Strategies for Tomorrow: Unraveling Algerian University Instructors' E-Practices in the Face of Pandemic Challenges

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Article Info	Abstract
Article History Received: 21 December 2023 Accepted: 20 March 2024 **Keywords** COVID-19 E-practices Equity E-teaching Framework Social media	Due to the COVID-19 pandemic, teaching and learning environments have shifted from traditional to modern, in-person to online, using e-applications/platforms and social media as online teaching and learning tools. This abrupt situation has forced teachers around the world, especially in Algeria, to engage in a process of trial and error to advance the ever-evolving academic discipline of e-pedagogy. This research paper conducts a historical review of peer-reviewed research articles during the pandemic's first wave, focusing on tracing the digital practices of Algerian university instructors and inferring principles to face future challenges. Through a historical review method, the studies unveiled diverse e-modalities and implicit principles leveraged from March 2020 to November 2020 and identified challenges encompassing technical, pedagogical, and psychological aspects during the transition to remote instruction, predominantly on Facebook and other e-spaces. In this sense, the study puts forward a framework that could meet future challenges, including continuous professional development for digital fluency, flexible e-teaching and e-learning practices, equity-focused cross-platform educational strategies, and student agency in e-learning. This research prompts a deeper conversation on the broader implications of observed e-practices, contributing to ongoing discussions about the future of education in a rapidly evolving digital landscape.

INTRODUCTION

The COVID-19 pandemic has triggered significant global changes, particularly in Algeria, with a notable shift from traditional face-to-face work to online modalities, especially within the education sector. This transition has profoundly impacted education, necessitating the conversion of face-to-face and/or blended learning to exclusive online formats. Both students and teachers faced challenges as they were unprepared for optimal operation in these new pandemic-altered educational contexts (Sarnou & Sarnou, 2021). This unexpected situation compelled educators to engage in a trial-and-error process to advance the ever-evolving academic discipline of e-pedagogy.

A substantial body of literature has been produced to address online learning during this intricate period on both the global (e.g., De Boer, 2021; Jena, 2020; Hussain, 2020) and local scales (e.g., Ait Aissa & Tebaa, 2022; Guessar, 2020; Khattala & Houichi, 2021). Numerous

studies, including meta-analyses (e.g., Wahab and Ali, 2020; Camargo et al., 2020) and systematic reviews (e.g., Betthäuser et al., 2022), have explored teachers' practices during and post-COVID-19 but few of them highlighted the hidden principles that were leveraged to palliate these difficulties and even less have generated a framework with it that could potentially serve as an emergency protocol to be applied by policymakers and stakeholders in their respective educational institutions, that favors readiness of the teaching profession and thus gear it with essential e-savoir-faire to face any forthcoming challenge where online-only education becomes the prevailing choice. Therefore, this scholarship aims to fill this gap in the literature, shedding light on the significant challenges that teachers and students face. It also explores how instructors, to varying degrees, overcame these barriers by deploying a diverse range of e-modes of instruction to ensure educational continuity.

From a historical standpoint, the primary objective of this research is not only to explore the digital transformation experienced by teachers in Algerian universities during the COVID-19 pandemic era but also to shed light on the lessons learned in these early stages that can be of use in upcoming challenges. Thus, this study aims to capture the diverse efforts related to technology-facilitated instructional approaches—whether successful or not—in addressing challenges encountered within and beyond the confines of their respective educational institutions during the Coronavirus period and, evidently, unveil a framework upon which (e)-pedagogies should be grounded to adapt to future challenges.

METHOD

This historical review spanned from the pandemic's commencement until November 2020. Works (2019, p.36) posits that "historical literature reviews focus on scrutinizing research over a period, often commencing with the initial emergence of a matter, concept, thesis, or phenomenon in the literature, then mapping its progression within the scholarship of a discipline." Through the lens of this theoretical perspective, the primary goal of this research is to shed light on the digital transformation undergone by instructors in Algerian universities, naturally prompted by the global pandemic.

Procedure

To conduct this investigation, the initial search engines employed included Taylor and Francis, Elsevier, Google Scholar, Education Resources Information Center (ERIC), and notably the Algerian Scientific Journal Platform (ASJP). The primary keywords utilized in the exploration encompassed COVID-19, the pandemic and Algeria, e-learning, e-teaching, online education, and EFL. Notably, both Taylor and Francis, as well as Elsevier databases, yielded no articles relevant to the Algerian context. A subsequent attempt on the ERIC platform also produced no results. However, from Google Scholar, two pertinent articles were identified out of a total of 83, with two being duplicates already found on the Algerian Academic Platform dedicated to various research domains. Within this platform, five noteworthy articles were chosen after examining over 600 articles (depicted in Figure 1) related to COVID-19 in diverse domains, given the malfunctioning filtering platform-related option. To clarify, only a single keyword was utilized as a filter in the search box, prompting the researchers to assess all available articles.

