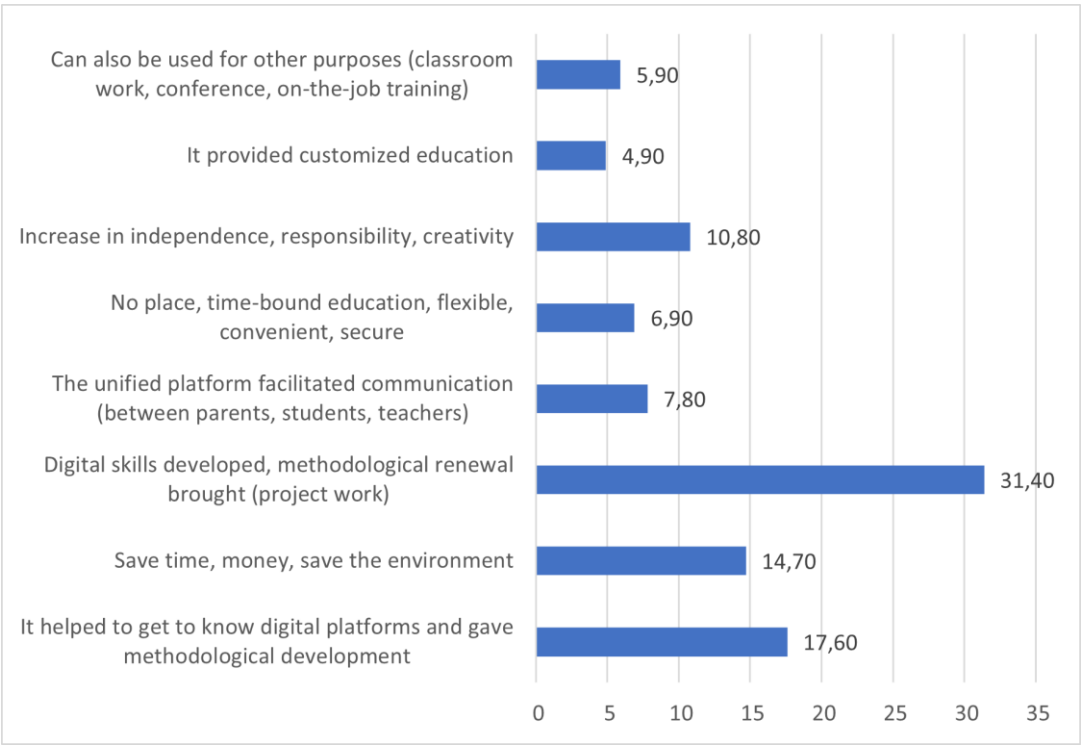
21. Figure: Has the experience of digital education been evaluated in any of the following forums? (N=121, %, Multiple answers)



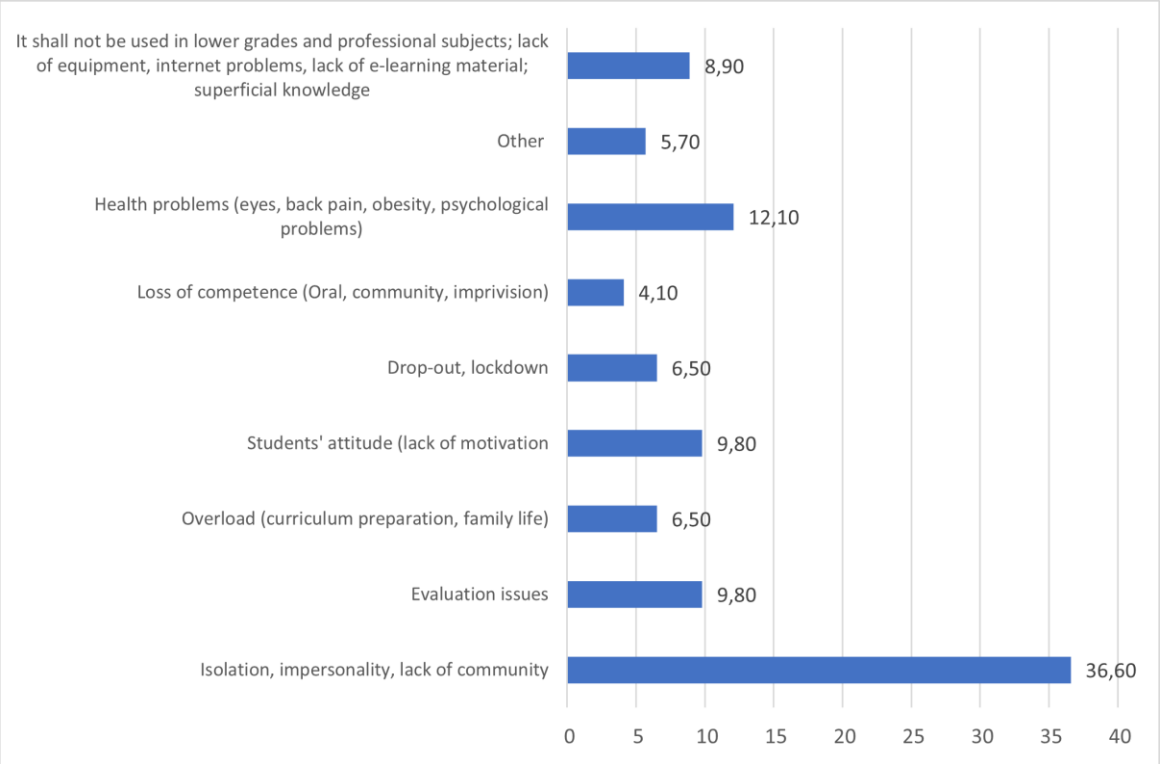
If we analyze the answers to the yes: almost a quarter of the teachers answered that there was no such assessment, but the proportion of those who discussed the issue in working groups or in a faculty meeting was high. In more than a tenth of the cases, the managing authority also initiated such an assessment.

We ourselves have asked what the pros and cons of digital education have been.

