

## TECHNOLOGY IN TEACHING AND LEARNING IN ROMANIA

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### Abstract

The pandemic caused by the novel Coronavirus has forcibly introduced digital technologies in the teaching and learning process all over the world. Even if teacher and students preparation for this way of teaching has not sufficient, all participants have succeeded in a rather short amount of time to adapt to online teaching and use the myriad of applications, websites and online teaching and learning platforms. The present article evidentiates the impact of digital technologies in education, therefore the study area that incorporates it is education technology.

The idea from which this study originated is the way and rapidness that teachers managed to integrate digital technologies in teaching and to adapt their methods and strategies so that they combine all the advantages offered by online teaching with the contents to be taught.

The main objective of the article has been the identification of the main applications, websites and platforms that the teachers consider useful, the level of usage during exclusive online teaching or hybrid teaching and the advantages and disadvantages of using digital resources on short-term and long-term. The research method is based on the teachers responses to the online questionnaire, on a qualitative research.

The present study is structured in four main sections. The first section presents the context of introducing technologies in the teaching-learning process caused by the Covid-19 pandemic. The second section consists of a list of applications, platforms and educational websites used by Romanian teachers during exclusive online teaching and learning and developing opportunities offered to students and teachers. The third section presents the opinions of teaching staff in a private school from Romania regarding the positive and negative impact of digital technologies over the teaching and learning process. The last section comprises conclusions & recommendations for the main stakeholders.

The main results obtained following the research show that the teachers have used and continue to use a series of apps, websites and educational platforms in teaching, even if the teaching is hybrid or with physical presence. Using digital resources has advantages such as class interaction, high interest in children, but also disadvantages (such as limited resources, internet connectivity, increased time in preparing lessons).

**Keywords:** *Online school, Covid-19 pandemic, educational applications, education digitalization, Romania.*

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### 1. COVID-19 pandemic debut

In December 2019, the first case of Coronavirus was discovered and very soon was going to affect the entire world. In Romania, the first case was confirmed on February 26th 2020. Not long after, panic installed around the whole world and shortage supplies caused by excessive shopping occurred even for basic food products. Only a few weeks after, almost a global quarantine was installed, which has helped the planet by reducing pollution also. From the moment when national quarantine was instated in Romania, all domains have suffered alterations in organisation and activity running. The introduction of technology and the internet have changed the people’s life from many perspectives. (Hossain et. al. 2021)

First of all, the work-from-home practice, not very often met in our country, was adopted by most of the companies and the results indicates that 65% of employees have worked from home and 40% says that they were more efficient. (Vasile et. al. 2020)

Second of all, different industry sectors (e.g. tourism, retail) changed their leadership, business strategies and aspects related to employees or consumer behaviour. Many businesses were forced to close their doors and others were on a win (e.g. sales, online marketing). (Donthu, 2020).

The devices that help in activities by using digital technologies have been in high demand and there were times when manufacturers did not have enough stock to fulfil the great demand. According to some results based on a GfK’s annual sales data from 70 countries, the sales of smart products were with 24 percent bigger than the sales from the previous year. (Richter, 2021)

And not lastly, the flexibility and creativity in schools of all the educational parties has been the starting point for the organisation and sustaining of online teaching activities because the teaching staff was not prepared for such a challenge. (Bell et. al., 2021) Although, in recent times, various practices and forms of integrating technology into the teaching process have emerged, in the case of the Covid-19 pandemic, “online teaching is no longer an option, it is a necessity” (Dhawan, 2020, p. 7) Worldwide, 1.2 billion students could not attend school or university because of the COVID-19 pandemic. (Li and Lalani, 2020) Many teaching institutions have been closed and the right to education has not been ensured equally to all students, due to the fact that there are factors that negatively influence their participation through digital technology. Even before the pandemic, many children could not exert their right to education due to social context and limited financial possibilities so they had to make concerted efforts to maintain learning through the internet, television or radio. (Shleicher, 2020).

