

# Challenges and opportunities of non-face-to-face higher education for university students with and without diverse educational needs

## Retos y oportunidades de la enseñanza superior no presencial para los estudiantes universitarios con y sin necesidades educativas diversas

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### Resumen

La pandemia de la Covid-19 obligó a adoptar el aprendizaje no presencial en la Educación Superior, lo que permitió analizar sus retos y oportunidades. Para este estudio se utilizó un diseño de investigación exploratorio-descriptivo que evaluó el proceso educativo a distancia a través de la participación de estudiantes ( $n = 241$ ) y profesores ( $n = 9$ ) de la Universidad de las Islas Baleares (UIB) mediante un cuestionario y grupos focales. Los mayores retos se centraron en la necesidad de adaptar las estrategias pedagógicas al nuevo proceso de enseñanza-aprendizaje, así como la falta de formación digital por parte del profesorado universitario. A pesar de las limitaciones de la enseñanza no presencial (modalidades online e híbrida), el alumnado, especialmente aquellos con necesidades educativas diversas, valoraron positivamente la reinención de la práctica educativa por su flexibilidad y practicidad, ya que permitió una mayor adaptación y ajuste a sus necesidades comparada con la práctica pre-pandemia.

### Palabras clave

Presencia, Necesidades Especiales, Inclusión, Educación Superior, Educación no Presencial

### Abstract

The COVID-19 pandemic necessitated the adoption of non-face-to-face learning in higher education, allowing for the analysis of its challenges and opportunities. For this study, an exploratory-descriptive research design was used to evaluate the distance education process through the participation of students ( $n = 241$ ) and professors ( $n = 9$ ) from the University of the Balearic Islands (UIB) using a questionnaire and focus groups. The main challenges revolved around the need to adapt pedagogical strategies to the new teaching-learning process, as well as the lack of digital training among university faculty. Despite the limitations of non-face-to-

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face teaching (online and hybrid modalities), students, especially those with diverse educational needs, positively appreciated the reinvention of educational practice for its flexibility and practicality, allowing for greater adaptation and adjustment to their needs compared to pre-pandemic practices.

### **Key Words**

Presence, Special Needs, Inclusion, Higher Education, Non-Classroom-Based Education

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## **1. INTRODUCTION**

The educational crisis resulting from the Covid-19 confinement made evident how our lives may change, as well as the necessary and close relationship between education and Information and Communication Technologies (ICTs). The sudden swap in the way lessons had to be offered showed the lack of preparation and adaptation of the educational system to crisis situations, but it was also an opportunity to analyze the challenges of non-face-to-face higher education (e-learning and b-learning) considering the varied profiles of students. Technological advances have historically brought about emerging social changes, with some actors promoting transformations and others resisting change (Quiroga, 2014). However, education is currently undergoing a process of reinvention and adaptation to new social needs, and although the face-to-face modality has gradually returned, advances in technology have proven to generate significant contributions and enhance learning (Bernate & Guativa, 2020). It has also become evident that the assessment methods used so far no longer meet the needs of the present (Boud, 2020).

The educational crisis resulting from the COVID-19 lockdown has highlighted the close relationship between education and ICT (Armas-Alba & Alonso-Rodríguez, 2021; Betancourt-Odio et al., 2021). While ICTs offer opportunities to improve the accessibility and flexibility of education, significant challenges have also emerged in adapting educational systems to this new reality. Additionally, it is essential to address the specific needs of students with diverse educational requirements, as they may face additional barriers (Armas-Alba & Alonso-Rodríguez, 2021). The relationship between education and technology is a topic of growing relevance and debate in today's society (Quiroga, 2014). The education system is undergoing a process of reinvention and adaptation to new social needs (Bernate & Guativa, 2020). As non-face-to-face teaching modalities become more common, it is crucial to ensure that these modalities are inclusive and accessible to all students, regardless of their individual needs (Sola-Martínez et al., 2020).

It is essential that advances in education are governed by the principles of equity and educational inclusion through the implementation of comprehensive strategies that consider students with diverse or special educational needs (Landeró & Miranda, 2020). Technology and digital resources are highly versatile tools capable of providing free access to learning (Bernate & Guativa, 2020) and of adapting the learning process to the needs of each student (Pozuelo, 2014). ICTs are significant tools for the teaching and learning process, and the hybrid modality has gained momentum in recent years (Simón et al., 2016). The Covid-19 pandemic has accelerated the transformation of education systems towards non-face-to-face education, specifically towards hybrid education (Ocampo et al., 2021).

There is a great variability of students, including those with diverse needs (DN), who require support to achieve academic goals (Parra et al., 2012). According to Jurado et al. (2018), these needs may vary at any point in their educational trajectory, making it difficult to determine the bulk of DN students. However, the number of requests for help or support is a good indicator. In Spain, the Ministry of Education and Vocational Training (2023) reported that 10,0% of non-university students received support during the academic year 2021/22. Inclusive quality education is necessary to address the principle of equal opportunities in higher education and to provide appropriate responses to each student's needs (Blanco, 2006). As Bausela (2002) stated, the system must be flexible enough to consider the particularities of each individual in designing the teaching-learning model. Personalization of teaching is also necessary to promote students' meaningful and valuable learning that also posit their ability to make decisions about their own training process (Martín, 2020).

Technologies and teacher support are crucial for providing an inclusive and quality educational response to diversity (Fernández, 2004). Parra et al. (2012) suggest that educational practices should promote differences and lead to a new educational method. Quiroga (2014) argues that pedagogical and evaluative criteria should take into account the students' needs, not just set learning objectives.

