

Article

Students' Perceptions of Online Learning during COVID-19 Pandemic: A Qualitative Approach

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Abstract: In this study, we conducted a thematic analysis of the views and perspectives of university students about online learning, specifically regarding their interpretations and experiences of the transition from traditional face-to-face courses to online teaching during the COVID-19 pandemic. The sample included 209 undergraduate and postgraduate students who were invited to complete five tasks, i.e., a free association task, answering open questions about the advantages and disadvantages of online learning, providing suggestions for improving online learning, and sharing a personal experience lived during this period. Some of the main themes extracted from the data refer to the negative aspects of online learning mentioned by participants in relation to its disadvantages, such as health and psychosocial problems (e.g., stress, anxiety, decreased motivation, isolation/loneliness, and apathy) and learning process problems (e.g., misunderstandings, a lack of feedback, additional academic requirements, a lack of challenge, and disengagement). Other recurrent themes refer to the positive aspects of online learning associated with its benefits: comfort and accessibility, economy (saving time and money), and psychological and medical safety. The personal experiences during COVID-19 shared by our respondents were organised around four main themes (positive, negative, ambivalent, and transformative experiences) related to students' adaptation to the educational context generated by the pandemic. Based on these findings, practical recommendations for universities and researchers are discussed.

Keywords: students' perceptions; online learning; educational experience; COVID-19 pandemic; qualitative study; thematic analysis



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1. Introduction

As of March 2020, due to the ongoing COVID-19 global pandemic, most higher education institutions worldwide were forced to close their doors and start teaching online. The change from traditional learning to remote online learning was swiftly enacted, without the proper preparation or training of both academics and students. The sudden and “forced” [1] (p. 466) shift in teaching approach impacted the academic experience of both academics and students and led to a series of social, technical, educational, and psychological challenges.

There is a close relationship between education and sustainable development that requires policymakers to carefully assess the consequences resulting from its dynamics. Though sustainable development, concerning the preservation of a safe environment for future generations, is promoted through education, the educational system itself is under pressure to change due to the many challenges related to sustainability, e.g., greater awareness of natural, economic, and social resources; new perspective of social justice and universal wellbeing; and new attitudes toward consumption and lifestyle [2].

Under these circumstances, a sudden change in the educational system—introduced on a large scale due to a social crisis like the COVID-19 pandemic—needs to be discussed both globally and contextually. An analysis is needed in relation to different factors that influenced the adopted policies and strategies, e.g., the level of development of online learning networks, previous experience in integrating online and traditional learning [3], balancing synchronous and asynchronous learning [4], and training for teachers and students [5]. It is also important to discuss the effects of the change at several levels, including economic, social, psychological, teaching quality, and academic achievement. For example, some researchers highlighted the positive effects of online learning on students' academic performance, autonomous learning [6], and engagement [7]. Other researchers described the negative academic outcomes for students [8] and the psychosocial challenges of the virtual learning environment [9–11], while others considered the effects of technologies in a more nuanced manner, considering various specific factors. It is important to weigh the benefits of innovative economic, social, and technological solutions against the possible negative effects of pressure for change to not compromise some of the Sustainable Development Goals (SDGs), e.g., viable and sustainable economic solutions for the resources-constrained education systems, quality education for all, health and wellbeing, and social justice [12]. However, the experience of online education during the COVID-19 pandemic has called for innovative adaptations that can be used in the future for the digital transformation of higher education institutions by building on the empirical evidence accumulated during this period of crisis.

In this study, we conducted a psychosocial analysis of the transition from traditional face-to-face courses to online teaching during the COVID-19 pandemic. Online learning is an alternative to face-to-face courses that requires specific considerations, e.g., a higher involvement on behalf of both academics and students, a higher social online presence, and a series of personal characteristics. Most importantly, online learning requires previous training, rigorous preparation, and a conscious, deliberate acceptance of its advantages and disadvantages [13]. While many universities had the technical support necessary to adopt online learning as an alternative during the COVID-19 pandemic, most students were not prepared for it and did not freely choose it.

The general objective of this study was to explore the difficulties and challenges encountered by university students during the COVID-19 pandemic, as well as their perceptions of the advantages and disadvantages of online learning. We were also interested in the students' recommendations concerning the improvement of online learning and their shared experience of this new teaching approach. Finally, our study was aimed to provide an account of the way in which students managed online learning and to offer some recommendations for future crisis situations.

Perceptions are defined as complex mental processes by which people understand, interpret, evaluate, and form a picture of social phenomena. Furthermore, perceptions are studied by exploring individual voices that can be expressed, for example, through "narratives, storytelling, behaviour, and reactions to individuals or groups" [14] (p. 606). In this study, perceptions were operationalised through views, ways of understanding, and personal perspectives developed within the processes of social interaction and communication about online learning. In addition, we also explored perceptions of the environment, social events, and emotions, as well as self-perceptions and perceptions of others, all of which are known to be socially and culturally influenced and/or shaped [15].

Why conduct a study on students' perceptions? Perceptions represent interpretations of reality with truth value for many people, being "extremely powerful and influential in human thought and behaviour" [14] (p. 606). Negative perceptions of online learning could lead to a decrease in academic performance, while positive perceptions could have the opposite effect of increasing performance. These perceptions can also influence students' behaviour in virtual classrooms, both in relation to learning objectives and with peers and teachers. Attention, motivation, emotions, and satisfaction in response to learning can also be modulated by students' perceptions. Furthermore, by studying perceptions of the

e-learning system, we can access students' views, evaluations, and interpretations, which (when corroborated with those of education professionals) can form the basis for improving the quality of learning, provide solutions to more successfully cope with pandemic-like situations, and create a basis for intervention and counselling for students who experience difficulties in adapting to such situations.

This study was based on the ontological and epistemological frameworks of social constructionist paradigm. According to the social constructionist paradigm, knowledge is not necessarily based on the objective and unbiased observation of reality, but its elaboration depends on the historical and cultural context and is achieved through experiences of social interaction and communication [16]. In this study, social interactions took place not only in a specific broader social context created by the outbreak of the COVID-19 pandemic but also within small, virtual, clearly socially bounded communities, namely those generated by the online learning environment. The participants' perceptions and experiences are the result of their conscious engagement to generate shared meanings to manage the new form of learning. Furthermore, our study was based on the weak social constructivism perspective [17] because the elaboration of shared social knowledge is not totally independent of objective societal aspects and the development of human beings; rather, it is constructed over a set of objective facts. In our case, shared meanings about online learning were marked by factors such as technological development, institutional frameworks of learning processes, and reported personal, psychological and medical issues. Finally, we adopted a qualitative approach with thematic analysis [18].

