KEEP

KEY ENGAGING EDUCATIONAL PRACTICES USED BY SECONDARY SCHOOL TEACHERS TO KEEP CONNECTED WITH THEIR STUDENTS FOLLOWING COVID-19 PANDEMIC

NO. 2020-1-FR01-KA226-SCH-095580

Transnational analysis of the practices used by secondary school teachers to keep connected with their students following Covid-19 pandemic.

Co-funded by the European Union

Project Title:	Key Engaging Educational Practices used by secondary school teachers to keep connected with their students following Covid-19 pandemic
Project Acronym:	KEEP
Project Number	0955580
Grant Agreement Number	2020-1-FR01-KA226-SCH-095580
Deliverable number	D4.1
Work Package	WP4
Work Package Leader	Université Paris-Cité
Partners	France Education International, Fondation P&V, Académie de Nancy-Metz, Université Paris-Cité, Instytut Badań Edukacyjnych, Panepistimio Patron
Dissemination level	Public
Delivery date	2023/05
Status	Final
Version	3
Author(s)	Lisa Pavlova and Emmanuelle Voulgre
List of contributor(s)	Elsa Dominguez, Lina Rivera, Evelyne Huré, Saskia de Groof, Dunia Oumazza, Marc Fedele, Aniella Lebeau, Emmanuelle Voulgre, Lisa Pavlova, Anastasia Misirli, Agnieszka Dwojak-Matras, Joanna Rabiega-Wiśniewska Katarzyna Kalinowska.
Deliverable Manager	France Education international

Table des matières

Introduction 5
Methodology 6
Limitations 6
Report Structure and Guidance for Reading 6
1. Teachers' portraits and practices overview 8
Overview of Teacher Profiles, School Environments, and Preparedness to Online Teaching 8
Subject diversity among educators in four European countries 8
Diversity in school settings 9
Student diversity and inclusion 10
Educators' experience and training in digital tools 10
Access to digital equipment and tools 10
Exploring Innovation and Effectiveness: Teachers' Perceptions of Their Practices 12
Perceived effectiveness of the practices: learning outcomes and engagement 12
Perceived innovation of the practices: novelty and learner-centred approaches 14
2. Purposeful teaching techniques - categories of engaging practices 17
Promoting Student Autonomy and Learning Agency: Strategies and Perspectives from the interviewed Teachers 17
Difference between student autonomy and learning agency. 17
Perspectives from teacher interviews 18
From instructor to facilitator: the shift in teacher's role 19
How Teachers Promote Autonomy and Learning Agency: Strategies for Enhancing Accessibility of Learning Resources and the Flipped classroom method 20
Engaging and Relevant Learning: Enhancing Student Motivation 25
Adapting Learning Content and Practices to Meet Diverse Student Needs 25
Interactive and Gamified Learning Activities for Effective Learning 27
Building Strong Connections for Enhanced Learning 29
Teacher-student communication 29
Peer Communication Among Students 30
Family Involvement 31
Assessment Practices During the Lockdown Period: Focusing on Students' Progress and Well-being 32

3. Contributing and Impeding Factors for Innovative Practices in Teaching Amidst the COVID-19 Pandemic 36
Challenges in the Transition to Distance Teaching During the Global Pandemic 36
Challenges of technological infrastructure, digital skills, and the lack of preparation time in online teaching during the pandemic 36
Organisational challenges in schools during the pandemic lockdown: a look at guidelines, training, and collaboration 39
Student-specific challenges, parental engagement, and emotional distress 40
Elements that Supported Teachers' Transition to Distance Teaching During the Global Pandemic 43
The Crucial Role of Technology, Training, and Prior Experience in Teachers' Transition to Online Teaching 43
The positive influence of peer exchange, mentorship, and institutional support on teachers' adaptation during the pandemic 44
The impact of maintaining regular communication, attention to student well-being, and parental involvement 46
The role of investment, resilience, creativity, and lifelong learning in teachers' transition to remote education during lockdowns 47
4. Conclusion 50

Introduction

As the COVID-19 pandemic induced an abrupt shift to remote education, European teachers had to ensure continuity of learning and exhibit adaptability and creativity. This upheaval required transformation of teaching practices, which are the primary focus of this analysis. This report aims to integrate data gathered from the KEEP project and its associated work packages, with an emphasis on identifying shared teaching practices and viewpoints among twenty educators across four countries. The corner point of this study is thus a transnational analysis of teaching practices implemented during lockdown and deemed innovative and effective by the teachers themselves.

This report is intended to stimulate intellectual discourse and encourage the exchange of effective teaching practices among educators. It also provides the basis for the fifth Work Package of the KEEP project, "Lessons learned and recommendations for future actions". The insights derived from this analysis can also serve to inform policymakers and guide future research investigations on the factors that contribute to the improvement of teachers' pedagogical and digital practices. This can be especially important when it comes to implementing informed decisions to maintain the learning continuity when physical attendance at school is not feasible, such as during pandemic circumstances, school closure or other scenarios that may hinder in-person learning.

The general objective of this study is to integrate data gathered from the KEEP project and its associated work packages, with an emphasis on identifying shared teaching practices and viewpoints among twenty educators across four countries. The corner point of this study is thus a transnational analysis of teaching practices implemented during lockdown and deemed innovative and effective by the teachers themselves.

The relevance of this report lies in its potential to foster dialogue and encourage the sharing of practices among educators. It also provides the basis for the fifth Work Package of the KEEP project, "Lessons learned and recommendations for future actions". The insights derived from this analysis can also serve to inform policymakers and guide future research investigations on the factors that contribute to the improvement of teachers' pedagogical and digital practices. This can be especially important when it comes to implementing informed decisions to maintain the learning continuity when physical attendance at school is not feasible, such as during pandemic circumstances, school closure or other scenarios that may hinder in-person learning.

The study focuses the teachers' perspectives on various facets of their practices. Firstly, we identify teachers' perceptions of innovation and effectiveness of their practices, shedding light on how they embraced novel approaches in their teaching amidst the pandemic. Secondly, we clarify the purposes they attributed to their pedagogical choices and their perceptions of the outcomes of the implemented methods, particularly in relation to student engagement and learning. Finally, we identify some common supporting factors that facilitated implementation of teachers' practices, as well as constraining factors encountered by the teachers.

Methodology

The methodology for this study unfolds in three steps. Step one involved analysis of portraits and transcripts of the interviews with teachers. The practices evoked within these materials were first identified and organised. The second step involved the second in-depth analysis of the transcripts from interviews and focus groups. From these transcriptions, specific phrases (units of meaning) were identified that related to the teachers' intentions behind the implemented teaching practices. We further determined units of meaning for each teacher associated with their perceptions of innovation, effectiveness, as well as hindrances and facilitators in their teaching practices. Following this, we initiated the coding process, which involved categorising the identified phrases. This step facilitated the organisation and interpretation of the collected data. The final step involved a contextual comparison of the categories established in the previous step. This comparison served to identify recurring issues in teachers' discussions. Finally, we derived conclusions from this analysis, which are shared in this report.

Limitations

This study is not without its limitations. One of the challenges was to define the scope of the 'practice'. Each teacher was allowed to define it in their own terms, which could range from a pedagogical method to a specific action highlighted in their discourse. This created a degree of variability that affected the comparability of the collected data.

The analysis was also based on the transcripts of semi-directive interviews, which inherently carried the potential for omissions and inconsistencies. Teachers might have forgotten to detail certain aspects or could have varied in their level of detail in response to the same questions.

Adding another layer of complexity, the interviews were conducted in French, Polish, and Greek, and then translated into English. This process may have led to some loss or distortion of meaning due to language differences and translation nuances.

Furthermore, the ability to conduct additional interviews or ask for clarifications was not possible due time constraints and the availability of teachers, which affected the depth and breadth of data for the analysis.

Lastly, while this study provides valuable insights into the practices of a diverse range of teachers, the findings represent just a snapshot of the broader educational landscape during the COVID-19 pandemic. This study does not offer universal conclusions and it is not representative of all teachers in the participating countries. Nonetheless, the value of this report rests in the identification of commonalities in teachers' experiences, opinions, and recurring challenges, despite the wide-ranging diversity in teacher profiles, their environments, and contexts.

Report Structure and Guidance for Reading

This report is organised in three main parts. The first part provides an overview of teacher profiles, alongside an exploration of their perceptions of innovation and effectiveness in their practices. The second part delves into the identified categories of practices employed by teachers to engage

their students during the pandemic-induced transition to remote learning. The third part examines the factors that teachers perceived as either enabling or hindering their ability to implement innovative teaching practices during the pandemic.

Although each part of the report can be read independently for specific insights, it is recommended to read the report in its entirety for a comprehensive understanding. Please note that the overarching conclusions are in the conclusion section rather than at the end of each part. This format ensures a holistic interpretation of the findings, reflecting the interconnectedness of the various aspects explored in each section.

1.Teachers' portraits and practices overview

This part of the report provides an overview of the profiles and teaching practices of twenty educators from four European countries - France, Belgium, Greece, and Poland. The purpose is to find commonalities and draw comparisons among their profiles, work environments, motivations, and teaching methods that arose during the COVID-19 pandemic, specifically focusing on the transition to online teaching.

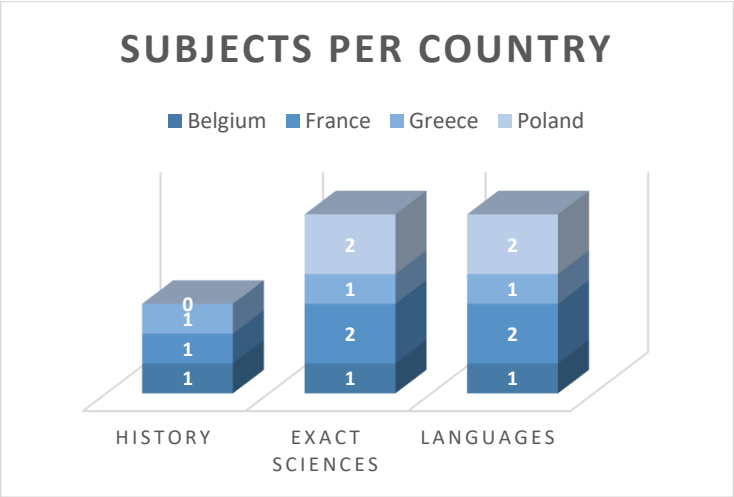
We first outline teacher profiles, their school environments, and overall readiness for the abrupt shift to online teaching. Subsequently, we explore the concepts of innovation and effectiveness, as perceived and articulated by these educators themselves.

Overview of Teacher Profiles, School Environments, and Preparedness to Online Teaching

In this section, we provide an overview of the profiles of the teachers who participated in our study, as well as a brief examination of their school environments in terms of size, pupils per class, urban/rural locations, and students' backgrounds. Additionally, we discuss the educators' experiences with teaching online and the availability of digital equipment in their respective schools.

Subject diversity among educators in four European countries

In this study, we examined the interviews of 20 educators from four European countries who adapted their pedagogical approaches amidst the pandemic. These educators came from Belgium, France, Greece, and Poland and taught diverse subjects. Collectively, the range of subjects extended to 15 distinct disciplines. History was identified as the most common subject, taught by three educators from Belgium, France and Greece. Furthermore, two French teachers share a common subject combination (History and Geography). Nine educators taught exact Science subjects, with representation from all the four countries - two from France, two from Poland, two from Belgium and two from Greece. The subjects within this category encompassed Physics, Chemistry, Mechanics, Mathematics, Science, and IT. Mathematics was a subject of instruction for three educators, with one each from Belgium, Greece, and Poland. Language studies were represented by six educators instructing in Italian, French, Dutch, Philology, Spanish, and Polish. These educators come from four countries. Other subjects included Music, Cooking and Physical Education. Overall, the broad range of subject specialisations amongst the participating teachers underscores the rich diversity of their professional profiles and areas of expertise.

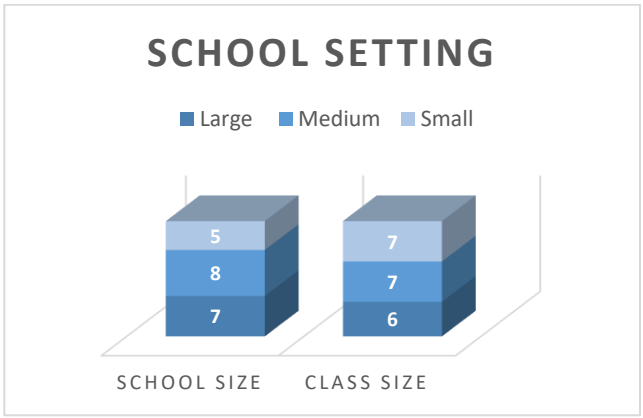


Diversity in school settings

The participating teachers in this study were employed at various schools, differing in size, number of students per class, and geographical locations. Among the twenty teachers, seven were employed at large schools with over 600 students, while eight worked at medium-sized schools accommodating 300 to 600 students. The largest school, located in a middle-class town in Wallonia, Belgium, had 2,000 students and around 100 classes in total. Conversely, five educators worked at smaller schools with fewer than 300 students. The smallest school, located in a mountainous rural region in Greece, had a total of 15 students.

Regarding class sizes, the twenty teachers were distributed across various school settings. Four teachers taught in schools with an average class size of 10-20 students, seven were employed at schools with an average class size of 21-25 students, and six worked in schools with an average class size of 26-30 students. Furthermore, two teachers were associated with schools that had an average class size of 31-35 students, while only one teacher instructed in a school with over 35 students per class. A unique case involved a Philology teacher from Greece, who taught at a school with an average class size of merely five students.

The majority of teachers who participated in the study, fifteen in total, taught in urban schools, which are typically found in densely populated areas with a high concentration of infrastructure and services. These urban schools generally have larger student populations and diverse student backgrounds. Conversely, three teachers were employed at rural schools, located in less populated areas and often featuring smaller student populations. Additionally, two teachers worked in semi-urban schools, characterised by their placement in areas with moderate population density and access to some urban amenities.



Student diversity and inclusion

The analysis of interviews conducted with twenty participating teachers highlights the diverse social and economic backgrounds of their students. Half of the teachers stated that they worked with students from various socio-professional categories, illustrating a broad spectrum of backgrounds and experiences within their classrooms.

