



FROM EMERGENCY REMOTE TEACHING AND LEARNING TO POST-COVID HIGHER EDUCATION: A REFLECTION ON UNIVERSITY STUDENTS' EXPERIENCES

Anthi Adamopoulou¹,

Epameinondas Panagopoulos²ⁱ,

Ioannis Kamarianos³,

Georgios Stamelos⁴,

Haris Lambropoulos⁵

¹Laboratory Teaching Staff,
University of Patras,
Greece

²Postdoctoral Researcher,
University of Ioannina,
Greece

Adjunct Lecturer,
University of Patras,
Greece

³Professor,
University of Ioannina,
Greece

⁴Professor,
University of Patras,
Greece

⁵Assistant Professor,
University of Patras,
Greece

Abstract:

The current study aims to record and explore students' transformative university experience during the Emergency Remote Teaching and Learning (ERTL) process in Greece, both during and after the pandemic. To understand the impact of transitioning to the Emergency Remote Teaching and Learning (ERTL) process and back (in the post-COVID era), a tailored research design was developed in three phases. The initial phase of the study (at the beginning of the experience of the ERTL) involved examining the student population's perceptions of the educational situation at the onset of the pandemic crisis. The survey sample conducted during the pandemic refers to 332 students from six (6) departments of the University of Patras in four (4) disciplines. In the second phase of the research design (during the experience), the objective was to explore the experience

ⁱ Correspondence: email epameinondaspanagopoulos@gmail.com, up1063567@upatras.gr

of transitioning to Emergency Remote Teaching and Learning/ERTL) during the pandemic crisis. The survey sample conducted during the pandemic refers to 742 students from six (6) departments of the University of Patras in four (4) disciplines (January 31, 2021, to February 15, 2021). As the analysis of the data from the second phase indicated a significant variation in the experience of ERTL among students who studied education in comparison to those who pursued other faculties (e.g., engineering, medicine, marketing), the third phase (after the experience) was focused on investigating the experience of future teachers, as they were regarded as pivotal multipliers of experience. Thus, in the third phase of the research design, the objective was to explore the impact of transitioning to forced remote teaching and learning (ERTL) during the post-pandemic period, following the conclusion of the pandemic crisis response. The survey sample was conducted after the COVID-19 period and included 101 students from two departments of the School of Humanities and Social Sciences at the University of Patras (January 2024 to May 2024). The findings reveal that students perceived the institution as being effectively prepared for ERTL (80.4%), with faculty adapting effectively to online teaching (66.7%) and online examinations of courses (60.7%). Satisfaction with face-to-face services increased significantly post-pandemic (e.g., 90.8% for library access), though qualitative critiques highlighted persistent infrastructural underfunding. A generational shift towards flexible learning has emerged, with 34.3% of students preferring to choose blended learning environments, while only 28.4% advocating exclusively for face-to-face education. While ERTL offered pragmatic benefits, such as reduced commute time (valued by 74.3%) and lower expenses (cited by 63.5%), relational and pedagogical challenges persisted, with less than 20% reporting enhanced peer collaboration or teaching staff communication. Data analysis revealed lasting societal changes, including digital modernization, erosion of social bonds, a renewed appreciation for in-person education, and persistent health-related anxieties. The study concludes that ERTL catalysed both innovation and inequity, highlighting, in our case, the need for balanced, resilient educational frameworks that integrate technological flexibility with human-centred pedagogy. According to our data, the individual experiences and institutional memory of the crisis continue to influence contemporary Greek higher education, advocating for equity-driven policies and hybrid learning environments.

Keywords: post-pandemic experience, university, emergency remote teaching and learning, student experience

1. Introduction

1.1 Subjective Experience and Institutional Memory in the Post-COVID Education Era

The global COVID-19 pandemic created an unprecedented disruption in higher education systems worldwide, forcing universities to implement Emergency Remote Teaching and Learning (ERTL) as the only viable solution to maintain educational

continuity. This sudden transition from traditional classroom instruction to fully online platforms fundamentally transformed the academic experience for students and faculty alike, creating both opportunities and challenges that continue to shape the post-pandemic educational landscape (Adamopoulou *et al.*, 2024; Young & Clerke, 2024).

In the case of Greek university education, as in other countries, this transition occurred with remarkable speed but not without significant growing pains. University administrations and teaching staff were required to adapt within days to entirely new modes of instruction, often without adequate preparation or technological infrastructure. Students found themselves navigating unfamiliar digital learning environments while simultaneously coping with the broader social and psychological impacts of the pandemic. This complex situation created what we term "risk identities" - how students perceived and negotiated their educational experiences during this period of profound uncertainty and institutional transformation (Kedra et al., 2022; Stamelos *et al.*, 2021; Zagkos *et al.*, 2022; Monioudis *et al.*, 2023).

The initial phase of the pandemic response revealed stark differences in institutional preparedness across Greek universities. While some institutions with existing digital infrastructure managed the transition relatively smoothly, others struggled with fundamental technological challenges. Students reported wide variations in the quality of their remote learning experiences, often depending on their field of study. Those in theoretical disciplines, such as the humanities and social sciences, generally adapted more easily to the online format. In contrast, students in practical fields, including engineering, medicine, and laboratory sciences, faced particular difficulties due to the loss of hands-on training opportunities.

In previous years and during the period of the global pandemic known as the Coronavirus pandemic 2019 (Covid-19), a series of studies in Greece and abroad sought to record and investigate the university experience of students regarding the implementation of emergency remote teaching and learning (ERTL) as an extraordinary and compulsory means of maintaining the daily life of the university environment. In light of the repercussions of the global pandemic, the primary objective of these surveys was to ascertain students' perceptions regarding the academic institution's preparedness and capability to transition from conventional university research and in-person teaching methodologies to emergency remote teaching and learning during the critical phase of the pandemic (Rasli *et al.*, 2022; Monioudis *et al.*, 2023; Kedra et al., 2022; Stamelos *et al.*, 2021; Zagkos *et al.*, 2022; Young & Clerke, 2024; Sing, 2023).

At a subsequent level, these global surveys sought to explore students' perceptions of online education, which was regarded as the most effective option available at the time in terms of health and safety. Additionally, these research projects aimed to examine students' experiences of online education from an educational perspective.