2. Online Learning vs. Face-To-Face Teaching

Previous studies underlined the numerous advantages of online learning such as lower costs, high accessibility and flexibility, rapid exchanges between teachers and students, opportunities for students to perform other activities while undertaking their studies (e.g., part-time jobs), and lower levels of stress [19–25]. Other studies also pointed out the disadvantages of online learning such as technical issues (e.g., internet connection and broadband issues), the risk of low attention levels, loss of sense of belonging, isolation, loss of motivation, and poor communication [7,20–22,24–26].

Several key factors impact the effectiveness of online learning, and some of the most important refer to: (1) technology, e.g., access, navigation and internet connection, the design of e-learning platforms, and accessibility to learning synchronous and asynchronous learning materials; (2) instructors' characteristics, e.g., teaching styles, attitudes towards students, digital skills, and encouraging interaction between participants; and (3) students' characteristics, e.g., personality traits, demographic characteristics, and digital knowledge and skills [27]. Regarding the latter, studies showed that online learning might be more beneficial for specific types of students. Motivation and self-discipline are extremely important, as students must be able to efficiently manage their deadlines and allocate time for asynchronous and synchronous materials [28]. Additionally, students must be able to learn through experience [29] and hold strong independent learning and motivation skills [20].

The objective of online learning is to maintain the same quality of education as traditional face-to-face teaching while using online methods and platforms [30]. This is harder to achieve since online learning requires a completely different learning environment, e.g., access to the learning materials, methods for online social interaction, and assessment tools. Online learning is not just a different way of delivering learning materials and contents but also a completely different social space in which individuals interact with each other, express themselves and their emotions, and seek solutions to different problems. As such, this environment needs to be as similar as possible to the traditional one to avoid any potential limitations to the communication and interaction between teachers and students.

Unlike in-person lectures, online learning is based on virtual learning environments (VLEs) accessed through a computer, smartphone, or tablet. Consequently, any act of communication and all its components (emission, reception, feedback, etc.) are mediated by

a digital medium, e.g., computer, and is thus experienced quite differently than face-to-face teaching. The Media Naturalness Theory [31] was developed to explain the principles of electronic communication. According to this theory, a decrease in the degree of naturalness of a communication medium leads to the following effects in connection with a communication interaction: (a) increased cognitive effort, (b) increased communication ambiguity, and (c) decreased physiological arousal [9].

Different strategies can be adopted to increase the similarity between any communication mediated by an electronic medium and the face-to-face medium. One strategy is adopting performant digital devices, fast broadband speed, high quality learning platforms. Another one is ensuring digital training (e.g., support and training for the use of e-learning platforms) and psychological preparation (e.g., establishing appropriate expectations and developing appropriate alternative modes of communication). A final strategy is ensuring a high level of involvement from both teachers and students in actual learning, e.g., increased effort to generate social online presence, which can result in an increased senses of belonging and connectedness [32], actively interacting and working together, and supportive environments with prompt communication and common values and interests [1]. Social presence involves five integrated elements: affective association (emotional connection with learning activities), knowledge and experience (previous expertise), interaction intensity (engagement in interpersonal relations), community cohesion (sense of belonging and sharing resources), and instructor involvement (the teachers' capacity to shape students' behaviours and to engage them in critical analysis and reflection) [33,34].

3. Online Remote Learning during the COVID-19 Pandemic

Ensmann et al. [35] explored students' experiences of online learning during the COVID-19 pandemic using the Social Presence Model [33,34] as a theoretical framework. Their findings underline the importance of social presence as a literacy for learning—in any modality—and the need to provide mental health support for students. Their respondents frequently invoked a lack of face-to-face, social, and real interactions, and they linked this to increased screen time, exhaustion, and a lack of interest and motivation for learning. Similarly, Bączek et al. [36] conducted a survey to investigate the perceptions of online learning among Polish medical students eight weeks after the move to online learning. The main disadvantages of online learning evoked by their respondents included a lack of interactions with patients, technical problems, reduced interactions with the teacher, a lack of self-discipline, and social isolation. In educational areas involving significant professional practice, such as medical studies, a lack of direct contact with the professional environment is a major disadvantage. Furthermore, results from a comparative study showed that medical students are more dissatisfied with online courses than students in other degree programmes [37]. In another study, Dung [38] also identified extensive time staring at digital screens, a lack of body movements, a lack of conditions for developing social interaction skills, fear of online assessment, concentration loss, and a lack of peer interaction in virtual classrooms. Almendingen et al. [39] conducted a study examining Norwegian students' experiences of the sudden shift to online teaching during lockdown. Their results showed that 75% of students reported that their life had become more difficult and 50% felt that learning outcomes would be harder to achieve at two weeks after moving to online teaching.

Moreover, students in remote areas found online learning to be less efficient than face-to-face learning because they do not have the appropriate communication networks and infrastructure required to follow online learning [40]. Other studies also described broadband connectivity issues in rural areas as a significant challenge for students to make use of online learning initiatives [41]. These results suggest that the shift from in-person classes to online learning increased the social class achievement gap, exacerbating social class academic disparities [42], and favoured learners whose personalities were characterised by high levels of agreeableness, conscientiousness, and openness to new experiences [43]. Telyani et al. [44] investigated the perceptions of Cypriot teachers regarding the sudden

shift from in-person classes to online teaching, specifically regarding the main challenges of online learning during the COVID-19 pandemic. The most frequently invoked challenges among the 20 interviewed teachers focused on students' behaviours such as reduced interaction, not engaging in solving problems, not answering questions, reduced task completion, decreased attendance, lowered engagement, and reduced performance [44]. Likewise, Biwer et al. [45] reported that during the period of online learning, students felt less able to focus their attention and invest as much time and effort in self-study as in the pre-pandemic period. Effects on mental health were also highlighted. For example, college students faced increases in anxiety, loneliness, and depression [46,47]. The increases in stress, anxiety, and depressive thoughts among students were caused by fear and worry about their own health and of their loved ones, difficulty concentrating, disruptions to sleeping patterns, decreased social interactions, and increased concerns over academic performance. Physical health problems, such as headaches, were also reported as a result of prolonged screen exposure [48].

How did the abrupt adoption of online learning during the pandemic period affect students' academic performance from various levels of education (primary school to university)? The change had both positive and negative effects on academic performance. In general, however, the effects were rather negative and were influenced by various factors such as age (or level of schooling), previous learning experience, and learner characteristics. In a systematic review, Hammerstein et al. [49] highlighted the negative effects of school closures on student achievement (or test scores) on mathematics, reading, and other subjects from primary and secondary education, showing a stronger impact on younger students and those from a lower socio-economic status. Other studies showed that online learning outcomes were influenced by factors such as learner characteristics, perceived usefulness, course content and design, ease of use, and faculty capacity. Of these, learner characteristics, e.g., proactiveness, self-study ability, and compliance, are the most important factors [50]. The academic results of students who attended at least one academic year of face-to-face learning before the outbreak of the pandemic were better than students who started their studies online [51]. In another study on K–12 students, low-performing students showed greater improvements in performance than high-performing students, suggesting that online learning had different effects and narrowed the gap between low- and high-performing students [52].