22. Figure: What benefits of digital education can you identify? (N=102, %)



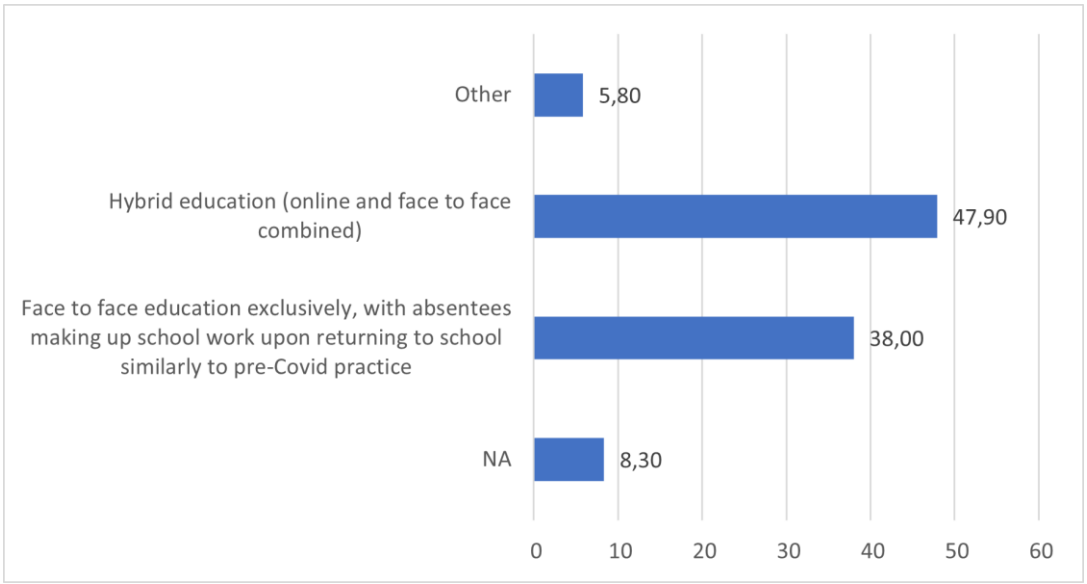
23. Figure: What disadvantages of digital education can you identify? (N= 123, %)



The most common benefits were the development of digital skills and methodological renewal, but many mentioned the practicality of digital education (saving time). Among the disadvantages, isolation, impersonality and lack of community were most often mentioned.

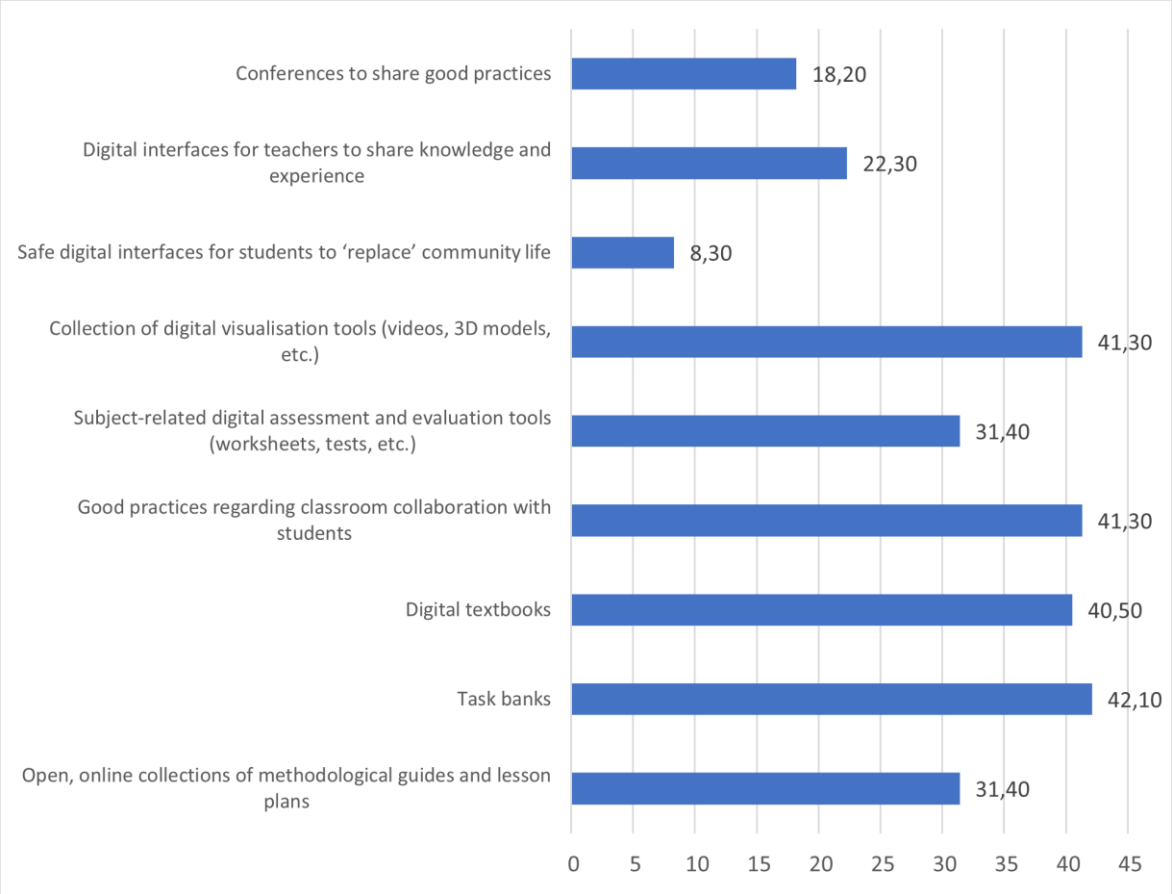
At the end of the questionnaire, we also raised what they would see as optimal in the future and what help teachers would need during their educational work.

24. Figure: What would you consider optimal for the future? (N=121, %)



Respondents would support classroom education and hybrid education, respectively.

25. Figure: What digital solutions do you think could make pedagogical work more effective in the future? (Yes answers, N=121, %)



Most would want visual aids, digital textbooks, and test banks, but would like to share good practices with them and with each other.

Summary

The transition to digital education in the last two school years has been forced by the Covid 19 epidemic. There has been a rapid shift in education: online education has taken place instead of classroom education.

In general, in the beginning, the heads of institutions did not receive central guidelines for the transition: the education managers provided only basic information and links to the heads of institutions. Thus, the task of the heads of institutions was to inform teachers, students, and parents about the issues of transition; assess the resources of the institutions and the digital skills of the participants and intervene if needed.

Research shows that in all countries, digital learning tools have been made more or less available to both students and teachers; and both institutions and maintainers have played a significant role in the development of digital skills (training). Participants in digital education could continuously count on IT help: in the institutions, IT assistants usually participated in the implementation of digital education: system administrators, IT teachers, and even students helped to solve the problems that arose.

It can be said that the transition was most successful where schools had previously participated in a digital program (Erasmus, eTwinning, Erasmus + collaborations) and where they had previously invested in digital tools (usually through tenders or government / maintenance interventions). In several cases, the government / maintainer has invested more in equipment / platforms to help with a smooth transition. In most schools, Microsoft Teams was the main platform for digital education, but Google Classroom was also mentioned.

The transition took place in a relatively short time - either immediately or within a week or two - and was a success.

The first and most important step was to reach an agreement on the platform issue within the institutions. The information obtained in different member states shows a different picture: in some member states , education management insisted on using the same platform, while in other member states the use of multiple platforms was initially allowed, but later they switched to using the same platform.