It is important to note that initially, the goal was to investigate the e-practices and experiences of Algerian EFL university teachers. However, due to the scarcity of literature in this area, the decision was made to broaden the scope of the study to include all Algerian university teachers. As a result, all articles presenting findings related to instructional modalities during COVID-19 were incorporated into the study. From another perspective, the primary focus of the research

is to uncover how teachers managed the challenges of e-teaching, particularly in the context of the sudden shift to emergency remote online education. While some studies were learner-focused, it is essential to recognize the inseparable link between teaching and learning processes. Therefore, such studies were included in the research, provided they reflected both learners' and teachers' practices. As an illustration, two selected studies (Blizak et al., 2020; Hadjela et al., 2020) exclusively targeted students as the population, but they nevertheless highlighted how online teaching impacted their learning experiences.

In the identification stage, the total number of articles gathered from these databases amounted to 701, with two systematically removed as duplicates, leaving 699. Moving to the second step, these articles were read and analyzed, resulting in the exclusion of 673 based on title and abstract review. The outcomes of this step (26 articles) were then utilized in the subsequent phase, involving the assessment of full-text articles for eligibility. Nineteen full texts were excluded based on exclusion criteria, comprising five primary elements. The first two criteria were related to rejecting commentaries or proposals, which involved instructors reflecting on the challenging situation and offering advice, from their perspective, in the form of guidelines for educators, teacher educators, stakeholders, and decision-makers on how to address and navigate the crisis at that time. As an example, Ambarak and Briki's (2020) study, which was excluded, focuses on the overall online experience of Algerian society, outlining instructions from the Algerian Ministry of Education to educational institutions and concluding with general instructions for the educational landscape during the crisis.

Taylor and Francis = **0** ; Elsevier = **0** ; ERIC = **0** ; Google scholar = **83** ; ASJP = **618**

Identification

Records identified through databases
(**n= 701**)

Duplicates **n=(02)**

Screening

Record identified through databases
(**n= 699**)

Excluded on title and abstract
(**n=673**)

Eligibility

Full texts assessed for eligibility
(**n=26**)

Full texts excluded (**n=19**)
- Commentary
- Proposals
- Outside of the educational field
- Foreign-bound context
- Not specifying the context of the study

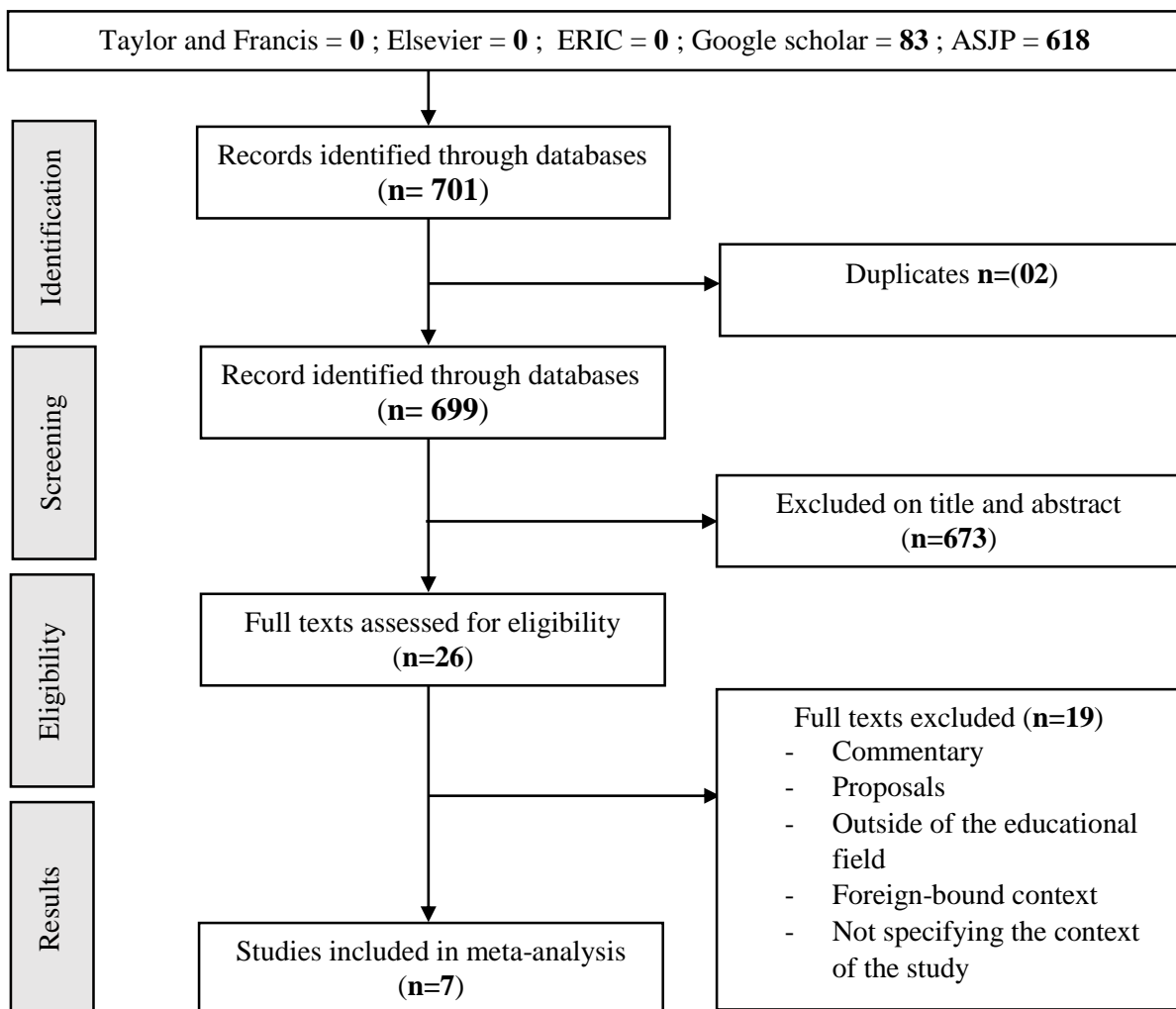**Results**

Studies included in meta-analysis
(**n=7**)