Six teachers reported having a significant proportion of students from immigrant backgrounds, which encompassed refugees, bilingual and trilingual children, and children from immigrant families. To give an example, two teachers from France indicated that their schools had allophone units and classes dedicated exclusively to students who do not speak French.

Additionally, the presence of students with special educational needs was underscored, as four teachers acknowledged working with learners experiencing learning difficulties or disabilities or requiring specialised educational support. These learners included individuals with dyslexia, specific learning difficulties, visual disabilities, and autism spectrum disorders. This diversity in student backgrounds was linked by the interviewed teachers to the necessity for inclusive and adaptive teaching practices that consider the unique needs and experiences of each student.

Educators' experience and training in digital tools

The examination of teacher profiles uncovers a range of experience and training in online teaching and digital tools usage. Some teachers were trained and confident in employing digital tools, others had limited experience with new technologies prior to the pandemic. Out of the twenty teachers, five identified themselves as trainers or digital education experts, with three coming from Greece and two from France. Six educators reported receiving some training in digital tools before the pandemic, while five others, despite not having undergone formal training, had autonomously acquired and integrated digital practices in their classrooms. Two teachers who had completed official training also emphasised the importance of self-training for their professional development, which enabled them to use digital tools in teaching and facilitating the transition to online instruction. In contrast, four teachers had no training or experience with digital tools in the classroom or online teaching.

Despite their training and experience, many educators stressed the importance of informal learning, peer learning, and collaboration among teachers in enhancing their competencies and facilitating a smoother transition to online teaching. To illustrate this point, one of the teachers stated, “I frequently share strategies with colleagues who teach the same subjects as I do. Collaborative work promotes efficiency, motivation, and access to additional resources.” (Teacher of History and Geography, France).

Access to digital equipment and tools

Access to digital equipment and tools had a significant impact on teaching and learning during the COVID-19 lockdowns. We analysed how well were equipped teachers and their students and whether schools provided access to digital platforms to the teachers. The level of digital preparedness varied among the teachers; however, a majority (16 out of 20) reported minimal challenges related to the availability of digital equipment such as laptops or iPads for either themselves or their students. A few teachers from this group did mention initial issues with equipment during the onset of the lockdown. However, these were subsequently resolved through the assistance of various entities including the Ministry of Education, regional authorities, schools, and associations, ensuring the provision of laptops to every student in need. In contrast, four teachers faced challenges due to inadequate equipment for both themselves and their students. These teachers had to adjust their teaching strategies, modifying learning materials and considering the fact that some students could only access learning materials through mobile phones, or that their computer access was limited due to sharing with other household members. Furthermore, several teachers reported not receiving laptops from their schools, thereby necessitating the use of their personal computers for work.

Each participating teacher reported the provision of certain digital tools and resources by educational authorities or their respective schools for teaching purposes. However, the usage of these platforms was generally not mandatory. In some cases, schools adopted a single platform for all subjects, as observed in two Belgian schools that employed Teams, and two who used Smartschool. French teachers had access to the Virtual Classroom of the CNED, although they utilised a variety of digital tools and platforms. In Greece, the Hellenic Ministry of Education and Religious Affairs officially provided two platforms for asynchronous learning (e-me and Eclass) before Covid-19. Due to being optional, just a small number used them. However, during the pandemic secondary teachers mostly used E-class. Out of the teachers in the study, three reported using it. In Poland, the National School Network's e-learning platform integrated Moodle, but its use was not compulsory. Several Polish teachers reported using Google solutions in their teaching, including Google Classroom, Google Polls, and Google Jamboard. Additionally, one Polish school had an internal application for tracking student attendance.

Regarding the training to use these tools, teachers mentioned receiving guidelines from schools, official training (in the case of Greece, at the end of the 2nd lockdown), or relying on peer learning to familiarise themselves with the new tools. Beyond access to equipment and digital tools, several Polish schools allowed teachers to use their classrooms and equipment during the lockdown. This provision was particularly beneficial for teachers who found teaching from home challenging due to limited space or unsuitable working environments

Exploring Innovation and Effectiveness: Teachers' Perceptions of Their Practices

The COVID-19 pandemic and subsequent lockdowns required a significant transformation in the teaching practices of each educator involved in this study. These teachers implemented various strategies that they perceived innovative and effective to adapt to the new circumstances. During the interviews, we asked the participants to elaborate on the reasons they believed their practices were effective and innovative. By analysing and comparing the data collected, we identified the factors that the teachers believed made their practices innovative and effective. In this section, we present the results of our analysis.

Perceived effectiveness of the practices: learning outcomes and engagement

The interviewed teachers generally agreed on the fact that to consider a practice effective there should be an **observable positive change as a result of this practice.** However, some teachers found it challenging to precisely measure this change. Six educators out of twenty expressed difficulties in evaluating the impact of their implemented practices. Teachers explained that assessing the effectiveness of these teaching methods required established criteria to evaluate their success. The Teachers of Physical Education in France emphasised that the effectiveness of the practices may not be immediately apparent. Similarly, the Teacher of Mathematics in Greece noted that more time was needed to ascertain the efficacy of the new approaches as both teachers and students were unaccustomed to them. The Teacher of Italian also mentioned that since the summative evaluations were not allowed in her school, she could not assess the students' results and learning outcomes precisely.

Despite the challenges in precisely measuring the effectiveness of their teaching practices, the majority of interviewed teachers were able to explain why they perceived their practices as effective. They observed positive changes in their students' learning outcomes, noticed increased engagement in the learning process, and received positive feedback from both learners and parents.

Eleven out of the twenty teachers participating in the study reported observing positive results in the learning outcomes of their students when implementing their innovative teaching practices during the COVID-19 pandemic. For instance, the teacher of Italian language from France who mentioned the difficulty of conducting summative assessments, also observed positive outcomes in some pupils. She noticed that in the school year following the first lockdown, certain students who previously struggled or had difficulties were able to grasp and retain certain concepts, likely due to the teaching adaptations made during the pandemic. The teacher acknowledged that these results were not consistent across all students and found it challenging to quantify the impact in terms of evaluations, but she was pleased with the progress they observed in some pupils. Other teachers also reported that learning took place despite the challenges posed by the pandemic. They noted that their students acquired new vocabulary, improved their skills, and demonstrated a better understanding of the

subject matter. As one teacher stated, "For me, my teaching practices proved to be effective because the students learned to do the exercises in the right way. They learned the right vocabulary." (The Teacher of Physical Education, France).

Additionally, four educators from France, Poland, and Greece observed that the effectiveness of their practices extended beyond traditional learning outcomes and played a crucial role in fostering the development of transferable skills and life competencies among their students. They noted that their pupils developed transferable skills such as the ability to work in teams, autonomy, critical thinking, and self-awareness. For instance, the teacher of Physics from Greece observed that his students developed:

> *"The feeling of creating something new, putting their minds to work, thinking critically."* - Teacher of Science, Greece.

In addition, several teachers observed varying results among students and different classes, attributing the differences to factors such as students' access to technology and their personal situation at home. For example, the teacher of History from Belgium mentioned that pupils with access to computers found the learning experience easier compared to those without, highlighting the impact of technology availability on learning outcomes.

Through analysis of the teachers' discourse, we identified **pupil engagement** as another factor that teachers took into account when assessing practice effectiveness. Five teachers from four countries noted that their practice was effective because it enhanced students' interest and engagement in the learning process. Teachers reported that non-traditional approaches, lessons focused on students' interests, and collaboration helped make learning more engaging and less tedious for their pupils. One of the teachers stated in relation to the effectiveness of the implemented practice:

"I could clearly see how engaged the students were in their activities; I observed how they actively discussed the lesson content with one another and shared their experiences. For instance, they would show each other the materials they had prepared. This demonstrated their strong commitment to the learning process." (Teacher of Literature, Poland).

Maintaining communication and connection was considered crucial for engagement, and many teachers emphasised this as an important objective of their implemented practice. One teacher mentioned that her approach allowed to "communicate and be on the same wavelength while having the teacher guide the students." (Teacher of History and Geography, France). Another described their virtual classroom as "lively, dynamic" and noted that students appreciated the interaction and feeling of support (Teacher of Mathematics, Belgium). The Teacher of IT from Poland considered her practice effective as it allowed to maintain strong relationships with their students, which they deemed essential.

In summary, the effectiveness of the teaching practices implemented during the pandemic was evaluated by the educators in terms of learning outcomes and student engagement. Teachers reported that their innovative practices positively impacted both aspects, fostering a supportive learning environment and ensuring continued learning despite the challenges posed by remote education.

Teachers found that the effectiveness of the implemented practices required time and effort and that the significant benefits of them were likely

to be observed in the long run. To illustrate, one of the Teachers explained, "In my opinion, I truly believe that these methods are effective, but it's crucial for students to acclimate to them first. Their effectiveness increases over time." (Teacher of Physics, Poland). Furthermore, teachers acknowledged the time and effort required to organise and adopt new teaching methods, but they believed that these practices would yield significant benefits if embraced by schools.

As we transition to the next section, it is essential to consider the innovative character of these teaching practices, as perceived by the teachers themselves. The idea that these methods require time and effort aligns with the descriptions of their innovative nature. In the following section, we will explore how teachers view the innovative aspects of their practices.

Perceived innovation of the practices: novelty and learner-centred approaches

The COVID-19 pandemic and subsequent lockdowns proved to be a transformative experience for the teachers who participated in our study. As a result, they adopted new teaching methods or modified their existing approaches. Reflecting on the lasting impact of this experience, one of the teachers stated, "It is something that has stayed with me, and I cannot imagine returning to the pre-pandemic style of teaching" (Teacher of Literature, Poland). Our analysis of the interviews revealed two primary themes: teachers emphasised that the innovative aspect of their teaching was grounded in the novelty and digital nature of these approaches, as well as in the significant shift towards a more learner-centred teaching paradigm.

The shift to online teaching, the need to adapt practices, and the utilisation of digital tools, including various information technologies, were novel experiences for the teachers. These new approaches were considered innovative in terms of the teachers' individual experiences and their teaching environments.

The implementation of various methods such as synchronous and asynchronous learning, videoconferencing, and digital learning paths were considered innovative practices by the teachers. As one teacher pointed out, "It was innovative because videoconferencing was not practised before." (Teacher of Physics and Chemistry, France). Teachers discussed the novelty of using previously unfamiliar digital tools and appreciated the opportunity for themselves and for their students to gain digital skills through these new methods, as one teacher observed, "Consistently the use of such media, I think, gives children digital skills that are very much needed alongside the subject of mathematics." (Teacher of Mathematics, Greece). Teachers also discussed the novelty of using previously unfamiliar digital tools, such as Discord and AirDrop, to enhance the learning experience. One teacher shared their experience with Discord, stating, "Most of the students were familiar with Discord. For me, it was unknown, so they actually liked the fact that they could use a social app that they were involved with every day, and that was new for us." (Teacher of Cooking, Belgium). To provide another example, one teacher highlighted the innovative and time-saving benefits of digitising all learning materials and utilising AirDrop. The teacher explained, "My students don't keep paper notebooks at all

anymore. They take a screenshot and use AirDrop to send it out to the whole class, and everyone gets it and pastes it into their digital notes. It is such a time saver." (Teacher of Literature, Poland).

Educators noted that novelty was not limited to the use of new digital tools, but also extended to the implementation of new pedagogical practices, including integration of different methods, use of alternative materials and activities, teaching practical subjects at home, and involvement of parents in the learning process. For example, the teacher from Greece mentioned that for him the innovative character of the implemented practice manifested in the fact that he introduced flipped classroom: "When we first implemented the flipped classroom approach, I believe it was considered innovative, particularly in the Greek context, as it hadn't been widely adopted at that time." (Teacher of Mathematics, Greece). During the interviews, some teachers mentioned the innovative aspect of combining multiple methods in their teaching approach during lockdown. For example, one teacher believed that his approach, which combined mobile learning, face-to-face and remote learning elements, can be considered innovative due to its unique and comprehensive blend of educational practices (Teacher of Science, Greece). Additionally, some educators highlighted the innovative character of involving parents in the learning process and extending hands-on learning beyond the classroom, which introduced a new dimension to traditional teaching methods (Teacher of Cooking, Belgium ; Teacher of Physical Education, France).

Ten out of twenty teachers participating in our study emphasised a shift towards a more learner-centred approach as an innovative aspect of their teaching practice during lockdown. They focused on adapting their teaching methods to their students' needs and experiences, promoting student autonomy, and transforming their role in the classroom.

One teacher highlighted the shift towards student autonomy and responsibility, stating, "It is innovative because it puts pupils in autonomy, it puts them at the heart of their learning" (Teacher of History and Geography, France). This was echoed by another teacher who said, "innovative practice was to shift this responsibility of doing to the students, in groups or individually, to organise it that way for them" (Teacher of Physics, Poland). Some teachers explained that allowing students to participate in the agenda and design of their own learning was innovative. One of the teachers asked his students how they wanted the lesson to be done, giving them a sense of ownership and control over their own learning experience. (Teacher of History, Greece).

Several educators shared their experience of transitioning from a traditional teacher-centred approach to a more collaborative and supportive role in the classroom. One of them explained that working side-by-side with their students, rather than being the centre of attention, was a transformative and innovative change in their teaching practice. The teacher stated: "Instead of face-to-face interactions, we now work side-by-side with our students. For me, this was quite innovative because we often say it, but we don't actually do it. Previously, students just took notes, but now, they are in control, and we are there to support them. I used to enjoy being the centre of attention in front of my students, but that's not my purpose anymore, as their needs have changed. To me, this has been very innovative, as it is transforming the way we approach our profession." (Teacher of French, History and Geography, France).

Additional information about the work context of educators who participated in the study can be found in other deliverables of the KEEP project, specifically the Teachers' Portraits, the Situational Review, and the Ecosystemic Report for secondary education during COVID-19 in four European countries.

2.Purposeful teaching techniques - categories of engaging practices

The twenty educators interviewed in this study adopted unique strategies during the transition to remote teaching. We sought to understand their motivations, objectives, and whether any commonalities in their intentions could be discerned. Our methodology involved discourse analysis and coding of the educators' interviews, allowing us to analyse their experiences and insights systematically.