In the transition to digital education, teachers had to realize that they needed to change their methods, as well as the organization of learning and communication. Solutions varied from country to country, with some reducing the length of classes, some limiting the number of online classes to four, three of which were usually devoted to curriculum delivery and one to consultation. In many cases, the amount of homework was reduced and non-traditional forms were used in class work: the importance of the project and group work increased.

The teaching staff in the surveyed schools usually helped each other's work by sharing knowledge. Knowledge sharing was usually most common between teachers of the same subject and teachers of the same grades. Knowledge sharing has also worked internationally (E-Twinning).

The amount / availability of digital teaching materials varied from country to country: in Hungary, the proportion was initially low, while in several countries (Estonia, the Netherlands) a wide range of digital teaching materials was available (video lessons, booklets, textbooks). However, curriculum developments later took place in countries where digital curricula were initially available in relatively small quantities.

During digital education, the workload of teachers has increased: not everyone has been able to reconcile their professional and private lives properly. In some schools, efforts have been made to determine when students and parents can look for teachers: in these cases, they are less burdened by digital education.

We need to mention the lack of a "presence" in digital education as a significant problem. This caused problems both for teachers (isolation, lack of community) and for teachers and students during the learning process (lack of interaction).

An additional problem with online education was that new tools had to be found to evaluate students 'work, as it was not always possible to realistically show how much of the student's own work and added help was realized in the form of family support or student collaboration. In any case, teachers tried to use a wider range of questions for the exam: they gave individual and group assignments, tests, essay assignments, and also assessed students 'class work. (This was confirmed by the results of both the interviews and the questionnaire research.) The role of teamwork and pair work has increased, while the role of individual work and homework has changed.

There were member states where the method of evaluation was left to schools, and there were those where there was central regulation on this issue. The method of assessment also changed in different waves: initially there was a member state where there was no test and grade, only textual assessment, but later the system became more flexible: teachers were free to choose how to assess for core subjects.

Our interviewees also pointed out that they were more able to measure subject knowledge and did not have adequate tools to develop logical skills.

Some school principals raised the issue of the camera: it was not always possible to keep track of whether a student was present at the class, but several opinions suggested that using the camera could violate individual rights.

In terms of the results achieved, we found differences from country to country: there were Member States where results were deteriorating and there were some where improvements were reported, although some felt that this could be explained by a milder classification.

It is typical of most Member States to assess the level of knowledge of students in order to make up for missing parts and to make students' knowledge of individual subjects more secure.

Although digital education was burdensome for all participants: teachers surveyed rated their own work and average on average 3.55.

Students 'motivation to learn shows a similar picture to that of classroom instruction in online space. Those who were motivated in the former performed well in the latter.

The main benefit of digital education is the development of digital skills. It was useful in many other things as well: it brought methodological renewal to educators, and among its other practical benefits, time management was mentioned primarily by educators.

One head of the institution highlighted as a positive effort that they were able to keep 98% of students in the education system. Parental satisfaction with the digital switchover was also high, above 80%.

However, it also had its drawbacks of the digital education: the lack of community life led to the isolation of students and can also cause health problems due to lack of exercise, constant use of the eye.

There was another aspect worth noting: children's handwriting skills deteriorated during digital education, which was a problem for graduate students as it happens in graduation writing. There were also declines in other skills: most respondents mentioned social, reading and speaking skills.

According to a heads of the institutions: digital technology has given a lot of new things that they want to continue in the future, they preserve the values of the digital switchover in school - parent communication. Nevertheless, classroom instruction is the most preferred, but hybrid instruction has also been found to be good by many respondents.

In order to spread digital education – in some member states - a rich supply of educational tools would be expected: the availability of textbooks, task banks and good practices was set as a goal. Nevertheless, the successes of digital education can be seen as a solution to an emergency. Of course, in certain situations

(workplace relocations, illnesses, competitors) maintainers intend to use it in the future, but they would clearly prefer classroom instruction and hybrid instruction.

Suggestions, recommendations

1. One respondent described digital education as a "positive crisis." This can be the starting point for future developments.
2. School closures and global epidemics remain with us, thus analysis of COVID experiences and experience-based innovation are constantly needed.
3. The previous digital transformation was not wholly reversed at the end of the COVID-pandemic. Previously created digital learning systems are currently being stored, and hybrid education experiments are underway in some schools. A full European extension of hybrid experiments will be needed to achieve a 21st century education built on the experiences of the pandemic.
4. The development of digital infrastructure should not be concentrated exclusively in schools. The BYD (Bring Your own Devices) approach should be enhanced remembering the bitter experience when much of the accumulated infrastructure was shut down in schools.
5. At the time of school closures, none of the existing digital services were able to meet the complex needs of schools. National systems (e.g. Estonian, Finnish, Hungarian) mostly collect data and facilitate stakeholder communication. Communication products (eg Zoom, Skype) are not suitable for learning support. The platforms offered to schools (Google Classroom, MS Teams) are not products built with educational logic and their main purpose is to provide cloud service. Therefore, there is a need to develop new learning platforms in Europe. Platformization is the ultimate yardstick for the school's digital transition. Without the use of a learning platform, there is no notable digital performance in schools.
6. The global platforms used during the COVID pandemic collected European learning data. In the future, either GDPR regulation for global platforms should be strengthened or genuine European platforms and cloud services should be established.
7. One of the toughest challenges for teachers during the pandemic was digital content creation. Each Member State has shown a different degree of maturity for the provision of adequate digital content. In the future, not only the development of educational digital content is needed, but also the development of task banks and assessment applications. Cooperation between European organizations, Member State governments and start-ups is also conceivable in this area.
8. In order to share the rich innovation experience of schools, horizontal learning needs to be launched. There will be a need for a European 'digital playground' where successful digital education practices can be freely given and received.
9. Previous efforts of technological development should be followed by teacher development. The pandemic has clearly demonstrated that traditional in-service teacher training has prepared teachers for the digital switchover with modest efficiency. Therefore, a new type of practice-embedded learning is needed to apply digital skills - optimally to develop hybrid learning systems in schools.