Furthermore, in a study conducted before pandemic, Broadbent and Fuller-Tyszkiewicz [53] identified five distinct profiles of self-regulated learning: minimal regulators; restrained regulators; calm, self-reliant, and capable regulators; anxious, capable collaborators; and super-regulators. The minimal regulators represent the least adaptive profile, which is characterised by the lowest motivation and self-regulated learning strategies, anxiety, lesser activity organisation, the lowest level of critical thinking, and lacking confidence in their study abilities. Super-regulators have the highest degree of adaptation. They tend to set the highest grades goals and have the highest levels of time management and organisation, effort regulation, metacognition, critical thinking, and confidence in their study abilities [53].

Similarly, Biwer et al. [45] identified four student profiles according to the reported changes in their resource-management strategies during online learning in pandemic: the overwhelmed, the surrenderers, the maintainers, and the adapters. The overwhelmed refers to the students who are less able to regulate their resources and have difficulties with attentional regulation, effort regulation, and time management. The surrenderers face similar difficulties as the overwhelmed in terms of attention, effort, and time management, but they also invest less effort and time in their self-study. The maintainers differ from the others only by a relatively small increase in effort and time investment. Finally, the adapters are characterised by the efficient management of attention, effort, and time, being more motivated in the new situation. Ishimaru et al. [54] studied the adaptation features of university students exposed to fully online education during COVID-19 pandemic, especially engagement and stress. The authors identified three groups of students: school

adaptation, school maladaptation, and school over-adaptation groups. The first group presented the lowest level of mental health problems (fatigue, anxiety, and depression), and the last group experienced the highest level of mental health issues, except for fatigue. The over-adaptation group generally consisted of older female students who considered online education to be less beneficial and had shorter total sleep time on weekdays and longer total sleep time on holidays [54].

Despite numerous challenges, students identified some advantages or positive effects of online learning. The most frequently evoked were flexible schedules and convenience, comfortable environments, and enhanced technical skills [41]. Others reported advantages include the ease of sharing educational materials, effective access to study resources, updated learning materials, and flexibility in time and space [55–57]. Further studies also mentioned protecting one's health and ensuring the community's safety, saving travel time, exposing one to new forms of learning, keeping up with the original plan of the semester, having extra time for self-study, and easy access to online resources [38,58], as well as the ability to stay at home, continuous access to online materials, the opportunity to learn at one's own pace, and comfortable surroundings [36].

4. Method

4.1. Participants

In this study, the convenience sample included 209 undergraduate and postgraduate students in Psychology, Biology, and Languages from the Alexandru Ioan Cuza University of Iași, Romania (N = 188 females), aged between 19 and 52 years old (M = 22). Among the participants, 204 of them attended at least two full semesters of online learning during the COVID-19 pandemic, and 5 of them only attended one semester; 193 students did not experience online learning before, while 16 experienced this form of learning on previous occasions (e.g., independent distance learning programmes). Following the measures to prevent the spread of COVID-19 infection [59], Romanian universities, including the Alexandru Ioan Cuza University of Iași, decided to organise teaching activities predominantly online from April 2019, towards the end of the 2019–2020 academic year. At the beginning of the 2020–2021 academic year, most faculties moved their teaching activities exclusively online, with 95% of the students involved in this form of learning [3].

Prior to the pandemic period, teaching activities at the university were carried out in the traditional face-to-face format for students enrolled in full-time education and included lectures, tutorials, practical labs, and seminars. Prior to the pandemic, the university's e-learning platforms and other digital tools were mainly used for students enrolled in independent distance learning and for posting learning resources and asynchronous communication. Synchronous online activities carried out before the pandemic were limited to videoconferences, video meetings for national and international collaborations, and one-to-one mentoring/supervision activities.

During the COVID-19 pandemic, the participants involved in this study attended all their lectures, tutorials, and mentoring activities exclusively online. Only a small part of their practical labs required a hybrid approach. More specifically, Psychology and Language students attended all teaching activities exclusively online, while Biology students carried out a small part of their practical labs in face-to-face mode with very strict social distancing measures in place. Online teaching was officially carried out using the Cisco Webex, Microsoft Teams, and Moodle digital platforms. Some academics also used other applications such as Zoom, WhatsApp, and Google Suite in addition to those agreed upon by the University management. Cisco Webex allows for synchronous online teaching via video meetings in various forms, such as one-to-many (e.g., lectures), many-to-many (e.g., debates), one-to-one (mentoring), breakout room/sessions (e.g., group discussions or labs activities), and chat communication. Microsoft Teams and Moodle provide options for asynchronous learning in addition to the online video classes (e.g., course materials, forums, class assignments, and course calendar).

4.2. Procedure

The Ethics Committee of Faculty of Psychology and Educational Sciences, Alexandru Ioan Cuza University of Iași, approved the study. Participants were provided with an information sheet that contained a full description of the study and details about anonymity, data confidentiality, and their right to withdraw from the study. After participants signed the consent form, they filled in an online Google Forms questionnaire consisting of the five items described below and a few questions related to socio-demographic variables. The questionnaire was followed by a short debrief. Data were collected in June 2021 at the end of Semester 2 of the academic year.

4.3. Measures and Instruments

(1) Free association task

The free association task is a method widely used to collect data about the content of a social representation [60–62]. The free association task allows researchers to identify the latent dimensions defining the structure of the semantic universe of the social object being studied. It consists of associating words or expressions with a stimulus word or expression corresponding to the object of representation. In this study, participants were asked to write down the first five words/expressions that came to their mind when they heard the stimulus expression-word “Online learning”.

(2) Advantages of online learning

Participants were asked to list five advantages of online learning (*From my perspective, the advantages of online learning are . . .*).

(3) Disadvantages of online learning

Participants were asked to list five disadvantages of online learning (*From my perspective, the disadvantages of online learning are . . .*).

(4) Suggestions for improvement

Participants were asked to provide three suggestions, based on their online learning experience during the pandemic, for improving the quality of the academic activities delivered online (*To improve the quality of the academic activities delivered online, I recommend . . .*).

(5) Personal experience depicting online learning

Participants were invited to describe a significant event experienced during the pandemic and associated with their online learning experience (*Describe, in 10–15 lines, a personal experience—a situation, an event—related to online learning*).