Our exploration led to the identification of four key groups of teaching practices: promoting student autonomy, enhancing student motivation, building connections, and effective assessment strategies. These groups were further subdivided into eight distinct categories, namely: materials accessibility, personalisation, collaborative learning, learning progress assessment, well-being assessment, teacher-student communication, gamification, and family involvement.

It's essential to acknowledge that these categories are intertwined, and each implemented practice often encompassed multiple dimensions. The objective of this chapter is to present our findings from this analysis, underlining the complexity of educators' responses to the challenges of teaching during the pandemic.

Promoting Student Autonomy and Learning Agency: Strategies and Perspectives from the interviewed Teachers

The importance of fostering autonomy and learning agency among students has been a major concern for educators. Teachers who participated in our study referred to these concepts a great number of times. In this part of the report, we will discuss the concepts of student autonomy and learning agency, and how they can be enhanced from the perspectives of the teachers. We will outline various strategies that teachers employed to promote autonomy and learning agency of their students.

Difference between student autonomy and learning agency.

Student autonomy and learning agency are **interconnected concepts,** but they focus on different aspects of the learner's role in their own learning process. Both place the learner at the centre of their own learning experience. On the one hand, **autonomy** refers to the ability of learners to take control of their own learning and make independent choices on how to organise their learning process. It is often associated with self-regulated learning, which refers to a learner's capacity to comprehend, structure, and control their learning environment.

On the other hand, **learning agency** represents a step further in terms of independence and refers to the capacity of learners to not only be autonomous but also be active agents and decision-makers of their own learning. Agency

empowers learners to take the initiative in order to make choices and shape their own experiences and learning opportunities. Fostering the learning agency of students leads to higher motivation, enhanced creativity, and better learning outcomes. It develops the students' ability to generate pertinent questions and find information independently. Throughout our study, several teachers emphasised the importance of encouraging learning agency in their students. For example, during the interview, the Physics teacher in Poland admitted: "I'm just thinking that if we encourage students to search and show them how many interesting things there are, they will inevitably start looking for these things at some point, hopefully. And they will start to develop their knowledge themselves, maybe, too" (The Teacher of Physics, Poland).

To sum up, student autonomy and learning agency are critical concepts that emphasise the importance of placing learners at the centre of their learning experiences. While autonomy focuses on learners' ability to take control of their own learning, learning agency goes beyond and empowers learners to become active agents and decision-makers in their learning process.

Perspectives from teacher interviews

The promotion of student autonomy and learning agency emerged as a critical concern among the interviewed educators. This theme was identified as a central focus, with 33 pedagogical practices recognized by 14 teachers as contributing to its development. The indication of "directly" denotes that the teachers explicitly indicated the relationship between the described practices and the promotion of student autonomy, as well as creating an environment that fosters their independence. Several reasons underpinned the emphasis on the practices that develop students' autonomy and learning agency. Firstly, students had to spend a lot more time learning on their own. As most teachers acknowledged, the online learning format made it challenging to maintain the same frequency of lessons as in traditional settings, for various reasons.

Undoubtedly, during the lockdown period, numerous students and teachers faced difficulties due to limited access to technological resources and unstable internet connection. In certain instances, accessing online resources was impossible due to the shortage of computers or tablets within households or unstable internet connection. But even if the connection was stable, and both teachers and students had all the necessary technological tools at their disposal, it was impossible to adhere to the same schedule as in an offline setting, as admitted by teachers who participated in our study. Following the same amount of online lessons as in offline settings was impossible for the students because it was too tiring. As the Teacher of Dutch in Belgium mentioned: " We found out that too many live lessons were exhausting for students, and we tried to reduce them as much as possible and find alternatives." (Teacher of Dutch, Belgium). It was much more challenging to capture the full attention of students in an online setting compared to an offline setting.

Additionally, as acknowledged by the teachers who participated in the study, it was impossible to ensure whether students were fully engaged with the class material. For various reasons most students did not have their cameras turned on, and it was generally accepted due to problems with internet connectivity or privacy concerns. Teachers

indicated that it was a daunting task to understand the degree of students' involvement in the online learning process. Although teachers could ascertain if students were logged in or not, verifying their active participation remained a challenge. Hence, teachers needed to create pedagogical strategies to encourage student engagement and foster interactive learning during synchronous sessions. As the Teacher of History shared: "I wanted to listen to my students. And they had to be involved in some way. I could not see them since the cameras were turned off. I needed to listen to their voices and make sure they were participating, watching" (Teacher of History, Greece).

Teachers who participated in the study admitted to partially or even completely abandoning the lecturing part of their synchronous lessons and emphasised autonomous work. This, in turn, meant that students had to spend more time learning independently. It was admitted that fostering motivation was challenging since neither schools nor teachers had control over the learning environment of the students. Participating teachers noted that on occasions, the learning environment was not optimal, thereby presenting students with a range of challenges that needed to be addressed. The Teacher of French, History and Geography in vocational school in France admitted: "My transformation was focused on enabling students to become autonomous learners, even in challenging or unsupportive learning environments where they may be on their own." (F T 4 French, History, Geography).

Finally, some hands-on activities required students to take charge of their own learning and exercise their autonomy and agency, as they had to organise their physical environment and decide on the timing and execution of the necessary tasks. That was especially important for the Teacher of Physical training (France) and for the Teacher of Food preparation and nutrition (Belgium).

From instructor to facilitator: the shift in teacher's role

Promoting autonomy and learning agency of students requires a corresponding shift in the role of the teacher. This idea was widely supported by teachers who participated in the study. In fact, since the learner becomes the central and autonomous agent of their learning, the teacher is no longer the centre of the learning process, nor do they become the main source of knowledge. Rather, the teacher becomes a designer and facilitator of the learning process, acting as a guide rather than an instructor. To illustrate, the French teacher of Italian admitted: "I was present in the classroom as a mediator, rather than adopting a top-down approach" (Teacher of Italian, France). The teachers from other countries showed similar attitudes, as identified in their discourse. The teacher of History from Greece reflected on a change in his practices during the pandemic and said, "There was a change in the attitude of the teacher. They are only about accompanying the learning process" (Teacher of History, Greece). Similarly, the Physics teacher in Poland stated, "As much as possible, I wanted to use the lessons to make the student try to learn with my help during that lesson. And not on the basis that I am the source of knowledge, because now the source of knowledge is technology, access to the internet." (Teacher of Physics, Poland).

How Teachers Promote Autonomy and Learning Agency: Strategies for Enhancing Accessibility of Learning Resources and the Flipped classroom method

The interviewed teachers emphasised the significance of creating an **accessible learning environment** that fosters student autonomy during asynchronous independent work. They implemented practices aimed at making learning resources readily available and easy to use for students working independently. Due to the limitations of online settings, teachers had to reduce explanations and lecturing and instead encourage and motivate students to actively engage with the material in an autonomous way, whether in synchronous or asynchronous settings.

Due to the challenges faced in conducting synchronous classes and technical difficulties, **teachers had to limit traditional lecturing methods and adopt the Flipped Classroom pedagogical approach.** Flipped classroom involves reversing the traditional model of instruction, in which students typically receive direct instruction from the teacher in class and complete homework or individual work outside of class. In a Flipped classroom, students prepare for the lessons by studying learning materials before attending class. This method allows students to be more active during synchronous lessons and participate in collaborative learning activities such as discussions, quizzes, games, and collaborative projects. To illustrate, the Teacher of History in Greece explained the approach as follows: "I prepare the lesson and I come back next time and it's actually targeted questions. We solve questions and clarify some key things that might be blurred. The key thing is to give in advance, have the material posted somewhere. You give the material beforehand to the students, which they have to watch, read, study it." (Teacher of History, Greece). The interviewed teachers identified flexibility as the biggest advantage of the Flipped classroom method, which involves reversing the traditional model of instruction. This approach allowed students to study the material at their own pace and according to their individual schedule, giving them autonomy over their learning. Teachers recognised that every student is different and needs different amounts of time to access and acquire knowledge, and the Flipped method helped them to understand and accommodate their students' learning preferences and habits. Additionally, the method helped to build confidence and self-efficacy among students. In total, 11 out of 20 teachers in Belgium, France, Greece and Poland indicated that the Flipped method was one of the main practices that they introduced during confinement.

The importance of having a clear organisation of materials in one place was emphasised by several teachers. For example, the Greek teacher of Philology noted, "The needs were to have somewhere to have our materials gathered and organised. And to be able to function as a classroom." (Teacher of Philology, Greece). This was particularly crucial in contexts where teachers used different tools and platforms for different subjects with the same class. While some schools had a single platform for all subjects, others required students to refer to various tools, platforms, and resources to prepare for lessons, resulting in confusion and a lack of preparation. Therefore, some teachers highlighted the significance of centralising all the learning

materials in one place and ensuring that students can easily find and access them: "It is very important to limit the number of tools, so that students don't get lost. And it is also best to agree on this school-wide: choose the tools that work well with our students and limit yourself as a school to those" (Teacher of History, Belgium). In Belgium, History and Dutch Teachers were using Digital learning paths in Smartschool or Teams: "First, the ICT department of my school set up Teams class channels, they also linked all the teachers and students to those class channels. So, for each class there is a 'room', a separate channel. And then the teachers can make their own separate sub-channel within the class channel." (Teacher of History, Belgium).

Some teachers in the study were taking into account the digital tools that were used by students to access the learning material. While some teachers had no issues since all students had personal computers or tablets, others had to consider that some students had access only to mobile phones. This was the case for a Physics teacher in Greece and for the Mathematics and Mechanics teachers in Belgium, who had to consider that some of their students accessed the learning materials from their mobile phones. In another instance, a French teacher had to send printed learning material by post to students who faced issues with internet connection. Similarly, an IT teacher from Poland had to distribute materials earlier to students who experienced problems with internet connectivity.

Several teachers in our study recognized the significance of breaking down the learning material into smaller, more manageable parts to prevent students from being overwhelmed with a large amount of information and tasks at once, especially when it comes to the Flipped classroom method. This was accomplished in various ways, such as limiting access to online platforms until specific times or after completing previous tasks, or by sending learning materials in smaller parts with instructions several days prior to the lesson. One notable approach was reported by a teacher who gradually increased the distribution of learning material, starting with very small tasks and materials in the initial stages and gradually increasing the volume over time. This allowed students to become accustomed to the new format of learning without feeling pressured during the period of lockdown. As the Teacher of Music from Greece explained, "First, I didn't want my students to feel pressured during this period of lockdown. I started by teaching them how to use the Eclass platform…When I dropped off an assignment, I would send a message so they could get to work. I gave them 5-minute exercises with a deadline they had to respect" (Teacher of Music, Greece). Additionally, the task fragmentation approach proved beneficial for two teachers in Belgium who used online learning paths to guide students through the learning material. A History teacher form Belgium described their instructional process, in which they began with a concise explanation of the task's purpose and then directed students towards the designated learning path: "I always do a very brief instructional moment, basically explaining the purpose of the task. It is very briefly explained to them how to proceed. And then they are actually directed to the learning path or assignment, and those assignments or those learning paths are worked out in such a way that it is crystal clear." (Teacher of History, Belgium). Similarly, a Dutch teacher of Dutch from Belgium shared the importance of a well-defined structure when planning an online learning path, which implied careful consideration of task division and time allocation.

Overall, the teachers participating in this study emphasised the importance of providing a clear

structure for the learning materials and objectives. They stressed the need for explicit guidelines on how to work with the materials, as well as clear instructions on how to complete tasks and assignments. As the Teacher of Geography mentioned: "Afterwards, the big problem was the questioning and the instructions. When we are in class, we can give instructions and then come back to them. The pupil can raise his hand and they can say what they didn't understand. Here, we had to be as clear as possible" (Treacher of Geography, France). This clarity was considered crucial to the success of the Flipped Classroom method, as it helped students better understand what they were expected to learn, how to approach the materials, and how to use them effectively.

The teachers who participated in the study implemented the Flipped Classroom method in various ways. A majority of the teachers used an online learning platform to organise and structure the materials for their students. For instance, teachers of Dutch and History in Belgium utilised the Learning Paths on Smartschool and Teams platform to share their materials with students, including texts, interactive exercises, films and structured PowerPoints with voice-over. Similarly, teachers of Music, History and Philology in Greece were using the E-me/E-class Digital Education Platform with integrated tools and using external digital tools via additional links (to Padlet or Hot Potatoes, among others). In contrast, the interviewed teachers in France and Poland used a variety of platforms and methods for their Flipped classes. For example, the IT Teacher in Poland utilised Padlet to share the materials and work on their learning tasks with his students. The teacher of Physics in Poland created interactive videos, posting them on Youtube and then sending the links to the videos so that they could prepare for the synchronous classes. The Teacher of Literature in Poland also sent materials in advance of lessons and required students to read texts or watch videos before their synchronous lessons: "I used the Flipped classroom method, meaning I asked students to read some material or watch a video before our meetings. I told my students what we were about to do, so that they could fully participate. Reading the texts was the most important part of preparation. Without knowing the texts, there was no conversation." (Teacher of Literature, Poland). In France, teachers used various tools and applications to implement Flipped classroom methods. For example, the Teacher of Italian language created worlds and games on Classcraft for students to complete autonomously. The Physical Education teacher created asynchronous workout sessions on the Glide application and published worksheets with two programs on the Mon Bureau Numérique platform. The History and Geography teachers used the digital notebook to direct students to different assignments that they needed to complete autonomously: "Each lesson was a session from the teaching folder or a lesson from Moodle first via ENT, with the instructions in the textbook. The instructions are deposited in the textbook." (Teacher of History and Geography, France). The Teacher of Physics and Chemistry used a system of tools including CNED for online classes, Padlet, and Classroom screen. The Teacher of French and History created Interactive Slideshow Presentations in a Flipped Classroom using the Genially tool. Overall, the majority of the teachers implemented Flipped classroom methods while using very different tools adapted to their lessons.

While conducting the study we identified several common challenges that teachers faced when implementing the Flipped Classroom method.

Firstly, several teachers reported that they had to spend a lot more time on preparing their lessons

and materials than they did before. This involved learning new techniques and methods, dedicating a lot of free time to organising and structuring materials, and inventing new ways to present information. Therefore, the Flipped Classroom method requires a lot of independent work and organisation not only from students but also from teachers. For example, the Teacher of French in France noted: "I manage to make them work. They really did the required work on their own. To achieve that I really had to do a lot of work in preparation." (Teacher of French, France). The Teacher of History in Greece remarked: "It took a lot of preparation. I had to think about the organisation of each module and add the corresponding material. And a lot of times either finding the appropriate material or creating it from scratch. It took work, right? Always." (Teacher of History, Greece).