The pandemic made it possible to analyze the challenges and opportunities of different educational modalities and hybrid learning or b-learning was an appropriate solution (Guaman et al., 2020). The convergence between face-to-face and distance education is inevitable as the education system evolves (Pastor, 2005). Ocampo et al. (2021) note that the pandemic forced institutions to rethink education, establish a relationship with ICTs, and prepare for future crises. Thus, creating an equitable and inclusive educational environment requires curricular strategies and institutional policies that impact inclusion in educational settings and the community itself (Aliaga et al., 2022). According to Castro et al. (2017), in order to achieve full inclusion of all individuals in society, it is necessary to change both the environment around them and the attitudes and behaviors of the people who interact with them. This implies an active and ongoing commitment to overcome barriers and obstacles that may prevent the full and equal participation of everybody. Maya et al. (2017) explain that talking about diversity in the educational context is a great challenge, and for this reason, tools and methodologies must be created to address the needs and particularities of each student and to promote an inclusive and equitable environment. According to the authors, this is an important challenge that implies deep reflection on educational practices and the implementation of significant changes to ensure quality education for all students.

These challenges are even more evident in the context of the COVID-19 pandemic, as highlighted in other studies that have examined the impact of the crisis on higher education. For example, the OECD Report (2020) notes that the pandemic affected people of different backgrounds and educational levels, but it hit the most vulnerable the hardest, underscoring the need to address inequalities in education during times of crisis. The UNESCO-IESALC Report highlights the diversity and depth of the pandemic's impact on higher education, emphasizing that higher education institutions were generally unprepared for the disruption caused by COVID-19. This underscores the importance of flexibility and digitalization in adapting institutions to emergency situations. Furthermore, the European Commission (2021) indicate that the pandemic not only affected the operation of universities but also influenced how research is conducted and

university governance. These changes suggest the need to reevaluate how higher education institutions are managed during times of crisis.

The aim of this article was to analyze the challenges and opportunities presented by non-face-to-face higher education for the proper inclusion of students with DN. The specific objective were to explore the experiences of university students with DN in relation to the different learning modalities in order to determine strengths and areas for improvement. The research question was: which were the experiences of university students with DN while education was non-face-to-face? The long term aim was to set the base for the design of future quality and inclusive learning strategies and interventions, as well as to promote improvement processes in higher education institutions.

## 2. METHOD

This work was approved by the Research Ethics Committee (CER) of the University of the Balearic Islands (UIB) and is part of the project "TRANSFORM: Transforming to improve inclusion at the university," funded by the Euroregion Pyrenees-Mediterranean EURCOV.

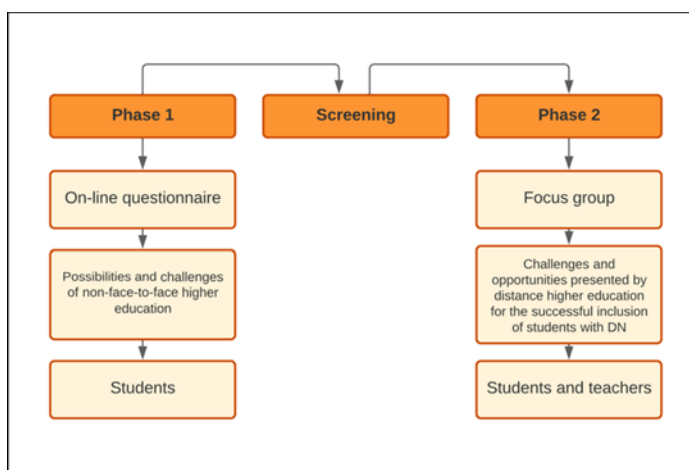
The research question has determined the chosen methodology: an exploratory-descriptive research design. This approach does not require a prior hypothesis, as having one could lead to biased interpretations based on the researcher's prejudices (Hernández-Sampieri et al., 2018). A Mixed Methods Approach was used to leverage the strengths of both quantitative and qualitative paradigms, allowing for a more comprehensive understanding of the educational phenomena (Gámiz & Gallego, 2016; Díaz, 2014). Triangulation was applied to enhance the validity of the concepts by seeking convergence of the results attained from different methods (Núñez, 2017). By investigating the same categories, the weaknesses and strengths of each method complemented each other (Forni & Grande, 2020). In order to determine the students' perceptions and needs regarding non-classroom-based learning, a mixed-methods approach was followed using both a questionnaire and a focus group.

### 2.1. Data Collection

In this research, information came from multiple sources, which consist of diverse samples that provided complementary information. The procedure followed two phases (see Figure 1). In the first phase, information was collected through a cross-sectional online questionnaire (10.6084/m9.figshare.24268402) that explored the participants' perceptions and opinions regarding non-face-to-face learning. This questionnaire comprises 39 items with three different response types: dichotomous (yes/no), Likert-type scales, and open-ended questions that tried to ensure a comprehensive exploration. The questionnaire covered a wide range of topics and questions to thoroughly understand the impact of the pandemic on university students. It included demographic data, access to technological resources, specific needs, changes in those needs due to the pandemic, and students' perceptions of virtual teaching modalities. Additionally, emotional and physical health aspects were explored, as well as the support received from the university and other stakeholders. Students also expressed their opinions on the organization of

teaching and provided suggestions for the future. This comprehensive approach allowed for a complete view of how the pandemic affected various aspects of the lives and learning of university students.

