

COMPARISON OF THE LEARNING PROCESS OF HIGH SCHOOL STUDENTS BEFORE, DURING AND AFTER THE PANDEMIC

Florentina Alina Grigorescu (Pîrvu)

Doctoral School of Entrepreneurship, Business Engineering & Management – FAIMA from University Politehnica of Bucharest (Romania)

Abstract

During the post-pandemic time period, it was observed an increased interest among scholars over studying the effects of online schooling regarding the teaching-learning-evaluation process and how the school has changed after the introduction of technology in teachers lives. However, there are few studies that treat the subject of how online schooling has affected students.

The main objective of this research is to compare the manner in which the teaching-learning-evaluation process has been carried out for both gymnasium students and highschoolers during the pre-pandemic, pandemic and post-pandemic period and to analyze how this process has changed for the students and how digital technologies are useful.

The used research method is the focus-group in a private high school from a large Romanian City, Bucharest, the Capital City of Romania. During the group interview, a structured interview with three essential parts has been used.

The present research is structured into four sections. The first section presented the context in which digital technology has entered students lives and how they have adapted to the changes, the second section presents a list of good practices used by teachers and the third section contains the results of the focus-group. The last section is composed of conclusions and recommendations over the main results.

The results of this study show that students appreciate the use of new digital technologies in the teaching-learning-evaluation process, and even if they returned to physical classes, teachers must continue to integrate digital resources and tools into their activities. Since all the participating students to the focus-group come from a private high-school, carrying out a similar study on a public school group, there could be major differences in the results obtained.

The implications of this study are useful to both teachers, that may pick up examples of good practices, and students.

In conclusion, the present study presents the lives of students during the pre-pandemic, pandemic and post-pandemic period and highlights the changes they have been through and how the technology helped.

Keywords: *Students, learning, pandemic, Romania, private high school.*

1. The context of introducing digital technologies in the lives of students

Since all schools have switched to exclusively using digital technologies for teaching, both teachers and students have had to quickly adapt and use their digital skills for the teaching-learning-evaluation process to continue. Covid-19 has led to the closure of schools globally, providing an opportunity to reconsider the way education is conducted in all countries. (Pozo et. Al., 2021)

In the last decade, technology has impacted almost all areas. Education is one of those that has undergone major changes, starting from the way information is transmitted, the diverse sources of information that the internet offers, and up to the way learning and evaluating students takes place.

Digital technologies offer new learning environments, new methods for teachers to transmit the information, and lead to the emergence of new learning styles based on the use of the internet and various digital tools.

Laurillard states that the learning environments offered by new digital technologies trigger a different kind of relationship between teachers, students, and taught content. Collaborative technologies offer a range of new ways that support the learning process and allow students to share and exchange ideas, while creating their own digital products. (Laurillard, 2013).

Even before the pandemic, in some countries, distance education, mediated by technology, was taking place at a normal pace. This practice was common among adult education and students at different universities, but not in primary or secondary education. (Mannadhar & Luitel, 2020)

Even though the transition of all teachers and students to exclusively online teaching was sudden and forced by the pandemic, it didn't take long for teachers and students to adapt to the online environment because the internet and all the digital devices of today have been a great help and have eased their work. However, not all students had the necessary material resources available (laptop or desktop personal computer), neither a suitable home environment to learn and study or a good internet connection. (Cullinan et. al., 2021)

Although the use of technology seems to bring many benefits in online teaching, it also comes with a series of disadvantages like the lose of concentration and various health problems after spending a long time in front of the computer, the feeling of isolation and lack of socialization, as well as the costs of equipment and internet connection. Another major disadvantage is that students cannot actively participate in discussions, especially when a large number of students attend the course. (Armstrong, 2013)

2. Examples of good practices used by teachers during online teaching

The pandemic period has brought numerous challenges for both students and teachers, and many teachers had to adapt their teaching methods in order to continue providing high-quality education to their students (Mannadhar & Luitel, 2020).

One of the most commonly used good practices was the use of online platforms for synchronous and asynchronous communication (Laurillard, 2013). Many teachers used platforms such as Zoom, Google Meet, and Microsoft Teams to hold virtual classes and meetings with their students. This allowed students to continue receiving instruction and support from their teachers even while they were unable to physically attend school.