The findings of the aforementioned surveys demonstrated that female students expressed satisfaction with the University's prompt and effective response to the challenges posed by the novel approach to university education. Furthermore, the students acknowledged the efforts of the faculty members in adapting to the specific

requirements imposed by this new system. Conversely, students expressed concerns regarding the efficacy and efficiency of structures such as the administrative axis of the institution (Kurnaz & Arı, 2024; Monioudis *et al.*, 2023; Kedraka *et al.*, 2022; Stamelos *et al.*, 2021; Zagkos *et al.*, 2022; Adamopoulou *et al.*, 2024; Young & Clerke, 2024; Sing, 2023). It is noteworthy that the survey responses conducted during the pandemic crisis inquired about the acceptance or rejection of this solution for continuing studies during the quarantine and the potential extension of distance learning in future studies. The responses indicated that students from the field of education sciences demonstrated a greater degree of acceptance towards tele-education during the pandemic period. Conversely, female students from disciplines such as polytechnics (e.g., engineering) expressed concerns regarding the efficacy and efficiency of their practical training (Young & Clerke, 2024; Stamelos *et al.*, 2021).

To summarise, the conclusions of the aforementioned studies are structured in terms of the perceived need for urgency in the field of education and the crisis dynamics that dominated the context. Many students expressed concern about the emergence of phenomena related to social inequality and educational exclusion.

It is imperative to acknowledge that a significant proportion of these studies underscore the necessity for further exploration of the ramifications. The experience of enforced confinement and social distancing will persist for these generations, exerting a substantial influence on their cognitive abilities, professional training, and the formation of their social identities. The development of these identities will be contingent on pivotal concerns, including the acceptance of technological advancement and the future of society.

The pandemic's impact on Greek higher education extends beyond teaching methods to broader questions about the purpose and structure of universities. It has prompted serious reflection on how to balance technological innovation with educational quality, how to maintain equity in increasingly digital learning environments, and how to prepare for future disruptions while preserving the core values of the academic community. These questions remain central as Greek universities navigate the post-pandemic landscape and consider what permanent changes should emerge from this period of forced experimentation (Adamopoulou *et al.*, 2024).

It is essential to examine how the pandemic crisis has transformed higher education. Individuals and institutions have remembered this experience and will continue to have an impact on education. The objective of this research is to explore the findings from the research conducted during the pandemic crisis, with a particular focus on the operational effectiveness of the university institution.

2. The Purpose of the Study

The current study, as the third part of a research project on "Investigating the impact of the pandemic crisis on education," aims to explore critical reflections on the educational experience during the pandemic, focusing on Emergency Remote Teaching and Learning

(ERTL). Specifically, the study will examine experiences formed and the potential impact of ERTL on the current educational process. More concretely, this approach seeks to understand how students processed the experience of the pandemic and its subsequent impact on contemporary educational culture and practice. Thus, as in the former two stages, the study focuses on the student population from the perspective of 'Generation Z', who have never known a world without direct access to digital technology and the ability to develop their digital practices in order to overcome major crises, such as a pandemic.

3. Understanding the Post-Pandemic Impact on Education: Research Design

It has already been noted that the unprecedented COVID-19 pandemic, in addition to its severe health impacts, has led to a series of emergency measures and policies at the global level to enable the continuation of activities at both the social and individual levels in compliance with the pandemic's constraints. One of the areas that was significantly impacted was education. The transition from face-to-face teaching to emergency remote online teaching and learning was the only option available to continue the educational process at all levels of education. Numerous scholarly articles and research studies have addressed the issue by examining various aspects of such a transition (Panakaje *et al.*, 2021; Bhagat & Kim, 2020).

To understand the impact of the transition to the Emergency Remote Teaching and Learning (ERTL) process, we developed a tailored research design in three phases. The first phase investigated the student population's perceptions of the educational conditions at the onset of the pandemic crisis. The second phase was designed to record and investigate the lived experiences of the students during the crisis and under the weight of the consequences they had already experienced. Finally, a third phase was designed to investigate the critical reflection on the lived experience of the crisis after the end of emergency remote teaching and learning (ERTL) in the post-pandemic condition.ⁱⁱ Consequently, the present study has entered its third phase, which involves investigating the post-crisis lived experience and comparing it with the experience during the crisis. The study's significance can be encapsulated in three key points: firstly, it aims to articulate the transformative experience of ERTL and its impact on students' perceptions

ⁱⁱ The research project "Investigating the impact of the pandemic crisis on education" was implemented by the Laboratory of Analysis and Planning of Educational Policy, Sociological Analysis of Educational Data and Documentation, Department of Educational Sciences and Social Work, University of Patras. For more see: Kamarianos, I., Adamopoulou, A., Lambropoulos, H., & Stamelos, G. (2020). Towards an understanding of University students' response in times of pandemic crisis (COVID-19), *European Journal of Education Studies*, 7(7), pp. 20-40. <https://doi.org/10.46827/ejes.v7i7.3149>.

Adamopoulou, A., Lambropoulos, H., Stamelos, G., & Kamarianos, I. (2024). One year in a state of emergency: Investigating student responses during the pandemic crisis. In *Proceedings of the 5th Panhellenic Conference on Sociology of Education – Education in a state of emergency: Sociological perspectives* (pp. 200–215). Laboratory of Analysis and Planning of Educational Policy, Sociological Analysis of Educational Data, Documentation. <https://www.researchgate.net/publication/382020749> [in Greek].

of learning and education; secondly, it seeks to highlight future recommendations, improve teaching methods, and cultivate resilient educational practices for potential crises; and thirdly, it aims to contribute to a broader academic and social debate on the role of distance education and its place in university education. The third phase is the most profound and research-demanding stage, as it is not limited to documenting the experience of the pandemic but seeks to interpret its impact on the learning culture and the educational process. Reflection on the crisis can yield valuable insights for the future adaptation of universities to unforeseen circumstances.

The pandemic has accelerated the adoption of digital technologies, online learning, and livestream services, resulting in a shift toward more digital and blended learning approaches in education. In the education sector, the pandemic accelerated digital transformation, with institutions adopting distance learning and educational technology (EdTech) to address the challenges posed by social distancing policies (Lee & Han, 2021). Also, the pandemic has had a lasting impact on higher education, with changes in pedagogical practices persisting beyond the pandemic and serving as a catalyst for change in university teaching, prompting a shift towards more innovative and inclusive approaches, and a multifaceted approach is essential for genuine educational transformation (Broadbent *et al.*, 2023).

The COVID-19 pandemic has had a profound impact on the research and higher education sectors globally, with far-reaching implications for teaching, learning, and research. The pandemic has amplified inequalities among marginalized groups, and there is a need for equity and decolonial thought in the post-pandemic University. Higher education institutions also need to learn from the pandemic's experiences and build back better, promoting sustainable and equitable development and addressing the challenges and inequalities exacerbated by the pandemic (Arday, 2022).