In the second phase, the information was complemented by conducting two focus groups. The participants in the first group were selected from Phase I, representing a random sub-sample of students with DN. The participants in the second focus group were professors from the sampled degree programs. In both groups participants signed an informed consent for participation and for video-recording their answers for later transcription. To filter the information, an analysis of categories and labels was carried out (refer to the Results section). The qualitative perspective of the focus groups imply that participants were the source of knowledge, and the results become the starting point for reflection, contributing to the generation of a theory from the data (Mena & Méndez, 2009). There was not a pre-existing theoretical framework and the theory was built and refined from the collected data, starting with a general set of questions related to the topic of interest (Arora & Stoner, 2009).



**Figure 1.** Process followed in the research design where every phase showcases the data collection tool, the topic and the participants respectively

The survey was conducted using Microsoft Forms, the online survey creator from Office 365, from October 2021 to February 2022. Students from each grade simultaneously answered the questionnaire under the supervision of a researcher. This allowed the researcher to address any doubts and provide clarification if the students did not understand any statement. The data collected from Phase 1 was exported and analyzed using the Statistical Package for Social Sciences IBM SPSS v. 27 software.

The two focus groups took place on consecutive days and were conducted using the Zoom video conferencing platform. Zoom was chosen for its synchronous connection capabilities and the ability to record the sessions for later transcription. Additionally, considering the ongoing pandemic, Zoom was deemed more secure for conducting the sessions.

The information gathered from the focus groups was manually categorized, known as thematic analysis. The results are presented in a narrative form, where the codes are derived from the meaning conveyed in the participants' responses rather than emerging directly from the focus group questions.

## 2.2. Participants

In the first phase of the research, the participants consisted of students from various degrees at the UIB, including social work, early childhood education, primary education, physical therapy, nursing, psychology, pedagogy, and social education ( $n = 241$ ). Among these participants, there were 46 students with DN. For the second phase, a targeted or non-probabilistic sample was selected using deliberate, critical, or judgmental sampling. This selection was based on the answers to the questionnaire in the previous phase. The selected sample included higher education students with DN ( $n = 5$ ). Additionally, an expert sample of professors from the same institution was also chosen ( $n = 9$ ).

Element	Category	N	%	Cumulative %	Mean	SD	
Year	1	93	38,6	38,6			
	2	60	24,9	63,5			
	3	27	11,2	74,7			
	4	61	25,3	100			
	<b>Total</b>		241	100	100	2,23	1,21
Degree	Early Childhood Education	72	29,88	29,88			
	Primary education	92	38,18	68,06			
	Social work	53	21,99	90,05			
	Physical therapy	6	2,49	92,54			
	Psychology	4	1,66	94,2			
	Nursing	4	1,66	95,86			
	Social education	5	2,07	97,93			
	Pedagogy	5	2,07	100			
<b>Total</b>		241	100	100			
Gender	Female	214	88,8	88,8			
	Male	25	10,4	99,2			
	Other	2	0,8	100			
	<b>Total</b>	241	100	100	1,12	,35	
Request for university support	Yes	23	9,5	9,5			
	No	218	90,5	100			
	<b>Total</b>	241	100	100	1,91	,29	
Type of support	Learning support	10	40	40			
	Emotional or psychological support	0	0	40			
	IT equipment	5	20	60			
	Learning materials and tools	1	4	64			
	Financial support/scholarship	8	32	96			
	Assistance for unforeseen circumstances	1	4	100			
	<b>Total</b>		25	100	100		
Diverse Need	<i>Applied for university support</i>						
	Yes	<i>Yes</i>	11	23,9	23,9		
		<i>No</i>	35	76,1	100		
	No	<i>Yes</i>	12	6,2	6,2		
<i>No</i>		183	93,8	100			

**Table 1.** Demographics and descriptive data of the university students

The decision not to consider gender as a variable of interest in this study was based on several factors, including the research scope, objectives, and available resources. Gender-related analysis would have required a more extensive and specific examination, including a larger sample size, which was beyond the study's primary focus. All participants were fully informed about their participation and provided their voluntary and informed consent. They were not given any financial or academic compensation for their participation.

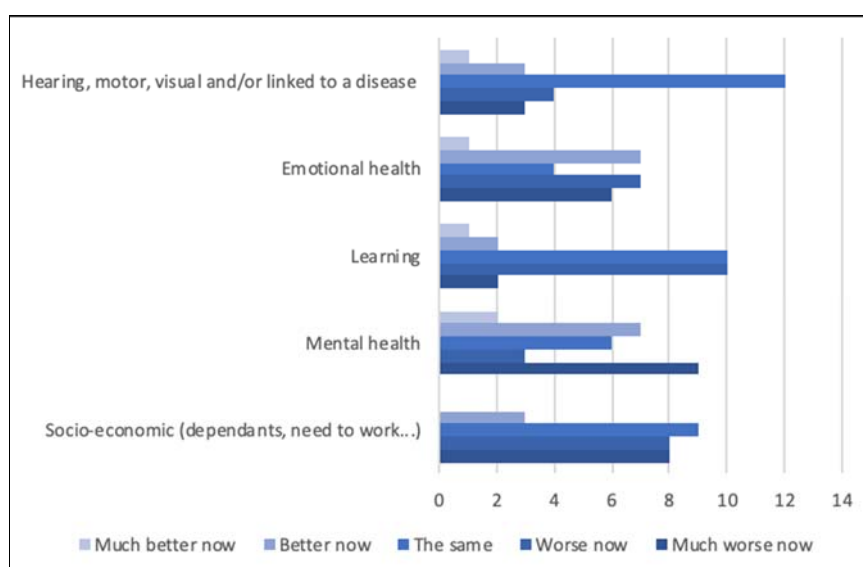
### **3. RESULTS**

#### **3.1. Phase I**

In general, participants perceived their various needs to be worse or much worse during the period of confinement compared to the face-to-face modality. This perception is evident in the left-skewed distribution of responses. However, in some cases, such as mental and emotional health, the distribution was somewhat more centered, although the majority of responses still indicated a negative impact (see Figure 2). Specifically, during the initial months of the pandemic, participants' self-perceived needs focused on the following:

- Learning (42%): Overcoming learning difficulties, organizing and planning their studies, persevering in their goals, avoiding distractions, and other related aspects.
- Psycho-emotional (40%): Addressing feelings of anxiety, loneliness, anguish, increased pressure, and other emotional challenges.
- Logistical (12%): Needs related to computer equipment, internet connection, establishing a suitable study environment, managing study time effectively, and other logistical considerations.
- Socio-economic (6%): Balancing responsibilities related to childcare, caring for dependent family members, working in essential sectors, and other socio-economic challenges.

These categories represent the main areas in which participants perceived their needs during the early stages of the pandemic.



**Figure 2.** Distribution of the perception of pre- and post-pandemic diverse needs using a 5-value Likert scale

In relation to the specific objective, descriptive analyses of the evaluation of the resources and conditions of learning during the pandemic were obtained (values ranged from 1, *much worse now*, to 5, *much better now*). The highest-rated elements of distance learning during the pandemic compared to face to face pre-pandemic learning were assessment tests ( $M = 3,39$ ;  $SD = 0,95$ ) and teamwork in virtual format ( $M = 3,36$ ;  $SD = 1,21$ ). On the other hand, items rated as worse in distance learning were socializing with other classmates ( $M = 2,71$ ;  $SD = 1,32$ ) and the ability to concentrate in front of the screen ( $M = 2,66$ ;  $SD = 1,22$ ). However, overall, most items were rated neutrally or equally at both poles of the Likert-type scale.

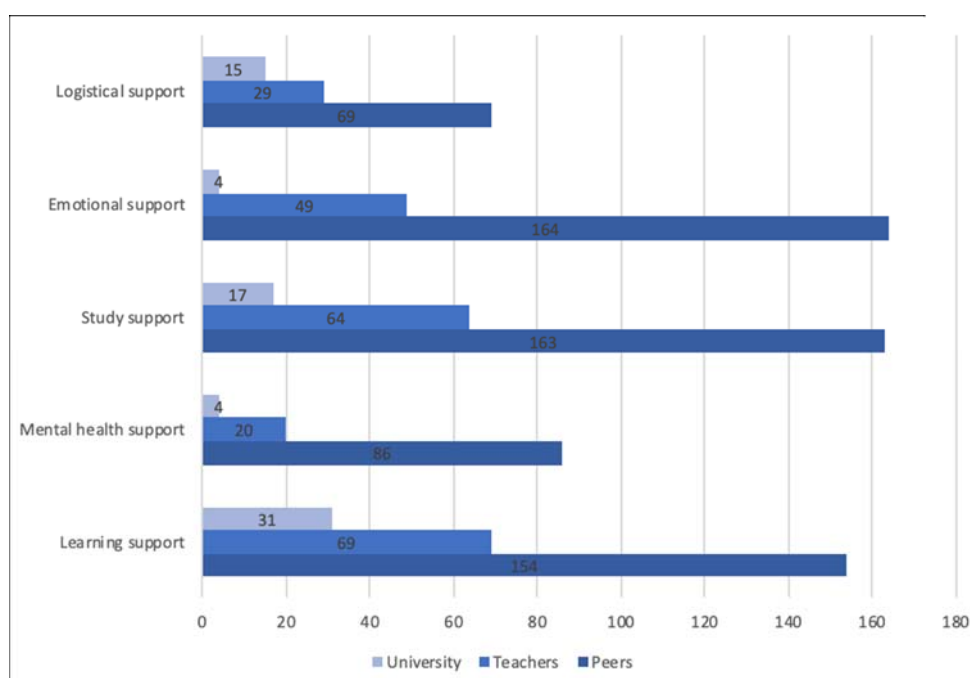
Regarding the aim and the specific objective of the research, the changes perceived by participants in themselves due to confinement and the change in the modality of teaching, difficulties were perceived at the emotional level ( $M = 2,85$ ;  $SD = 0,21$ ), at the learning level ( $M = 2,70$ ;  $SD = 0,26$ ), and at the physical level ( $M = 2,14$ ;  $SD = 0,71$ ).

Participants reported that the support provided by the three active agents (university, teachers and peers) varied significantly (see Figure 3). Peers were perceived as the most helpful agents, providing specific support, especially on an emotional level. Teachers were also seen as active agents of help, offering support and empathy, while the university as an institution was perceived as the least valued agent in terms of providing specific tools and assistance to students. The participants' free-responses about the support received from each agent were as follows:

- University: Adaptations in exams, increased online tutoring, mediation lab for individual therapy, availability of recorded asynchronous classes, technological resources, and adapted face-to-face group coordination.
- Teachers: Adaptations in exams, learning support with supplementary materials, empathy and emotional support, increased availability of online tutoring, extracurricular classes for learning support, availability of recorded asynchronous classes, and greater flexibility in delivery.



- Peers: Sharing experiences, emotional support, online study groups, accompaniment and cooperation, and computer and digital support.