Another shared challenging aspect of implementing the Flipped classroom method was calculating the amount of time students would spend on autonomous work and ensuring that their workload was not overwhelming: "The difficulty was to assess the time the student had to work. The colleagues, well most of them, gave too much work. The students were overwhelmed because sometimes we were willing to give them a little bit too much. I was trying to reduce the work to less than an hour." (Teacher of French and Geography, France). This was especially relevant during lockdown circumstances, as overwhelming students with work could lead to abandonment and dropouts.

Furthermore, another common challenge was ensuring that guidelines and instructions were clear to students. The Teacher of History emphasised the importance of clear instructions, stating that "the tasks should be simple." (Teacher of History, Belgium). Similarly, the Teacher of French and Geography in France explained: "The big problem was the questioning and the instructions. When we are in class, we can give instructions and come back to the instructions. The pupil can raise his hand and he can say what he doesn't understand. Here, we had to try to be as clear as possible and that was the most complicated for me in the end. It was to try to find instructions that were clear and concise." (Teacher of French and Geography, France).

The Flipped Classroom model has been found to increase active and autonomous learning during synchronous classes, as reported by teachers in our study. Such activities empower students and transform them into active agents of their own learning. During synchronous classes, teachers organise individual or group work and project-based learning, becoming facilitators of the learning process. Teachers provide instructions, organise the learning environment, and offer support as needed. To illustrate, the Teacher of Mathematics in Belgium explained: "They worked on their own while I was available online to answer their questions. Ten minutes before the end of class, we came back together and talked about their difficulties and what they had learnt" (Teacher of Mathematics, Belgium). The Teacher of French History and Geography in France created work for small groups or pairs, allowing her to give effective guidance and verify their work. She noted: "In the end, my idea was to create work in little groups or work in pairs, so that I have time to go to each group and provide effective guidance or verification of the work." (Teacher of History and Geography, France). She noted her role had changed from being a performer in front of the class to being an enabler of student learning. She explained the change of her role as a teacher in the following way : "Although I like to perform in front of the students, I'm not here for that. I'm not here for that anymore because the time has changed.

At least for me, it was very innovative. We are changing the way we approach the job. And that's not bad!" (Teacher of History and Geography, France). Students' autonomous tasks were also found to maintain their engagement and connection to the learning process. For example, the Teacher of History in Belgium stated that collaborative assignments were more difficult for students to withdraw from than online assignments because participation and collaboration were immediately noticeable. To give another example, while describing one of her practices in synchronous classes, the Teacher of Spanish from Poland mentioned: "Escape rooms require a high degree of independence from the students, who take a journey through tasks, individually or in groups." (Teacher of Spanish, Poland).

As previously mentioned, the teachers reported that collaborative activities not only fostered students' autonomy but also encouraged their learning agency. Working in groups on projects allows students to take more ownership of their learning and gives them opportunities to make decisions about how to approach a task. For instance, the Teacher of Italian in France mentioned how students can work together to determine the scope of the project and assign roles based on their strengths and interests. In Classcraft, students can choose their role and customise their character according to their strengths and preferences, which allows them to take ownership of their learning and take action. Furthermore, this teacher provided students with the opportunity to promote their metacognition by encouraging them to reflect on their own learning process and strategies: "Ten minutes before the end, we met in the general channel (Discord) where everyone said a little about their difficulties, what they thought of an activity, what they had retained and what they thought was important." (Teacher of Italian, France).

As identified in the study, another way to promote learning agency of the learners was related to involving students in design and implementation of the learning process. Several teachers mentioned that they asked their students for feedback about the learning objectives, structure, and content of their lessons. For example, the Teacher of French and History in France mentioned: "I asked my students if they would agree to work with a suggested method so that we could move forward more quickly and apart from one student who said no, the others agreed" (Teacher of French and History, France). The teacher of Polish in Poland who had regularly collected feedback from their students mentioned: "The questionnaire was to show them that they could have their say too, that they had some influence on what was going on in the lesson." (Teacher of Polish, Poland). Several teachers emphasised the importance of asking students about their preferred way of organising the learning process and actively involving them in its implementation. For example, the teacher of cooking classes in Belgium mentioned that students helped the teachers on how to set up the communication channel that they chose (Discord). The teacher expressed appreciation for the opportunity to engage in a dialogue with their students and the beneficial outcomes of collaborating with students to identify solutions. Another method to involve students in the design of the learning process is through peer reviews and finding and sharing additional materials for themselves and their classmates As mentioned by the Teacher of Philology in Greece, their students reviewed each other's works and created a summary presentation of all works, which was published was published asynchronously and presented in their synchronous sessions (Teacher

of Philology, Greece). The Teacher of Music in Greece also introduced the peer-to-peer evaluation, where students could assess each other's collaborative presentations. She mentioned, "I wanted my students to take the initiative to work with each other, to be part of their learning process. The students learned to work together and respect each other's work, and to self- assess and evaluate their work together as well" (Teacher of Music, Greece). Several teachers encouraged their students to find and share materials related to the topic they were studying. For example, the Teacher of Polish asked students to create "artefacts of learning", using an online whiteboard where every student could add something. They used Jamboard implemented in Wakelet, the main platform that she was using to organise the learning process.

Engaging and Relevant Learning: Enhancing Student Motivation

The findings indicate that another concern for the teachers from the study was to make the learning experience enjoyable for their students. To enhance the engagement of their students, the teachers in the study customised the learning experience based on the individual needs and interests of their students. Additionally, they incorporated interactive elements into the learning experience to enhance student engagement.

Adapting Learning Content and Practices to Meet Diverse Student Needs

One of the recurring findings from our study was the emphasis placed by the teachers on the importance of adapting learning content and practices to make them relevant for individual students. In particular, the interviewed teachers recognised the significance of considering not only the students' learning environment, such as schedules and equipment, but also their interests. As no two students are identical, the teachers acknowledged the necessity of tailoring their approaches to fit the diverse learning needs of their students.

To create personalised lessons and learning activities, teachers noted that they were following a continuous cycle of observation, feedback collection, and adaptation. To give an example, the Teacher of Mathematics from Belgium was observing and noting students' behaviour and reactions to adapt and organise the course, while also collecting feedback directly from students, she noted: "We did a lot of preparatory work on this to find what was suitable for students." (Teacher of Mathematics, Belgium). Similarly, the Teacher of IT in Poland conducted surveys with her students at the beginning and end of the course to understand their preferences and assess the effectiveness of her teaching methods. She noted, "When I came to work at the beginning, I did surveys with the students and asked them, "What tools do they know?", "What do they like to use?", "What lessons would they like to have?", "Are there any things that other teachers do that they like?". Then I also did this kind of summary survey for them at the end of the semester, to tell me what it was like, what they liked. And there were different answers. " (Teacher of IT, Poland). The Teacher used Google forms to collect this information. The Teacher of History and Geography in France mentioned that

they asked for feedback directly from students during the lessons: "I believe it is important to seek direct feedback during synchronous sessions to improve the quality of the session. I used to do this by asking students, "Was this session useful to you?" To give an example, they expressed that while synchronous sessions were beneficial, they preferred not to have them too frequently." (Teacher of History and Geography, France). Several teachers reported that once they allowed their students to contribute to the lesson, the students actively sought out solutions, proposed learning materials and activities, and made suggestions on how to make the lessons more tailored to their needs.

Several teachers expressed that they were constantly adapting their materials and exercises to match students' interests. For example, the Teacher of Literature from Poland was offering her students to study literature in a contemporary context: "A successful lesson for me means that I managed to arouse emotions and bring young people to the discussion. You need to find something in those excerpts that will bring present value to young people." (Teacher of Literature, Poland). The Italian teacher in France stated that the innovative aspect of her teaching practice was its relevance to students: "The Class Craft activities were in line with what the pupils know, what the pupils practice, i.e. video games." (Teacher of Italian, France). The Teacher of Mathematics from Belgium mentioned that they tried to understand the preferred way of presenting information for students and then adapting the presentations and explanations to make them more visual or more "classic" according to the preferences of the students. Some teachers offered additional exercises to students who were interested in learning more and limited the workload for those who were experiencing difficulties. For example, the Teacher of History and Geography stated, "I was particularly interested in providing additional support for those students who were eager to learn, while ensuring a minimum level of support for those who faced difficulties. This was a crucial pedagogical goal for me. " (Teacher of History and Geography, France). Another example is the Teacher of Polish who started a "Random Book Club" during the lockdown. This one-hour meeting allowed students to share and discuss the books and films they enjoyed. This initiative also helped in the development of students' learning agency. The teacher said, "a group of students was interested, and this group of students proposed these meetings, also prepared them. This way we worked on organising topics around films or books. " (Teacher of Polish, Poland).

Another effective strategy that the interviewed teachers employed to make learning more enjoyable and relevant for their students was to engage them in individual or group creative projects. These activities involved assigning tasks to students that required them to research and present information, or to find creative solutions to a given problem. In Poland, two teachers used digital Whiteboards to propose creative projects to their students. The Teacher of Polish language used Jamboard integrated in Wakelet platform to suggest her students collaboratively or individually collect information and create "artefacts of learning". The Teacher of Literature utilised the Explain Everything digital platform to foster creativity and encourage exchange among her students. She created a series of boards, each dedicated to a specific group of students, that included various challenges such as pictures, links to music tracks, thematic videos that she recorded herself, along with corresponding instructions and helpful tips for conducting research.

Another identified type of practice that was cited by teachers was presentations that students had to

prepare in groups or individually. As an illustration, the Teacher of Music from Greece requested her students to form groups and create presentations on the semantic analysis of songs using the digital tool Padlet. Another example is the Teacher of Polish who gave her students freedom to pick topics that are interesting and relevant for them, she mentioned: "One student organised a meeting titled "What is Zuckerberg preparing for us?" which was about future news, and it attracted many students from the school. The presentation was created using jamboard, and included worksheets that added a cool interactive element to the meeting. Another student organised a meeting on manga." (Teacher of Polish, Poland).

Interactive and Gamified Learning Activities for Effective Learning

In addition to personalisation, the interviewed teachers consistently highlighted the significance of interactivity and engagement in effective learning. As noted by the Teacher of Spanish from Poland: "Students needed engaging lessons. Students needed freshness, motivating and appealing methods based on gamification, and a way to combat boredom." (Teacher of Spanish, Poland). To enhance the learning experience, we identified a variety of practices related to gamification and interactive techniques, which are presented in detail in the Portraits of the KEEP project. The purpose of this section is to highlight the main types of such activities, while giving some examples. Overall, we identified two types of activities that foster interactivity and gamify the learning experience: digital games and quizzes, as well as simulations of offline learning experiences.

During our interviews with teachers, we found there was a great variety of interactive games, quizzes and brainstorming activities that the teachers implemented in synchronous and asynchronous settings. They were also using a wide range of tools to diversify the activities. For the Flipped classroom, several teachers mentioned that to maintain students focus, they were keeping the tasks small and interactive. As the Teacher of History and Geography in France explained, "I aimed to provide more engaging and energising activities for students to do at home, considering that they already had seven to eight hours of classes. I was aware that during these hours, they couldn't spend all their time copying notes or watching recorded lectures. To address this, I created interactive activities based on videos that covered specific topics in the curriculum" (Teacher of History and Geography, France). Several teachers who participated in the interviews utilised and adapted video materials for asynchronous learning. For example, a History and Physics Teacher shared abstracts of relevant videos using YouTube, the Teacher of Cooking filmed cooking shows, and the Physical Education Teacher provided online workout sessions. The development and implementation of such interactive and gamified learning experiences required significant investment of time, energy, and creative effort from the educators. For example, for the Cooking classes, the Teacher filmed his colleagues cooking dishes showcasing every step of the process in separate videos, each film covering a specific aspect of the recipe: "So he had made about six films for one recipe. It was really a bit like a chef on television, that's how they got the idea. The advantage was that this colleague occasionally played a role on television series, so he knew a bit about the tricks of the actor's trade." (Teacher of Cooking, Belgium). In addition, educators incorporated various

interactive games and quizzes into both their asynchronous and synchronous classes, utilising tools such as Kahoot, Hot Potatoes, La Quizinière, Testportal, LearningApps, Mentimeter, Wooclap, Bookwidgets among others. The interviewed teachers reported that various interactive tools such as Kahoot, Hot Potatoes, La Quizinière, Testportal, LearningApps, Mentimeter, Wooclap, and Bookwidgets were effective in gamifying lessons, increasing student motivation, and maintaining their focus. As an illustration, the Teacher of Dutch from Belgium implemented Kahoot, a game-based learning platform, in their live classes. This platform enabled students to participate using their mobile phones and compete to answer questions correctly in the shortest time possible. The competitive nature of the game was well-received by the students, as reported by the teacher, "They just love it, no matter what it's about." (Teacher of Dutch, Belgium). To give another example, the Teacher of Spanish from Poland engaged their students in a structured set of puzzles and other activities, creating Escape rooms: “the lesson consists of small activities to be performed by students, all activities leading to the unravelling of the main problem set by me” (Teacher of Spanish, Poland). They mentioned that Escape rooms helped them to maintain students' focus due to the unpredictability of the lessons and the logic of discovery: “The escape room formula increases the unpredictability of lessons, which creates a more engaging learning environment, the learning process is more attractive.” (Teacher of Spanish, Poland).

Three teachers from Belgium and one teacher from Greece also mentioned that they drew inspiration from their offline classes to make the learning process more engaging for students. For instance, the teacher of Dutch created structured PowerPoints with voice-over for the Flipped classroom, while the Mechanics and Mathematics teachers used digital pen and tablet to annotate live presentations during Visual Synchronous lectures. According to the Mathematics teacher from Belgium, this approach allowed for interactive problem-solving and real-time discussion: "It was lively, dynamic, I could really interact with them, I answered their questions, and they weren't lost. I would solve the exercises with them, with remarks, and I would talk at the same time, so really we were together in the course. It was like our classroom lessons." The teacher of Science in Greece used the Phyphox application to conduct an experiment on the oscillations of a spring using mobile phones. (Teacher of Science, Greece).