Higher education institutions need to rethink education systems and reimagine what is important, necessary, and desirable for future generations. Furthermore, digital transformation, resilience, and sustainability are key to navigating the uncertainties brought about by the COVID-19 pandemic (Rasli *et al.*, 2022). The COVID-19 pandemic has had a profound impact on higher education, affecting students, staff, and institutions. The COVID-19 pandemic has disrupted higher education globally, particularly in terms of internationalization. Universities must adapt to the new normal by redefining internationalization at home and adopting a more holistic approach to education and research (Van der Graaf *et al.*, 2021).

Flexible and adaptable learning modes are crucial in higher education, with blended learning emerging as a promising approach that combines face-to-face and online teaching methods. However, face-to-face education remains the preferred method for many students. Face-to-face education has several advantages, including promoting interpersonal interaction, enabling social learning behavior, and providing fewer distractions. Educational institutions should explore innovative ways to combine online and face-to-face teaching modes to create a flexible and effective learning environment.

Higher education institutions also need to continue supporting and developing a range of learning modes that meet the diverse needs of all students (Imran *et al.*, 2023).

Digital transformations in higher education are complex and multifaceted, underscoring the need for a more nuanced understanding of the role of EdTech in shaping the future of higher education. Digitalization has the potential to transform education, but it requires a strategic approach to realize its benefits. The universities need to address the challenges of digitalization, including the need for new competencies and skills in the workforce (Pinheiro *et al.*, 2023).

According to Lee *et al.* (2021), despite numerous concerns about online teaching (often expressed against it), there has been limited discussion about the actual experiences of the student population with online learning during the pandemic. Educational critics have also selectively discussed the challenges faced by disadvantaged groups of students, including those with some form of disability (Young & Clerke, 2024) or those lacking access to technology (Márquex-Ramos, 2021; Sing Yun, 2023); this is undoubtedly a challenging time, and understanding these challenges is crucial. In this context, we should not suggest rejecting such narratives. However, the observations in this study of how male and female students faced these challenges during the pandemic suggest somewhat different narratives, much more optimistic.

4. A Quantitative Methodological approach: a convenience sample of University Students in Post-COVID Pedagogical Transition

The survey was sampled during the spring semester from January 2024 to May 2024, using a questionnaire posted on a Google form through the asynchronous education system (e-class courses) to the students' email addresses. The data concern students from the Departments of the University of Patras: (i) Education and Social Work, (ii) Educational Sciences and Early Childhood Education. Convenience sampling, a non-probability sampling technique, was selected because it allows researchers to select subjects based on their convenient accessibility. The sample consisted of 101 participating students from the University of Patras, comprising 79 females (78.2%) and 22 males (21.8%). Regarding year of study, 79 (78.2%) were fourth-year students, while the rest (22.8%) were from older years of study. It is also important to acknowledge the limitations of the survey, as the sample consists exclusively of fourth-year and undergraduate students, who are the final cohort to have experienced ERTL.

According to our research design and the conclusions that have emerged from previous phases of the project, the above sample is then compared with the corresponding sample from the first and second phases. So, this research taps into data from three different cohorts of undergraduate students from the Departments of Education at the University of Patras, each representing a different stage of the Emergency Remote Teaching and Learning (ERTL) experience. The first sample (n = 150) was gathered at the beginning of ERTL in 2020, recording students' early expectations and fears. The second sample (n = 224) was obtained during the active period of ERTL in

early 2021, when students were experiencing remote teaching firsthand. The third sample (n = 101) was gathered following the termination of ERTL (they were fourth-year students or older, or had experience with ERTL), between January and May 2024, providing a long-term perspective on how students view the lasting effect of the pandemic on their learning experience and academic inclinations.

Throughout all phases of the survey, participants were invited to respond and self-position themselves through a questionnaire.

A. About the context/environment in which the online training took place, and in particular:

- to what extent the University, its faculty, committees, and services meet the requirements of the forced transition from face-to-face education to distance education, in 9 questions measured on a 7-point Likert-type scale (from "not at all" to "absolutely"), in 9 questions measured on a 7-point Likert-type scale (from "not at all" to "absolutely"), and vice versa.
- compare the 'difficulties' they encountered during the online learning process and the current one, with six questions measured on a 5-point Likert-type scale (from 'strongly disagree' to 'strongly agree').

B. On their experience of online education as an educational process (mode of education) and in particular:

- what they would prefer today, after their experience: studying in an online format, studying with face-to-face training, or a hybrid format (six multiple-choice questions),
- express their opinion on e-learning after their experience, as well as on the changes that may have taken place at the University in the period after COVID, up to the present day (open text question).

5. Results: Students' experience/memory of ERTL (during COVID) and the current perceived experience in the Post-COVID Education era

Figure 1 presents the clustered responses of participants (ERTL-during COVID) to the eight questions regarding the academic environment's readiness and capability to meet the demands of the forced transition to online education. Eight out of ten students (80.4%) consider that the University responded moderately or positively. A high percentage of students' state that professors met the "requirements of online education" (66.7%), and 60.7% of students consider that "professors met the requirements of online examinations". The percentage was lower for "the university's network center and how they responded to problems accessing or connecting to the platform" (46.1%). They appeared to be divided on how responsive the "student affairs committee", the "university library regarding remote access to libraries and educational materials", and the "secretariat" were.

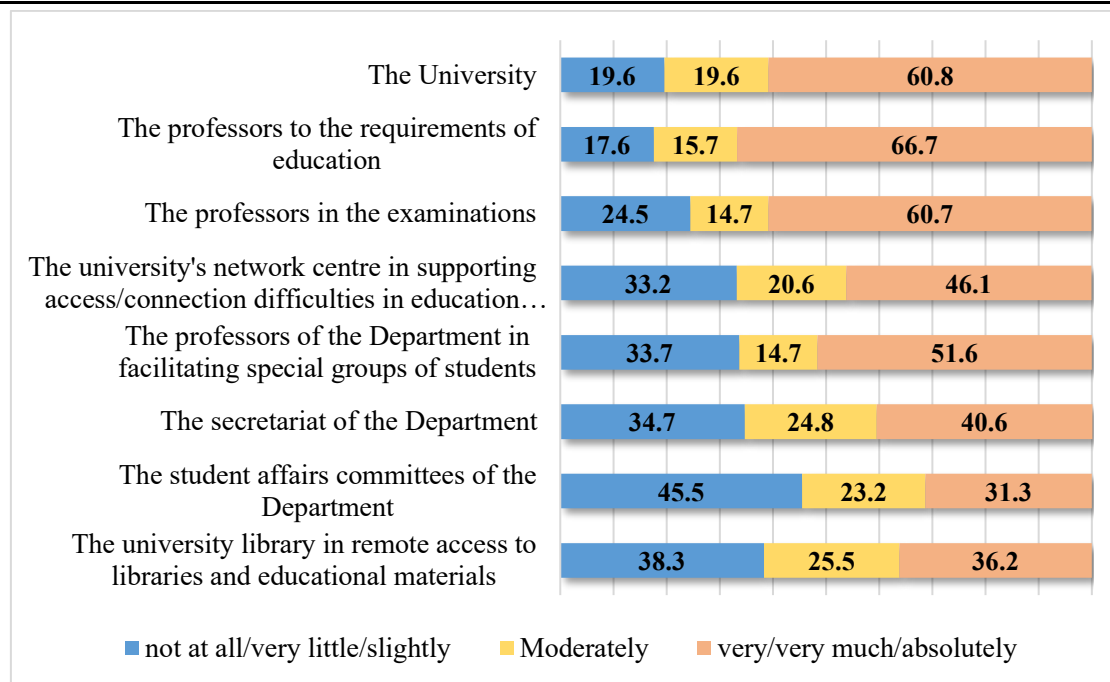


Figure 1: How responsive have they been? – The statistical analysis of the response of the academic environment to ERTL during the experience