**Figure 3.** Support received from university, teachers and peers

In relation to the distance learning format, the students reported both positive and negative aspects:

Advantages:

- Convenience and ease of learning.
- Flexibility in managing their study schedule.
- Practicality and effectiveness of the online learning process.
- Reinvention of educational practices to adapt to the distance mode.

Disadvantages:

- Difficulty in maintaining concentration while studying remotely.
- Lack of familiarity and knowledge with the online learning modality.
- Inadequacy of certain activities for distance learning.
- Loss of human contact and face-to-face interactions.
- Complexity and challenges associated with communication barriers.
- Misinformation and potential for misunderstandings.
- Feelings of loneliness, overwhelm, stress, and demotivation.

Despite the disadvantages experienced with distance learning, the participants expressed that in the event of another similar crisis situation, they would propose rethinking the online teaching strategy with some changes. These changes include incorporating more dynamism and interactivity into the online lectures, adjusting

timetables, modifying assessment methods, reducing the number of tasks, and adopting methodologies that encourage reflective activities such as dialogues and debates. A smaller number of participants indicated that they would prefer to continue with the same distance learning modality without any changes. Additionally, participants highlighted the need for regulated and high-quality emotional support to complement the non-face-to-face classes, as well as improved communication between teachers and students (see Table 2).

Basic technological and computer equipment was essential for conducting synchronous and asynchronous distance learning during the initial phase of confinement due to the Covid-19 pandemic. It is important to note that all the resources mentioned in Table 2 are required for the proper utilization of the platforms used to conduct synchronous sessions in non-face-to-face lectures. Ensuring that students have access to the necessary technological resources is crucial for their active participation in online learning.

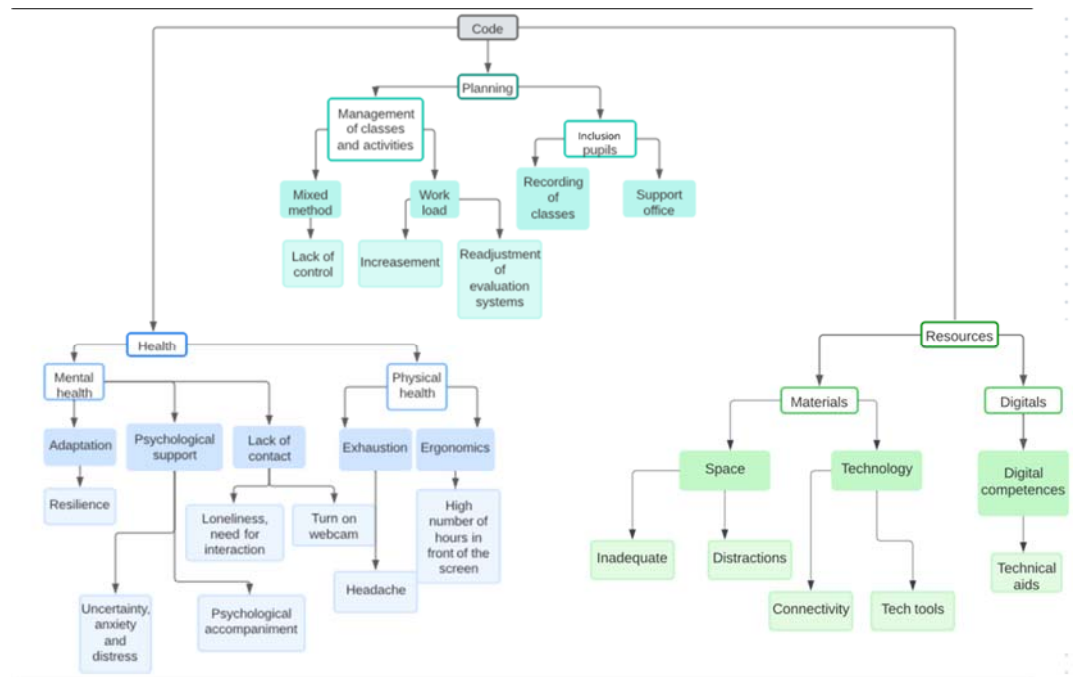
	Yes		No	
	<i>n</i>	%	<i>n</i>	%
<b>Demand for IT equipment (computer, microphone, camera)</b>	5	2,07	236	97,93
<b>Access to the internet</b>	239	99,2	2	,8
<b>Regular access to a computer, tablet or mobile phone</b>	239	99,2	2	,8
<b>Access to a webcam for video calls</b>	232	96,3	9	3,7
<b>Access to a microphone for video calls</b>	234	97,1	7	2,9

**Table 2.** Exploratory analysis of the demand for computer equipment compared to the actual computer equipment needs of university students

### 3.2. Phase II

The verbalizations from both the group of students with diverse needs and the group of teachers (T) were transcribed into text. Information units related to the topic of interest were identified and used to create categories for analysis. The process of transcribing verbalizations from both the group of students with diverse needs and the group of teachers (T) was carried out collaboratively by a team of three researchers to ensure rigor and consistency in the data analysis. These researchers had expertise in qualitative research methods and were trained in the principles of grounded theory. To establish reliability and consistency in the analysis, the research team held regular meetings to review and discuss the transcripts. During these meetings, any discrepancies or uncertainties in the coding and categorization process were addressed through open dialogue and consensus-building. The team established clear coding guidelines and definitions to minimize subjectivity, and any disagreements were resolved through discussion until consensus was reached. Additionally, the researchers maintained an audit trail, documenting all decisions and changes made during the coding process to enhance transparency and facilitate potential future audits or inquiries. This collaborative and systematic approach aimed to ensure the trustworthiness and validity of the qualitative

data analysis. From the transcription, content labels were created, and these labels were then distributed into different coding categories based on their common meaning. Labels related to the same theme were grouped together graphically, resulting in the creation of a conceptual map. The conceptual map allows for the visualization of three major clusters: health, planning, and resources. The top levels of the map display the categories and subcategories in which these labels were distributed (see Figure 4). A conceptual map organized the relationships between different themes and concepts that emerged from the transcriptions.