Annexes

Sample

Distribution of respondents by country (N=121, %)

	%
N/A	1,7
Austria	1,7
Cyprus	0,8
Czech	3,3
Estonia	0,8
Hungary	76,9
Lithuania	1,7
Luxembourg	2,5
Malta	3,3
Poland	0,8
Portugal	2,5
Romania	1,7
Serbia	1,7
Turkey	0,8

Respondent institutions

- Agrupamento de Escolas de Pedome
- Agrupamento de Escolas de Santo André, Santiago do Cacém
- Alytus Dzukija School
- Andrássy György Katolikus Közgazdasági Technikum, Gimnázium és Kollégium Eger
- Arany János Reformed Grammar School
- Avastetői Általános Iskola és Alapfokú Művészeti Iskola
- B POTAMOS GERMASOGEIAS
- Baksay Sándor Református Gimnázium és Általános Iskola
- Bartus Éva Tünde
- BÉKÉSCSABAI SZC SZÉCHENYI ISTVÁN BILINGUAL TECHNICAL SCHOOL OF ECONOMICS AND STUDENT HOSTEL
- BGéSZC Szily Kálmán Technikum és Kollégium
- Bp. XIII. Ker. Pannónia Német Nemzetiségi Kétnyelvű és Angol Nyelvet Oktató Általános Iskola
- Bp. XVI. Táncsics Mihály Ált. Isk. és Gimnázium
- BSZC Kalocsai Dózsa György Tecnikum és Kollégium
- BSZC Széchenyi

- Budapest II. Kerületi II. Rákóczi Ferenc Gimnázium
- Budapest VI. Kerüeti Derkovits Gyula Általános Iskola
- Budapest XIII. Kerületi Vizafogó Általános Iskola
- Budapesti Gazdasági SZC Széchenyi István Kereskedelmi Technikum
- Csongrádi Batsányi János Gimnázium és Kollégium
- Debreceni Vörösmarty Mihály Általános Iskola és AMI
- DSZC Bethlen Gábor Közgazdasági Technikum
- Dunakeszi Radnóti Miklós Gimnázium
- Egri Dobó István Gimnázium
- ELTE Radnóti Miklós Gyakorló Általános Iskola és Gyakorló Gimnázium
- Érdi Kőrösi Csoma Sándor Általános iSKOLA
- Érdi Szakképzési Centrum Százhalombattai Széchenyi István Technikum és Gimnázium
- Fazekas Mihály Practical Primary and Secondary School of Budapest
- Fóti Fáy András Általános Iskola
- Fóti garay János Általános Iskola
- Gamási Általános Iskola
- Gimnazija "9.maj"
- Gyöngyösi Berze Nagy János Gimnázium
- Gyulai SZC Harruckern János Technikum, Szakképző Iskola és Kollégium
- Hodmezovasarhelyi Szakkepzesi Centrum Corvin Matyas Technikum es Szakkepzo Iskola (Hodmezovasarhely Vocational Training Centre, Corvin Matyas Secondary Technical School)
- Hőgyes Endre Gimnázium
- Hunfalvy
- İHSAN ERTURGUT
- II. Rákóczi Ferenc Katolikus Általános Iskola, AMI, Óvoda
- Irinyi János Református Oktatási Központ
- Jerónimo Emiliano de Andrade Secondary School
- Karinthy Frigyes Gimnázium
- Kecskeméti SZC Kada Elek Technijum
- Kossuth Lajos Evangélikus Általános Iskola és AMI
- Könyves Kálmán Általános Iskola és AMI Kaffka Margit Általános és Alapfokú Művészeti Tagiskolája
- Kunszentmártoni Városi Általános Iskola és Alapfokú Művészeti Iskola
- LPEM
- Lycée Aline Mayrisch Luxembourg
- Lycée classique de Diekirch
- Mátyás Király Gimnázium
- Miskolci SzC Bláthy Ottó Villamosipari Technikum
- MMSZ Esterházy Miklós Technikum és Kollégium
- Narva College of the University of Tartu
- Nyíregyházi Bem József Általános Iskola
- Nyitott Ajtó Baptista Szakképző Iskola, Középiskola, ÁLtalános Iskola, Óvoda, Szakiskola és Kollégium
- Óbudai Árpás Gimnázium
- Olad, Secondary Technical School
- Olga Milosevic Primary School.
- Orchidea Magyar-Angol Két Tanítási Nyelvű Óvoda, Általános Iskola és Gimnázium
- OVMÁI Rákócziteleپi Tagintézménye
- Pedagógiai Szakszolgálat
- Piarista Iskola
- Pilisvorosvari Templom Teri Nemet Nemzetisegi Altalanos Iskola
- Premontrei Szakgimnázium, Technikum és Kollégium
- Primary school
- Prügyi Móricz Zsigmond Általános Iskola

- PTE Gyakorló Általános Iskola és Gimnázium
- Rabat Primary
- Sárvári Tinódi Gimnázium
- Scoala Gimnaziala "Sámuel József"
- Semmelweis Egyetem Pető András Gyakorló Általános Iskola
- Solymári HUnyadi Mátyás Német Nemzetiségi Általános Iskola
- St Joseph School Sliema
- St Margaret College Vittoriosa Primary
- Střední odborná škola podnikání a obchodu, s. r. o. Prostějov
- Střední průmyslová škola Emila Kolbena Rakovník, p. o. (in English: Emil Kolben High Technical School Rakovnik)
- Százhalombattai Arany János Általános Iskola és Gimnázium
- Széchenyi istván
- Szegedi Radnóti Miklós Kísérleti Gimnázium
- Szegedi SZC Móravárosi Szakképző Iskola
- Szegedi SZC Vedres István Technikum
- Szegedi Tömörkény István Gimnázium és Művészeti Szakgimnázium és Technikum
- Szent Imre Katolikus Általános Iskola és Háromkirályok Óvoda
- Szent Miklós Görögkatolikus Általános Iskola
- Szent Miklós Görögkatolikus Iskola és Óvoda
- Szentendrei Református Gimnázium
- Szerencsi Szakképzési Centrum Sátoraljaújhelyi Kossuth Lajos Technikum, Szakképző Iskola és Gimnázium
- Szerencsi SzC Tokaji Ferenc Secondary School
- Szerencsi SZC Tokaji Ferenc Technikum, Szakgimnázium és Gimnázium
- Szkoła Podstawowa 336 in Warsaw.
- Szolnoki Szakképzési Centrum
- Szolnoki Szakképzési Centrum Rózsa Imre Technikum
- Szolnoki SZC Kereskedelmi és Vendéglátóipari Technikum és Szakképző Iskola
- Szolnoki SZC Pálfy-Vízügyi Technikum
- Technikum
- Technikum, Szakképző Iskola és Kollégizm
- Thomas Mann Gymnasium
- Total
- TU Wien
- University of Szeged
- Váci Madách Imre Gimnázium
- Váci Szakképzési Centrum Boronkay György Műszaki Technikum és Gimnázium
- Vas Megyei Szakképzési Centrum Hefele Menyhért Szakképző Iskola
- Vas Megyei Szakképzési Centrum Kereskedelmi és Vendéglátói Technikuma és Kollégiuma
- Vas Megyei SZC Kereskedelmi és Vendéglátó Technikum és Kollégium
- Verseghy Ferenc Gimnázium
- Vilniaus Aleksandro Puškino gimnazija
- VMSZC SÁRVÁRI TURISZTIKAI TECHNIKUM
- VMSZC Secondary Technical School of Catering, Tourism and Commerce
- Vocational Secondary School
- Volksschule Waltendorf
- Zakladni skola a materska skola Pisek, prispevkova organizace

Type of school (N=121, %)