Figure 2 presents the clustered responses of participants to the eight questions regarding the readiness/capability of the academic environment, considering the COVID-19 period, two years after their experience - in a state of “normality”. Figure 2 indicates students' retroactive appraisal of the ERTL experience two years following its incidence, registering far more positive evaluations than in their in-crisis responses (Figure 1). This change depicts a phenomenon called post-crisis appreciation, in which people reinterpret past issues more positively over time. Students seem to acknowledge, retrospectively, the institutional effort and flexibility under extraordinary circumstances, especially in domains such as library access and quality of teaching. The higher ratings do not always indicate an improvement in conditions but a change in students' interpretive frame, influenced by temporal distance and general context. This makes institutional memory and perceived resilience essential, as students move from experiencing crisis to assessing it as part of their learning experience.

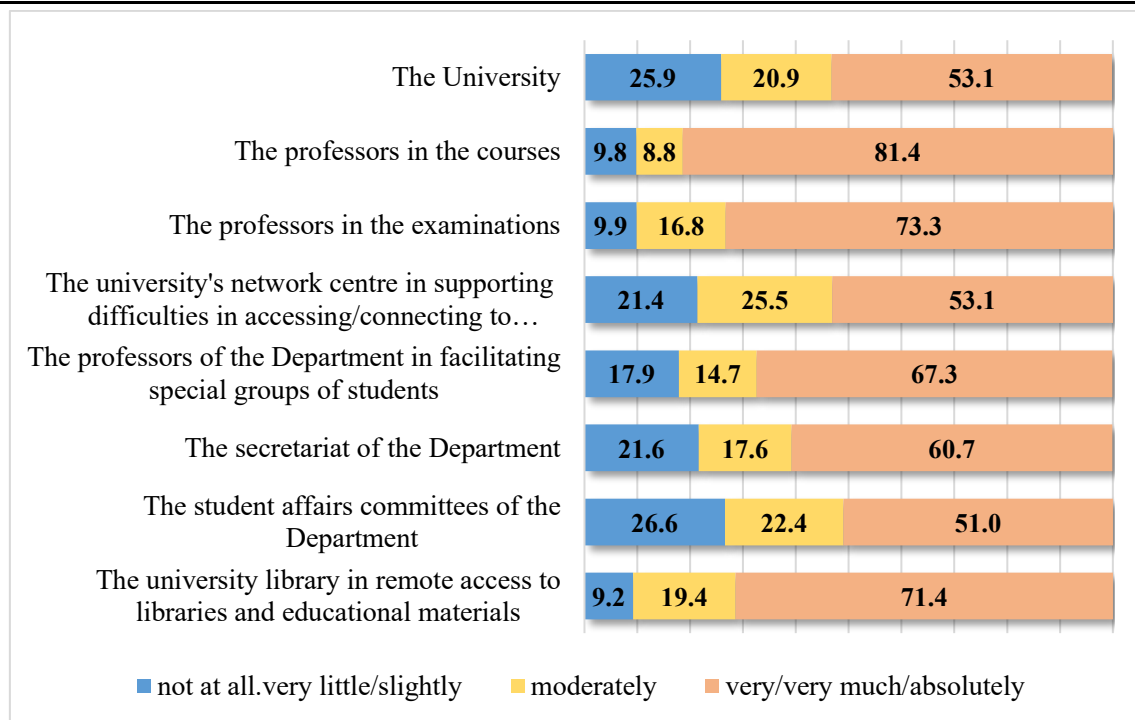


Figure 2: How responsive have they been? - The statistical analysis of the response of the academic environment to ERTL two years after the experience

Table 1 provides a comparative perspective of students' ratings of institutional responsiveness at three time points: during ERTL (during the experience), retrospectively looking back at ERTL (post-experience), and in the present face-to-face context (in a state of "normality"). The results identify two prominent trends: first, students' retrospective ratings of ERTL are more favorable than their contemporaneous, in-crisis reports - a case of post-crisis appreciation; second, the present face-to-face setting is rated even higher, especially for services such as the library and academic support. This implies both an objective enhancement of services and a change in student expectations. Yet, persistently lower marks for administrative committees and student support mechanisms indicate continuing institutional lacunae. In all, the table illustrates how institutional memory, current experience, and changing student expectations interact in conditioning educational evaluation.

Table 1: The response of the academic environment

	The academic environment currently meets the requirements of face-to-face education (in a state of "normality")		The academic environment responded to the requirements of the ERTL			
			Post-experience		During the experience	
	Mean*	Std. D.	Mean	Std. D.	Mean	Std. D.
• The University	5,2	1,299	4,7	1,356	5,1	1,345
• The professors of your department in the courses	5,5	1,293	4,8	1,386	5,2	1,371
• The professors to the requirements of the exams	5,3	1,303	4,6	1,763	5,2	1,460
• The Department's Secretariat	4,8	1,835	4,0	1,859	3,8	1,987
• The committees on students' issues	4,5	1,652	3,6	1,681	4,0	1,654
• The University's Network Center to support any access/ connection troubles	4,6	1,633	4,2	1,831	4,6	1,807
• The University's library provides remote access to libraries and educational materials	5,3	1,361	4,0	1,775	3,9	1,870
• The Department's professors are Involved in the facilitation of special groups of students	5,0	1,652	4,2	1,955	4,5	1,839
The overall response of the academic environment	5,0	1,154	4,3	1,237	4,5	1,171
*1=not at all ... 7=absolutely						

The Mann-Whitney U test revealed statistically significant differences between experience/memory of ERTL (experience) and the current perceived experience (impact), in the sentences "the university transition to ERTL" ($p=0.012$) and "the professors to the requirements of online exams" ($p=0.003$), with higher means in experience. Furthermore, statistically significant differences were identified in the following propositions: "the department's secretariat" ($p = 0.00$) and "the university's library to remote access libraries and educational material" ($p = 0.03$). However, larger means were recorded in the ongoing experience impression.