**Figure 4.** Categories and subcategories flowchart resulting from the qualitative analysis of the transcriptions.

In relation to the question "What are the needs arising during the transition from face-to-face education to mixed or distance learning?", the emerging needs expressed by the students could be divided into three main categories (Planning, Health and Resources), with more specific needs specified within each category. Firstly, there were needs related to the learning process. Within this category, the following needs were identified:

- Needs related to improving college planning.
- Needs related to the tasks themselves.
- Needs related to teacher training.

Professors mentioned several needs, including: a) Adapting to distance teaching and from a private context. b) The need to rethink subjects within a short period of time, prioritizing relevant content and presenting it clearly. c) Adapting syllabus and methodologies. d) Facing challenges in adapting content to the restrictions imposed by distance teaching. e) Developing a tutorial plan for students. f) Concerns about evaluation systems. g) Ensuring the adequacy of evaluation systems. h) Difficulty in adjusting

workload to students' needs. They also identified several needs related to resource limitations at the university. These needs included:

- The need for dynamic tools for virtual classes.
- Prompt response to student requests.
- Clear guidelines for adapting syllabus.
- Technological resources and training for online classes.
- Suitable physical space and reliable network access.
- Adaptations for students with special needs.
- Achieving a better balance between professional and personal life.
- Improved communication from the Ministry.

The needs related to the health of the students could be grouped into two main categories: mental health and physical health.

In relation to mental health, students expressed the following needs: a) A service to address the psychological discomfort caused by the pandemic and subsequent confinement. b) The need for social contact to alleviate feelings of lack of belonging to a social group, which was intensified by isolation and loneliness, and further aggravated by limited virtual social contact. c) During online lectures, students preferred to keep their cameras turned off, even to the point of not seeing their own faces. d) Lack of contact between teachers and students. e) Lack of motivation and emotional distress.

Professors highlighted the initial difficulties in motivating students using new methodologies; the need to provide emotional support and promote socialization among classmates and peers, and to foster stronger connections between teachers and students during confinement.

Regarding physical health, the following needs were identified: a) Blurred boundaries between work and family and personal life b) Lack of rest due to increased screen time. c) Fatigue from prolonged computer use. d) Physical discomfort resulting from a lack of physical exercise, leading to postural problems and headaches. e) Eye strain and migraines.

In response to the question "What strategies and resources have been implemented (by the university, teachers, classmates, yourself) to meet these needs?", students with DN and professors provided the following information, concurring in their responses:

- The university implemented new security measures, protocols, alternative itineraries for students with special needs, online exams and classes, and extended deadlines for assignments.
- Teachers offered greater flexibility in their schedules, provided mentoring and increased availability through platforms like Zoom. They also sought technical support from the university and specific training in digital tools.
- Classmates appointed a mediator to advocate for the class's needs (DN students).
- Individuals themselves implemented strategies such as maintaining social ties through video calls with classmates, dedicating more time to self-care, exploring alternative note-taking and study methods, optimizing work schedules, engaging in regular physical activity using indoor sports apps, and taking ownership of projects and tasks to increase success.

The responses regarding "What have you missed to meet these needs?" and "What would you have incorporated at that moment?" are categorized as follows:

In the DN group:

- Regarding the learning process, they missed a support service that could inform about study techniques, aids to review subjects, and they would have liked the option to record face-to-face classes for students who couldn't attend.
- In terms of logistics and resources, they felt a lack of financial support and material assistance, a lack of online meeting spaces, organizational issues at the university and with the hybrid system, and some felt that webcams intruded into their privacy.
- Concerning mental and physical health, they felt a lack of psychological and emotional support. The deterioration of students' mental health, including anxiety attacks, highlighted the need for a university-based service to help students in dealing with difficult situations. They also felt a lack of support and empathy from some teachers.

In the professors' group:

- They felt that certain needs were not met, such as assistance for students with network problems, lack of clarity regarding camera usage, quality psycho-emotional support for students, and training for hybrid classes.

The prioritization of needs by the group of students with DN was as follows:

1. Psychological support.
2. Better organization of tasks.
3. Adequate space at home.
4. Technical aids.

The prioritization of needs by the professors' group was as follows:

1. Teachers' adaptation to the new modality.
2. Emotional and psychological support.
3. Improvement of technological resources.
4. Strengthening the bond with students.

Considering all the information, in the Planning category, the teachers emphasize the differences in problems encountered during the first and second lockdown. They recognize the need to adapt methodologies and syllabuses, as well as adjust the workload. In the Health category, teachers expressed the importance of providing emotional support to students who were affected by uncertainty. They noted that student participation from home was greater during the 2019-20 academic year, emphasizing the need for social contact and emotional support. In the Resources category, teachers highlighted the need to explore alternatives for students requiring adaptations or with special and diverse educational needs.