	%

Other	16,5
primary school	25,6
secondary school	56,2
N/A	1,7

Other

- kindergarden, Primary, secondary
- primary school
- primary and secondary school
- primary and secondary school, practice school
- high school
- Higher Education Institution
- összetett köznevelési intézmény
- Pedagógiai Szakszolgálat
- szakiskola
- technical school
- Technical University
- technikum 9-13.
- többcélú szakképző
- University College
- vocational school

Number of students in your institution (N=121, %)

	%
100-300	18,2
301-600	34,7
601-900	33,9
901-	9,9
N/A	3,3

Age group you teach

	%
13-14 years old	6,6
15-18 years old	42,1
Other	51,2

Other

- 10-11 years old
- 10-12
- 10-14
- 10-15

- 10-18
- 11-14
- 11-18
- 12-18
- 12-19
- 13-19
- 13-20 év
- 14-19
- 14-20
- 14-20 years old
- 14-21
- 14-22
- 14-24
- 15-
- 15-20
- 15-25
- 18 - 28
- 18-
- 19-20
- 19+
- 2y 9 months - 11 yrs
- 3-18
- 6 - 14
- 6-10
- 6-11
- 6-14
- 6-15
- 6-18
- 6-19
- 7-11
- 7-12
- 7-14
- 7-9
- 7to14
- 8-12
- 9-10
- 9,10
- HoS

You have been in the profession for: ..... years % (N=121)

	%
1-5 years	5,8
6-10 years	5,0
11-15 years	14,9
16-20 years	9,1
21-30 years	46,3
more than 30 years	18,2
NA	0,8

Subjects

- Administration
- Állampolgári ismeretek, Történelem és társadalom ismeret, Etika
- angol
- angol nyelv

- Angol nyelv
- angol, etika
- Angol, matematika
- biológia
- Biológia-környezettan (környezettechnika, hidrológia, hidraulika)
- Biology
- Computer, Product and production,
- digitális kultúra, informatika, biológia-egészségtan
- drama, ethics, hungarian language and literature
- EFL
- Egészségügyi szakmai tantágyak Szociális szakmai tantágyak
- Eglish
- ének-zene
- English
- English and Hungarian subjects (Language, Literature and Maths)
- ENGLISH and P.E.
- English as a 2nd language
- English as a foreign language
- English as a Foreign Language
- English as a Second Language
- English Citizenship
- English Civilization
- English History
- English language
- English Run international international projects
- English, German
- English, Computer studies
- English, German
- English, Marketing, Commerce
- English, Maths
- English, professional subjects, CLIL
- English, Russian
- English/Art/Religion
- faipari szakmai elméleti tantárgyak (anyagismeret, bútoripari szakrajz
- Faipari szakmai tantárgyak
- Foglalkoztatás II, Munkajogi alapismeretek
- földrajz, művészettörténet, természetismeret
- frensh language, headtheeacher
- Geography, Social Studies
- German, English
- German, English, Maths, Sports, Art, Biology, Society, Musik,
- German, History, Critical Thinking, Art
- german, mathematics
- Hardware, Application Software
- Head of School. Used to teach basic subjects (Maths/English/Maltese) along with Religion, Social Studies, Science and Physical Education
- history
- hungarian language and literature
- Hungarian literature and language, English
- I am the Head of school
- ICT
- Informatika
- Informatika: - Hálózatok I. - Informatikai és távközlési alapok II.
- IT, Art&Craft
- Italian, Spanish
- Komplex gyógypedagógiai egyéni fejlesztés
- Közlekedési szakmai tantárgyak, elsősorban vasúti közlekedéssel kapcsolatosan, illetve bármely közlekedésben az alapozó tantárgyak.
- literature, music, Hungarian grammar
- magyar nyelv és irodalom, filozófia

- magyar nyelv és irodalom, német nyelv
- magyar nyelv és irodalom, történelem
- Magyar nyelv, irodalom, testnevelés
- Magyar nyelv, román nyelv, matemetika, természettudományok, ének-zene, rajz, kézimunka, polgári nevelés,
- Magyar-olasz
- magyar, digitális kultúra
- magyar, német
- Main lecture is hold by Prof. Redlein (industrial information systems) where I support a bit. The excercise ERP-Systems is part of the course industrial information systems. I am teaching the course ERP-Systems.
- Marketing, market research, nonbusiness marketing
- matemathics, PE
- Matematica
- Matematika
- matematika, fizika
- Matematika, informatika
- matematika, magyar nyelv és irodalom, etika, technika, vizuális kultúra, környezetismeret
- math
- Math and geography
- mathematics
- Mathematics, English
- Mathematics, Physics, Chemistry, Informatics, Makerspace Projects
- Mechanics, Technical drawing, Woodworking
- Munkavállalói ismeretek, IKT projektmunka
- Német mint idegen nyelv
- Pályaorientáció
- Pedagogical
- Portuguese, English
- Programming, Computer Systems, Operating Systems, Computer Networks, Object Oriented Programming, Appliance of Computers
- SCIENCE, GYM AND GREEK IN KIDS FROM FOREIGN COUNTRIES
- Statisztika, adózás
- Szakmai tantárgyak
- Tarih,coğrafya,sosyal bilgiler,güvenli,internet kullanimi,medya okuryazarligi,girimşimcilik,rehberlik ve kariyer planlama.
- természettudomány, biológia, technika életvitel
- testnevelés
- Testnevelés angol nyelven
- testnevelés, varrószakkör
- Történelem
- történelem history
- vállalkozástan, vállalkozási ismeretek, marketing, ügyvitel, vállalkozási gyakorlat

Basic distribution

Upon the outbreak of the COVID-19 pandemic, did you receive any training or assistance on transitioning to digital work from any of the following actors or through any of the following channels? Yes answers (N= 121, %)

Training or assistance	I received delated information and professional help	I received general information	I did not recieved information or professional help	N/A
From the authority / the provider your school's programmes are run by	23,1	43,8	28,1	5
From educational managers	22,3	35,5	34,7	7,4
From government organisations	10,7	43,0	41,3	5,0
From colleagues working in other institutions]	37,2	28,1	25,6	9,1
From teachers' organisations / unions	19,8	29,8	40,5	9,9
From the leader of your own school	41,3	37,2	14,9	6,6
Through the Internet	48,8	39,7	6,6	5,0
Through social media	34,7	36,4	17,4	11,6

Others:

- eTwinnin groups and twinning partnersno
- External IT experts
- I participated in digital consultancy training in 2019.
- kolléga saját intézményben
- Meetings organised by the ICT team of the school
- Non-profit organisations in educational field
- Online courses/meetings.
- Önálló tanulás útján jöttem rá arra, melyik program, melyik feladattípus... használható az óráimon a leghatékonyabban
- personal contacts, thank to working for in-service teacher trainer institution
- Professional teacher groups in Facebook, sharing good practice with coleagues.
- Publishers
- Saját iskolám kollégáitól. MIndenki segített mindenkinek a tanárok körében.
- szakmai tankönyvkiadó digitális tankönyvei (SZEGA BOOKS, Mozaik, Oxford Kiadó, MM Publication)
- tantestületen belül egymástól
- Teams, Tempus, messenger, redmenta, forms
- We teamteached ourselves
- Webinars

At the beginning of the pandemic, if you received any training or assistance from your own institution on transitioning to digital work, in what form did it happen?