The Wilcoxon Signed Ranks Test revealed statistically significant differences in the evaluation of responses to the requirements of the two conditions (face-to-face and ERTL) across all parameters of the academic environment, with a higher response rate across all parameters in the face-to-face educational setting.

The preceding analysis reveals a significant finding. A comparison of the overall means indicates that Education students at the University of Patras who experienced Emergency Remote Teaching and Learning (ERTL) perceive the academic environment's

capacity to respond to the ERTL transition as comparable (moderately positive) and proportional to the adequacy of response experienced in the face-to-face learning context. The table shows students' perceptions of what they think is important for their future studies in a "normal" academic setting at three time points: 2020 (pre-experience of remote learning), 2021 (during the experience), and 2024 (post-experience). These perceptions are reflected in mean scores and standard deviations on a variety of educational practices. The results show that after the pandemic and the widespread application of distance education, students increasingly value flexibility and independence in their studies. For instance, the ability to attend fixed online seminars on topics of interest, or to watch pre-recorded lectures at their own time, was consistently rated high in 2024 (3.2). Similarly, students have a clear preference for individual tasks during the course of the semester and the possibility of passing a course through exemption assignments, both of which were rated 3.2. These replies highlight a shift towards autonomous and learner-centered learning. Interestingly, the top-rated item in 2024 is the chance to go to preparatory (tutorial) sessions prior to examinations (3.3), which indicates that students put high value on organized support to cover their queries, particularly during examination times. This echoes an increasing need not just for flexibility but also for purposeful interaction and academic scaffolding.

On the other hand, approaches associated with purely traditional or fully digital modalities appear to be less appealing. For example, attendance of only lectures given in amphitheaters or virtual courses supported by avatars, as well as on platforms like Zoom or Skype that take place after autonomous learning, results in the lowest scores. This confirms that students are moving away from the extremes — with no interest in an entirely face-to-face learning environment or fully online modality — and are turning towards hybrid learning models that balance the strengths of both modalities. Another noteworthy trend is the overall increase in mean scores between 2020 and 2024 for many items, indicating that the experience of remote and hybrid learning has positively influenced students' attitudes towards practices that they might previously have overlooked or undervalued.

In short, students are demanding more and more a learning model that is flexible, interactive, and personalized, in which they have the possibility to decide on the manner, rhythm, and content of their learning while retaining physical presence and human interaction. Universities are therefore called upon to respond to this changing learning culture and to redesign programs that include the best of both digital and face-to-face education.

Table 2: What I consider important for my future studies in a "normal" academic setting? (Student perceptions on Critical Success Factors in Higher Education)

I consider it important for my future studies in a "normal" academic setting:	After the experience of the ERTL		During the experience of the ERTL		In the beginning of the experience of the ERTL	
	Mean	Std. D.	Mean	Std. D.	Mean	Std. D.
To be able to attend scheduled online seminars on the subjects that interest me	3,2	0,782	3,3	0,804	3,1	0,789
To watch the recorded lecture from home at a time of my choosing	3,2	0,775	2,8	1,016	3,0	0,955
To complete individual assignments during the semester	3,2	0,804	2,9	0,793	3,1	0,668
To attend the lecture and then participate in a corresponding lab session	3,2	0,773	3,0	0,743	3,0	0,845
To attend preparatory sessions before exams to resolve questions	3,3	0,772	2,9	0,935	2,8	0,954
To have classes in small student groups	3,0	0,958	2,8	0,785	2,9	0,757
To participate in group projects for the course	3,0	0,952	2,7	0,897	2,8	0,852
To have the course material and sources in advance so I can prepare before the lecture	2,9	0,965	2,9	0,859	2,7	0,875
To choose courses from other departments and build my own curriculum	3,1	0,890	3,1	0,880	2,8	0,943
To pass the course through exemption assignments	3,2	0,876	3,1	0,820	2,9	0,875
To read the unit on eClass and then discuss it with the professor in class	2,9	0,959	2,8	0,809	2,7	0,854
To only attend lectures in the amphitheater	2,5	1,000	2,7	0,909	2,6	0,913
To attend virtual classes (via avatars) from home	2,4	1,065	2,5	0,958	2,5	1,011
To work from home with assignments throughout the semester	2,4	1,090	2,6	0,955	2,6	0,942
To read the unit and then discuss it with the professor via Zoom/Skype	2,3	1,101	2,6	0,882	2,3	0,929
To attend only laboratory/practical courses	2,3	1,032	2,2	0,778	2,0	0,838

In the question "After the experience of forced distance learning and the experience of face-to-face education, ultimately in my studies I would prefer", as shown in Table 3, more than one in three (34.3%) stated that they would prefer "to be able to decide how to attend each course". This answer was followed by "the courses should be exclusively face-to-face" (28.4%) and "the courses should be conducted in a mixed mode" (25.5%). Less

than 1 in 10 prefer "only the laboratory and tutorial part of the course should be conducted face-to-face and the rest of the course online" (6.9%) and "their future studies should be conducted exclusively online" (2.9%).

Table 3: After experiencing ERTL and face-to-face education, I would ultimately prefer...

	N	%
Be able to decide how to attend each course (either online or face-to-face)	35	34,3
The courses should be exclusively face-to-face	29	28,4
The courses should be conducted in a mixed mode (online and face-to-face)	26	25,5
Only the laboratory and tutorial part of the course should be conducted face-to-face, and the rest of the course online	7	6,9
The courses should be exclusively online	3	2,9

Below, in Figure 3, the 12 statements of online education's positive (or negative) elements are presented, with grouped percentages of the instead agree/agree option. It forms three different groups. The first one shows high percentages of agreement, eight out of ten agree that due to online education, "I do not lose time from traveling", 7 out of ten answered that it "reduces my expenses of student life," and more than half of them answered that "it gives me time to work in parallel". The second group ranges from 20% to 45%; students agree that with online education, "he/she can organize his/her schedule," "his/her life becomes easier," and "he/she has access to more study resources." Finally, the third group, with agreement rates ranging from 11.6% to 15.5%, i.e., less than two out of ten, agree that online education enhances the characteristics of the teaching process, namely "working more with his/her peers", "understanding more", "communicating better with his/her teachers", "communicating better with his/her peers" and "creating an appropriate learning environment". Finally, there is a percentage (7.1%) who agree that online education "creates the appropriate social context for them".