Request for Support/Application for Assistance		Need	
Learning Support	10	Learning	12
Emotional and/or psychological support	0	Mental health	14
		Emotional health	11
Computer equipment	5	Socio-economic	17
Learning materials and tools	1		
Financial assistance	8		
Supervening Circumstances	1	Physical health	7

**Table 4.** Gap between students' diverse needs and actual demands for support

Table 4 presents the gap between students' diverse needs and their actual demands for support, which is closely related to our objective of exploring the experiences of university students with diverse needs (DN) during non-face-to-face education. The table provides insights into the specific areas where students requested support or assistance, including learning support, emotional and/or psychological support, computer equipment, learning materials and tools, financial assistance, and supervening circumstances. Understanding this gap is essential to identify strengths and areas for improvement in the provision of support services for students with diverse needs.

#### 4. DISCUSSION

The findings of this study provide valuable insights into the multifaceted challenges and opportunities posed by non-face-to-face and hybrid learning modalities, with a particular focus on students with diverse needs. In this comprehensive discussion, we will delve deeper into how our results align with previous research, emphasizing the pivotal role of teacher training and the critical importance of inclusive practices in shaping the future of education, all while following the order of our objectives.

Our study's findings resonate with previous research, which has consistently highlighted the multifaceted challenges faced by educational institutions during the pandemic (Armas-Alba & Alonso-Rodríguez, 2021). These challenges encompass limited access to technological resources, teachers' inadequate training in digital environments, and insufficient support systems. A noteworthy point raised by this body of research is the significance of digital competence among teachers, a factor crucial for fostering inclusive education, both during the pandemic and in the post-pandemic era (Betancourt-Odio et al., 2021).

Our study's findings align closely with the first objective, which aimed to identify the diverse needs of students during the transition to non-face-to-face and hybrid learning modalities. The research illuminates the multifaceted nature of these needs, including challenges related to mental and physical health, logistical aspects, and socio-economic factors. These findings underscore the importance of recognizing the nuanced needs of

students in diverse contexts and tailoring support accordingly (Armas-Alba & Alonso-Rodríguez, 2021).

A significant aspect illuminated by our study is the paramount importance of considering the mental and physical health of students when designing and implementing distance learning modalities. Despite the recurrent emphasis on health and psycho-emotional well-being throughout our study, it was surprising to discover that students did not initially seek emotional and psychological support from formal university services. Instead, they turned to their peers and personal connections for support, underscoring the vital role of community and interpersonal relationships during challenging times.

Objective 2 aimed to identify the strategies and resources implemented by various stakeholders to meet the diverse needs of students during the transition to non-face-to-face and hybrid learning. The study findings shed light on the collaborative efforts of universities, teachers, and peers in providing support to students. This objective underscores the importance of a multifaceted approach to addressing the diverse needs of students, highlighting the pivotal role of the educational community (Sola-Martínez et al., 2020).

The last objective sought to prioritize the diverse needs of students and teachers during the transition to non-face-to-face and hybrid learning modalities. The research highlights the divergent priorities of students with diverse needs and professors, shedding light on areas where additional support is required. This objective underscores the importance of aligning institutional strategies with the specific needs and priorities of various stakeholders to enhance the overall effectiveness of support services (Pozuelo, 2014).

Our study corroborates the grounded theory's central tenet, emphasizing the pivotal role of teachers in the educational process, whether in physical or digital learning environments. Grounded theory posits that teachers must acquire new digital competencies and effective pedagogical strategies through training courses to navigate the evolving educational landscape effectively. This resonates with prior research that underscores the dire need for teacher training in digital competence and the promotion of meaningful learning experiences (Betancourt-Odio et al., 2021; Pozuelo, 2014).

The potential of e-learning and blended learning modalities to provide flexibility and individualization tailored to the unique needs of each student emerges as a key takeaway from our study. The imperative for ongoing and flexible teacher training to ensure the delivery of high-quality and inclusive education cannot be overstated (Armas-Alba & Alonso-Rodríguez, 2021). ICT has been utilized effectively, despite limited resources, but teacher training needs improvement. It is important to acknowledge that the attainment of academic objectives is closely tied to access to technology, which in turn depends on the financial capabilities of families (Armas-Alba & Alonso-Rodríguez, 2021). This presents a significant challenge for universities and educational institutions, as they need to develop strategies that offer personalized and flexible learning experiences to meet the specific needs of each student, especially those with special needs. Solutions must include not only training in digital teaching skills but also an understanding of student characteristics and their contextual factors. Furthermore, it requires the availability of sufficient technological resources to provide loan services, ensuring equitable access to technology regardless of students' economic, social, and cultural backgrounds or their families' situations.

The results of this study seem to highlight that critical elements in designing distance learning should consider the mental and physical health of students, the availability of

material and technological resources, and the planning of distance learning modalities. It is surprising that despite the recurring focus on health and psycho-emotional well-being throughout the study, students did not request emotional and/or psychological support from the student support service, specifically the University Office for the Support of Students with Special Needs at UIB. The participants were unaware of the existence of this service. However, their fellow students have been the primary sources of help and specific support, particularly in terms of emotional support. It is therefore advisable to provide information to the university community about such support services so that both teachers and students are aware of their availability.