Several teachers mentioned using escape rooms to encourage self-expression and introduce interactivity and play in the online classroom. This approach was implemented by the Spanish teacher in Poland, the Teacher of History in Greece, and the Teacher of Italian in France. They noted that it was an effective tool for encouraging student participation in both synchronous and asynchronous settings.

To conclude, the interviewed teachers in this study emphasised the importance of adapting learning content and practices to meet the diverse needs of their students. Ultimately, several teachers highlighted the importance of following a continuous cycle of observation, feedback collection, and adaptation, to tailor learning materials and activities to the students' needs and interests. To achieve this goal, the teachers were implementing and adapting a range of practices, such as surveys, creative projects, and escape games. To make learning interactive and engaging teachers recurred to interactive games, quizzes and brainstorming activities. Implementing these

approaches helped teachers to improve students' engagement and motivation to learn.

Building Strong Connections for Enhanced Learning

During the COVID-19 pandemic, the transition to online learning presented a significant challenge for the educators who participated in our study. As the learning environment shifted from physical to virtual, it became essential to establish and maintain meaningful connections between students, teachers, and families. This was particularly important for ensuring consistent attendance and preventing students from dropping out of school. To address this challenge, creating spaces for exchange was critical. In this section, we will explore the various ways in which the educators in our study facilitated connection and collaboration, with a particular focus on teacher-student communication, peer communication among students, and family involvement.

Teacher-student communication

One of the key priorities for teachers who participated in the study was to maintain their availability for students during the period of remote learning. Therefore, establishing effective communication channels was a significant challenge and the first priority following the announcement of the lockdown. To address this challenge, educators had to identify appropriate digital tools that their students could access, with some teachers having to rely on mobile phone-compatible platforms. Some teachers communicated with the students via email or school-provided platforms, such as Smartschool and Teams for teachers in Belgium and e-class for teachers in Greece. However, some teachers had to resort to other forms of communication, such as SMS and Whatsapp messages or social media platforms like Facebook or Discord. Despite the challenges, the interviewed teachers recognized the critical importance of maintaining open lines of communication with their students, as this was vital for supporting their learning and overall well-being.

Another important factor mentioned by the interviewed teachers concerned staying connected and present during all the synchronous activities even if students were working independently. To illustrate, the Teacher of Mathematics from Belgium stressed the importance of being present and providing support, encouragement or advice to students while they worked independently: "Students wanted that contact, so to speak, the feeling that they weren't left alone with a subject that is difficult for some." (Teacher of Mathematics, Belgium)

One of the strategies mentioned to help maintain teacher-student connections was collecting feedback about the lessons and involving students in the learning process. This approach helped students feel that their voices were valuable parts of the dialogue, as the Teacher of History stated, "I like to see my work as a teaching-learning conversation with my students, in which you actually, as a teacher, do indeed engage in

dialogue with your students" (Teacher of History, Belgium).

Several teachers emphasised the importance of establishing an informal dialogue with their students and building relationships with them. They believed that showing genuine interest in their students' lives during the lockdown, enquiring about their well-being, and being positive and encouraging helped to establish human connections and prevent dropouts. Two teachers from the study also highlighted that this approach facilitated the re-engagement of students who had dropped out of the learning process (Teacher of Italian, France; Teacher of History, Greece).

Peer Communication Among Students

The second priority for teachers was to maintain and strengthen student-to-student connections during the lockdown periods. In order to achieve this goal, teachers actively implemented practices that fostered collaborative learning, peer learning, and group work. These strategies allowed students to interact and learn from each other, despite the physical distance imposed by the pandemic.

Every teacher who participated in the study incorporated some form of collaborative learning in their classroom. They were involving students in creative projects, collaborative presentations, escape rooms and other activities. It is interesting to note the case of History classes in Belgium. The History Teacher mentioned that their students were able to interact and collaborate with new people due to the online nature of the classes. They encouraged this by creating arbitrary breakout rooms for group work and discussions, and received positive feedback from the students regarding this experience: "...Students know what their assignment is, they are divided into breakout rooms, so the group division happens very quickly. That division is done by the teacher. That was always a bit of an exciting moment for them too, because then, actually, with a magic push of a button, they are divided into sub-channels and then, suddenly, they are with 3 students in a group, without prior knowledge of who their group members would be." (Teacher of History, Belgium).

It was also mentioned that during the lockdown, their school implemented cross-curricular projects to facilitate collaboration between students who take different classes. This Teacher emphasised the benefits of peer learning, where students learn from one another in a collaborative setting.

Aside from collaborative projects, several teachers mentioned that for them it was equally important to create a shared space for their students and thus encourage their online meetings and group revisions outside of the class, to create "channels of communication and support, not just learning" (Teacher of Music, Greece). To illustrate, the Teacher of Mathematics in Belgium, made the link for their online lessons accessible all the time, so that if they wanted to work on mathematical problems or meet, they would connect through this video link. The Teacher of Philology from Greece, who was using the E-me Digital Education Platform for organising learning materials and communication space for students, noted that the online space they created provided the possibility of sharing, where students could share something with anyone they wanted or had to think about who they would share it with. The Teacher stated that this possibility was something that they did not have in the classic classroom and that "this possibility of sharing <...> created a new way for children to create and communicate, which helped those who were previously unfamiliar with synch

means to broaden their knowledge, to open up" (Teacher of Philology, Greece).

Family Involvement

The lockdown led to a noteworthy surge in parental involvement in their children's education. Families became more engaged not only in the organisational aspects of the learning process but also in the learning process itself. With parents and children sharing the same physical space, parents had the occasion to observe and participate in their children's learning.

During the focus groups conducted in this study, teachers emphasised the importance of maintaining a connection with parents during the lockdown. Since parents were staying at home, in some cases they had greater control over the physical aspects of their children's learning environment, when compared to teachers. Cooperation between parents and teachers was essential for ensuring that learners had access to the necessary equipment and for organising their schedule. Several teachers expressed gratitude for the support provided by parents who quickly became aware of their children's difficulties during the confinement and helped them stay on track by ensuring attendance at classes, assisting in completing homework, and maintaining a healthy work-life balance. Thus, parental involvement in the learning process and students' well-being at home were important components for achieving success in terms of learning outcomes during the lockdown. Collaboration between teachers and parents played a crucial role in this process. However, it is important to emphasise that such levels of parental involvement varied considerably across different contexts and were not universally observed.

From a pedagogical perspective, the study revealed that two of the interviewed teachers actively integrated parental involvement as an aspect of their teaching practices. Both teachers taught practical subjects. The Teacher of Cooking in Belgium implemented a parental involvement strategy by sending weekly boxes of ingredients and instructions for a family meal. This activity required students to prepare dinner for their parents, and, according to the teacher, students were putting in extra effort for this reason. The parents were also asked to fill in a digital evaluation form afterwards. The questions were about, for instance, their child's participation, whether the child left the kitchen clean after the activity, and the parents' thoughts on the dish. The teacher noted that parents showed high involvement in this activity: "I was surprised by the fact that about 80% of the parents filled in the questionnaire" (Teacher of Cooking, Belgium). This approach received positive feedback from both students and parents, as it helped to connect students, parents, and teachers around a learning activity. The second example involves a Physical Education teacher in France who encouraged students to participate in physical activities with their friends and parents and created questionnaires and quizzes related to health and sports that children could complete and discuss together with their parents. The Teacher also maintained communication with families and received positive feedback from parents who indicated that they valued the opportunity to participate in activities with their children.

To encapsulate the importance of maintaining a human connection in the virtual world we would like to cite the Teacher of Information Technologies in Poland, who stated: "Keeping the relationship with my students was the most important thing for me. I knew that the key element was not to lose my students, like not to lose a human being. I did not want to lose the child in the network." (Teacher of IT, Poland). The findings of our study highlight the significance of building strong connections through effective and human communication for successful learning outcomes, especially in the online learning environment and in stressful times such as the pandemic. The educators who participated in our study demonstrated a strong commitment to fostering meaningful connections between students, teachers, and families.

Assessment Practices During the Lockdown Period: Focusing on Students' Progress and Well-being

The assessment of students' progress is a crucial component of teaching practices. The data we gathered during our study shows that assessment has not lost its importance for the interviewed teachers during the lockdown period. Assessment was crucial for measuring students' progress, keeping track of whether they are following the course content, preventing potential learning losses, and keeping students motivated in their learning journey.

During the lockdown period, educators faced various challenges in assessing their students' progress, particularly because they could not physically observe them. The absence of face-to-face interaction with students made it harder for teachers to gauge their level of engagement, understanding, and mastery of the material. As the Teacher of Italian from France stated, "Assessing the progress of students during the lockdown period was particularly challenging since we could not see them." (Teacher of Italian, France). Several teachers indicated that they had problems with attendance during the assessments, especially when it comes to ongoing evaluation and testing. To illustrate, the Teacher of History and Geography from France indicated, “I used to do evaluations at the end of the chapter in the form of a Quizinière (online testing tool) and I never had 100% of the students who returned the exercise “ (Teacher of History and Geography, France).

The switch to online learning, combined with the challenging and unprecedented nature of the Covid-19 lockdown, had an impact on the assessment process and ultimately on the level of stress experienced by both students and teachers.

During the lockdown teachers had to reinvent assessment strategies. They had to consider the additional stressors of the pandemic and online learning to ensure that the assessment process was not stressful for students. As noted in one of the focus groups, students' morale and motivation were declining due to the lack of structure and reduced contact with peers. This affected both their academic progress and mental health, as evidenced by parents reaching out

to teachers (Focus Group, Belgium). Therefore, it was crucial for teachers to evaluate not only their students' learning progress but also their well-being during this challenging time. In this section, we will explore the practices that teachers used to assess their students' learning and well-being during the lockdown period.

Although assessment strategies during the lockdown were not in the focus of our study, the teachers we interviewed evoked practices aimed at assessing progress of their students. We identified 19 practices related to assessment which could be categorised into diagnostic, formative, and summative assessment activities.

Diagnostic assessment was used by teachers to identify students' starting point, their knowledge and their (psychological) state before the start of the learning process, whether it was a lesson or a learning unit. It helped teachers to understand their students and, if needed, tailor instructions to the current needs of the students. Formative assessment was an ongoing evaluation of students' understanding and assimilation of learning material conducted gradually throughout the programs. Its purpose was to enable teachers to monitor students' progress and make timely adjustments to their teaching strategies and delivery if needed. Summative assessment is a type of evaluation that is conducted at the end of a program, or module to measure students' overall mastery of the subject material. This could take the form of a final exam or other testing methods.

In our study the interviewed teachers put emphasis on diagnostic and formative assessment of their students. Out of 19 practices related to assessment, 2 were summative, 8 were formative and 10 were diagnostic. In Poland, while summative examinations were still held, they were rescheduled to a later date (postponed by one month), and the oral component was entirely omitted.

In Greece, summative assessment for the third year of Lyceum Upper-Secondary Level, traditionally conducted through Panhellenic exams, took place in both years of the pandemic (June 2020 and June 2021). However, another form of summative assessment, end-of-year exams required for grade advancement, was cancelled. In this case, student progression was based on the mean score on the mean formative assessment score.

When it comes to learning progress evaluation, the interviewed teachers mentioned the following practices: interactive assessment games and quizzes, self-evaluation, collecting feedback from students during the synchronous lessons, synchronous observations of the completion of tasks, assessment of tasks completed synchronously and asynchronously. Most of these practices were related to diagnostic and formative assessment.

The teachers were commenting on the necessity to adapt the evaluation to an online format to give students more time to reflect on the suggested assignments while taking into account that they had access to the information on the Internet. For example, a Spanish teacher of Spanish from Poland adapted her assessment strategy to online teaching by preparing tasks that required students to search for information and complete tasks based on comprehension of the material. She criticised the use of a test portals with multiple choice questionnaires for summative

assessment which put undue pressure on students to complete tasks within a strict time limit, resulting in a test of writing skills rather than knowledge: "It wasn't a test of knowledge, it wasn't that students didn't know something, they just didn't have time to think. Even some of them were slow typers who didn't have the manual skills" (Teacher of Spanish, Poland). She believed that her method of assessment allowed students to learn as they completed the test, and that it was less stressful than the traditional method of testing used in the school. She created Google Forms and Padlet with open-ended questions, where students could type or record their answers while taking time to research and formulate their thoughts. The teacher found that Padlet was an especially useful tool to assess her students' oral proficiency during the pandemic since many students were not turning their web cameras or speaking up. Padlet allowed students to do an individual task from a lesson unit, record their oral presentation, and upload it through a webcam. By splitting up the topic, each student had the opportunity to work on their presentation independently and record themselves as many times as they wanted. This approach helped the teacher in question to assess her students' speaking skills while respecting their privacy and avoiding the stress of speaking in front of the class.

Another type of assessment concerned giving students individual or group projects and then submitting them. Sometimes everything that teachers were checking is the task completion. It was the case, for example, for the Physical Educationteacher who asked her students to send her the completed feedback form of the work that was done during the week. For this teacher it was important to encourage her students so that they keep up the good work: "When they sent me their sheets, I provided them with some feedback regarding the number of rehearsals and other relevant aspects. But we also thanked them for their investment. It was very important for me to convey that we were supportive of their efforts" (Teacher of PE, France). Some other examples of individual assessment of the work would be essays suggested by the Teacher of Literature from Poland, or realising technical drawings suggested by Mechanics teacher from Belgium. The evaluation of collaborative projects mentioned by teachers included presentations, tasks and escape games. Some teachers introduced peer evaluation for the projects. To illustrate, according to the teacher of Music from Greece, that helped her students to learn to respect each other's work, and to reflect on their own learning and achievements.

The most cited form of formative and diagnostic evaluation was related to interactive tests and quizzes during synchronous lessons. Ten teachers out of twenty were using this type of practice to assess the progress of their students. The teachers stated that the use of online interactive tools helped them to identify which students were keeping up with the class and which students were falling behind. Some of these interactive tests included an immediate feedback mechanism, allowing students and teachers to instantly see the results and introduce corrections. As mentioned by teachers it was also helpful to have that data about students answers automatically saved in one place. To give an example, Wooclap tool helped some teachers to extract data about their students' results in excel format and even visualise it in less than 1 minute. Several teachers who participated in the study cited diagnostic assessment in a form of in-class games as an important part of their teaching during lockdown.