Figure 1. Flowchart of inclusion of studies for the historical review

The final criterion focused on excluding studies that did not specify the context or target population, as exemplified by Zermane and Aitouche's (2020) study. In this instance, the authors elaborate on digital learning in Algeria at various levels, mentioning Batna University, but the article lacks details on the methodology or data collection process. Ultimately, seven articles were selected to proceed with the study.

RESULTS

After a careful selection process of many articles, the researchers found seven related articles (1. (Haddad, 2020), 2. (Lassassi et al., 2020), 3. (Blizak et al., 2020), 4. (Lassoued et al., 2020), 5. (Ghounane, 2020), 6. (Sahraoui & Chaibendraa, 2020) and 7. (Hadjela et al., 2020)) that meet their main research goal. The selected papers vividly described and depicted the lived e-experiences of both e-teachers and e-learners, highlighting the challenges encountered and offering insights into how some burdensome barriers were mitigated to sustain their educational pursuits. Their principal findings are summarized in the following (see Appendix A).

The first article

In the early stages of the pandemic in Algeria, Haddad (2020) conducted a descriptive-analytical study to outline the e-teaching and learning environment. Using Biskra University's Moodle database, quantitative data was gathered through a survey involving 27 teacher-trainees, exploring their educational practices, challenges, and potential solutions during this critical period. The findings spotlighted various obstacles hindering a smooth transition to an online-only setup and suggested partial remedies. A key highlight was the inadequate digital literacy of both teachers and students, resulting in a meager content delivery rate on Moodle—illustrated by only 37% of foreign language teachers uploading their courses on the platform. Another challenge stemmed from the instructors' limited proficiency in e-pedagogy, complicating the creation of e-materials. In response, instructors addressed these challenges by collaboratively creating e-content with peers and transitioning from the intricate use of Moodle to alternative pathways. Notably, social media platforms, particularly Facebook, emerged as the preferred choice for both teachers and learners. Besides its educational role, Facebook served administrative functions, allowing the university administration to communicate with students and notify them about uploaded e-lessons—a decision made by university stakeholders to better cope with the challenges in the complex educational environment.

The second article

Data from 2000 university teachers across the entire national Algerian territory, covering 31 provinces, were collected by Lassassi, Lounici, Sami, Tidjani, and Benguerna (2020). The findings revealed that more than 62% of instructors had no prior experience with online teaching before the sudden onset of the COVID-19 pandemic. Consequently, only 50% of them utilized Moodle, despite not displaying a significant deficiency in e-skills, and all had access to some form of tech device. However, to some extent, the ability to cope with the situation did not necessarily indicate an optimal execution of e-teaching, especially given their lack of preparedness and the constraints of limited internet bandwidth. Instructors encountered pressing challenges, notably the absence of interaction with students due to Moodle's limitations in promoting advanced features. The second major challenge was properly assessing students' assignments or determining the extent of their comprehension of the course. While the temporary shift to Facebook or teachers' personal websites helped overcome the challenges, some instructors still maintained a negative perception regarding the efficacy of e-education in

their context. Additionally, instructors observed that students lacked self-discipline in their learning process.

The third article

Blizak, Blizak, Bouchenak, and Yahiaoui (2020) conducted a descriptive quantitative study, surveying 380 students from the Faculty of Chemistry and Hydrocarbons at the University of Boumerdes, Algeria, to assess their perception of the sudden transition to online learning during the COVID-19 pandemic. Students reported facing various challenges, including weak internet connectivity, limited access to suitable tech devices, communication gaps with teachers, insufficient time, an overwhelming workload with numerous assignments, and heightened stress. These cumulative challenges led to a negative perception of online learning among students, with obstacles spanning psychological, pedagogical, and technical dimensions. The technical barrier was highlighted by the fact that 66% of students could not access the Moodle platform. Notably, 78.7% of them utilized mobile phones for their online learning activities, facilitating a smooth transition to the Facebook application. Alongside this social network, teachers extensively, if not exclusively, interacted using text-focused communication modes such as email, forums, and chat rooms. Some instructors utilized other education-specific platforms like Google Classroom, coupled with low-cost Google-based applications offering various free services, including cloud storage on Google Drive. Instructors concluded that this e-education approach was, to some degree, successful, suggesting its potential adequacy, especially for disabled students, in the post-pandemic period.