## 2. Applications, platforms and educational websites used by Romanian teacher

The sudden transition to online teaching and the pressure on the teachers' shoulders has led to the emergence of two categories. The first has been constituted by teachers that chose to conduct their classes with the simplest and most reachable version and the second category were the teachers that have come out of their comfort zone, learned and developed their digital abilities to try and continuously perfect for the most efficient process of teaching learning evaluating. Teachers had to adapt their methods and use new technological concept to face the new way of teaching. (Shleicher, 2020)

According to a study by Forbes Romania in which 603 students, teachers and parents have participated the most used communication platforms have been Zoom (21%), WhatsApp (23%), Google Classroom (13%) and Facebook (11%). (Barbu, 2020)

The open educational resources educational, websites, online libraries, virtual museums in other applications that are used during teaching activities have been used only 2.82%. The specialise platforms in e-learning have been underused also. Only a percent of 2.6% of teachers claim that they have carried out their teaching activity through platforms such as Google Classroom, Moodle etc. Another percent of 2.8% of teachers claim that they used applications such as Zoom, Meet, Teams or Skype. To the total of applications, learning instruments such as Kahoot, padlet, wordwall etc. are added. (Botnariuc et. al., 2020) According to an article posted on the website [www.clasaviitorului.md](http://www.clasaviitorului.md), based on data collected from teachers during the conference technology makes the difference the most used instruments and digital applications have been: Kahoot, Mentimeter, Padlet, Canva, LearningApps, Wordwall, Livresq, Liveworksheet, Quizizz and Google extensions.

Table 1. List of applications, platforms and educational websites used by Romanian teachers.

Platforms		
1.	Microsoft Teams	Platform designed for business communication.
2.	Google Meet	Video-communication service developed by Google.
3.	Zoom	Program for video teleconference.
Educational websites		
4.	Twinkl	British online educational publishing house.
5.	Krokotak	Educational website with free printable materials.
6.	Didactic	Educational website where teachers can download and upload materials for free.
7.	Emalascoala	Educational website with articles, printable materials and ideas for teachers.
8.	Livresq	Educational website and interactive platform where teachers can create, upload or download materials, lesson plans, or teaching ideas.
9.	Digitaliada	Digital and interactive program that help teachers to use digital educational content in their lessons.
Applications		
10.	Wordwall	Digital instrument based on a collection of words organised in different ways: wall, bulletin board, match up, missing word, random wheel etc.
11.	Skype	Telecommunication application.
12.	Kahoot	Ideal for recaps and evaluations.
13.	Mentimeter	It's an application through which the teacher may present content and also receive feedback in real time.
14.	Padlet	Perfect for presentations and teamwork.
15.	Canva	A platform dedicated to graphic design used to create media content presentations, posters, documents, worksheets or charts.
16.	Thinglink	Ideal for virtual tours, using digital objects or to combine different images/links/words.
17.	Imapuzzle	It's a perfect instrument for math lessons. The teacher can easily create a puzzle and add some math exercises to it.
18.	Edpuzzle	Ideal for music lessons, communication or any teaching material based on a video.
19.	Liveworksheets	Application for creating digital worksheets.
20.	Quizizz	Application for online quizzes.

### 3. The opinions of teaching staff in a private school from Romania

For a better understanding of the teaching staff's perspective on the digitalization of education in Romania, during online exclusive teaching but also in present times when teaching is carried out with physical presence of hybrid, data have been collected on the way of teaching that is mediated by technology from the perspective of teaching staff in a private school from Bucharest, Romania.

The present study is based on data collected through a questionnaire form meant for teaching staff in Bucharest. The research is qualitative and its purpose is to fully and deeply understand the concept of digitalization in the educational field, and the questionnaire is the best method to achieve it (Bird, 2009). The questionnaire has been emailed and also distributed through social networks. The extension Google forms was used for a more efficient, faster and more organized data collection of the received answers. The number of teachers that filled out the form was 86. The questionnaire contained 8 questions. The first two were meant to collect data on the teacher's profile and the following questions were meant to collect data on the impact of digital technologies introduction in the instructive-educational process. Most teachers that filled the forms teach in primary teaching (70%) and the rest in pre-school (10%), middle school and high school (20%). Regarding teaching seniority, it was observed that 40% of teachers have more than 10 years seniority, 30% have between 6 to 10 years, 20% between 3 to 5 years and 10% under 3 years.