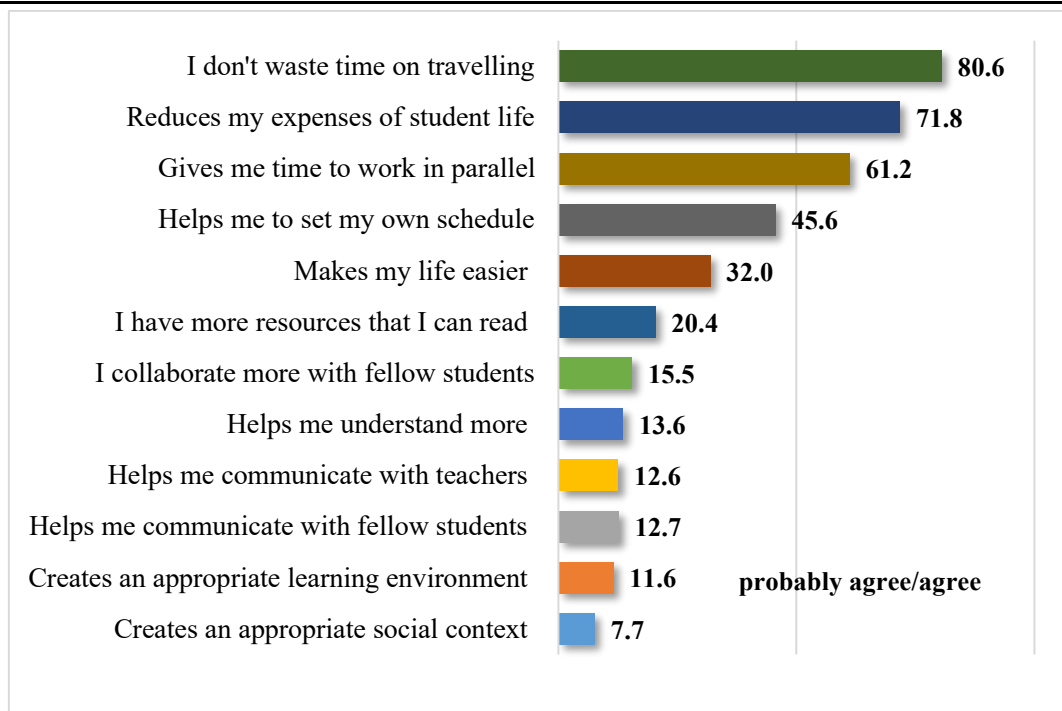


Figure 3: Positive (or not) elements of online education

Table 4: Comparison of Means (2024-2021)

	2024		2021	
	Mean*	Std. D.	Mean*	Std. D.
I do not waste time on travelling.	4,2	1,068	4,1	1,161
Reduces my expenses of student life.	4,0	1,197	3,9	1,271
Gives me time to work in parallel.	3,7	1,312	3,4	1,382
Helps me to set my schedule.	3,2	1,351	3,2	1,341
Make my life easier.	3,0	1,225	3,2	1,216
I have more resources that I can read.	2,4	1,304	2,9	1,287
I collaborate more with fellow students.	2,0	1,272	2,6	1,306
Helps me understand the lessons more.	2,1	1,318	2,6	1,345
Helps me communicate with fellow students.	2,0	1,300	2,3	1,327
Helps me communicate with teachers.	2,0	1,212	2,5	1,310
Creates an appropriate learning environment.	2,0	1,192	2,3	1,291
Creates an appropriate social context.	1,6	1,130	1,9	1,196

Note: *1=disagree ... 5=agree.

While overall positive experiences of ERTL/ distance learning environment remained consistent or intensified—without significant shifts in mean agreement—the Mann-Whitney U test identified specific items where perceptions significantly diverged between instructional modalities (“I collaborate more with fellow students ($p=0,00$), “Helps me understand more the lessons” ($p=0,002$), “Helps me communicate with teachers” ($p=0,001$), “Creates an appropriate social context” ($p=0,007$). Notably, agreement with statements affirming enhanced peer collaboration, comprehension, teacher communication, and social context was significantly lower under face-to-face instruction compared to the ERTL /distance learning environment.

Summarizing, in the attempt to understand the acceptance of online education by the students of the sample, we could come to the following conclusions: 80.4% of the sample somehow attribute online education either "as an acceptable solution of necessity" (63.7%), or as they have an "absolutely positive opinion" (16.7%). On the contrary, 18.6% have a negative view of distance learning; either they consider it a "failed emergency solution" (13.7%), or they have an "absolutely negative opinion" (4.9%).

Table 5: Online education: Institutionalizing the experience of an emergency solution?

	N	%
Acceptable emergency solution.	65	63.7
Absolutely positive opinion.	17	16.7
Failed emergency solution.	14	13.7
Absolutely negative opinion.	5	4.9
I do not know what to say.	1	1.0

In order to provide a qualitative interpretation of the quantitative data presented above, it is essential to take into consideration some of the indicative answers provided by the respondents to the foregoing analyses: "What has changed at the University since the pandemic?" Thematic categories were identified that demonstrated the predominant trends in students' experiences. The initial category is that of digitalization and familiarity with technology.ⁱⁱⁱ

According to the conclusion of our data analysis in "the beginning of the experience of the ERTL" (Kamarianos *et al.*, 2020), Young Greek university students used digital media extensively every day for both personal and educational purposes, under the pressure of social distancing measures due to the Coronavirus (COVID-19) pandemic. They also utilized social media for educational purposes with the kind of natural fluency that comes with having grown up alongside new digital technologies, as the experiences of young people involve multiple, complex, and overlapping social and digital universes. The majority of students in the study continued to use their smartphones as long as they were in quarantine during the lockdown; they continued to use their smartphones significantly (i.e., three to five hours per day), being "connected" to some digital platform (accessing social media and the internet). Accordingly, it is important to note the respective observed increased access via smartphones and computers to e-class and e-learning, as well as to the internet via computer, as compared to the previous (normal) situation (Kamarianos *et al.*, 2020).

In "normality", as outlined in the preceding analysis, it was proposed that the modernization of the University was attributable to the integration of online education, the digitization of processes, and the extensive use of technology. The following quotations were documented:

ⁱⁱⁱ For more, see: Kamarianos, I., Adamopoulou, A., Lambropoulos, H., & Stamelos, G. (2020). Towards an understanding of University students' response in times of pandemic crisis (COVID-19), *European Journal of Education Studies*, 7(7), pp. 20- 40. <https://doi.org/10.46827/ejes.v7i7.3149>.

"The University was modernized", "Procedures are now done electronically", "We became familiar with online education", "The use of technology is being used to a greater extent in various subjects".

A second category is changes in student culture and social relations. It is revealed that social interactions have been significantly affected. There are reports of distancing between students, reduced class attendance, changes in communication, and decreased interaction among students. Here are some typical quotes:

"Students have become more distant towards each other", "More difficult to communicate", "Student attendance in classes has decreased", "Relationships are formal rather than close".