- 2020; A Neteducatio online tanári képzésén februárban vizsgáztam internetes táblajátékok és más eszközök gyakorlati használatából. 2020 márciusában bevezették az online digitális oktatást.
- Dijital öğretmen gruplari
- Egyetemi (volt évfolyamtársak) csoport beszélgetéseken keresztül
- ETwinnin groups and twinning partnersno
- External IT experts
- I participated in digital consultancy training in 2019.
- kolléga saját intézményben
- Meetings organised by the ICT team of the school
- Myself
- Non-profit organisations in educational field
- Online courses/meetings.
- Önálló tanulás útján jöttem rá arra, melyik program, melyik feladattípus... használható az óráimon a leghatékonyabban
- personal contacts, thank to working for in-service teacher trainer institution
- Professional teacher groups in Facebook, sharing good practice with coleagues.
- Publishers
- Saját iskolám kollégáitól. MIndenki segített mindenkinek a tanárok körében.
- szakmai tankönyvkiadó digitális tankönyvei (SZEGA BOOKS, Mozaik, Oxford Kiadó, MM Publication)
- tantestületen belül egymástól
- Teams, Tempus, messenger, redmenta, forms
- We teamteached ourselves
- Webinars

Was your school adequately equipped with technical equipment? (N= 121, %)

	%
More or less.	36,4
No.	12,4
Yes.	50,4
N/A	0,8

*No, or more or less answers (N= 62, %; (***multiple responses are possible***)*

	%	**N**
Internet problems	17,7	11
Deprecated computers	12,9	8
Most teachers invested in the equipment themselves, using their own machines	14,6	9
Sufficient equipment (modern machine, camera, microphone)	38,7	24

	%	N
Lack of online platform	9,7	6
Lack of digital textbook, teaching aids	3,2	2
System, software problems	3,2	2

Did you have the necessary equipment for working from home at the beginning of the pandemic? Yes answers (N= 121, %)

	Yes	N
I had a personal computer or/and a laptop provided by my school	58,7	71
I had my own digital device	57,0	69
I used one of the computers in my family	8,3	10
I had additional devices that could be connected to a computer (camera / microphone	23,1	28
I had good internet access at hom	71,1	86
My technical equipment was only partly adequate	10,7	13

Are the following statements true in your school? (N=121, %)

	Perfectly true	Rather true than untrue	Not true at all	Rather untrue, than true	N/A
The vast majority of our teachers are familiar with the use of digital tools	18,2	47,9	6,6	23,1	4,1
Digital education is a problem for our elder colleagues	23,1	39,7	7,4	26,4	3,3
All colleagues adapt well to different educational backgrounds	11,6	45,5	6,6	30,6	5,8
All colleagues use social networking sites on a regular basi	15,7	38,8	10,7	27,3	7,4

Did you have an official learning platform in use before Covid? (N=121, %, Yes answers)

Digital devices were used relatively infrequently during teaching in our school.	24,0
Our school did NOT have a digital learning platform in use before COVID.	10,7
Using digital tools for teaching purposes in my school was rather commonplace.	8,3
We almost never used digital devices during teaching in our school before COVID.	4,1
We did have a digital learning platform in use prior to the pandemic.	10,7
We frequently used digital devices during our lessons.	39,7
N/A	2,5

In the school year of 2019-2020, approximately how long has digital education affected your institution (in months)? (N=121, %)

2019		**2020**	
month	**%**	**month**	**%**
0,0	0,9	1,0	5,4
1,0	0,9	1,5	0,9
2,0	6,3	2,0	13,5
3,0	42,0	3,0	9,9
3,5	0,9	4,0	5,4
4,0	26,8	4,5	0,9
5,0	9,8	5,0	8,1
6,0	6,3	5,5	0,9
7,0	2,7	6,0	29,7
8,0	0,9	7,0	13,5
9,0	1,8	8,0	5,4
Other	0,9	9,0	1,8
Mean	4,1	10,0	1,8
		12,0	2,7

2019		2020	
month	**%**	**month**	**%**
		Mean	5,2

According to your personal experience, how long did transitioning to digital education take in your school? (N=121, %)

	%
By the end of the school year of 2019-2020.	4,1
It took 1-3 months.	9,1
It took a week or two.	55,4
It was immediately manageable.	21,5
More than 3 months was needed.	2,5
N/A	7,4

How often did teachers "meet" their students online (implementation of interactive, online education)? (N=121, %)

	%
Daily	62,8
Every two to three days	19
Once a week	6,6
Other	3,3
We did not "meet" students online	1,7
N/A	6,6

Others:

- 2020_2021:Every two to three days
- amikor szükség volt rá, értekezletek havonta
- block course
- depending on their timetable

What digital platforms / apps have been used in the recent period in your school? What exactly have they been used for? (multiple responses are possible; yes answers) (N=121, %)

Learning management systems and planning apps for teaching	Used for communication	Used for teaching/learning tasks	Used for testing purposes	Used for other purposes
Moodle	5,8	12,4	5,0	3,3
Microsoft Teams	33,9	39,7	24,8	20,7
Google Classroom: personal account	24,0	32,2	13,2	8,3
Google Classroom: G-suite (school account)	29,8	36,4	20,7	11,6

Others:

- Canvas
- CANVAS for teaching/learning tasks, testing purposes ZOOM for communication
- CAnvas was used for communication, teaching/learning tasks and for testing purposes
- DKT (Digitális Kollaborációs Tér), a KRÉTA modulja.
- E-kreta- communicate with parents, give homework, communicate with colluages and tbe headmaster
- Edmodo
- EduPage
- elektronikus napló (KRÉTA)
- email
- face
- Facebook and SMS was used to communicate with parents. Now we are using more Microsoft Teams in stead of Facebook.
- Facebook,Messenger group
- Google Slide
- Kahoot, Redmenta, Jambord, Mindmap, Doodle
- Kréta
- Learningapps, Wordwall,Learn English Teens, Learn English Kids, English4you
- Many more platforms were also used for different purposes.
- meet
- Messanger
- national platform EMA
- O365 Tools: MS Forms, Sharepoint; Outlook etc..
- PADLET
- redmenta
- Redmenta
- Redmenta, Kahot
- Redmenta, Quizizz
- Skype
- Tanártól függő, kötelező egységes a teams Én: liveworksheets, learningapps, redmenta, quizlet, quizziz, wordwall, mentimeter,
- Testing wasn't really successful in this period.
- Used for classes: bigbluebutton
- We used also "Bakalari" school system, common in our Country, for sending messages and duplex communication with students and parents.
- Zoom