(6) Socio-demographics

Participants were asked to provide socio-demographic information concerning their age, gender, years of study, field of study, and number of semesters they attended online.

4.4. Data Analysis

All data were analysed using a thematic analysis (TA) method [18,60,63–67]. TA is based on a process of generating or identifying themes, subthemes, and interconnections between themes and subthemes [63,65]. A theme represents “a specific pattern of meaning found in the data” [60] (p. 209) that “captures something important” about their relation to the research question [18] (p. 82). Themes and subthemes are obtained from codes, the smallest components of the analysis, by collapsing or clustering them [63]. Codes are “building blocks” for themes and “patterns of meaning” [66] (p. 297) shared by research participants.

We chose this approach because it corresponded to the objectives of our research and has multiple advantages. Firstly, the collected data were qualitative and TA is one of the most used methods for managing and interpreting this type of data. TA can be used to process data from various sources such as interviews, focus groups, and newspaper

articles [65], diaries, discussion forums, story-based methods (vignettes or story-completion tasks) [67], open-ended responses to questionnaire items, video, images, essays, and free associations [60]. As stated in the previous section, we used two different techniques of data collection, i.e., free associations and open-ended questions, to ensure a greater data diversity and in-depth analyses. Secondly, we chose TA because it is a tool “unbounded by theoretical commitments” [66] (p. 297) and a methodological perspective usually used in exploratory research. TA is an excellent tool for identifying, describing, and interpreting people’s experiences in relation to an issue, their views and perspectives, current practices/behaviours, and shared representations of an object of social interest [68]. Thirdly, TA is a flexible method of qualitative data analysis that can be conducted in several ways [18,63,67], depending on the research objectives. This feature of the analysis allowed us to treat the data in two different ways, which we describe below, based on some methodological decisions [18,67].

4.4.1. Inductive and Deductive Analysis

In our research, the first objective was to explore the views and the perspectives of students about online learning (items 2 to 4). To process this type of data, we opted for a thematic analysis characterised by alternating the deductive and inductive approaches. Therefore, we based our work and questions on previous experiences and findings in this area. Similarly, to identify and name our codes, themes, and subthemes, we used findings from previous studies. In this sense, the analysis can be regarded as deductive. At the same time, the inductive approach was also used because most of the components of the analysis emerged from the data through a bottom-up approach.

4.4.2. Inductive Analysis

The second objective of our research was to identify, describe, and interpret the structure of students’ representations of online learning using the data obtained from the free association task (item 1). The third objective was to explore the emotional experiences described by participants in relation to an event associated with online learning (item 5). All data was analysed using an inductive approach—conducted exclusively “bottom-up”—without theoretical inferences [63].

5. Results

Results were organised in tables, each table containing all the themes and subthemes resulting from the analysis of data obtained from each single item/task.

5.1. Free Association Task

By analysing data from the free association task (item 1), we were able to extract the structure of the online learning representation they shared. We identified eight main themes at an early stage of the analysis. After reviewing and refining these themes, we retained three of them: *Negative*, *Positive*, and *Neutral aspects of online learning*. Themes such as Mental health and Psychological wellbeing, Physical health and Medical issues, and Technical were included in a more comprehensive theme called *Negative aspects* concerning online learning. Table 1 presents the themes and subthemes extracted from the free association task (Item 1).

The first theme refers to *negative aspects* perceived by students and is the richest in content. Given that online learning was not an option freely adopted by the students, the elements associated with this theme must be judged in the light of the social and medical context of this period. Not surprisingly, psychological wellbeing was affected, with students experiencing increased levels of stress and anxiety, a lack of concentration, and exhaustion. This may be due to the novelty of the situation, lack of preparation, lack of an adaptation period, and the adoption of new teaching/learning strategies, all of which increased the degree of difficulty in completing academic tasks. Additionally, the prolonged exposure to screens (sometimes up to 10 h a day) led to fatigue, reduced interest, and medical problems

such as backpain, headaches, and eye pain. Furthermore, since all teaching materials and activities had been prepared for face-to-face learning, academics transferred all contents to online learning without any adjustment since they lacked the time to do so. This can also explain some of the students' negative experiences with online learning.

Table 1. Themes and subthemes defining participants' free associations with online learning.

Themes and Subthemes
1. Negative aspects concerning online learning Stress, low levels of motivation, isolation/loneliness, low levels of focus and attention, experience of negative emotions, tiredness, exhaustion, frequent backpain or head and eye aches, lower quality of academic experience, additional academic tasks, monotony/boredom, lack of organisation, difficulties in understanding academic tasks, lack of preparation, difficulties with connectivity, loss of internet connection, and power cuts
2. Positive aspects concerning online learning Working from the comfort of one's home, no traffic, saving time and money, spending more time with the family, multitasking, personal development, personal change, opportunity, challenge, novelty, progress, and creativity
3. Neutral aspects concerning online learning Online lectures, virtual learning environment, online teaching platforms, oral online presentations, online tests and exams, internet, technologies, and online devices

The *positive aspects* are represented in the students' free associations by two major areas of interest. The first refers to savings (e.g., time, money, and resources), which would not be possible when conducting face-to-face learning. The other area refers to personal opportunities (e.g., challenges, openness to novelty, change, and development). At the borderline between these areas, we noticed a subtheme, multitasking. Being home allowed students to multitask while attending online lectures, e.g., listen to their lectures while also surfing the internet, collecting information about the lecture topics, or attending to other personal issues. Some participants mentioned being able to take care of their children or other family members.

The third theme comprises data that we considered *neutral*. It includes discourse about new teaching activities and contents, the adoption of new technologies and concepts. These mentions were not accompanied by positive or negative evaluations.

5.2. Advantages of Online Learning

The analysis of the benefits of learning from the students' perspective revealed the following main themes: *Comfort and accessibility*, *Economy (time and money)*, and *Safety* (psychological and medical) (see Table 2). Initially, we had a larger number of themes; however, we reduced them to three. For example, Saving time, Family time, Saving money, Avoiding traffic, and Multitasking were all integrated into one theme, *Economy (time and money)*.

As can be seen in Table 2, some of the advantages mentioned by students were also found in the previous analysis of their free associations (see Table 1). This repetition—which was anticipated during the elaboration of the questionnaire—is not redundant or unnecessary for our thematic analysis. On the contrary, it reinforces the results, as we discovered identical or similar data obtained through two different tasks that participants completed. For example, economic advantages were mentioned both here and in the free association task. While these advantages were included as subthemes within the Positive aspects of the previous analysis of the free associations, in this analysis, they constituted one of the main themes, *Economy*.