Another good practice used by teachers was the use of multimedia resources and interactive activities like videos, slideshows, podcast, articles, webinars, online applications to make online classes more engaging and interactive (Armstrong, 2013). Also, the teachers used a variety of teaching methods such as lectures, discussions, group work, and hands-on activities. (Meador, 2019) More than that, to enhance the learning experience and provide immersive learning opportunities, teachers used virtual reality and simulations, such as Google Earth or SketchUp. (Mannadhar & Luitel, 2020)

Additionally, some teachers made an effort to create a sense of community and connection with their students through the use of social media and other online platforms. This helped students feel supported and motivated to continue their studies despite the challenges.

Also, to organize course materials and facilitate communication with students, teachers have used various learning management systems (LMS), such as Blackboard, Canvas, or Moodle. (Armstrong, 2013). Furthermore, to facilitate and streamline the process of communication and collaboration among students teachers have used online tools such as Google Docs, Google Classroom, or Trello (Laurillard, 2013).

As well to personalize the learning experience and track student progress, teachers have used adaptive learning software such as Khan Academy or ALEKS. The ALEKS tool allows teachers to assess student understanding through quizzes and assignments, generate a student progress report and provides students with the opportunity to practice and receive constant feedback on their progress (Kumor, 2021).

Table 1. Good practices used by teachers during the pandemic.

Online platforms	Multimedia resources	Create a sense of community	Learning management systems (LMS)	Virtual reality and simulations	Online resources	Adaptive learning software
Zoom	Videos	Social media	Blackboard	Google Earth	Videos	Khan Academy
Google Meet	Slideshows	Online platforms	Canvas	SketchUp	Podcasts	ALEKS
Microsoft Teams	Online applications		Moodle		Webinars	

Source: author (27 December 2022)

Another good practice that teachers used was offering one-to-one support and tutoring to students who may need additional assistance or guidance with their studies. By offering personalized support and tutoring, teachers can help ensure that all students have the opportunity to succeed and reach their full potential. According to Ryan (2022), the main benefits of tutoring include a deeper and wider understanding of the subject matter, personalized learning, the encouragement of questioning and critical thinking, an improvement in confidence, and the introduction of accountability.

In conclusion, the pandemic period has presented numerous challenges for students and teachers in terms of adapting to online learning. To overcome these challenges, teachers have used a variety of good practices such as using online platforms for communication, incorporating multimedia resources and interactive activities, creating a sense of community, using a range of teaching methods, utilizing learning management systems, utilizing online tools for communication and collaboration, using virtual reality and simulation, online resources to supplement traditional materials, adaptive learning software, and offering one-to-one support and tutoring.

3. Insights from focus group: High school students' experiences of learning in a pandemic

In the past year, the COVID-19 pandemic has had a significant impact on education, with many schools and universities transitioning to online learning. For more than 168 million children worldwide, schools have been completely closed for almost a year due to pandemic, according to the data published by UNICEF. (Farber, 2021).

The scope of the present research is limited to the experiences of high school students in a private school in Bucharest, Romania, before, during, and after the Covid-19 pandemic, regarding the use of digital technologies. The objectives of the research are to investigate how the use of digital technologies has impacted the teaching-learning-evaluation process for these students, and to identify any challenges or benefits associated with the use of these technologies.

The research is a qualitative study, based on a focus group discussion with a group of 10 high school students from grades 9 to 12. The focus group was conducted in the last semester of 2022, in the high school's library. The focus group, conducted in Romanian, lasted approximately 90 minutes and was moderated by the researcher. The session was audio-recorded and transcribed verbatim.

To guide the discussion and gather relevant information within the focus group, a predetermined interview guide was used. The questions in the interview guide focused on the teaching-learning-evaluation process and were grouped into three parts: before, during and after the pandemic.

The first questions focused on the period before the pandemic. Regarding the teaching process, most students stated that only a few teachers used digital resources or computers in the class. Even though all classrooms were equipped with computer and a video projector or smart TV. Additionally, when asked about digital resources or tools used by teachers, students provided examples such as: presentations, videos or resources from different educational websites.