Another way to conduct diagnostic assessment took the form of tests before and after the classes as well as tests integrated in the various platforms and digital tools that teachers were using in case of Blended learning. For example, the Teacher of History/Geography created evaluations at the end of each learning unit using the Quizinière tool.

Finally, to evaluate students' progress several teachers mentioned observing students completing the tasks and tests online during synchronous lessons. As mentioned, it was especially convenient for some teachers to do it online because teachers could observe their students in a non-intrusive and focused way. For example, the teacher of History from Belgium mentioned that observations were easier in online settings in the breakout rooms as it was possible to focus on each student's engagement and understand their progress. The Teacher of Physics from Poland mentioned that he was observing the students' activity using the Testportal platform. This teacher was thus able to collect information on which questions were harder for students and how much time each question was taking. He was also able to track when a student showed unusual behaviour, such as completing a test in a short amount of time after being inactive for an extended period.

As important as it was to assess students' learning progress, for the teachers who participated in our study it was equally important to be able to evaluate their students' well-being and mental health, particularly in the context of confinement and remote learning. In fact, after conducting interviews with teachers and focus groups, it became clear that the unprecedented circumstances brought about by the COVID-19 pandemic made it more crucial than ever before for educators to keep track of their students' well-being and prevent burn-out. Teachers were collecting this information from students in their online classroom and in some cases, included questions about their well-being in their formative or diagnostic assessments. To give an example, The IT teacher from Poland described using an informal technique to evaluate his students' well-being by starting each online meeting with a conversation about their daily lives and any significant events that had occurred. He also prepared Metaphorical cards using Points-Of-You platform and Moment Cards tools. Students could draw from to prompt a short discussion on different topics, tailored to their well-being. By starting the class with this exercise, the teacher was able to assess the mood of the students and identify any potential issues that could affect their learning.

Assessment of student well-being similarly became a crucial part of the pedagogical practices for two teachers from Belgium. The first practice involved creating an online community via Discord for each class group, where teachers regularly initiated individual check-in chats with students, particularly those showing signs of disengagement. These interactions aimed to assess students' mental well-being and provide support (Teacher of Cooking, Belgium). The second practice involved restructuring school timetable balancing academic instruction and well-being assessment. It prioritises key subjects necessary for certification, such as Mathematics and French, while also incorporating periods for student coaching. This lighter schedule served students struggling with technology, allowing them to have an alternative timetable. Some teachers, including those from non-core disciplines like physical education and music, provided coaching, focusing on maintaining student motivation and well-being (Focus Group, Belgium).

3.Contributing and Impeding Factors for Innovative Practices in Teaching Amidst the COVID-19 Pandemic

In this part of the report, we delve into the factors that both supported and presented challenges for the teachers from our study during the COVID-19 pandemic. Through the analysis of comprehensive interviews conducted with twenty educators, we were able to gather accounts of their experiences and identify similar challenges encountered across different settings, as well as factors that proved to be helpful in navigating the switch to online teaching during the pandemic.

Overall, 125 testimonies about hindering elements and 145 supporting elements were identified, each element representing a separate idea in the discourse of the teachers. The following sections will present a detailed exploration of these elements, grouped into distinct categories.

Challenges in the Transition to Distance Teaching During the Global Pandemic

Teachers identified challenges that hindered an effective transition to distance teaching which encompassed both tangible issues, such as inadequate technological resources and training, and more intangible problems tied to emotional and psychological well-being during the global pandemic. Educators had to face student-specific issues, a deficit of digital skills and experience, and the pressing need for greater parental engagement and support. Additionally, organisational difficulties within schools, and a scarcity of lesson preparation time further complicated the shift. Lastly, it was noted that pre-existing systemic issues in education were amplified during this period.

Challenges of technological infrastructure, digital skills, and the lack of preparation time in online teaching during the pandemic

One of the challenges identified by the teachers involved **deficiencies in technological resources and infrastructure**, essential to facilitating an online learning environment. Out of the twenty educators, fourteen encountered issues related to a lack of equipment for themselves and their students, unstable internet connection, and difficulties with software used for the lessons. Five educators noted that either they, their students, or their colleagues were inadequately equipped with personal computers or tablets suitable for online learning. In particular, several teachers from Belgium, France and Greece indicated that they had to use their personal computers and that their pupils face inequalities related to equipment at home. As it was acknowledged by the Teacher of Italian, "One of my colleagues who did not have a computer at home, which can happen even in 2020, could hardly have any connection with the students" (Teacher of Italian, France). Two teachers

from Belgium and Greece also indicated that they had to adapt their lessons taking into account that some of their pupils could only use their mobile phones or had limited access to computers as they were sharing them with their siblings. This digital divide had an impact on students' ability to engage fully with the online learning materials. For example, a History teacher questioned the effectiveness of delivering video presentations when students were forced to view them on the small screens of their phones (Teacher of History, Greece).

Seven teachers faced **problems related to internet connectivity and software** from their own side or from their pupils' side, especially in the beginning of the pandemic. Teachers encountered issues with unreliable internet connections at home, and some even reported that the internet connectivity was equally poor when they attempted to conduct lessons from school. Addressing internet connection problems and adapting to new software took a significant portion of synchronous lesson time. As one teacher noted, "While we have a 40-to-45-minute lesson, until the students are connected (...) I could see that the time was too short, so I had to make the most of it. There was an issue there." (Teacher of History, Greece). Ten teachers pointed out difficulties with malfunctioning software. As a Physical Education teacher from France expressed, "There were frequent technical glitches. The recurring failures upon logging in led to students losing patience and, subsequently, attendance dropped." (Teacher of Physical Education, France). Several teachers indicated instances when learning management systems like Smartschool in Belgium and ENT in France crashed, especially during the early stages of the pandemic. Another teacher from Poland underscored the challenges of dependency on a single platform for communication in a remote learning environment. When technical issues caused their communication platform to crash, they temporarily lost their means of contact with everyone (Teacher of Polish, Poland). Four teachers cited that the software they were using was not user-friendly, and they were unable to switch to more intuitive alternatives. For instance, a Greek Philology teacher stated, "I personally don't see it (the software the teacher had to use) as being that easy to use. We are talking about a platform which students are less familiar with and they find it difficult too" (Teacher of Philology, Greece). The teacher of History from Belgium expressed frustration with the limitations of the platforms they were using, such as slowing down under high usage, with the Smartschool platform. In comparison, they found Microsoft Office to be more stable. However, despite its superior performance, Office is not used as the primary platform due to its nature as a business tool rather than a school environment. Smartschool was still used because it included student guidance and grade book features. Finally, the teacher of Literature from Poland expressed a sense of loss regarding the dynamic energy found in in-person group discussions, regretting the absence of software capable of replicating this aspect of learning. Despite efforts to recreate a similar environment, the teacher faced technical limitations such as microphone feedback, leading to unnatural and tedious conversational flows. This disrupted the spontaneous brainstorming sessions they and their students enjoyed during physical classes.

One of the most discussed challenges cited by six teachers related to **camera usage in synchronous classes.** As one of the educators stated, "That black screen at the beginning was a macabre thing. You could only see me. (...) Only with time my pupils were willing to switch on those cameras. Not everyone, but I'll be honest, I didn't force them to." (Teacher of Literature, Poland). This lack of visual

cues and feedback was frequently described as “unpleasant” and “frustrating”, as they felt they were "talking to a computer instead of people" (Teacher of Dutch, Belgium). A primary concern revolved around student engagement and participation. The lack of face-to-face interaction, due to students' inability to see each other and teachers' difficulty visualising their pupils, significantly compromised the sense of connection and personal interaction. This situation also constrained teachers' ability to provide individualised attention and manage the class effectively, something they would have been able to do in a traditional classroom setting. Issues related to camera usage were among the toughest to address due to technical difficulties; one educator noted that when students turned their cameras on, it resulted in "too much technical interference" (Mathematics Teacher, Belgium). Privacy and data protection concerns were another significant barrier to mandating camera usage. Teachers mentioned that there was no "overriding legislation that the camera had to be there," (Teacher of Physics, Poland) and expressed apprehension about potential unauthorised recordings.

Teachers identified a significant obstacle in the form of a **lack of digital skills and experience among both educators and pupils**. In total, twelve teachers highlighted this issue. Eight teachers from the four countries admitted that they or their colleagues were not sufficiently prepared to employ digital teaching methods. Some teachers possessed only basic computer skills, as one educator mentioned, "some colleagues don't even know how to turn on the computer." (Teacher of Music, Greece). A considerable challenge lay in unfamiliarity with digital platforms such as Moodle, Zoom, and Microsoft Teams: "At that time a lot of digital tools were completely unknown to us" (Teacher of History, Belgium). This lack of digital proficiency, coupled with the abrupt transition to online education, left teachers feeling overwhelmed and unsupported, as another noted, "We were a bit left to our own devices at first" (Physical Education Teacher, France).

Despite these challenges, the lockdown period also saw an increase in online training for educators. One teacher noted, "I didn't have any online training before the pandemic.When it started, there was a rash of these training sessions. I used a lot of them." (Teachers of Literature, Poland). Therefore, despite the initial challenges, the educators who participated in the study found ways to adapt to the new digital teaching environment.

Five teachers from Belgium and Greece also indicated that there was a digital skills gap among students, complicating the shift to online learning and requiring teachers to allocate time to train their pupils in the use of these utilities. Some students in the second year of secondary education were “burdened by learning new software” (Teacher of Science, Greece), struggled with basic digital tools such as Word (Teacher of Cooking, Belgium), and using their school mailboxes (Teacher of Mechanics, Belgium). The requirement to use various applications for different subjects imposed an additional cognitive load on students who were already dealing with the shift to online learning.

The transition to online teaching and the need to entirely reimagine their lessons and their delivery introduced a challenge to educators related to the significant **increase in lesson preparation time**. This new process of teaching preparation required a revaluation of traditional teaching approaches, requiring a "completely different way of preparing for a lesson." (Teacher of Literature, Poland). This

process, as one teacher described, was a "titanic amount of work" (Teacher of French, History and Geography, France), requiring additional effort to create and set up online platforms while simultaneously juggling student engagement concerns. In total, nine teachers reported that they spent considerably more time preparing learning materials. The preparation for remote teaching was not only laborious but also demanded a substantial cognitive and technological load. Teachers found themselves working late nights and investing a great amount of effort to maintain consistency in their lessons: "we pulled with the late nights and that is what we did to be able to be consistent." (Teacher of Music, Greece).

Organisational challenges in schools during the pandemic lockdown: a look at guidelines, training, and collaboration

The transition to online teaching and learning during the pandemic lockdown introduced organisational challenges within schools that impeded effective adaptation to the new learning environment. Seven teachers mentioned issues such as disorganised guidelines, inadequate training and Information Technology (IT) support, and a lack of collaboration among teachers.

The **lack of clear guidelines and protocols during the initial stages of the lockdown** led to a sense of chaos and confusion for some teachers. As one educator stated, "In the beginning, it was a bit of a "wait and see" (...) nobody knew exactly what we had to do." (Teacher of Dutch, Belgium). During the initial phase of the pandemic, in several cases, teachers independently chose communication platforms and students often had to navigate multiple tools which led to "the feeling of chaos" (Teacher of Spanish, Poland). Additionally, some decisions taken in the beginning of the pandemic could be "mutually exclusive" (Teacher of IT, Poland). Educators mentioned that there were numerous decisions made at the local level, which sometimes contradicted or conflicted with decisions coming from higher authorities or external sources. This created confusion and made it challenging for teachers and school administrators to navigate the situation effectively. It was highlighted that, at the beginning of this process, they had to adapt to these varying decisions and find ways to make things work, which led to a significant amount of stress and uncertainty.

Furthermore, one of the teachers felt that the leadership could have been more present, "I think that the management could have been a bit more directive (...) it left the door open too much." (Teacher of Mechanics, Belgium). The teacher expressed that the absence of pressure from the school, along with broader messages from regional and federal authorities suggesting that students should not be overly burdened during this period, alleviated the immediate stress, but also had its drawbacks for motivation to engage into remote education.

Another identified issue was the **lack of adequate training and IT support**. Despite the rapid shift to digital platforms, for several teachers, the provided training was not effective. Moreover, within some schools there was an absence of full-time ICT specialists within schools to provide necessary support for both teachers and students, which exacerbated the technological challenges faced during the transition to online learning.

Two teachers from Poland expressed the **lack of collaboration between teachers**, in particular, in terms of the sharing of resources and best practices. As one teacher noted:

> *"The implemented practices and methods would have been more effective if teachers had collaborated, created materials together, or at least exchanged ideas and resources."* - Teacher of Polish, Poland.

One of the teachers highlighted **systemic difficulties** faced by educators, namely the burden of an overloaded curriculum, challenging working conditions, and the restrictive hierarchy within educational institutions. These issues, coupled with the transition to online learning, significantly influenced both student motivation and the willingness of teachers to exert effort to innovate and create effective solutions. The teacher from Poland expressed that the programs were excessively focused on theoretical knowledge and heavy testing, leading to less time for fostering critical thinking and practical skills: "I see all the time that the programmes are overloaded. The pressure on grades, students are preparing for tests... There is enormous pressure on students, especially in big cities." (Teacher of Spanish, Poland). Secondly, the teacher expressed concern that teachers could feel discouraged and exhausted due to the lack of financial remuneration which does not correspond to the workload. This demotivation could translate into a decrease in effort, "In general, I have the impression that teachers are also so tired and discouraged by the financial conditions (...) They come to the conclusion that you can't burn yourself out so much, give so much of yourself, if there are no tangible results in the form of, I don't know, a decent life for our family (...) Sometimes you think: is it even worth making too much effort?" (Teacher of Spanish, Poland). Finally, the teacher identified hierarchy within the educational system as an impediment to implementing change and fostering innovation: "The Polish education system is quite hierarchical. Frequently, it's the headmaster who serves as a barrier to implementing changes or innovations. They often resist change, dismissing new ideas from their higher position." (Teacher of Spanish, Poland). Moreover, the teacher also expressed concern about the inflexible role assignments within the school system which creates barriers to interdisciplinary collaboration.

Student-specific challenges, parental engagement, and emotional distress

Throughout the study we identified challenges faced by teachers, which were related to student-specific challenges, parental engagement, and emotional distress.