Question number 3 had as purpose the collection of data regarding the most used digital apps during exclusively online teaching.

Table 2. Apps, educational websites and platforms used by teachers.

Online apps	Educational websites	Platforms
Wordwall, Kahoot, Canva, Nearpod, Genially, Learning Apps, Baaboozle, Pinterest.	Twinkl, Emalascoala, Krokotak, Didactic.	Microsoft Teams, Zoom.

In order to evidenciate the impact that the sudden introduction of technology has had over teachers, the answers to the question "Would you still use digital resources after returning to the classroom?" were that 90% of the teachers have continued to use digital resources even after online school was over. On the other side, 10% of teachers have given up the integration of digital resources in the instructional-educational process once the return to face-to-face teaching has occurred. In hybrid teaching 90% of the teachers have stated that they use digital resources almost on a daily basis and 10% have stated to no longer use this type of resources. It is worth mentioning the fact that's the current student generation has grown alongside technology and they are very familiar with all kinds of devices (Bhasin and Rajesh, 2021).

The following questions had open answers as every teacher had the opportunity to list the advantages and disadvantages of using digital resources in class:

Table 3. Advantages and disadvantages of using digital resources.

Advantages	Disadvantages
motivation and interest grow in students	weak internet connection that interrupts lessons
the lessons become more interactive	longer time spent to create teaching materials
supplementing activities that are difficult to be carried out in the classroom	insufficient training for teachers
immediate feedback	technology cost

### 4. Conclusions for the main stakeholders

The purpose of this study was to evidenciate the importance and usefulness of the digitalization of education in Romania and not only. Therefore, using digital resources in online teaching hybrid or face to face is starting to become more commonly used, according to the results of my research and if they become aware of the benefits and also the disadvantages they can achieve interactive lessons and modern teaching, of course with the help of other entities that influence teachers and students lives. A study by Shivangi Dhawan in 2020 presents a SWOT analysis of online teaching with its advantages and disadvantages and specifies that, over time, online teaching can be a real success. (Ayeni-Arthur, 2017).

The applications, sites and platforms listed by teachers in the questionnaire were diverse and this indicates that they have adapted their teaching methods and strategies to the online or hybrid model. This idea is also written by Eduard Edelhauser and Lucian Lupu-Dima who stated that "A mix-and-match of

these tools with a variety of delivery methods, such as interactive e-learning courses, live and recorded lectures, and collaborative documents for group work, can work well to provide a comprehensive learning experience, but this also creates some difficulties for students and teachers." (Edelhauser and Lupu-Dima, 2021).

#### 4.1. Recommendations for the main stakeholders

Due to the fact that there has been enough time since the first contact of teachers and apps on digital platforms it is recommended that they choose a set of apps they find useful and that their students reacted well to. This way everything becomes routine for teachers and students and the wanted results are achieved. This does not mean that teachers should not experiment keep learning and searching constantly for resources that are useful and that may help in fulfilling the proposed objectives. From my own experience I can state that the even if there were problems linked to Internet connexion and lack of means to help in the optimization of the online or hybrid teaching I have always found solutions and try to focus on the advantages and the great results of my students. Also from my perspective I can state that with more time passing and the more frequent use of digital apps the time spent in creating necessary materials for the classroom has become shorter because I've learned and perfected myself in using them. If you give yourself enough learning time and enough patience the digital apps become a must have making your work much easier.

Therefore, most teachers use digital resources in the teaching process in Romania despite the disadvantages and even though the preparation for technology mediated teaching was somehow very sudden due to the pandemic caused by the novel coronavirus. If teachers will continue to perfect (on their own or through organisations and institutions that offer classes) the Romanian teaching system will only have benefits.

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