In the context of this research, it is important to reflect on the role of the community and human relationships in times of need. As evidenced by the findings, students initially turned to their peers and friends for emotional support before considering formal sources of assistance. This dynamic highlights a fundamental aspect of the human experience: trust and solidarity in interpersonal relationships. In times of difficulty, it is natural for people to turn to their closest social circles for emotional and psychological support. This pattern of behavior could be interpreted as a testament to the importance of community in people's lives. Friendships and personal connections play an essential role in emotional support and psychological well-being. However, it also raises a relevant question about trust in institutions, as participants were unaware of the existence of a formal emotional support service at the university. This finding raises important questions about how educational institutions and society at large can promote greater awareness of formal resources available for emotional support. At the same time, it suggests the need to balance the importance of informal support networks with the availability of formal services. Ultimately, this reflection underscores the complexity of human relationships and emphasizes the importance of addressing both formal and informal sources of support in the pursuit of holistic well-being.

The number of students with specific needs compared to those who have sought help indicates that not all cases have been identified or addressed. This aligns with the students' feedback in the focus group, where they expressed a lack of information about the institution's resources and support services. The demand for computer equipment (as shown in Table 3) is another example, where only 5 students made requests for equipment, but 7 to 9 students lacked the necessary resources to effectively participate in online lectures. This demonstrates that the needs of all students were not adequately met. In general, there is a disconnect between the diverse needs of students and the number of requested supports. It is clear that public institutions must have sufficient resources, both in quantity and quality, to meet the needs of all students (refer to Table 4).

In comparing face-to-face education with distance education (as shown in Table 2), the findings indicate that the distributions are generally balanced or slightly polarized towards one side, but none of the items are statistically rated as "much worse" or "much better". The pandemic has created uncertainty and vulnerability for students, impacting their experience with distance learning.

In line with Pozuelo (2014), our analysis aligns with grounded theory, which emphasizes the significant role that teachers play in the evolution and transformation of the educational process, both in the physical classroom and in the digital realm. Grounded theory posits that teachers need to acquire new digital skills and adopt effective pedagogical strategies through training courses in order to navigate this evolving educational landscape successfully. These principles of grounded theory underline the



importance of training encompassing the instrumental use of technology and the promotion of meaningful learning experiences. Digital competences are essential for mastering e-learning, including the ability to construct, produce, evaluate, and select information effectively. However, the challenge lies in balancing the workload and ensuring that higher education's methodological and organizational principles are adapted to the new educational modalities, while also considering the allocated hours according to ECTS. Another challenge is addressing students' ability to concentrate when faced with prolonged screen time, which must be taken into consideration in the organization and delivery of this new modality.

The shift in modality has brought forth various needs among learners, particularly in relation to the psycho-emotional, logistical, and socio-economic consequences of the pandemic. When it comes to learning, the challenges of non-face-to-face education primarily revolve around organizing and planning the learning process. The sudden transformation without a proper evaluation and readjustment process was a result of the urgency imposed by the confinement measures. However, it is important to acknowledge that the pandemic itself acts as an extraneous variable, which was addressed by designing the questionnaire to differentiate the needs arising from the pandemic and confinement from those specifically related to non-classroom education. Nonetheless, there are limitations to the study. Firstly, the participants were heterogeneous, including students with diverse needs, making it challenging to determine if the needs of these subgroups differ significantly from one another. Secondly, the terminology used, such as "diverse needs," was chosen due to limitations in the educational legislation terminology in Spain, which specifically focuses on disabilities and severe behavioral disorders.

E-learning and blended learning offer flexibility and individualization to cater to the unique needs of each student. However, they still have shortcomings, including inadequate assessment methods, lack of bilateral communication, and the need for enhanced teacher empathy. The findings of the study lay the foundation for a higher education model that is not solely dependent on face-to-face instruction but it is adapted to the needs of diverse students. The university must develop an institutional strategy that ensures comprehensive training across different modalities, particularly in distance learning. This training should be ongoing and flexible to address the specific requirements of all learners, encompassing digital competence and access to and effective use of technology. As highlighted by Sola-Martínez et al. (2020), quality teacher training is essential to provide equitable and inclusive education of high standards.

In summary, the use of technology as a resource is crucial in developing the skills and competences necessary in today's society. This study focused on the Spanish context, specifically the Balearic Islands, to examine the response of the university system to the pandemic situation. The findings indicate that the education system, despite the existing research conducted in the past few decades, still demonstrates limited utilization of ICT in the classroom without effectively applying 21st-century competences. Although researchers have been writing about the challenges and opportunities of online and non-face-to-face learning for disabled and disadvantaged students since the mid-90s, with a focus on accessibility, universal design for learning, and assistive technologies, it took an extrinsic factor like the global pandemic and confinement to put these theoretical advancements into practice. The pandemic provided an unprecedented opportunity to implement inclusive principles through the widespread use of ICT in a real-world context. It seems that the pandemic served as a wake-up call for policymakers and senior

managers, shedding light on the importance of embracing technology in education in ways that research alone had not been able to achieve.

Looking ahead, we recommend further experimentation in the design, implementation, and evaluation of personalized and student-centered pedagogical strategies. By employing different technological, pedagogical, and organizational configurations, the teaching-learning processes can become more flexible and better equipped to address the challenges identified in this study. It is essential to offer high-quality educational proposals that cater to the needs of all students, particularly those with diverse needs. By continually exploring innovative approaches, we can enhance the overall quality and inclusivity of education. In conclusion, our study offers profound insights into the intricate challenges and opportunities presented by non-face-to-face and hybrid learning modalities, particularly for students with diverse needs. These findings underscore the pressing need for a holistic and inclusive approach to education, one that encompasses technology, teacher training, and robust support services. As we navigate the evolving educational landscape, it is imperative to prioritize equity, access, and the holistic well-being of every student, propelling us toward a future where education is truly inclusive and transformative.

## DECLARATION OF INTEREST

The authors declare that there is no conflict of interest.

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