Seven teachers observed that for **some students it was more difficult than for others to transition to online learning.** One of the teachers emphasised the pre-existing issues among a specific subset of students who were already showing signs of truancy, behavioural problems, or coming from challenging home situations before the onset of COVID-19. The shift to online education exacerbated these issues, making it even harder for these students to remain engaged. While reflecting on this the teacher stated, "for a number of pupils, COVID-19 actually made that small difference between staying on board or dropping out." (Teacher of History, Belgium).

Three teachers noted that adapting to online learning was challenging for students with

immigrant backgrounds because of the language barrier. To illustrate, one educator mentioned that students from different language backgrounds had a harder time keeping pace with online lessons: "I suspect that a majority of our students speak another language at home. It's more difficult to keep the pace with another language remotely," (Teacher of Dutch, Belgium).

Teachers of Music and History from Greece indicated that children with specific learning difficulties faced heightened challenges during the shift to online education. It was especially difficult in absence of specialised sections or resources for children with learning difficulties, which forced some of the teachers to assume roles that should be covered by specialised staff.

The teacher of Philology from Greece expressed concerns regarding the lack of socialisation and human contact in the geographical area where they were teaching, which was exacerbated by the lockdowns.

The transition to online learning was not challenging for all students; in fact, one of the teachers indicated that some of his pupils found the online environment to be more calm and secure, allowing them to work at their own pace within their familiar home setting. This observation was particularly valid for students in a stable home situation with sufficient resources and for those who were naturally more study-oriented or found the traditional school environment disruptive (Teacher of History, Belgium).

The importance of **parental support** during online learning was highlighted by nine teachers. Some students required more assistance from their parents, especially those with learning difficulties. However, not all parents were able to provide a conducive learning environment, and some even hindered their child's participation in lessons. Five teachers from Belgium, France, Greece and Poland indicated that **the learning environment at home was not always optimal for their pupils**. For example, they indicated that some students did not have a private room to work quietly for school and had to work in common areas where other family members were present, causing distractions. In such situations, the lack of support from parents could manifest in different ways, such as noisy background distractions such as the TV or vacuum cleaner, which made it difficult for students to focus on their work. In addition, two teachers expressed concern about the lack of clarity regarding who was completing the school work at home. One teacher stated, "We didn't know if they were doing the work at home or if it was the older brother." (Teacher of Physical Education, France). Another teacher observed that during online classes, parents or caregivers would be present next to or behind the student while completing the work, potentially affecting the student's learning and progress (Teacher of Music, Greece).

Two teachers expressed concerns about the impact of home environments on the mental and emotional wellbeing of some students during online learning. The teachers observed that this was especially true for students who had difficult relationships with their parents or were in conflictual or violent family situations. As one of them noted, "pupils were also sometimes locked up at home in situations that were not necessarily easy. (...) I am thinking of pupils who were in very conflictual or even violent family situations." (Teacher of Italian, France).

Overall, the shift to online learning brought about **psychological and emotional struggles for both students and teachers**. This challenge was raised by eight educators from our study. Teachers have raised concerns about the potentially traumatic

and distressing nature of the pandemic, as well as the challenges of maintaining a healthy work-life balance.

According to several teachers, some of their students were not mentally available for learning due to anxiety and worrying about what was going to happen to them during the pandemic, "As a teacher, I noticed that many students who experienced anxiety attacks and were worried (...) Some people have had parents who were ill. There have been deaths. In cases like that, even if a student is full of good will, even if the connection was there…In their heads, they were not available. " (Teacher of French, History and Geography, France). According to two teachers from our study, it was especially difficult in the beginning of the confinement: "the first period of confinement was exhausting because we really didn't know what was going to happen to the confinement and how long it was going to last (...) We were all very scared." (Teacher of PE, France); "it was extremely dense in the first month" (Teacher of Science, Greece).

The teachers noted that some students found it challenging to stay motivated during remote learning and preferred being in the physical classroom with their peers: "pupils wanted face-to-face interactions. They missed school more. They certainly didn't like distance learning." (Teacher of History, Greece). Inability to go to school could have some serious implications for students' mental health and wellbeing as it was challenging to maintain work and life balance. One of the teachers suggested that a regular school rhythm was crucial for effective learning, and that a lack of structure and healthy habits can negatively impact students' academic performance: "My students have expressed that it was complicated, that they preferred to be in class and to see their friends (...) Taking a shower and getting dressed, coming to school, (...) it immediately puts them in a different frame of mind. We didn't lose many of them (students), but there were some who had a lot of trouble" (Teacher of Mathematics, Belgium). The Teacher of Spanish from Poland observed that after a while her pupils were tired from studying online: "after a few months, well, I think it was somewhere around 3 months, there came a point where no matter what tool was introduced, they were tired. They were tired, so it was difficult to activate them. " (Teacher of Spanish, Poland).

Six teachers noted that they themselves experienced discouragement and burnout due to the challenges of adapting to the new learning environment. Maintaining work and life balance was a major challenge that teachers faced during the shift to online learning as they had to work from home, put in extra hours for preparation and change their working habits to accommodate their new schedules.

The sudden shift in teaching methods due to the pandemic left some teachers feeling exhausted and lacking creativity. As one teacher put it, "As time goes by, you realise that you are constantly working, which can lead to a lack of creativity.Towards the end of the year, I started to lack a bit of creativity." (Teacher of Italian, France)

The intensity of online teaching caused some teachers to feel burnt out. As one teacher expressed, "It's difficult for me to sum up my experience of teaching at pandemic in this way, because in the early days I was delighted, then I felt myself burning out (...) At some point, even though I was getting results, doing well, somehow the depression came." (Teacher of Spanish, Poland).

However, it is important to note that none of the teachers who noted that they experienced discouragement and burnout found the pandemic

to be a completely negative experience. Most of them also reported feeling engaged with their students, enjoyed the flexibility of the online environment, and the possibility to explore and experiment with new teaching practices and methods.

In conclusion, the shift to distance learning during the pandemic posed a variety of challenges for both teachers and students. The primary issues were related to technological resources, infrastructure, and digital preparedness. Teachers reported that the lack of equipment, unstable internet connections, and software usability issues hindered the learning process. The use of cameras during synchronous classes also posed a significant challenge, compounded by technical difficulties and data privacy concerns. The lack of digital skills among teachers and students was a major obstacle, although online training sessions helped to address this issue. Organisational challenges, such as the lack of clear guidelines and protocols, and systemic difficulties, such as the overloaded curriculum, also presented significant challenges. The traumatic and distressing nature of the pandemic, student-specific challenges, and parental engagement added to the complexity of the transition, with many teachers experiencing discouragement, burnout, and a lack of creativity. Despite these challenges, many teachers were able to adapt by reimagining traditional teaching approaches and improving their skills.

After examining the challenge faced by teachers in the transition to distance teaching during the pandemic, it is important to explore the elements that supported them during this challenging time.

Elements that Supported Teachers' Transition to Distance Teaching During the Global Pandemic

In our research, we identified 145 elements, as expressed by educators, that supported them during the challenging transition to distance teaching. These elements were subsequently grouped into several key categories.

The Crucial Role of Technology, Training, and Prior Experience in Teachers' Transition to Online Teaching

Availability of technological equipment and digital tools was a major supporting factor during the pandemic, as eighteen teachers mentioned it was indispensable to have access to digital resources and equipment available for themselves and their pupils. To illustrate, several teachers mentioned "The school had enough devices (laptops) to provide to all teachers and facilitate their work from home." (Teacher of Philology, Greece); "At the time of the pandemic outbreak, students and teachers who had problems with equipment could borrow it from the school." (Teacher of Spanish, Poland). Eight teachers emphasised that the fact that their pupils were provided with laptops and tablets was a major factor that allowed them to maintain learning continuity. Equipment and in some cases 4G keys for the Internet were provided either by IT departments at schools, regional authorities or associations. To illustrate, one of the teachers from

France commented in support of the regional project Grand-Est 4.0 under which the secondary school pupils were provided with laptops:

> *"I really and truly believe that the equipment of the Grand-Est 4.0 project has made our lives easier. We were really lucky with this famous 4.0 project. We knew that all our students had equipment."* - Teacher of History and Geography, France.

Some teachers also noted that online platforms, tools and resources (instructional videos, lesson plans) were made available and helped them to prepare and conduct the lessons. To give some examples, the teacher of Physics and Chemistry appreciated the availability of CNED platform with online resources, the teacher of History from Belgium appreciated the Teams platform was provided. Overall, technological resources played a crucial role in facilitating remote learning during the pandemic.

Alongside technological equipment and digital tools, some **training and advice** proved to be instrumental for several teachers from the study and helped them to adapt to the new environment. As one teacher commented on the support from the ICT department at their school, "We got training around the tools provided. Massive amounts of training have also been offered." (Teacher of History, Belgium). Overall, having a supportive ICT coordination at schools was a game-changer for some teachers, as another teacher pointed out "We have a very large school group, so we actually have an ICT coordinator and he helped us with everything, preparing computers for the students and so on. We have really good support for this." (Teacher of Cooking, Belgium)

Many teachers found that their prior experience with digital tools and professional development was a major advantage when transitioning to remote teaching. Overall, sixteen teachers mentioned that they were already using digital tools and had curiosity about using them. Several teachers indicated working as trainers in digital education for other teachers. One teacher said, "I had already introduced hybrid forms of teaching into my working methods before the pandemic and was using technology in the teaching process." (Teacher of Spanish, Poland). Another teacher mentioned, "I've always been very curious about digital technology, so I often tested tools in the classroom" (Teacher of Italian, France). This prior experience not only facilitated the adaptation to online teaching and a better understanding of the required tools and platforms but also enabled teachers to learn from and build upon their existing knowledge to enhance the quality of their instruction.

The positive influence of peer exchange, mentorship, and institutional support on teachers' adaptation during the pandemic

A significant factor that supported teachers' navigating the transition to remote teaching during the pandemic was **collaboration and peer exchange among teachers**. In total, thirteen teachers from our study mentioned that support and mutual exchange of effective practices played a pivotal role in their adaptation.

Teachers recognized the importance of exchanging ideas, discussing what worked and

what did not in their teaching strategies. One of the teachers commented on the exchanges with colleagues and friends as one of the things that helped her to innovate: "It's often a question of exchanging practices, we take ideas, we give ideas" (Teacher of Italian, France). This spirit of sharing and cooperation was instrumental in tackling the issues arising from the shift to distance learning. Exchange and teamwork fostered a sense of community and mutual aid in a challenging environment. To illustrate, one of the teachers from Belgium mentioned: "We are a solid team of engaged teachers who brainstormed together about the best ways to try to keep in contact with students, who helped each other, who used each other's ideas and resources" (Teacher of Cooking, Belgium).

Several teachers mentioned that seeking advice from **mentors** or more experienced teachers was very helpful, especially when it comes to using technology. In these instances, the more tech-savvy teachers shared their know-how with their colleagues, effectively aiding their transition to digital teaching. This role was vital, as explained by one teacher, "My colleague knows a lot. Every time I had a problem, we would call each other." (Teacher of PE, France). Another teacher mentioned: "there were many colleagues, mentors, who had their own pages and had the mentality to offer and support their colleagues (...) they invited colleagues they knew to support them and that's how this large group was created as it evolved." (Teacher of Science, Greece). Through such mentorship, teachers were able to overcome technical barriers, ensuring the continuity of teaching and learning.

Partnerships fostered between teachers proved crucial in the development and implementation of effective distance teaching practices. Two teachers from France mentioned working regularly in tandem with their colleagues teaching the same subjects. One of the teachers mentioned preparing lessons together: "We have common levels, and we do all our lessons together. We really have a cohesive pairing in relation to our subject in physics and chemistry." (Teacher of Physics and Chemistry, France). Another teacher mentioned peer exchange when it comes to digital practices: "I have a colleague, in particular, who appreciates digital education, so we exchange with each other. I exchanged a lot with my geography colleague because we were already working together before, and he was already into digital before." (Teacher of History and Geography, France).

Finally, teachers mentioned **collaborating across subjects, departments, and schools,** enabling them to pool resources and ideas to address common challenges. This external network enabled them to access a broader range of perspectives and experiences, enriching their own practices. One teacher noted, "We communicated with teachers from other schools. We kept in touch with other teachers." (Teacher of Mathematics, Belgium). The Teacher of IT from Poland also mentioned that having a network of teachers already in place before the pandemic helped them a lot to transition to distance learning, as teachers could share teaching practices, strategies, resources, and to provide mutual support in the new challenges.

In order to encourage collaboration and exchange, the role of **leadership and institutional support** proved to play an important role, as mentioned by several teachers from our study. For example, one teacher mentioned that the exchange between teachers was encouraged by the direction of the school: "The direction asked two or three teachers (...) to make video clips and to train us (...) So it was a great team effort. And the management really took charge. I think it was essential to have

someone who guides the teachers a little bit" (Teacher of Mathematics, Belgium). Overall, ten teachers highlighted the critical role of institutional support and guidelines in facilitating their adaptation and innovation during lockdowns. This support encompassed various aspects, including effective leadership, clear guidelines, training, advice, and fostering a trusting and creative atmosphere among colleagues.

One of the key aspects of institutional support was the presence of a strong and **supportive leadership.** Several teachers mentioned that the responsiveness for teachers' needs coming from the school administration played an important role for them: "Our principal was very supportive and responsive for teachers' needs. That made it possible for teachers to really focus on their students and to try to find new teaching practices." (Teacher of Cooking, Belgium). Short and regular meetings with school teams were mentioned as an important supporting factor by five teachers which helped schools to ensure a common approach to teaching practices. One teacher mentioned, "We met several times via My Digital Office with the head teacher to establish a common practice." (Teacher of PE, France). This collaborative approach allowed for a more uniform teaching methodology, which was crucial for effective distance learning. Clear guidelines and instructions coming from the school leadership were also essential elements that allowed teachers to navigate the new digital landscape effectively. Some teachers mentioned that clear coordination helped them to be more structured and efficient during the crisis: "After a while, teachers received very clear guidelines from the principals of what tools could be used, what tools could not be used. " (Teacher of History, Belgium), "we did receive guidelines from the school, so then I clearly knew what to do ... Then I had immediately drawn up a plan for myself of what I wanted to do" (Teacher of Dutch, Belgium).