The fourth article

Lassoued, Alhendawi, and Bashitialshaaer (2020) conducted a study across four Arab countries—Algeria, Egypt, Palestine, and Iraq. The research encompassed surveys with 100 Arab professors and 300 students from different universities in these countries. The specific focus on Algeria was evident in the study conducted at EL Oued University, and the ensuing results are context-specific to this university. The study's findings initially reveal a negative perception of e-education from both learners and teachers. It also highlights a diverse array of obstacles that, to some extent, impeded the progress of e-learning. The primary challenge centered around student equity, with not all students having access to the necessary technological devices, compounded by issues with internet connectivity. Despite the implementation of online learning, it largely replicated traditional instructional methods. Essentially, "e-university courses are implemented in a lecture style, and they are not diversified by modern teaching methods that encourage direct interaction and visual communication between professors and students" (Lassoued & al., 2020, p. 9). This is attributed to a lack of proper training for teachers in using technology for educational purposes. The reliance on Moodle by university stakeholders somewhat limited the level of interaction between teachers and students. To augment communication, alternative e-platforms such as Facebook and, subsequently, YouTube were utilized, providing spaces for instructors to further explain the uploaded content to the formal ministry-assigned platform.

The fifth article

In her study, Ghounane (2020) conducted surveys with 90 EFL students and interviewed 8 EFL teachers at Saida University to explore the initial steps taken by students and teachers in transitioning to a home-based learning environment. Like the rest of Algeria, they both had to operate using Moodle. Teachers expressed agreement that this e-platform is suitable and praised its formal features in contrast to social networking sites (SNS). They claimed to assess students to some extent and receive feedback. However, the study's findings contradict these assertions, revealing that less than half of the students (47.78%) accessed Moodle to download e-lessons,

and only 4.4% accessed it for assignments. The study suggests that students lack e-skills, resulting in a non-mastery of the target platform. On the other hand, the study notes, "Facebook is the most favored SNS tool used in the group either to announce administrative or pedagogical activities. They created a Facebook group where they can share books, handouts, and communicate" (p.33). However, teachers refrained from joining Facebook, considering it informal and using it solely for administrative purposes, such as announcing when a teacher has uploaded materials on Moodle. Additionally, a certain technophobia was observed among senior teachers. Other alternative platforms, such as Zoom and Google Classroom, were used for video conferencing to implement a flipped classroom, but they were not optimally effective due to the teachers' lack of familiarity with these tech tools.

The sixth article

Sahraoui and Chaibendraa's study (2020) aimed to investigate the role of social media in enhancing scientific communication to address the impacts of the coronavirus pandemic on scientific research. To achieve this objective, a national survey was conducted on social media, involving 66 participants (59.1% students and 40.9% teachers). The findings reveal that students show a higher inclination towards using Facebook (38.7%), followed by YouTube (22%), and, thirdly, Zoom and Google Meet primarily for live sessions (22%), with Whatsapp being the fourth choice (16.7%). These alternative platforms, particularly Facebook groups, provided avenues for teacher-student communication, fostering innovative approaches to online teaching and learning. These e-platforms offered features that allowed students to share content, teachers to assess through e-assignments, and, consequently, facilitated the creation of a social community. The Messenger phone application was also utilized for instantaneous communication among peers and teachers, enhancing communication between these two groups to varying extents. However, this e-experience was not without challenges, particularly those related to equity. Nearly a quarter of the participants (22.4%) admitted to not owning a tech device to log in to these platforms, coupled with poor internet bandwidth, making it difficult for them to operate.

The seventh article

Hadjela, Mazouz, Lassoued, and Malaoui's (2020) descriptive-analytical study delves into the landscape of online university education during the coronavirus pandemic, surveying 95 students across 31 Algerian universities. The findings paint a vivid picture of the challenges students grappled with during this period. A primary concern highlighted the stressful situation students faced, leading to a demotivated state for some who were in dire need of psychological support. More than a quarter did not interact or communicate with their respective instructors. Additionally, issues of student equity arose, involving access to the internet and a lack of technological devices for accessing these e-platforms. The e-instructors were neither prepared nor trained, as evident in the transfer of traditional teaching methods to online delivery. Technically, teachers uploaded text- and PPT-format documents, requiring students to download and view content asynchronously. There was a lack of e-presence on both sides (teachers and students) on main platforms, including Moodle. Moreover, there was a deficiency in information circulation between the administration, teachers, and students. Some students resorted to using the university's YouTube channel for pre-recorded lessons to be viewed at a later time, while a minority acknowledged using Zoom for synchronous live sessions with their instructors.

After summarizing the seven articles, it was of high prominence to highlight the point where the different articles intersected as shown in the table below.

Going deeply through the research objectives and findings of the seven selected articles, the researchers found intersections and commonalities regarding their digital transformation by highlighting the barriers the Algerian university teachers faced during the COVID-19 pandemic and the extent to which they surpassed them. For instance, (a) articles one and two intersected in *collective creation of online content*, (b) articles one, two, three, four, five, six and seven intersected in *employing alternative e-platforms*, (c) articles three, five and six intersected *educationalizing Facebook*, (d) articles one and five intersected in *using Facebook for administrative purposes*, (e) articles one, five, and six intersected in *creating online communities*, (f) Articles two, five, four and seven intersected in *limited interaction*, (g) articles two, four, and seven intersected in *e-assessment challenges*, (h) Articles one, three, four and seven intersected in *lack of training for teachers*, (i) Articles four and five intersected in *lack of diversity in e-teaching modes*, (j) Articles one, three and four intersected in *lack of self-direct learning*, (k) articles three, four, six and seven intersected in *equity issues (internet and tech-devices)*, (l) articles four and seven intersected in *hesitancy in adopting e-learning*, (m) articles five and six intersected in *reluctance to teach on social media*, (n) articles four and seven intersected in *unmotivated students*, (o) articles three and seven intersected in *absence of psychological support* (see Table 1).