Social media and messaging apps	Used for communication	Used for teaching/learning tasks	Used for testing purposes	Used for other purposes
Facebook	57,0	9,9	0,8	9,1
Messenger	52,1	7,4	0,8	5,8
Viber	14,0	3,3	0,8	3,3
Discord	10,7	9,1	0,8	1,7

Others:

- Facebook csoportokat hoztam létre.
- Google classroom
- Instagram lives were used for classes
- Instagram WhatsApp
- KRÉTA
- Meetings
- Messenger
- Presentation, informations
- skype
- Tamo jel- ournal
- We used official platforms.
- Whatsapp
- WhatsApp
- WhatsApp, only by small number of teachers.
- Whatsapp, Signal
- Zoom

Video conferencing platforms and apps	Used for communication	Used for teaching/learning tasks	Used for testing purposes	Used for other purposes
Skype	19,0	16,5	4,1	2,5
Zoom	39,7	33,1	6,6	10,7
Google Meet	38,0	43,8	15,7	7,4

Others:

- Facetime
- jitsi.meet
- Microsoft Teams
- Moodle
- MS Teams Meeting
- teams
- Teams
- TEAMS
- We used MS Teams for communication and online lessons.
- Webex

Test sheet editor apps, e-mail, school website, others

	Not used	Used for communication	Used for other purposes	Used for teaching/learning tasks	Used for testing purposes	N/A
Test sheet-editor apps, namely	24,0	0,8	-	21,5	33,9	19,8
E-mail / group e-mail, namely:	16,5	61,2	1,7	5,8	-	14,9
Official communication platform at national/territorial level	32,2	33,1	2,5	5,8	-	26,4
School website	17,4	52,1	16,5	,8	0,8	12,4
Others	35,5	4,1	1,7	1,7	1,7	55,4

Test sheet editor apps, namely:

- Canvas
- Canvas, Learningapps.org, redmenta.com
- Forms, Google Foms, Quizizz, Redmenta
- Google Classroom
- Google Forms
- Google Forms Kahoot Mentimeter Quizizz
- Google Forms, Redmenta
- Google űrlapok, REDMENTA,
- Kahoot, Learningapps
- Learning apps
- Live worksheet, Teachermade, Google Form
- Liveworksheets
- Liveworksheets, Wordwall, Learning apps, Edpuzzle
- Microsoft Forms
- Microsoft forms Google forms Kahoot Quizizz
- Moodle, Kahoot, Wordwall, Redmenta
- MS Forms, One Note, Word via Sharepoint
- MS Word, MS Publisher etc.
- redmenta
- Redmenta
- Redmenta, Forms
- Redmenta, Google Forms
- Redmenta, Google űrlap
- Redmenta, Kahoot, Google Űrlap, Microsoft Forms. Quizizz.
- Redmenta, Kahoot, Google, Jamboard
- Redmenta, Kréta
- Redmenta, Quizizz
- redmenta.com Google forms learningapps.org
- Teams, Forms, OneNote

E-mail / group e-mail, namely

- Among colleagues only.
- Automative emails were sent to students about Google Classroom Activities and tasks by Google. So they could keep track of the new tasks. However kids nowadays don't really fancy using emails.
- g-mail
- G-suit,
- Gmail

- Gmail - G Suite (school account)
- gmail (hivatalos iskolai ímélcímekkel)
- Gmail school accounts
- Google Gmail.
- Google suite for education accounts
- iskolai Google alkalmazás gmailja
- KRÉTA elektronikus napló
- mailing list
- messenger csoport
- messenger, Google meet, Skype (first time but we changed later)
- Microsoft Outlook
- Microsoft Teams
- Office365
- Our school has its own e-mail server based on Forpsi system.
- Outlook, EduPage (messages)
- with parents

Official communication platform at national / territorial level, namely:

- Bakalari
- e-Kreta
- e-Kréta
- electronic school register system
- email
- Email, public media channels.
- G-suit, KRÉTA rendszeren belül, iskolai levelezőrendszer
- gmail
- Gmail
- Google Meet
- KRETA
- Kréta
- Meet, Kréta (school system)
- Microsoft Teams
- office - mukahelyi cím
- Our institutional CooSpace system was used for communication (even before covid).
- SGE
- szakképzési centrum Outlok rendszere
- sztmi (gmail)
- TAMO, el journal.
- Teams
- The school's own e-mail system
- Webuntis
- www.edu.cz

School website:

- altisk-gamas.edu.hu
- esjea.edu.azores.gov.pt
- For announcements only.
- for News and for providing information
- for partners (not students, colleagues or parents)
- https://spsrakovnik.cz
- It was used to give information to parents.
- sharing news
- Tájékoztatás, eljárás rendek, járványügyi előírások
- Tapasztalatunk szerint a diákok nem nézik az iskola honlapját. Facebook és Instagram profilját viszont sokkal többen.
- We show news
- www.moravarosi.hu
- www.zspisek.cz

Others:

- GoToMeeting
- Kréta
- Redmenta
- Redmenta, Kahoot, LearningApps, Wordwall

How burdensome was digital transitioning for you? (N=121, %)

	%
It was a manageable burden	51,2
It was not a burdensome issue for me	19,0
It was quite a burden	22,3
N/A	7,4

If you've had problems, please, specify them! Yes answers (N=121, %)

	Yes
Constant readiness to stay connected with students	53,7
Novelty of digital education	40,5
Weakness of my digital skills	19,0
Balancing digital teaching and my private lif	62,8
Lack of materials methodologically adequate for the digital space	54,5
Poor condition of available electronic devices	21,5
Liaising with / assisting parents to support their children's learning at home	44,6
Helping students struggling with isolation	65,3

Have you personally or your institution changed the following in recent times due to digital education? Yes answers (N=121, %)

	Yes
Your timetable	38,8
Your teaching methods	81,8
Your system of assessing your students	47,1
Curriculum for the following academic year reduced / rescheduled	24,0
Teacher-student communication	71,9
Teacher-parent communication	54,5

Others:

- teacher-teacher communication

Please, describe how you have been assessing your students during periods of digital education since the outbreak of the pandemic? Yes answers (N=121, %)

	Yes
Students have prepared essays and other written tasks.	61,2
Some students have been assessed orally online	52,1
Students have participated in written online tests.	71,9
Students have been assigned tasks to be completed on their own.	70,2
Group assignments have been given to students.	43,0
Online activity of students during classes have been evaluated.	52,9
N/A	5,8

Others:

- Gamification (students learned certain point for various task)

Do you think that isolation and the lack of community life have resulted in learning difficulties for some of the students? To what extent has this been apparent in your school? (N=112, %)