Institutional support also showed itself in fostering an **atmosphere of trust and creativity** at school. Some teachers appreciated the freedom to innovate and experiment with new teaching practices, as one of them pointed out, "The management at my school leaves me free (...) that's why I value it at my school, because I can compare." (Teacher of Spanish, Poland). Another teacher observed, "It helped of course that we've been colleagues there for many years together and there is a relationship of trust." (Teacher of History, Greece).

The impact of maintaining regular communication, attention to student well-being, and parental involvement

Another supportive factor for teachers was their prompt mobilisation at the onset of lockdown to maintain regular contact with students, focus on students' psychological well-being, and encourage parental involvement and support.

Ten teachers mentioned that it was important for them to establish **regular and individualised contact with pupils**, which represented their initiative that sometimes-required effort, time, and a big number of follow-up messages. Teachers quickly turned to platforms like Discord and WhatsApp, creating channels and groups where they could interact with their students regularly. They saw the need to keep the relationship and engagement alive, even in a remote context. Some teachers mentioned being available for their pupils every day, ensuring that students felt their

presence and support, "(...) accessibility, that reachability of a teacher, for example for support, is crucial." (Teacher of History, Belgium).

Several teachers mentioned that they made it a point to know everything about their students, understand their individual circumstances, and offer tailored support. To illustrate, another teacher highlighted the importance of providing individualised support and showing compassion to every student through email exchanges, stating, "I was actively present via email, which facilitated a level of compassion and individualised dialogue that isn't always evident in the classroom." (Teacher of Physical Education, France). The teacher mentioned that such contact was especially important for students who experienced difficulties at home.

Having a trusting atmosphere at school and encouraging students to support each other was another factor that helped teachers to maintain contact with their pupils and keep them engaged in learning, even if they were experiencing difficulties. To illustrate, while discussing the factors that supported them, the teacher of Mechanics pointed out: "There is a very nice atmosphere in our school, we have students in the school who are socially in difficulty, or simply in academic difficulty. (...) When students are in difficulty, the rest of the class doesn't pick on the student but rather takes care of them. We have students who are really nice to each other, in general" (Teacher of Mechanics, Belgium).

The role of **parents** in supporting distance learning was also highlighted. Being able to contact parents directly allowed teachers to understand why a student might be disengaging from their work and find ways to collaboratively address it. One educator highlighted the minimal attendance issues they experienced, attributing this success to open lines of communication and parental involvement: "When I had situations where a pupil didn't show up (...) there was instant contact, one message to the parent and the child was back in the lesson." (Teacher of Literature, Poland)

In conclusion, the transition to distance learning was made smoother by regular communication and engagement with students, a focus on their psychological well-being, and strong parental involvement and support. These factors not only helped teachers adapt to new teaching methods but also ensured that students continued to learn effectively despite the challenging circumstances.

The role of investment, resilience, creativity, and lifelong learning in teachers' transition to remote education during lockdowns

The teachers' testimonies offer valuable insights into the critical role of personal well-being, a conducive working environment, and the importance of mindset factors, such as positivity, resilience, and lifelong learning, in adapting to the shift to distance learning experienced during lockdowns. These factors not only helped them navigate this challenging period but also facilitated innovation and the implementation of effective teaching practices.

One key facilitating factor in the teachers' effective transition to remote teaching was a supportive home environment. One teacher mentioned managing to establish a **comfortable work environment at home**, indicating the importance of a conducive and distraction-free environment.

This allowed the teacher to focus on exploring and implementing new teaching methods effectively (Teacher of History and Geography, France). Another teacher mentioned that living in the countryside helped him to limit stress and stay productive (Teacher of Philology, Greece).

Being willing to invest time and energy was mentioned at several occasions as a key factor that helped to succeed. In fact, teachers spent long hours reinventing their teaching methods, adapting learning materials, reaching out to pupils, attending training and helping their colleagues. They were ready to invest their time and energy into improving their teaching methods, regardless of how demanding the process was. As one teacher stated, "We gave it our all and pushed forward. I recall my husband sometimes saying 'You're pushing yourself too much,' but in my mind, it didn't matter. What mattered was achieving our goal." (Teacher of French, History and Geography, France).

What helped teachers navigate through the intensive workload and time-consuming nature of the shift to remote learning was their **growth mindset.** These educators saw the challenges as an opportunity to enhance their teaching practices and ultimately improve the learning outcomes for their pupils. As the teacher of History from Belgium mentioned: "Under the motto 'Never waste a good crisis', yes, covid accelerated everything (...) I must say, it has been two very intensive years. I worked very hard, but I also knew: 'everything I do here is not lost. Everything I do here is going to raise my classes'" (Teacher of History, Belgium)

Aside from resilience and investment, several teachers mentioned having a **mindset of lifelong learners** which was also evident in the teachers' willingness to constantly learn and test new solutions. Many teachers spoke about actively participating in training courses and webinars, to acquire new skills and knowledge and then testing them in the class to improve the effectiveness of online teaching. Furthermore, the pandemic period was seen by some teachers as a unique opportunity to access and participate in a variety of training courses that were otherwise unavailable or cost prohibitive. For instance, the teacher of Spanish form Poland treated the pandemic period as a unique opportunity to learn about different online tools and methods for working with pupils and emphasised the possibility to participate free of charge in several training courses. Another teacher mentioned, "I am training non-stop. I am a perpetual learner" (The Teacher of IT, Poland).

Furthermore, the teachers' creativity and sense of humour played a crucial role in making the lessons interesting and engaging, both for themselves and their students. This creative approach and openness to new ideas helped to break the monotony and make the lessons more enjoyable and productive. To illustrate, one of the teachers stated that creativity, a good relationship with students, a "sense of humour and freedom" helped them to invent new teaching practices and keep lessons interactive. According to the testimony of this teacher, such attitudes also helped them to maintain professional well-being and avoid burnout even after 25 years of teaching (Teacher of Literature, Poland).

In conclusion, our study has identified a range of categories of elements that supported teachers in their transition to distance teaching during the pandemic. These categories included the teacher's testimonies about the availability of technological resources and infrastructure, training in digital education, peer exchange, institutional support. Regular communication, prioritising student well-being, and parental involvement were also highlighted as vital components, fostering a

supportive learning community during isolation. Finally, the teachers' mindset, particularly their resilience and lifelong learning mindset emerged as an important factor in their ability to adapt in the new educational landscape.

4.Conclusion

Throughout the COVID-19 pandemic and associated lockdowns, educators worldwide displayed resilience and ingenuity, managing the transition to distance learning and maintaining connection with their students to ensure learning continuity. This report examined some of these experiences, analysing the practices that were developed in response to this significant disruption to traditional teaching methods by twenty European teachers during the pandemic. These educators encountered shared challenges and managed to find novel solutions despite varying teaching environments, levels of preparedness and access to digital tools. This report shed light on some of these transformative experiences that occurred during the transition to remote teaching.

In the first part of this report, we delved into the diverse profiles and experiences of twenty teachers from various backgrounds, teaching different subjects in both urban and rural settings, with varying levels of preparedness and experience with digital tools. Schools' digital equipment and infrastructure varied across participants, with some schools being well-equipped and providing access to digital platforms for teachers and students, while others faced challenges due to limited resources. Despite these differences and the heterogeneity, the majority of educators faced similar challenges and managed to innovate and transform their teaching methods. They emphasised the importance of adaptability, collaboration, and continuous learning in ensuring quality education in unprecedented times.

Examination of teachers' perceptions of their practices revealed that teachers generally agreed that a practice should show an observable positive change to be considered effective, but some found it challenging to measure this change precisely. Despite this, most teachers were able to explain why they perceived their practices as effective. They observed positive changes in their students' learning outcomes, noticed increased engagement in the learning process. In terms of innovation, teachers perceived novelty and a more learner-centred approach as the primary factors that made them consider the implemented practices as innovative. Novelty was found in the use of new digital tools and the implementation of new pedagogical practices. The shift towards a more learner-centred approach was also perceived as innovative, with teachers focusing on adapting their teaching methods to their students' needs and experiences and transforming their role in the classroom.

In the second part of the report, we present our findings from the analysis of teachers' discourse regarding the purposeful teaching techniques employed during the COVID-19 pandemic. We analysed the main purposes that teachers identified as the rationale behind the implemented practices and subsequently classified these practices into categories. Our examination revealed that while each of the practices had multiple objectives and thus related to various categories, they predominantly gravitated around the four primary themes in terms of their implementation: : student autonomy and learning agency, student motivation, building connections, and assessment strategies.

The educators recognized the importance of creating an environment that promotes students' active participation in their learning process and shared valuable insights into effective pedagogical practices that encouraged autonomy building and learning agency among their students. They implemented practices such as enhancing the accessibility of learning resources, using flipped classroom methods, and involving students in the design and implementation of the learning process. Additionally, they highlighted the importance of seeking student feedback about learning objectives, structure, and content of lessons. Moreover, the educators mentioned that a shift to a more innovative and interactive learning environment required a corresponding change in the role of the teachers, transforming them from traditional instructors into designers and facilitators of the learning process.

The second category of teaching practices emphasised strategies to enhance student motivation, underlining the significance of personalised and interactive learning. Teachers demonstrated adaptability, tailoring content and teaching methods to meet individual student needs. This dynamic process involved observing student behaviour, collecting feedback, and continually adjusting strategies to encourage engagement. Practices included surveying student preferences, aligning exercises with student interests, and initiating creative, student-centred projects. To facilitate effective learning, teachers accentuated the importance of interactivity and engagement, often through gamification techniques, implemented in synchronous and asynchronous settings. This involved creating engaging learning experiences, such as interactive quizzes, digital games, and video content, carefully tailored to suit student needs and interests.

The third category of practises related to building strong connections with students and their parents which was identified by teachers as particularly important for ensuring consistent attendance and preventing students from dropping out of school. Three key areas underscored this category: teacher-student communication, student-to-student connections, and parental involvement. For teacher-student communication, educators emphasised the necessity of maintaining their availability throughout the period of remote learning. This meant setting up effective communication channels that allowed students to reach out with questions or concerns, and teachers to provide timely responses and guidance. Another objective was to strengthen student-to-student connections during the lockdown periods. To achieve it, teachers adopted practices that fostered collaborative learning, peer learning, and group work. Beyond structured learning activities, several teachers stressed the importance of creating shared virtual spaces for their pupils, encouraging informal online meetings and group study sessions outside of formal class time. This approach aimed to sustain the social interactions inherent to a school environment. With remote learning blurring the boundaries between school and home, parents were often present during lessons, allowing for a new form of engagement. Teachers actively sought to establish lines of communication with parents and, in some cases, involve them in learning activities. Two teachers of practical subjects from France and Belgium exemplified this approach. However, this increased parental involvement was not universally applicable, with particular challenges arising in families facing issues such as limited access to digital devices, lack of digital skills, limited physical space, increased stress due to job loss, among others.

The fourth category related to the assessment practices which were especially important for maintaining connections with pupils, ensuring learning continuity, and preventing student dropout. The teachers we interviewed primarily focused on monitoring their students' progress through diagnostic and formative assessment techniques, reducing the potential stress of summative assessments. They employed a variety of strategies, such as interactive quizzes and games, self-evaluation, feedback collection, synchronous observations, and assessment of tasks completed both in synchronous and asynchronous settings. These diverse methods allowed teachers to tailor instruction to individual student needs. BIn addition to academic progress, teachers also prioritised monitoring students' well-being, acknowledging the added strains imposed by remote learning. The overarching goal was to create a supportive and constructive learning environment that fostered both skill development and personal well-being, acknowledging the unique challenges of the lockdown period.

In the third part of this report, we delved into a range of categories of elements that presented challenges and, on the contrary, supported teachers in their transition to distance teaching during the pandemic. Predominant issues concerned technological resources and digital preparedness of both teachers and their pupils. Teachers faced difficulties with equipment availability, unstable internet connections, software usability, and digital skills gaps among themselves and their students. Additionally, using cameras during synchronous classes introduced technical difficulties and data privacy concerns. Therefore, teachers highlighted the value of having access to technological resources and infrastructures when it was possible. Another issue concerned the lack of digital skills among both teachers and students, which was partially mitigated through online training sessions. On the opposite side, in cases when teachers had already had experience or training with digital tools it represented a supporting factor. Therefore, training in digital education was found to be instrumental in equipping teachers with the necessary skills to navigate the new learning landscape. Beyond technology, organisational difficulties, such as unclear guidelines, and some systemic issues, such as overloaded curriculum, presented considerable challenges. Compounding these issues, the distressing nature of the pandemic and the necessity of parental engagement added layers of complexity to the transition. The cumulative stress of these challenges resulted in feelings of discouragement and burnout among some teachers, hampering their creativity.

Despite the mentioned challenges, teachers identified several crucial elements that facilitated their transition to online teaching amidst the global pandemic. One of the most cited supporting factors related to institutional support and clear guidance. Moreover, maintaining collaboration between teachers and peer support, inside schools or in communities of practice outside of schools, was cited as a significant source of encouragement and support during the isolation imposed by the pandemic. Parental involvement was also recognised as a crucial supporting aspect by teachers. Lastly, teachers acknowledged the importance of their own mindset, with resilience, creativity, and a commitment to lifelong learning proving critical in their successful adaptation to the new teaching environment and ability to innovate. Overall, despite the increased workload and challenges associated with remote teaching, several teachers recognized the long-

term benefits of their efforts towards improving the quality of their lessons. This recognition served as psychological support, helping them maintain their commitment and persistence in their work.

In conclusion, this analysis aims to enrich our understanding of the pedagogical changes precipitated by the pandemic, emphasising the adaptations and innovations made by teachers to maintain educational quality. It underscores the importance of adaptability, teamwork, and lifelong learning in the context of education during these unprecedented times. Although this report does not offer any explicit recommendations, the final output of the KEEP project, "Lessons learned and recommendations for future actions" will encapsulate all the findings of the project. This will include outputs, interviews, and events organised throughout the execution of the KEEP project.

FRANCE EDUCATION INTERNATIONAL

SCIENCES HUMAINES ET SOCIALES
Sociétés et Humanités
Université Paris Cité

Laboratoire EDA
Education Discours Apprentissages

FOUNDATION P&V
emancipation participation citizenshipsolidarity

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

INSPÉ ACADÉMIE DE NANCY METZ
GRAND EST

ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ
UNIVERSITY OF PATRAS

IBE
EDUCATIONAL RESEARCH INSTITUTE

KEEP