Table 1. Comprehensive overview of e-learning challenges and benefits across the seven studies

Intersection of University teachers' e-practices and e-experience	
Positive aspects (merits)	**references**
Collective Creation of Online Content	Haddad (2020); Lassassi et al. (2020)
Employing alternative e-platforms	Haddad (2020); Lassassi et al. (2020); Blizak et al. (2020); Lassoued et al. (2020), Ghounane (2020); Sahraoui and Chaibendraa (2020) Hadjela et al. (2020);
Educationalizing Facebook	Blizak et al. (2020) ; Ghounane (2020); Haddad (2020); Sahraoui and Chaibendraa (2020)
Using Facebook for administrative purposes	Haddad (2020) ; Ghounane (2020)
Creating Online Communities	Haddad (2020) and Ghounane (2020) ;Sahraoui and Chaibendraa (2020)
Negative aspects (challenges)	**References**
Limited Interaction	Lassassi et al. (2020); Lassoued et al. (2020); Ghounane (2020); Hadjela et al. (2020).
E-assessment Challenges	Lassassi et al. (2020) ; Lassoued et al. (2020); Hadjela et al. (2020)
Lack of self-direct learning	Haddad (2020); Blizak et al. (2020); Lassoued et al. (2020)
Equity Issues (internet & tech-devices)	Blizak et al. (2020) and Lassoued et al. (2020) ; Hadjela et al. (2020); Sahraoui and Chaibendraa (2020).
Hesitancy in Adopting E-learning	Lassoued et al. (2020) and Hadjela et al. (2020)
Reluctance to Teach on Social Media	Ghounane (2020); Sahraoui and Chaibendraa (2020)
Unmotivated Students	Lassoued et al. (2020) ; Hadjela et al. (2020)
Absence of Psychological Support	Blizak et al. (2020); Hadjela et al. (2020).
Lack of Training for Teachers	Haddad (2020); Blizak et al. (2020); Lassoued et al. (2020); Hadjela et al. (2020)
Lack of Diversity in E-teaching Modes:	Lassoued et al. (2020); Ghounane (2020)

DISCUSSION

Upon thorough analysis of the chosen articles, conclusions were drawn, inferences were derived, and findings were revealed. The outcomes presented herein outline the three major challenges encountered by the e-academic community, specifically psychological, technical, and pedagogical challenges. Following this, emphasis is placed on the primary platform utilized and its associated purposes, while also acknowledging additional e-platforms employed to a lesser extent.

Psychological challenges

The abrupt onset of the COVID-19 pandemic had profound effects that are challenging to fully comprehend at the Algerian level, especially when students found themselves in complete lockdown. Understandably, they encountered psychological challenges, partly due to being distanced from friends, confined within their homes, and, sadly, some experiencing the loss of loved ones. Consequently, morale could significantly impact the learning process, particularly when students feel demotivated, a concern highlighted by numerous instructors. Consequently, they criticized the absence of psychological support for students (Blizak et al., 2020; Hadjela et al., 2020) and underscored the importance of prioritizing connection over education. This finding aligns with that of Odriozola-González, Planchuelo-Gómez, Irurtia and de-Luis-García (2020, p.1), emphasizing the need for "timely crisis-oriented psychological services" for student well-being. Bozkurt (2020) and his team term this intervention as "the pedagogy of care," urging educators to be mindful of the mental health of their learners.

Technical challenges

During this challenging period, Algerian students, much like their counterparts globally, engaged in remote learning exclusively from their homes to continue their formal education. However, this process encountered difficulties, particularly as highlighted in most, if not all, studies where instructors pointed out the technical obstacles faced by their students. Three main categories of tech-related issues were identified. The first pertains to internet-related problems, as some students admitted to either lacking access to the internet or experiencing issues related to it (Hadjela et al., 2020; Lassassi et al., 2020). The second addresses the shortage of tech devices needed by students and/or teachers for their teaching-learning activities. While no study reported a shortage on the part of instructors, they did note a significant number of students lacking any gadgets, greatly affecting their online education. Lastly, the digital divide poses a challenge for both teachers and learners, as some of them lack, to varying degrees, literacy skills, resulting, for example, in difficulties navigating the Moodle platform. A substantial body of literature within the scholarly community has observed similar challenges related to internet issues (Bozkurt et al., 2020; Buheji & Ahmed, 2020), disadvantaged students (Ghobrini, 2021; Osman, 2020; Sosa Díaz, 2021), and the digital gap (Asghar, 2020; Hussain, 2020).