As a main theme for advantages, *Comfort and accessibility* includes subthemes related to the possibility of staying home within a familiar environment while accessing learning materials and activities that were difficult to use pre-pandemic without going to the

university. Familiarity with one's own living space and a lack of dependence related to location and distance seem to be the defining characteristics of this theme.

Table 2. Themes and subthemes defining the advantages of online learning as perceived by students.

Themes and Subthemes
<p>1. Comfort and accessibility Commodity, physical comfort, familiar environment, online participation, mobility, high accessibility, online resources, more opportunities for synchronous and asynchronous materials, more teaching resources, timetable flexibility, freedom to organise one's personal time, faster and more efficient communication, feedback, problem solving, and higher attendance to classes</p>
<p>2. Economy (time and money) More free time, saving time, saving money, having more time to engage in other activities, more time to spend within one's family, avoiding public transportation, no delays due to the use of public transportation, having a job, and multitasking</p>
<p>3. Safety (psychological and medical) Trust, peacefulness, reduced anxiety, and stress due to face-to-face interactions; less discrimination; less bullying; reduced competitiveness; openness; tolerance; empathy; relaxation; low risk of COVID-19 infection; and sanitary safety</p>

The third theme, *Safety*, refers to students being able to control their levels of anxiety, stress, and mistrust that were triggered by face-to-face learning. One could argue that online learning has helped some of the students to overcome psychological issues such as the ones previously mentioned. Online learning is also linked to lower levels of competitiveness, discrimination, and bullying. We also observed some mentions about reductions in the risk of COVID-19 contamination; however, these mentions were quite scarce. An explanation may be related to the medical discourse in the media, in which younger people were frequently associated with a lower risk of infection compared to older people.

5.3. Disadvantages of Online Learning

The main themes regarding the disadvantages of online learning refer to *Health and psychosocial problems*, *Learning process problems*, *Technical problems and low digital abilities*, and *Discrimination* (see Table 3).

Table 3. Themes and subthemes defining the disadvantages of online learning as perceived by students.

Themes and Subthemes
<p>1. Health and psychosocial problems Stress, anxiety, lack of focus and attention, lower motivation levels, apathy, boredom, lower work efficiency, tiredness, exhaustion, high levels of screen exposure, back pain, head and eye aches, lack of social contact and physical interaction, lack of face-to-face communication, and loneliness</p>
<p>2. Learning process problems Lack of challenge, low levels of accountability, disengagement, unfriendly learning environment, lower efficiency and quality of teaching, monotony, misunderstandings, disorganisation, lack of feedback, additional academical requirements, higher expectations from lecturers, improper evaluations, academics are unfamiliar with online assessments, high level of suspicion regarding plagiarism intentions/behaviours, lack of appropriate study spaces (home), lack of intimacy, and noises</p>
<p>3. Technical problems and low digital abilities Unstable internet connection, power cuts, lack of adequate technology, and low knowledge and skills to use virtual learning environments and technologies associated with online learning among academics and students</p>
<p>4. Discrimination Disadvantage for those without digital skills, disadvantage for those without technological equipment, and disadvantage for those who are less assertive.</p>

Firstly, we should note some overlap between the *Health and psychosocial problems* and *Technical problems and low digital abilities* themes identified here and the *Negative aspects* theme drawn from the free association data (see Table 1). In the context of the disadvantages of online learning, the *Technical problems and low digital abilities* theme draws attention to the users' digital skills. Although the university organised various courses for the use of online learning platforms, students struggled with unstable internet connections, power cuts, a lack of adequate technology, screen blocking, etc., which required more extensive knowledge, experience, and ability to improvise (in addition to initial technical training) to find innovative solutions.

The content of the second theme, *Learning process problems*, mostly speaks for itself, though some clarifications are necessary. One of the main disadvantages of online learning mentioned by students refers to assessment methods. To avoid plagiarism and compensate for the lack of face-to-face interactions in continuous assessments during the semester, academics introduced additional or new types of assessments (homework, projects, etc.). These new types of assessments were associated with increased levels of stress, anxiety, and fatigue among students. Furthermore, some of the subthemes found here were linked to the ones included in the *Comfort and accessibility* theme drawn from the analysis of the advantages of online learning (see Table 2). While students enjoyed the comfort of their homes, the presence of other family members or colleagues (such as roommates and flatmates) was noted as significant distractions from learning. Thus, students invoked a lack of appropriate study spaces (home), a lack of intimacy, and being exposed to noises as having negative consequences of their learning experiences.

Finally, the last theme about the disadvantages of online learning refers to *Discrimination*. Online learning seems to have disadvantaged those with fewer financial resources (who cannot purchase high-performance electronic devices or pay for a high-speed internet subscriptions) and those with specific personal characteristics (high anxiety, low assertiveness and initiative, older, and low digital skills).

5.4. Suggestions to Improve Online Learning

Four themes were identified here: *Suggestions for the learning process*, *Suggestions for lecturers*, *Suggestions for learners*, and *Suggestions for improving communication and interpersonal relations* (Table 4). Some initial themes, e.g., *Lectures and Tutorials*, *Lecturers' engagement*, and *Change of teaching approach*, were reorganised into a broader theme, *Suggestions for the learning process*.

Table 4. Themes and subthemes reflecting student' suggestions to improve online learning.

Themes and Subthemes
1. Suggestions for the learning process Reducing number of students per teaching activity, reducing numbers of academic activities and assessments, better organisation, more course handbooks available online, detailed handbooks and supporting materials for each course, reducing risks of plagiarism, unique online teaching platform for all faculties in the university, more complex online teaching platform, returning to the traditional teaching approach, and introducing a blended learning approach
2. Suggestions for lecturers Change of teaching approach, interactive/attractive lectures, more professional development for academics, higher involvement, and more empathy towards students going through difficult situations
3. Suggestions for learners Counselling and wellbeing, academic skills support, additional resources for disadvantaged students, and higher involvement on behalf of students
4. Suggestions for improving communication and interpersonal relations Patience/calm, seriousness/responsibility, and understanding others and openness to communication

Most suggestions were directed towards improving the learning process. Some of these suggestions concerned administrative or organisational aspects of online teaching such as reducing the number of students per group and/or per learning activity, reducing the number of teaching hours, and reducing the number of activities and assessments. Another problem reported by students was the simultaneous use of several online platforms. For example, a student enrolled in courses offered by different faculties had to work with four or five different virtual learning platforms. To increase learning efficiency, participants suggested the use of a single online platform for the whole university.

The other two themes include suggestions focussed on academics and students. Academic staff are expected to improve the quality of the lectures (in particular, the attractiveness of the presentation and professionalism in online conditions), and students are expected to be more pro-active in order to increase the effectiveness of learning. Finally, the last theme focussed on improving the quality of the interactions and communication between academics and students by showing mutual understanding and empathy.