In terms of homework, all students reported that they completed written assignments in their notebooks. Group projects were completed in face-to-face meetings and consisted in posters, boards, or presentations using applications such as PowerPoint or Google Slides.

When asked about the evaluation process, all students stated that evaluation was done through oral listening, projects, or written papers.

Therefore, it appears that the use of digital tools and resources in the classroom was limited before the pandemic. Some teachers used digital resources and computers during instruction and the students' use of these tools was limited to a few specific tasks. Additionally, the evaluation process primarily consisted of traditional methods such as oral listening and written papers, rather than digital tools.

During the pandemic period, the second part of the focus group aimed to understand the students' opinions on the use of digital tools and resources and how they integrated them into their lives.

The first question referred to the methods and strategies used by teachers for exclusively online teaching. All students stated that all their teachers used synchronous and asynchronous communication platforms. Students quickly identified the main advantages: real-time communication, course materials available anytime, good organization of the assignments, the ability to work in small groups and the multitude of video and audio resources shared in online meetings.

When asked about the digital resources used by teachers students provided several examples of applications, websites, and platforms. In the top of the preferred applications by students were those that allow collaborative work: Google Slides, Google Docs, and Padlet, applications through which students can practice certain concepts and receive immediate feedback: Kahoot, Slido, Mentimeter, and Wordwall, as well as applications used for evaluation: Google Forms, Socrative, and Quizlet. The students said that

the evaluation process has changes and most teachers evaluated students through digital tools or projects and few kept the oral and written evaluation.

Regarding homework, students said that most assignments were completed in writing in their notebooks, but added a few subjects for which assignments could be completed using online applications or platforms. They also stated that during exclusively online teaching, they used more of the benefits of the internet and digital tools to improve certain skills, practice, or research certain subjects. Therefore, online learning made students more aware of the advantages that digital tools and resources can bring, but teachers need to be careful about how students use digital technologies.

In relation to the projects students stated that they were completed exclusively during online meetings and with the help of collaborative work tools. All projects consisted of digital products like digital posters, digital presentations, and videos made in applications, such as Animoto, Canva or Prezi.

Finally, when asked about the communication with teachers during online learning, all students stated that they used email, chat, or discussion forums to communicate with teachers, but they missed the face-to-face interaction with teachers and classmates.

In conclusion, the pandemic period had significant impact on education and students appreciated the use of digital tools and resources.

The third part of the focus group consisted of questions about the post-pandemic period. Students stated that teachers continue to use certain teaching methods that involve the use of digital resources and applications. Regarding homework, students said that, depending on the subject and discipline they are completing homework for, they choose either written homework on notebooks, presentations made in certain applications, videos, digital posters, or digital book reviews.

When asked about group projects completed by students in the post-pandemic period, four students said that they physically meet their classmates to complete the projects, while six students said they use online communication platforms.

In conclusion, it is clear that the use of digital technologies in education has become more widespread and integrated, even in the post-pandemic period. While there are benefits to using digital tools in teaching and learning, it is important for educators and students to be aware of the potential drawbacks and take steps to mitigate them.

4. Recommendations for the main stakeholders

Based on the findings of this research, there are several recommendations that can be made for the main stakeholders, specifically in regard to the post-pandemic period when the teaching process is conducted in-person.

First, it is important for teachers to continue incorporating digital technologies and resources into their teaching methods, even when in-person instruction is resumed. The pandemic has shown the benefits of using technology to facilitate learning and engagement, and it is likely that students will expect and appreciate the use of these tools in the classroom.

Second, it is recommended that teachers continue to offer a variety of teaching methods, including lectures, discussions, group work, and hand-on activities, in order to meet the diverse needs and learning styles of students and it is important for teachers to continue using communication platforms with students because they can communicate more easily with the teacher, can have work meetings with their peers, can view course materials when needed, and can upload various tasks completed with the help of digital technologies.

Finally, it is important for teachers to continue offering one-to-one support and tutoring to students who may need additional assistance or guidance with their studies. This can help ensure that all students have the support they need to succeed, regardless of their learning style or needs.