Pedagogical challenges

Drawing from the aforementioned findings, the studies highlight a deficiency in the digital fluency for students and certain instructors (Ghounane, 2020; Haddad, 2020), posing a limitation in undertaking e-teaching endeavors and associated e-activities, such as crafting contemporary and multimedia-enriched e-content for online courses (Ghounane, 2020; Lassoued et al., 2020). This partly explains the poor online delivery, especially in the initial phase on the Moodle platform. Additionally, the lack of e-savoir-faire among instructors, many of whom had limited or no training before the sudden shift to online-only delivery (Hadjela et al., 2020), resulted in some e-instruction resembling a mere transfer of traditional teaching methods to the online platform (Ghounane, 2020; Hadjela et al., 2020; Lassoued et al., 2020). This deficiency in e-pedagogy hindered instructors from providing effective and efficient e-

teaching experiences for their students. Peer collaboration for the creation and co-creation of e-content was observed as a partial remedy for this issue (Haddad, 2020; Lassassi et al., 2020). Another aspect is that a significant number of students used handheld devices, requiring e-instructors to possess expertise in operating educationally in a mobile learning (M-learning) environment. Similar findings align with those of Deshmukh, Irfan, Shiva and Balakrishna (2021, p.206), indicating that a minority of instructors "have undergone limited online courses themselves to improve their understanding of the latest technology topics and to carry out online certification courses." Supporting these claims, Jena (2020) and Trikoilis and Papanastasiou (2020) corroborate these assertions by noting the considerable level of unpreparedness among instructors due to the recent shift to an online-only teaching approach, influencing the quality of the e-teaching-learning process during that period.

Educationalizing Facebook

After identifying the primary challenges faced by Algerian university instructors during the lockdown prompted by the unexpected onset of the COVID-19 pandemic, the local academic communities discovered alternative e-avenues (Blizak et al., 2020; Ghounane, 2020; Haddad, 2020; Hadjela et al., 2020; Lassassi et al., 2020; Lassoued et al., 2020; Sahraoui & Chaibendraa, 2020) beyond Moodle for conducting educational activities. Facebook emerged as the preeminent e-space that accommodated both teachers and students, serving as a bridge to overcome the disruption in learning (Blizak et al., 2020; Ghounane, 2020; Haddad, 2020; Sahraoui & Chaibendraa, 2020). These studies consistently highlight the students' inclination toward Facebook, prompting most teachers—some of whom had concerns about the aspect of this outlet`s informality—to join their students on this familiar e-platform (Ghounane, 2020; Sahraoui & Chaibendraa, 2020). Facebook, rich in social features, was extensively utilized for educational purposes. In essence, Ghobrini, Benzert, and Balas (2022) introduce the concept of the "educationalization" of the e-platform, signifying the integration of the social aspect of social media with an educational perspective. This process is manifested in three key elements: e-communities, e-mediation, and e-teaching/e-learning.

e-communities

A strategy employed by students to adapt to the new normal and stay connected was the creation of groups on Facebook. Some students initiated these groups even before the crisis began, providing a space for them to meet, exchange ideas, and collaborate (Ghounane, 2020; Haddad, 2020; Sahraoui & Chaibendraa, 2020). These individuals are well-versed in various social media platforms, with Facebook being particularly prominent. Consequently, teachers who opted to join their students on this social network were already aware that their students were primary users of this e-platform. This familiarity facilitated the e-teaching-learning process, which will be discussed in the subsequent section. This finding aligns with that of Ghobrini and Sarnou (2022), who utilized a Facebook group as an online class for a MOOC-based teaching initiative, emphasizing that the students actively chose this e-platform. This online community of practice brought together all stakeholders to meet their educational needs. In a similar vein, Ghounane (2021) affirms that Facebook became the preferred platform for both students and teachers during and after the COVID-19 pandemic, even suggesting e-strategies for optimizing Facebook's educational potential.

e-teaching and e-learning

Within the digital confines of this e-platform, both teachers and students discovered a shared online space for collaboration, content sharing, and engaging in various educational online activities, whether asynchronous or synchronous (Blizak et al., 2020; Ghounane, 2020; Haddad, 2020; Sahraoui & Chaibendraa, 2020). This includes scheduling online sessions to

facilitate in-depth discussions about the pedagogical materials under study. Notably, the platform offers diverse features that teachers can leverage to diversify tasks and communication methods, utilizing text, images, or even videos. Despite not being fully optimized, this online space empowered the Algerian academic community to overcome existing obstacles, aiding students in the continuation of their online education. Consistent with these findings, previous studies, such as Toquero (2020, p.185), revealed that many students and academicians "have found solace online and created new Facebook group pages for various reasons," including pursuing "curricular interests." Similarly, Santoso (2021, p. 1026) asserts that Facebook groups are "worth considering for learners who have not been adequately prepared with technology for joining an online class," making it a preferred choice due to its familiarity.

e-mediation

Due to the lack of communication among administration, students, and teachers, Facebook emerged as an e-mediator between these stakeholders (Ghounane, 2020; Haddad, 2020). Some Algerian universities even established Facebook pages for their faculties, where they post announcements related to various aspects of students' tertiary education, such as tests, exams, and assignment deadlines. Other instructors, those hesitant to join the social landscape, utilized Facebook to notify students when they uploaded new courses on platforms like Moodle. This finding aligns with that of Crawford, Henderson, Rudolph, Malkawi, Glowatz, Burton, Magni, Lam (2020), who examined digital pedagogy responses in higher education across 20 countries. They affirm that in Pontificia Universidad Católica de Chile, the university conveyed updates to students through various messages posted on the university's social media channels, including its official Facebook page. This indicates that using such social-mediated platforms to maintain contact with students is a common practice for tertiary institutions.