5.5. Online Learning Experiences

The data obtained from exploration of students' emotional experiences of online learning (item 5) formed the basis for identifying a typology of experiences. To better capture the subjective and integral nature of the analysed experiences, we chose to present the results by describing the main themes and accompanying them by extracts from the participants' responses. The most significant personal events experienced during COVID-19 were organised around four main themes: *Positive, Negative, Ambivalent, and Transformative experiences*.

5.5.1. Theme 1: Positive Experiences

The first theme generated from the data, *Positive Experiences*, included a variety of experiences that were emotionally intense or associated with complex emotions, such as satisfaction, interest, inspiration, joy, elevation, enthusiasm, and optimism. For example, one of the participants reported experiencing gratitude: *"I taught myself how to use new technologies (. . .). This represented a huge personal success. Thanks to the skills I learned online, I was able to do better assignments for my courses as well as better entrepreneurial projects. I feel quite grateful for having had this opportunity."* (F, 21) (The letter in brackets indicates the participant's gender and the number represents the participant's age). Another participant reported joy in being able to more easily express their opinions and satisfaction with using the platforms: *"As an introvert, I really enjoyed online teaching, it was easier to express my opinion. (...) For me, online learning was much enjoyable than face-to-face."* (F, 22).

Positive experiences are about not only emotions but also the possibility of personal development. For example, one subtheme of positive experiences is opportunities that were available to them due to online teaching (e.g., attending extra-courses, participating at online conferences, and participating at book launches)—opportunities that would otherwise have been impossible/inaccessible for them: *"(...) I was able to attend conferences, projects, seminars, to which I do not normal have access. The move to online teaching made attending specific events more accessible."* (F, 21). *"I had the opportunity to attend an online conference (...). But for online learning and using online platforms of interaction, some events and meetings with external experts wouldn't have been possible, or might have been more difficult to organise. As such, online learning facilitated the interactions with professional experts from different places."* (F, 20). Online learning facilitated students' development of their digital skills: *"My online presentations were much more efficient as opposed to the ones I previously did face-to-face because I had more scientific resources which were available directly on my computer."* (F, 22).

Reducing anxiety and shyness was another subtheme mentioned here. Students who identified as being introverted or socially shy said that online learning helped them to overcome these issues. Being in the comfort of their own homes created a feeling of safety and boosted their self-esteem. Two participants reported the following: *"Being a shy individual, in-person exams always made me anxious, no matter how much I revised for the*

exams. I would feel sick to my stomach, nauseous, and very anxious. Take-home exams made me feel comfortable and calm, I was more focussed, my anxiety levels decreased." (F, 21). *"Face-to-face learning made me feel shy and less involved, when we started online classes, I started being more confident and feeling safer."* (F, 20).

5.5.2. Theme 2: Negative Experiences

The second theme, *Negative experiences*, refers to a lack of social interactions (e.g., a lack of physical interactions, a lack of face-to-face communication, a lack of non-verbal communication, and a lack of engagement from both students and academics). Cameras being off generated a lack of nonverbal feedback that caused communication difficulties: *"(...) face-to-face communication provides information about the student, their nonverbal behaviour (posture, gestures). Unfortunately, most of the students have their cameras off during online learning, therefore it is difficult to get any non-behavioural feedback."* (F, 22). *"(...) I was the only student to have my camera on. I did my presentation and there was no feedback, I could only see the professor's camera on (...). It was a very difficult presentation; given that I couldn't see my colleagues' faces, I didn't know on which aspects of my presentation I should focus or not."* (F, 20).

Some participants regretted the lack of face-to-face communication and felt that this affected the quality of their learning despite the academics' efforts to overcome this: *"I miss face-to-face interaction."* (F, 22). *"Online learning is not as efficient as face-to-face learning because it lacks interaction which is extremely important."* (F, 21). *"(...) I believe online teaching will never successfully replace face-to-face teaching... It is extremely painful to see professors trying their best to make online teaching interactive facing the lack of feedback and interaction. I believe professors are currently experiencing a state of confusion in their teaching approach."* (M, 20).

Other participants talked about the high levels of stress, exhaustion, and anxiety experienced during this time: *"My levels of anxiety and stress have increased. Sometimes, I'm struggling to communicate with people around me. Being a student is not only about learning but also about interacting with others."* (F, 21). *"(. . .) anxiety was one constant issue that I experienced during online learning."* (M, 21). *"I believe one of the things that marked my entire experience during this time was the lack of peer interaction. I used to be quite shy when doing oral presentations but since we moved to online learning, this has become even worse, and I believe it is because of the lack of interaction with my peers. During my oral presentation I felt my heart pounding, my mouth was dry, and I had difficulties speaking. I think the lack of physical contact with my peers and professors (...) accentuated my social anxiety."* (F, 20).

Among negative experiences, students also mentioned their confrontation with technical problems, e.g., poor performance of personal computers, broadband issues, power cuts, and difficulties in accessing learning platforms. These difficulties generated strong negative emotions such as a lack of empathy, frustration, fear, aversion, and anxiety, especially when they were associated with exams or assessments. The following two stories are illustrative of this point: *"One of the most stressful experiences (...) was an exam during which I lost my internet connection and (...) it took quite a while to get back online and be able to send my exam answers. It feels that academics are not very empathetic with these kinds of situations, particularly when we can't do anything about it. (...). It seems unfair to be penalised for circumstances that do not reflect our knowledge but rather the technological equipment that we possess. At the same time, I also try to understand my professors' position who can't confirm whether we have or not the necessary equipment (...). I suppose it is difficult to manage these kinds of situations and make sure everyone is happy"* (F, 20). *"I was unable to intervene during some classes because of the high number of students that were connected, the online platformed crashed. Even more so, my laptop and smartphone are not very performant which meant that I couldn't use my camera and I was told that I couldn't attend the exam unless I put the camera on (...)."* (F, 22).

Some students mentioned experiencing physical issues such as sedentarism, headaches, back pains, and eye problems: *"(...) after sitting in front of the computer for hours, I have headaches which sometimes can last for hours. I feel that my eyesight has worsen."* (F, 20).

5.5.3. Theme 3: Ambivalent Experiences

This theme refers to some experiences described as ambivalent in terms of both the emotions and meanings attributed to them. While participants recognised that online learning is necessary and offers numerous opportunities for personal development (e.g., the pleasure of acquiring new knowledge or the satisfaction of overcoming personal limits), they also associated online learning with negative emotions, such as a fear of the unknown, anxiety about their own academic performance, and feeling a lack of social support: *“I was fine (...), I had more time for myself, to learn, to grow (...) There were some negative effects among which stress and anxiety, (...) I miss physical interaction.”* (F, 22). *“I know face-to-face interaction between students and academics is missing, but I feel that everyone adapted to the new circumstances quite well.”* (F, 25).