Another category that emerges from students' responses is the recognition of the importance of face-to-face education. Students value physical presence on campus. Some extracts from what students reported:

"Appreciation in face-to-face education is greater than before", "I think that for a large portion of my fellow students, the importance of face-to-face education has risen in our esteem", and "We learned to appreciate face-to-face education more".

One category includes the adverse effects of this condition and the downgrading of the University. Some students believe that the University was degraded and that the pandemic acted as an occasion for adverse changes. Typical quotes are as follows:

"Everything has gone backward, everything has got worse," "The University has been further degraded, understaffed and underfunded," and "Some professors kept the videos and do not do theory courses, degrading the process."

Finally, the category concerning health fears and overcrowding was also highlighted. Fear is an embodiment of their identities. It is therefore reported that the persistence of health insecurity remained, even after the pandemic. Here are some points:

"There is greater fear of disease transmission", "Fear of crowding and sickness phobia", and "Communication with fellow students is more regular, but fear prevails in social interactions".

The analysis of the responses indicates that the students' academic experience has diversified on an educational, social, and technological level since the pandemic.

6. Discussion

The current study examined the multifaceted experiences and impact of Emergency Remote Teaching and Learning (ERTL) on Greek university students during the COVID-19 pandemic, capturing critical insights into institutional responsiveness, pedagogical preferences, and socio-technological transformations. The findings reveal a complex landscape where pragmatic benefits of digitalization coexist with enduring challenges in relational pedagogy and equity. Below, we contextualize these results within the broader scholarly discourse, addressing discipline-specific variations and generational implications.

Consistent with the findings of Phases 1 and 2 ("in the beginning" and "during the experience of the ERTL") (Kamarianos *et al.*, 2020; Adamopoulou, 2024), students perceived the University of Patras as moderately prepared for ERTL, with 75% affirming that they received adequate institutional guidance during the transition. Faculty adaptability was particularly notable—71% reported instructors met online teaching requirements, and 57% acknowledged compliance with examination protocols; this aligns with global studies highlighting faculty agility as a buffer against educational disruption (Hodges *et al.*, 2020). These findings align with the conclusions of international studies from various scientific fields and cultural contexts. A similar study showed that almost three out of four students believe that the most important benefits of online lectures are time-saving (18.47%), the ability to review recorded courses and seminars (16.87%), the convenience of working from home (13.25%), access to educational resources (12.45%) and the ability to participate in online lectures from anywhere (12.05%) (Manea *et al.*, 2021).

Other studies have demonstrated that students consider the e-learning process to be of less value than the traditional process, preferring a hybrid system. It is also important to note that. It is essential to recognize that online learning has the potential to impact student performance significantly. Respondents reported a poor level of information assimilation, particularly in courses with a more challenging nature and lecturers who employed teaching methods that were not well adapted. Furthermore, it is contended that academic institutions were not adequately prepared to transition to a predominantly online format for teaching and learning. Furthermore, research indicates that poor interaction with professors is one of the main issues reported by students (Coman *et al.*, 2020).

However, significant disparities emerged in technical and administrative support: only 46.1% endorsed the network center's responsiveness, while departmental secretariats and student committees received polarized evaluations. These gaps highlight the "digital divide" in crisis pedagogy (Watermeyer *et al.*, 2021), where frontline teaching was successful but the back-end infrastructure lagged.

Following the pandemic, satisfaction levels surged across various services, particularly in library access (90.8%), reflecting institutional learning and resource reallocation. Nevertheless, qualitative critiques of "degraded services" and underfunding

(e.g., "The University has been further degraded, understaffed, and underfunded") signal unresolved systemic issues that threaten long-term trust in administrative stewardship. Student preferences for future delivery modes reveal a generational pivot toward agency-driven flexibility: 34.3% favored choosing modalities per course, while only 28.4% advocated exclusive face-to-face instruction; this resonates strongly with Education students, 60% of whom endorsed blended models—a stark contrast to Engineering peers who emphasized discipline-specific needs (e.g., practical training). The minimal preference for fully online studies (3.1%) reinforces global consensus on the irreplaceability of physical campuses for socialization and hands-on learning (UNESCO, 2023). Notably, qualitative data revealed nuanced hybrid visions: "Face-to-face lectures with recorded backups" and "Hybrid labs for accessibility" reflect demands for asynchronous complementarity rather than replacement of embodied education.

Data converge on ERTL's pragmatic efficiencies: 74.3% valued time saved from commuting, and 63.5% cited reduced expenses. These advantages were amplified for financially constrained students ("I can study without renting an apartment"). Nevertheless, relational and pedagogical deficits prevailed: fewer than 20% believed online education enhanced peer collaboration (17.5%), comprehension (15.8%), or instructor communication (14.8%) (Teräs, 2022). This misalignment mirrors Selwyn's (2022) critique of "instrumental digital education," which prioritizes logistical convenience over collaborative learning. Also, open-ended responses highlighted eroded social bonds, "Students became more distant," and psychological tolls, "12 daily screens caused eye strain and depression". Paradoxically, these losses fueled renewed appreciation for face-to-face education—a phenomenon termed "post-disaster valuation" (Bonanno *et al.*, 2021). Engineering and Business students, in particular, emphasized the inadequacy of online labs and simulations, reinforcing discipline-specific vulnerabilities (Stamelos *et al.*, 2021). Moreover, discipline emerged as a critical mediator of ERTL acceptance. These divisions align with international studies, which have shown that STEM fields have struggled with hands-on components (Adamopoulou *et al.*, 2024). In contrast, the humanities have leveraged discursive flexibility (Zagkos *et al.*, 2022).

Furthermore, our findings validate the hybrid learning ecologies framework (Sing, 2023), where students demand agency in balancing digital efficiency with human interaction. However, the persistence of socioeconomic gaps—evident in digital gap sociological analysis—calls for targeted equity educational practices and policies: device subsidies, bandwidth support etc. Institutionally, the post-ERTL rebound demonstrates resilience but exposes chronic underinvestment in technical infrastructure (Adamopoulou *et al.*, 2024).

For faculty, the data highlight the importance of using asynchronous tools (e.g., recorded lectures) to supplement, rather than replace, synchronous engagement. As one student urged, 'Use technology to enhance, not replace, the classroom.'

6.1 Limitations and Future Directions

The fact that this study is based on a single institution limits its generalisability. Furthermore, longitudinal tracking of academic performance after ERTL is required, along with a comparative analysis of vulnerable subgroups (e.g., students from low-income backgrounds).

Future research could also examine discipline-specific adaptations to ERTL (e.g., virtual labs for engineering), the long-term mental health consequences of isolation during the pandemic, and the transferability of policies across different educational cultures.