5. Conclusions

In conclusion, based on the results of the present research, it appears that the teaching-learning-evaluation process for high school students has changed significantly during the pandemic and post-pandemic periods. Prior to the pandemic, the use of digital resources and tools in the classroom was limited, with most students completing written assignments and completing group projects through in-person meetings. However, during the pandemic, the shift to exclusively online teaching led to an increased in the use of digital resources and tools, including online platforms for synchronous and asynchronous communication, multimedia resources, and interactive activities.

Additionally, teachers made efforts to create a sense of community and connection with their students through the use of social media and other online platforms, and used a variety of teaching methods to engage students. While the integration of digital resources and tools in the learning process

has brought many benefits, it also comes with a series of disadvantages. Overall, this research suggests that digital technologies can be useful in facilitating the teaching-learning-evaluation process for high school students, but it is important to consider the potential challenges and ensure that all students have access to the necessary resources and support.

6. Research limitations and further research

Some potential limitations of this study include the small sample size of only 10 high school students from a private school in Bucharest, the reliance on self-report data, and the fact that the study was conducted in a specific location and time period. These limitations may limit the generalizability of findings to other high school students or schools in different locations or at different times.

In terms of further research, it would be interesting to replicate this study with a larger sample size and different schools, both private and public, in order to compare and contrast the experiences and perspectives of high school students in different contexts. It would also be useful to conduct follow-up research to see how the use of digital technologies has evolved over time and to explore any long-term effects on the teaching-learning-evaluation process. Additionally, it would be valuable to examine the perspectives of teachers and school administrators on the use of digital technologies in education, as well as the impact on learning and student engagement.

References

- Armstrong, S., (2013). What are the Advantages and Disadvantages of online learning? Retrieved December 16, 2022, from: What Are The Advantages And Disadvantages Of Online Learning? (elearningindustry.com).
- Cullinan, J., Flannery, D., Harold, J., Lyons, S., Palcic. (2021). The disconnected: COVID-19 and disparities in acces to quality broadband for higher education students. *International Journal of Educational Technology in Higher Education*. Retrieved December 16, 2022, from: The disconnected: COVID-19 and disparities in access to quality broadband for higher education students | International Journal of Educational Technology in Higher Education | Full Text (springeropen.com).
- Farber, C., (March 2, 2021), UNICEF unveils ‘Pandemic Classroom’ at United Nations Headquarters in New York to call attention to the need for governments to prioritise the reopening of school. Retrieved December 27, 2022, from: COVID-19: Schools for more than 168 million children globally have been completely closed for almost a full year, says UNICEF.
- Kumor, T., (2021) *Understanding teachers’ perceptions and strategies implemented in high school matematics classes using ALEKS*, Place of Publication: Boise State University.
- Laurillard, D., (2009). The Pedagogical Challenges to Collaborative Technologies. *International Journal of Computer-Supported Collaborative Learning*. Retrieved December 15, 2022, from: (PDF) The Pedagogical Challenges to Collaborative Technologies (researchgate.net).
- Manandhar, N. K., Luitel, B., C., (2020). Education before, during, and after pandemic: A proposal for STEAM education. Retrieved December 15, 2022, from: (PDF) Education before, during, and after pandemic: A proposal for STEAM education (researchgate.net).
- Meador, D., (July 23, 2019), Using Effective Instructional Strategies, Retrieved December 26, 2022, from: Using Effective Instructional Strategies (thoughtco.com).
- Pozo, J. I., Echeverria, M.P., Cabellos, B., Sanchez, D. (2021). Teaching and Learning in Times of COVID-19: Uses of Digital Technologies During School Lockdowns. Retrieved December 15, 2022, from: Frontiers | Teaching and Learning in Times of COVID-19: Uses of Digital Technologies During School Lockdowns (frontiersin.org).
- Ryan, (August 4, 2022), Benefits of tutoring & how one-to-one personalized instruction helps students. Retrieved December 27, 2022, from: Benefits of Tutoring | One-on-One Instruction & Personalized Learning (idtech.com).