Alternative e-platforms

While Facebook emerged as the predominant social media platform in most of the studies, Algerian tertiary-level instructors also utilized various other social media platforms. YouTube was employed to upload pre-recorded course videos (Lassoued et al., 2020; Sahraoui & Chaibendraa, 2020), and WhatsApp served as a means of communication and material sharing (Sahraoui & Chaibendraa, 2020). Additionally, educational-only platforms such as Google Classroom were utilized by multiple studies for conducting both synchronous and asynchronous classes (Blizak et al., 2020; Ghounane, 2020). One reported issue was that some students were unfamiliar with the technology, hindering their participation in e-conversations. Zoom was also employed for similar reasons (Ghounane, 2020; Hadjela et al., 2020). Notably, instructors tended to impose the platforms they were most familiar with, creating challenges for students to adapt to each teacher's preferences. In essence, instructors managed to navigate the unpredictable and under-explored realm of online pedagogy, emphasizing the urgent need to enhance the e-savoir-faire of Algerian tertiary-level instructors in delivering an optimized online teaching and learning experience (Ghounane, 2020; Lassassi et al., 2020; Lassoued et al., 2020; Sahraoui & Chaibendraa, 2020).

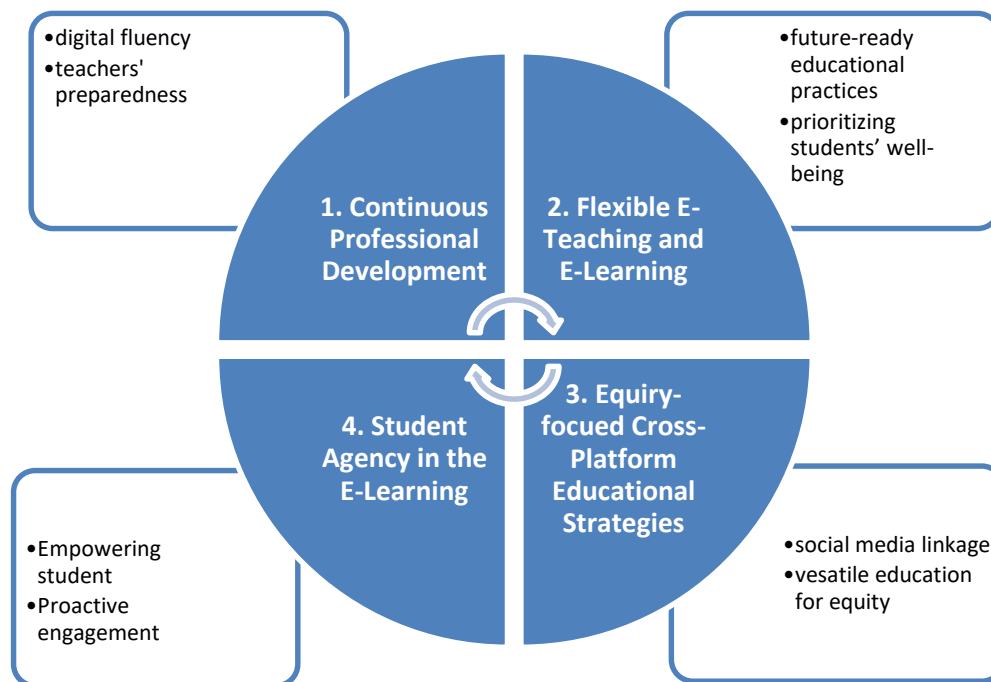## The framework and its implications

Figure 2. A tentative framework to face future challenges.

The above-mentioned findings illustrate how educators, not only in Algeria but globally, bravely faced and, to some extent, overcame these arduous challenges. More importantly, however, are the principles that were or should have been implicitly applied to design the above framework. The latter has been used by instructors, educators and policy guidelines to address future unanticipated crises in education. These principles are translated into terms: 1. continuous professional development for digital fluency, 2. flexible e-teaching and e-learning practices, 3. cross-platform educational strategies and 4. student agency in the e-learning initiative.

Continuous professional development for digital fluency

Unpreparedness to face the challenges was the primary barrier to operating effectively in a fully online-only mode of teaching. Therefore, priority should be given to continuous professional development for instructors to enhance their digital fluency. This enables them to devise and design novel teaching methods that, in turn, can confront any unforeseen unfavorable circumstances and the ever-evolving landscape of e-education. Given the fact that most 21st-century students are technophiles, and hence their online presence is on the rise, technological adaptability for instructors becomes highly prominent. This is essential not only for teaching them online but also to understand or at least have a feel for their online experience and perspective in the virtual world.