5.5.4. Theme 4: Progressive experiences

This theme included experiences related to a progress described by the participants, from initially seeing online learning as a negative experience to seeing it as a more positive experience later. As students became acquainted with online learning, their experience with it changed. Three excerpts from the students' stories are relevant here: *“My first experiences with online learning were a bit bizarre. It felt weird not going to university, not talking to my colleagues, seeing my professors only on my laptop. In time, I got used to it, it now feels weird going back to campus. I can't say I had any issues, on the contrary. I feel more confident doing oral presentations now. Even so, I still miss face-to-face lectures.”* (F, 21). *“I remember, at the beginning, don't know why, I found it difficult to talk in front of my laptop. I had a constant feeling of talking to myself, as if nobody else was there. I was surprised by this because I am a very chatty person. Online learning made it difficult for me but in time I learned to adapt. I can say that while it started as something negative, it turned into something positive, I started to develop new skills (...) online learning helped me develop new digital skills which I didn't think it was possible to learn in such a short time.”* (F, 27). *“In the beginning, it was difficult to do my courses online, but I soon adapted to all the things associated with it: technology, online platforms, etc. I finally got used to it and I now see it as an advantage as it saved me quite a lot of time.”* (F, 41).

6. Discussion

The aim of this study was to provide a psychosocial analysis of the transition from face-to-face learning to online teaching during the COVID-19 pandemic as experienced by a sample of Romanian university students. Our findings suggested that moving from face-to-face teaching to online learning during the COVID-19 pandemic was associated with a wide range of beliefs and perspectives, behaviours, and affective experiences. To begin with, we can argue that students' representation of online learning, as seen from their free association responses, was polarised; the semantic field of this representation was organised around two major themes. Some elements have positive connotations and generally refer to comfort, savings (time and money), challenges, and personal development, which is consistent with previous findings [38,55,69]. Other elements have negative connotations; students associated online learning with high levels of stress, low motivation, attention, and focus, as well as with negative emotions such as feelings of isolation and loneliness. These results are in line with previous findings [35,36,38,39,41,44,70]. Furthermore, emotional and physical exhaustion, headaches, backpains, and eye problems were among the most frequently invoked psychological and physical problems. The frequency of these issues among our participants was rather low but comparable to similar studies [33,34,71–73].

Further analyses considered the advantages and disadvantages of online learning and suggestions for improving the quality of academic activities. Firstly, students mentioned negative aspects such as a lower quality of higher education, monotony, boredom, difficulties in understanding the courses (e.g., a lack of clarity, a lack of feedback, and a lack of non-verbal behaviour), and improper space to connect from home. Other studies reported similar findings, e.g., difficulties in hearing the voice of the instructors and in acquiring the contents of the lessons [38], houses unfit for home-office purposes [39], poor

learning conditions at home [36], and work–home interference [70]. Perceptions of a lower quality of higher education can be explained by the reduced engagement of both teachers and students, a lack of knowledge, and difficulties in using the appropriate technology. In a similar study, lecturers expressed difficulties such as a lack of energy and reduced performance while students invoked not engaging in solving problems, not answering questions, reduced performance, and engagement, among others [44]. Furthermore, in a study on students' perceptions about online learning during the COVID-19 pandemic, Almendingen et al. [39] reported an overall sense of reduced motivation and effort. Secondly, students reported a series of positive aspects such as comfort, commodity, avoiding traffic, higher accessibility, saving time and money, psychological safety, and opportunities for personal training and development. These results are in line with previous studies that reported positive aspects of flexibility, remote learning, accessibility [69], comfort and flexibility of space and time [55], saving travel time, and exposure to new forms of learning [38].

Some of the themes invoked by our participants can be seen as both advantages and disadvantages for online learning. For example, some students reported higher levels of anxiety and stress during online learning, while others mentioned that their levels of anxiety and stress became lower during online learning. For some, online learning brought psychological safety, while others felt less safe. Some of the students reacted more positively to the new situation; they adapted quite easily, focusing on its advantages and overcoming its challenges. Others experienced more difficulties, associating online learning with negative emotions, e.g., anxiety, shyness, and isolation. The shift from face-to-face teaching to online learning did not agree with everyone. Previous studies showed that online learning fits more with students exhibiting specific personality traits and socio-demographic backgrounds [20,27–29]. Our study results suggest that online learning provided an advantage for students already exhibiting digital knowledge, thus confirming the hypothesis that the pandemic has deepened digital inequalities [74].

When asked about suggestions to improve the quality of higher education, the most significant invoked suggestions referred to institutional management (e.g., reducing teaching hours, reducing the number of assessments, and using better equipment and online platforms). Other suggestions were focused on lecturers and referred to making online teaching more interactive, providing higher engagement, and providing more detailed course materials. Further suggestions included providing counselling and more support for disadvantaged students.

While many of these aspects are positive, the dominant image of online learning is a negative one. However, these negative perceptions are strongly linked with the development of a global health pandemic and the restrictions that accompanied it such as multiple lockdown periods. Firstly, our participants, as well as many students worldwide, were forced into online learning because of national lockdowns regardless of their preferences. The results might have been different had the students been able to choose between face-to-face and online learning. Secondly, negative perceptions were probably also caused by the way online lectures and tutorials were delivered during this period, namely through *synchronous video communication* in all its forms—e.g., one-to-one, one-to-many, and many-to-many [10]. This way of delivery has many advantages such as instructional tools, e.g., screen sharing, polling, chat, and breakout rooms. While some students appreciated these features and showed higher engagement [75], most students expressed discontent, particularly related to being forced to spend several hours per day in front of their screens, as seen in other studies [38,76]. The desire to be engaged in academic activities and the interest to explore new learning modalities were significantly diminished by psychological and physical difficulties. A blended approach including both synchronous and asynchronous learning activities might be the solution. This is in line with some of the suggestions made by our respondents: reducing live online sessions and increasing the number of online materials, e.g., asynchronous activities and recordings of live sessions. This would allow students to revisit recorded live sessions at their own pace or consult recorded materials