	%
2	10,7
3	25,9
4	33,9
5	29,5
Mean	**3,83**

Do you think that your teacher colleagues have had mental problems due to isolation and the lack of collaboration? To what extent have you experienced this in your school community? (N=113, %)

	%
1	6,2
2	20,4
3	38,1
4	23,9
5	11,5
Mean	**3,14**

What pedagogical / methodological help have you been using? multiple answers are possible (N=121, %)

	Yes
Structured knowledge and experience sharing among colleagues in your school (working groups, etc.)	59,5
Support from your school leader	39,7
[Internet searches	75,2
I don't need any help, I have been using tools long enough	16,5

How effective do you think your work was in periods of digital education since the outbreak of the pandemic? (N=111, %)

	%
2,0	8,1
3,0	34,2
4	52,3
5	5,4
Mean:	**3,55**

Has the experience of digital education been evaluated in any of the following forums? Yes answers (N=121, %)

	Yes
Yes, in the faculty	24,0
Yes, in working group	51,2
Yes, the authority / provider the school is run by had such a meeting	15,7
There was no such assessment	22,3
N/A	5,8

Others:

- As a form tutor we did SWOT analyses with parents and members of my class. (separately)
- Feedback from students and parents
- Igazgató tanári kar előtt
- Iskolán belüli tapasztalatcsere, értékelés.
- iskolaszintű felmérés
- munkaközösségi és intézményi szinten került megvitatásra
- school management
- self evaluation and the comparison of experiences of other teachers thanks to working as a teacher trainer
- We made Google Forms and write studies about
- Yes, by the school management

What benefits of digital education can you identify? (N= 102, %)

	%	N
It helped to get to know digital platforms and gave methodological development	17,6	18
Save time, money, save the environment	14,7	15
Digital skills developed, methodological renewal brought (project work)	31,4	32
The unified platform facilitated communication (between parents, students, teachers)	7,8	8
No place, time-bound education, flexible, convenient, secure	6,9	7
Increase in independence, responsibility, creativity	10,8	11
It provided customized education	4,9	5
Can also be used for other purposes (classroom work, conference, on-the-job training)	5,9	6

What disadvantages of digital education can you identify? (N= 123, %)

	%	N
Isolation, impersonality, lack of community	36,6	45
Evaluation issues	9,8	12
Overload (curriculum preparation, family life)	6,5	8
Students' attitude (lack of motivation, lag	9,8	12
Drop-out, lockdown	6,5	8
Loss of competence (Oral, community, imprivision)	4,1	5
Health problems (eyes, back pain, obesity, psychological problems)	12,1	15
Increased inequality of opportunity (e.g. lack of material equipment)	5,7	7
Other	8,9	11

What digital solutions do you think could make pedagogical work more effective in the future? Yes answers (N=121, %)

	Yes
Open, online collections of methodological guides and lesson plans	31,4
Task banks	42,1
Digital textbooks	40,5
Good practices regarding classroom collaboration with students	41,3
Subject-related digital assessment and evaluation tools (worksheets, tests, etc.)	31,4

	Yes
Collection of digital visualisation tools (videos, 3D models, etc.)	41,3
Safe digital interfaces for students to 'replace' community life	8,3
Digital interfaces for teachers to share knowledge and experience	22,3
Conferences to share good practices	18,2

Others:

- Tempus Közalapítvány: A tanulás jövője szabadegyetem
- Changing the educational system, based on cooperation of student and teachers, learning centered

What would you consider optimal for the future? (N= 121, %)

Face to face education exclusively, with absentees making up school work upon returning to school similarly to pre-Covid practice	38
Hybrid education (online and face to face combined)	47,9
Other	5,8
N/A	8,3

Others:

- depends on every situation
- face to face first. but using a VLE to support pupils who are on long sickness
- hybrid education, however face to face should be dominant
- Hybrid, de csak alkalmanként, pl. projektnapok, évfolyamelőadások
- Jelenleg is előfordul, hogy 1-1 hétig hibrid oktatásban tanítok
- Különösen a felnőtt tanulók esetében.
- személyes jelenléttel több digitális oktatási platform

Comments on the questionnaire as a whole:

- A digitális oktatás összességében sikeresen zajlott. Ez azért komoly eredmény, hiszen új utakat kellett bejárni. Iskolánkban ez a felvételi eredményeken már mérhető (nem rosszabbak a szokott feladatsorokon, mint a korábbi években). A kompetencia-mérések, PISA-eredmények stb. ezt végképp alátámaszthatják, az a véleményünk, hogy összességében (néhány előnnyel, néhány problémával) a digitális munkarend eredményes volt, néhány hibrid elemet meg is lehetne tartani.
- Hope to gain new impulses, connections and experience during the TCA!
- I got convinced that there is nothing that can fully replace face to face interactions between people, be it colleagues, family members or teachers and students. I can see several ways digital technology can assist education, for example communication within the institution has become easier and more transparent, sharing online resources with students has become a lot more convenient than before when all we had were messenger or mailing lists. But the experience (and maybe the effectiveness) of meeting physically in a classroom can by no means be compared to video conferencing. The one ultimate advantage of video conferences, namely that it can reach over long distances, does not apply in the setting of traditional schooling (in my context at least) , as students and teachers normally live in close proximity of the school.
- Mit értünk hibrednek? HIbrid, hogy egy csoporttal így is és úgy is foglakozunk - ez jó Hibrid: a jelenlévők személyesen a hiányzók online - Jó lenne, de ehhez nem adottak a feltételek, a 10 percesz szünet nem teszi lehetővé a váltást, nincsenek gépek a tantermekben.
- Nagyon fontos a középiskolás és fiatal felnőtt korban a személyes találkozás. A tanulóink elég nagy részében mentális problémákat okozott az előző 2 év. Ez elmondható a tanárokra is.
- Our articles about the 2 online periods: http://derkovits.hu/digitalis-oktatas/kerdoivek-kiertekelese-2020-junius-derko/ https://docs.google.com/document/d/1tiGwz5fh1O-Cc7hUx8PuTFG-DIa3E74ftMgZiKSN1gA/edit?usp=sharing
- Teaching has always been face to face education. Even with the development of technology, I believe the traditional way of teaching is the most effective. Being in the company of other students is a basic need for a teenager.
- The whole school system should be changed, based on the motivation of students, cooperation of teachers and students, developing competencies, more responsibility for students, creativity and cooperation of teachers, much more freedom regarding curriculum etc.
- Twenty-first century skills should be in the focus rather than learning information in chronological order about literature and history. Science subjects should involve a lot more experiments. Teachers should eb motivatied to collaborate and share good practices with each other within institutions.
- Véleményem szerint minél kevesebb a személyes kontakt pedagógus és diák között, annál rosszabb a közös munka hatékonysága. Az általános iskolai korosztály esetén nem igazán fakad belső késztetésből a tanulás.