Flexible e-teaching and e-learning practices

Throughout the studies discussed above, students and teachers made do with what they had and tried to engage, even if it was not fully optimized, in different e-activities on various platforms according to the teachers' or students' preferences. This calls for an unseen principle that underscores the importance of flexibility in online instructional methods. Moreover, teachers should develop future-ready educational practices that can ensure a smooth transition from one mode of teaching to another according to the circumstances. These modes should fuse the social and educational aspects to ensure that no student is left behind, not only in terms of

education but in terms of well-being as well. One of these approaches can be directed toward cross-platform educational tactics.

Equity-focused cross-platform educational strategies

The core of the findings clearly emphasized the need for deeper reflection and thoughtful consideration of an equity-focused cross-platform approach to educational delivery beyond Facebook onto other socially mediated arenas, especially with the emergent linkage features that enable users to post content simultaneously, with a simple click, on different e-spaces. With a cross-posting feature, for instance, a user can post the same content at the same time on both Instagram and Facebook (Ghobrini et al., 2022). It is equally noteworthy that these social platforms can function without internet access, using the simplest tech devices, potentially serving as a game-changer in addressing equity-related issues (Ghobrini & Sarnou, 2022). This initiative transcends pandemic- or crisis-related circumstances; educators should be trained in utilizing a variety of tools, contributing to the broader conversation on versatile educational strategies for equity. Exploring the continually enhanced and refined features of these platforms becomes essential in fostering an effective and inclusive educational environment.

Student agency in the e-learning initiative

Education continuity was at risk because no mechanism was put in place despite having advanced tools at our disposal to prepare for it. The second issue was the over-reliance of students on their instructors during these times of crisis. Consequently, a new system should be put in place to ensure not only that students continue their education but, more importantly, be agents of their own learning process. These e-solutions can be in the form of MOOCs, where students learn at their own pace with a wide variety of e-pedagogical materials in a practical, real-world context. Students can proactively engage in different educational tasks autonomously, empowering them to take active roles in their education, which will undoubtedly shape their (e)-learning journey overall.

CONCLUSION

In these challenging times, teachers, and especially students, faced psychological, technical, and pedagogical challenges that hindered the e-teaching-learning process to some extent. However, they managed to overcome these difficulties, primarily by utilizing social media and other educational-only outlets, thus creating a favorable environment for e-education. Among these platforms, Facebook emerged as the preferred choice for these actors, given its comprehensive features and functionalities that facilitated the creation of e-communities. In these communities, collaboration and cooperation were central to the online teaching and learning journey, complemented by its use of e-mediation between the administration and other stakeholders. Even more crucial are the unseen principles that served to design a framework that, in turn, can be utilized to face future crises, encompassing the necessity for continuous professional development of instructors' digital fluency. This development shall hone their skill set, enabling them to cultivate flexible e-teaching and e-learning practices regardless of the circumstances. This includes leveraging equity-based cross-platform educational strategies that address any equity issue that might arise whilst considering the cross-cultural aspect of e-education. These principles could be leveraged by universities, researchers, policymakers and stakeholders to ensure the implementation of practical guidelines and protocols in the face of any upcoming pandemic or unknown context where home-only education becomes the predominant option.

Conflicts of Interests

The authors declare that there is no conflict of interests.

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Appendix A

No	References	Methodology	Context	E-experiences	
				Benefits	**challenges**
01	(Haddad, 2020) 27 teacher-trainees	Descriptive analytical method	Biskra university	Using Facebook educationally and administratively Collective creation of the online content	Digital fluency gap Utilizing Moodle platform teachers' e-skills deficiency Lack of expertise in e-pedagogy
02	(Lassassi et al., 2020) 2000 teachers	Descriptive research National survey	104 Algerian tertiary institutions	Utilizing Moodle platform lack of interaction internet issues e-assessment challenges Learning self-discipline lacking Negative perception of distance education	Use of Moodle platform and absence of interaction internet problems e-assessment issues lack of self-discipline in learning Negative perception toward e-education efficacy
03	(Blizak et al., 2020) 380 students	descriptive quantitative method	Boumerdes university	Absence of gender-based variation in academic performance. Senior students responded more positively to e-education than their junior counterparts. Employing phones for studying purposes.	Equity issue No system of psychological aid Limited time Intense workload Low level of interaction
04	(Lassoued et al., 2020) 400 Arab professors and students	exploratory descriptive study	EL Oued university	The use of Moodle for Content delivery Use Facebook and YouTube	Equity issues Hesitancy in adopting e-learning Replicating traditional teaching in the online format Lack of diversity in e-teaching modes
05	(Ghounane, 2020) 8 teachers and 90 students	Mixed method research	Saida university	Facebook for administrative purposes Focusing on the social aspect of these social platforms Use of Zoom and Google Classroom	Tech and internet disparities Reluctance to teach on social media
06	(Sahraoui & Chaibendraa, 2020) 66 students and teachers	Descriptive research	Biskra university	Creating online communities and administering e-assignments via Facebook instructor-learner interaction New modes of online teaching	Equity problems (tech-devices and internet access) Resistance toward operating on social media
07	(Hadjela et al., 2020) 95 students	Descriptive analytical method	31 Algerian universities	Utilizing non-traditional content delivery via YouTube for example.	unmotivated students absence of psychological support issues in assessing students via Moodle Tech and internet disparities Lack of training for teachers Replicating traditional teaching in the online format