at convenient times. Finally, another potential cause for these predominantly negative perceptions was the sudden shift—without any previous training—from traditional face-to-face teaching to online learning. Both students and lecturers were unfamiliar with virtual learning environments and associated learning platforms, and they were not ready for the academic demands of online synchronous learning, e.g., increased engagement, creating online communities, and a sense of belonging, as well as other social activities delivered online. The emergence of the pandemic and the need to teach almost exclusively online found the academic community insufficiently prepared for such an experience. Although lecturers had access to training opportunities, e.g., learning how to use virtual learning environments and platforms delivering online lectures and tutorials, they were not prepared for the human component of online learning, e.g., teaching presence, cognitive presence, and social presence, which are essential aspects of remote blended learning [33,34,71,72]. Online learning includes a series of skills regarding the development of teaching presence, e.g., direct instruction, instructional management, and building understanding [72]. The development of teaching presence is essential because it contributes to the development of other dimensions such as cognitive and social presence [77] and significantly correlates with student learning outcomes [78]. The lack of previous knowledge about remote blended learning led to a low level of teaching presence among teachers and academics that, in turn, led to perceptions of low social presence and a poor quality of the overall academic experience. These were followed by technical issues (e.g., poor internet connection, power cuts, and poor technical resources) that impacted media naturalness [31]. This might partially explain the reported physical and psychological problems (e.g., tiredness, exhaustion, and stress) caused by the high cognitive load and the extra mental effort required to assimilate the often-monotonous contents delivered online [9].

The themes drawn from our data support the identification of three categories of students in terms of their complex reactions to online learning. When analysing the data provided by each participant regarding all five tasks, we observed consistency between participants' representation of online learning, their views, perspectives, and affective polarity of the experience. These results allowed us to describe the three distinct groups of participants according to their adaptation to online learning: *the most adapted*, *the least adapted*, and *the uncertain* groups. The first group included the *most adapted*, as their representation of online learning was dominated by positive elements and their associated experiences had a rather positive affective tone. These students reported feeling comfortable in the new situation, having favourable opinions and attitudes towards online learning, effectively reacting to learning tasks, having better digital skills, and finding new opportunities and challenges. A second group of students were characterised as *least adapted*. Their views and perspectives were generally unfavourable to online learning, and their associated experiences had a rather negative affective tone. They reported higher levels of stress, anxiety, and loneliness and lower levels of academic effectiveness. Several students in this group mentioned exhaustion, headaches, and back or eye pain. Students in the *uncertain* group did not yet have clear views about online learning, their emotional experiences being characterised by ambivalence. While they recognised that online learning has numerous academic opportunities and possibilities for personal development, they expressed high levels of stress, anxiety, and exhaustion. They reported being engaged in a struggle to adapt, where the stakes were academic performance and wellbeing and the path required them to overcome their own limitations. These limitations seem to be linked to certain personality traits, a lack of digital skills, and the use of ineffective self-regulation strategies during a period when time and other resource management was essential. This possible typology is, to some extent, consistent with typologies originated from previous studies [45,53,54].

7. Conclusions, Limitations, and Recommendations

The global COVID-19 health pandemic forced universities worldwide to swiftly change their ways of teaching and adopt online learning. Academics increased their efforts to make sure that the quality of their teaching was not impacted by this change while

creating a feeling of normality within the new online environment. Similarly, students made significant efforts to adapt to the new changes and continue their education. Despite their increased efforts, academics and students faced numerous challenges. A low online social presence, in all its forms (e.g., sense of belonging and emotional connectedness), was one of the most significant aspects invoked by our respondents. This was followed by decreases in the learning quality and efficiency caused by the sudden move to remote blended learning and the technical issues experienced by both teachers and students.

Some of our findings are worth discussing in relation to sustainable development, as digitalisation and the introduction of online education on a large scale can be judiciously used to solve economic, environmental, and social problems. Although the experience of online learning during a crisis differs from planned online education [79], knowing the perceived negative and positive effects, as well as relating personal lived experiences in a local educational context with certain economic and social characteristics, can provide valuable information for the design of virtual learning environments. Outlining the differences between adaptive and non-adaptive students—based on their perceptions of online learning—draws attention to the need to narrow the inter-individual gap for several dimensions (e.g., developing flexibility, socio-emotional, self-regulatory, digital, and problem-solving skills) while considering the particularities of students' own development and the individual pace of adaptation to change.

This study highlights the possible decreases in the quality of teaching through predominant and prolonged online learning, as psychological and social wellbeing may be affected (e.g., boredom and fatigue, decreased engagement and motivation, lower social presence, and naturalness of the social climate). The economic benefits of online learning (e.g., saving time and money) mentioned in this study support previous findings regarding the contribution of online learning to increasing access to education and narrowing the gap between the rich and poor. However, in countries with low minimum income and significant regional economic differences, online learning could be negatively impacted by factors such as inadequate space to connect from home, poor internet connection and electronic devices, unsuitable houses for home offices, and poor learning conditions at home.

Online learning was investigated in a wide variety of quantitative studies during the COVID-19 pandemic. Our study is unique as it looked at students' perceptions using a qualitative approach, thus providing the opportunity to deepen and broaden our knowledge about online learning in crisis situations. For example, while previous quantitative studies identified the characteristics of the more adapted versus less adapted learners (e.g., [45,53]) our findings provide additional information on learners' motivations, their personal affective experiences, and the psychological and medical issues that they encountered. These findings will inform future quantitative studies looking into, e.g., the development of new scales assessing students' perceptions, and might represent the foundation for the development of psychological or social interventions.

The current study had several methodological limitations. Firstly, the qualitative approach makes it difficult to formulate scientific causal conclusions based on our results. Secondly, the predominance of female participants primarily from the same university restricts the generalisation of our results to a larger student population. Future studies should investigate larger student samples equally distributed according to gender from different universities across different regions. Thirdly, due to the qualitative nature of the tasks presented to the students in this study, numerous respondents provided similar answers for the different tasks.

Nonetheless, these findings allowed us to formulate some recommendations to ensure that the quality of the academic experience will not be impacted in the future when online learning will be more frequently and systematically adopted than it was before the pandemic. Among these, we recommend (1) using the same online platform—one that offers a dynamic, interactive, and multifunctional learning environment (intuitive user interface, streaming video, efficient online assessment tools, integrated collaborative

tools, private and secure sessions, etc.) across departments and faculties; (2) modifying the teaching timetable to make it more flexible (shorter live online sessions, longer breaks between online live sessions, smaller groups for tutorials/practical activities, etc.); (3) improving online materials (detailed course handbooks, additional asynchronous materials, pre-recorded materials, recordings of online live sessions, etc.) and gradually migrating towards a digitalised curriculum (see [80]); (4) providing technical and pedagogical training for teachers and students before introducing new systems or teaching approaches; (5) providing pedagogical and psychological counselling to teachers and students during critical periods; and (6) motivating teachers and students in order to develop a higher online social presence. Some of these recommendations are similar to those proposed in previous studies [38,42].

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