7. Conclusion. ERTL Institutionalisation and Face-to-Face Education. What is wrong?

The present research aimed to analyse the university experience of students regarding the implementation of the Emergency Remote Teaching and Learning (ERTL) measures, which were introduced as an emergency and mandatory measure to continue daily life in the university environment, due to the effects of the pandemic crisis. The present study focused on the experiences of students in the post-COVID era, comparing these with data from the first and second phases of the pandemic; this is because the present study constitutes a continuation of a research process that has been implemented in three phases since the onset of the pandemic crisis.

In the context of these findings, the participants of our study derived insights from the successes and failures of the ERTL experience. The pandemic revealed the remarkable resilience of students and the University (in this case, the University of Patras), while also highlighting the limitations of emergency measures. Furthermore, the study exposed the vulnerabilities of the education systems in question while simultaneously highlighting potential innovations. Notably, the emphasis was placed on the pivotal social and developmental functions of university education, which extend far beyond the mere transmission of knowledge.

Furthermore, this research aims to contribute to the broader scientific debate on the impact of the pandemic on education, particularly regarding the redefinition of post-pandemic university education. The present study was conducted to provide critical insights into the institutionalisation of Emergency Remote Teaching and Learning (ERTL) as a complex legacy within the context of Greek higher education.

To understand the impact of the transition to the Emergency Remote Teaching and Learning (ERTL) process and its reversal (in the post-COVID era), a tailored research design was developed in three phases. The initial phase of the study involved examining the student population's perceptions of the educational situation at the onset of the pandemic crisis. The survey sample conducted during the pandemic refers to 332 students from six (6) departments of the University of Patras in four (4) disciplines.

In the second phase of the research design, the objective was to explore the experience of transitioning to Emergency Remote Teaching and Learning (ERTL) during the pandemic crisis. The survey sample conducted during the pandemic refers to 742

students from six (6) departments of the University of Patras in four (4) disciplines (January 31, 2021, to February 15, 2021).

As the data analysis of the second phase showed results on the experience of students in the University of Patras' education departments, we designed a third phase in the post-COVID educational reality, where we compared data from the specific sample of phases 2 and 3, where the experience was established.

Thus, at a subsequent stage, an attempt was made to comparatively explore the experiences of memory and their ongoing experience with the sample of choosing online instruction, which was imposed as the optimal available option at that time. Furthermore, an examination was conducted of the students' experience of online instruction as an educational process.

The survey findings indicate a positive response from the sample of students, with the majority reporting that the University responded promptly and effectively to the challenges posed by the new mode of teaching and online examinations. However, there was a divergence of opinion regarding the response to the requirements of the remote educational mode by the committees and departmental secretariats.

Three overarching conclusions emerge, each with significant implications for future policy and practice.

Firstly, the University of Patras demonstrated notable resilience in its rapid transition to ERTL: 75% of students affirmed institutional preparedness, and 71% recognised faculty adaptability in meeting online teaching demands; this aligns with global findings on the efficacy of crisis responses (Hodges *et al.*, 2020; Kamarianos *et al.*, 2020). However, persistent infrastructural gaps, particularly in technical support (endorsed by only 46.1%), highlighted a 'digital divide' that exacerbated inequities (Watermeyer *et al.*, 2021). Although satisfaction levels increased post-pandemic (e.g., 90.8% for library access), qualitative critiques of 'degraded services' highlight unresolved systemic underinvestment in back-end infrastructure (Adamopoulou *et al.*, 2024).

Secondly, a generational shift towards agency-driven hybrid learning has emerged. Only 28.4% advocated for exclusive face-to-face instruction, while 34.3% preferred to choose modalities per course — a demand epitomised by students' calls to 'use technology to enhance, not replace, the classroom'. This reflects the hybrid learning ecologies framework (Varga *et al.*, 2024; Sing, 2023). Digital tools serve as supplements to embodied pedagogy. They are not substitutes for it. However, the logistical efficiencies of ERTL (74.3% of respondents valued saved commute time) starkly contrasted with relational deficits: fewer than 20% of respondents reported enhanced peer collaboration, comprehension, or communication with instructors, thus reinforcing critiques of 'instrumental digital education' (Selwyn, 2022; Teräs, 2022).

Thirdly, the reception of ERTL was shaped by discipline-specific vulnerabilities and strengths. While 60% of Education students embraced blended models, Engineering and Business cohorts emphasised the irreplaceable nature of hands-on experience and suffered pedagogical fragmentation in virtual labs, echoing global STEM challenges (Stamelos *et al.*, 2021; Adamopoulou *et al.*, 2024).

Especially, we would like to point out, in conclusion, the results and the consequent reflections that can be derived from putting the experiences of the students in the sample into perspective, namely between institutionalized ERTL educational practice and face-to-face educational practice. Students were generally positive about ERTL as a necessary solution and many items solicited similar perceptions, there were significant nuances. Statistically significant differences were found, however, with students attributing slightly higher agreement to ERTL than to face-to-face teaching. This indicates that, even though distance learning was not seen as strongly facilitating these relational and pedagogical dimensions, it was comparatively more positively assessed than face-to-face teaching in these particular areas.

The significance of this finding, which requires further analysis, is that it raises significant concerns regarding the future of face-to-face educational practice in higher education.

In consideration of the previously stated reflection and the conclusions drawn from the three phases of this study, the conclusion derived from the data analysis is that university education is positively associated with the presence of the condition under investigation. ERTL was a catalyst for the field of higher education. It appears that, whilst it accelerated digital adoption and exposed efficiencies, it also exacerbated relational and pedagogical divides. The "new normal" is necessary to achieve a balance between technological flexibility and human-centered design, thereby ensuring that education remains a communal and equitable endeavor. As Generation Z navigates this transition, their demand for agency and hybridity offers a roadmap for a more resilient higher education ecosystem.

About the Authors

Anthi Adamopoulou, Laboratory Teaching Staff at the Department of Education and Social Work, University of Patras (Greece).

Epameinondas Panagopoulos, Postdoctoral Researcher at the University of Ioannina (Greece) and Adjunct Lecturer at the University of Patras (Greece).

Ioannis Kamarianos, Professor of Sociology of Education at the Department of Education at the University of Ioannina (Greece). He has taught sociology and sociology of education at both the undergraduate and postgraduate levels since 1997.

Georgios Stamelos is a Professor at the University of Patras (Greece). His fields of interest are Educational Policy, Higher Educational Policy, European Educational Policy and Teacher Education.

Haris Lambropoulos (Ph.D. econ. LSE), Assistant Professor of Economics of Education at the University of Patras (Greece). His fields of interest refer to Human Capital, Innovation & Entrepreneurship and HR Development.

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