

Perspective

The COVID-19 Pandemic as an Opportunity to Foster the Sustainable Development of Teaching in Higher Education

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Abstract: The COVID-19 pandemic has had profound consequences on the social, economic and cultural life at the global level. The educational dimension has also been affected in the schools' regular functioning, with the temporary closure of educational institutions, as well as the impediment of face-to-face classes. This perspective paper aims to add to the knowledge already produced on this topic, by arguing that these challenging conditions can be a pivotal moment of opportunity for reshaping higher education, with the implementation, development and diffusion, among academics and students, of digital technologies. The paper also discusses the role of leadership in the transformation of organizational culture in higher education. The methodology used to carry out this study is qualitative, and the technique employed to analyze the data collected was content analysis. Research studies, in diverse formats, already published on the COVID-19 topic and its impacts were the elected data sources. The results of this document analysis allow us to conclude that there is the need to improve the digital sustainable development in teaching in higher education, which entails profound challenges that higher education institutions need to face and overcome if they want to be at the forefront of success in the international education market. This is where the authors seek to contribute, by offering insights on the challenges—but also the opportunities—that COVID-19 poses to higher education at a time when it needs to redefine its teaching methods, leadership models, and interaction channels, by going digital towards the improvement of the sustainable development of its teaching.

Keywords: digital sustainable development; COVID-19; teaching; higher education; digital transformation; university performance; leadership; sustainability

1. Introduction

The pandemic caused by COVID-19 (Severe Acute Respiratory Syndrome Coronavirus 2, SARS-CoV-2) is a worldwide concern and a topic that is frequently present in the current research agendas of laboratories, higher education institutions (HEIs) and similar Research and Development institutions.

While this pandemic is having profound implications at the global level, its repercussions and future consequences are yet to be foreseen with some degree of anticipation and assurance. In this

dynamic and challenging scenario, most countries have implemented measures that aim to mitigate the numerous effects of the pandemic. The most important ones are

[...] social distancing measures (notably, the immediate isolation of symptomatic persons, the suspension of mass gatherings, social distancing measures at workplaces and measures in and closure of schools); ensuring the public is aware of the seriousness of COVID-19; prevention and control of COVID-19 in hospitals and long-term care facilities; the training for all staff of healthcare facilities; rational approaches to limited resources; and surveillance systems for detecting cases and assessing community transmission [1] (p. 527).

Some of these measures of containment, social isolation and confinement that have been put in place as a way to fight the impact of the coronavirus have focused on higher education, notably the suspension of face-to-face classes and student tutorial support [2]. Furthermore, the HEIs' educational offer needs to move fast from face-to-face programs to online alternatives, changing the teaching and learning process and format carried out for many decades before the pandemic. This is the "new normality" (an expression used more and more these days) and the main avenue in facing and successfully coping with the novelty, the fear, and the uncertainty caused by the pandemic [3].

The teaching and learning activities are now much more developed via the Internet, and HEIs are using their specific internet platforms (e.g., Moodle) or other online tools, such as Zoom or Google Classroom, for example, and e-learning has become, in much of them, the only possible mode of formal learning [1].

In their recently published study, Aristovnik et al. [4], using a sample of 30,383 students from 62 countries, concluded that these institutional actors are overall satisfied both with the transition from face-to-face to online teaching and the support they received from their teachers throughout this process. On the downside, the students mentioned the lack of digital competences and the perceived higher workload. Furthermore, the study concluded that the students most affected by the COVID-19-related educational changes were male, part-time, undergraduate and applied sciences students, as well as students with a lower living standard (i.e., students that can only afford their educational costs with the help of a scholarship, and also part-time students that lost their job as a consequence of the pandemic). In addition, according to Aristovnik et al. [4], this scenario is much worse in less developed regions and countries of Africa and Asia, which stresses the relevance of reinforcing the educational offer in these territories to prevent inequalities at the digital, social, economic and gender levels. This may be attained via (i) government support in fostering digital literacy, enhancing infrastructures; and (ii) HEIs, through restructured and new delivery methods, digital teaching and learning tools and flexible and renewed curricula that ease this transition both for students and academics [4].

Higher education sustainability regards coordinated development and entails several aspects related to the environment, economics, culture, gender equality, and responsibility on the part of the community, among other aspects. There should be an active effort to maintain the long-term balance between them. The notion of SHED (Sustainable Higher Education Development) is all-inclusive and encompasses, for example, the interaction of higher education with the surrounding environment, economic growth, societal equity, equality, and quality enhancement. Therefore, after the identification of the definition of SHED, it is possible to determine indicators for its measurement [5].

This new, unexpected and unpredictable context brought new challenges and needs to higher education, which is already shaped by dimensions such as training, research, assessment, financing, internationalization, competition with each other in the national but also international markets, transparency before the stakeholders, and living with the phenomenon of Open Access scientific publications. In short, "Higher education is in turmoil in the whole world" [6] (p. 332) [2,6–8]. This challenge of living, at least for several months, with a contingent situation caused by COVID-19 may also be seen as informing the need for adaptation, but—and mainly—as an opportunity for education in general and higher education in particular.

In short, the COVID-19 pandemic has had profound consequences on social, economic and cultural life practically worldwide. The pandemic has also affected the schooling dimension in its

regular functioning, namely with the temporary closure of educational institutions and impracticality of face-to-face classes. This perspective paper argues that these conditions may be a pivotal moment of opportunity for the reformulation of teaching higher education, notably with the implementation, development and dissemination, among academics and students, of digital technologies. The authors also address and discuss the role of leadership in the transformation of organizational culture in higher education. Thus, the paper may be of special interest for the contributions it can provide to the stakeholders involved in higher education, as well as provide insights for the managerial and policy decision-making processes.

2. Materials and Methods

This article aims to understand and make known the consequences of the COVID-19 pandemic specifically in higher education. Documentary collection and analysis was the technique mobilized in this research, using different types of documentary sources as a basis for its potential in providing elucidative information on a given topic [9,10].

The types of documentary sources mobilized in this research include articles, books and book chapters produced by various scientists in the field of social sciences and that are considered to be important in the understanding of COVID-19 pandemic as an opportunity to foster sustainable development in higher education. The bibliographic search was carried out through the B-ON and SCILIT databases, from 15 to 20 September 2020, through the search for articles that had the following expressions in the title and/or abstract: “COVID-19”, “higher education”, “leadership” and “sustainability”. B-ON (Biblioteca do Conhecimento Online) “provides unlimited and permanent access to research and HEIs to the full texts of thousands of scientific journals and online eBooks from some of the most important content providers” [11]. The SCILIT database, which consists of a “free database for scientists using a new method to collate data and indexing scientific material” and that “extract[s] the latest data from CrossRef and PubMed on a daily basis” [12], was used because the authors deemed it pertinent to select and verify all articles with DOI (Digital Object Identifier) on these topics.

Table 1 presents the statistical characteristics of the documents collected and analyzed.

Table 1. Document sources analyzed and their characteristics.

TYPE OF ARTICLE				GEOGRAPHICAL SCOPE		YEAR OF PUBLICATION			
Theoretical	Empirical	Opinion/ Viewpoint article	Report	International	National	2020	2019	2018	Prior to 2018
19	21	3	1	23	21	25	8	4	7
Total: 44 publications									

Source: authors' production.

The authors of the articles are from five continents and 26 countries: Albania (1); Australia (1); Austria (2); Brazil (4); China (3); Czech Republic (1); Ethiopia (1); Finland (1); Germany (1); Indonesia (2); Italy (1); Kenya (1); Malaysia (2); Mexico (1); New Zealand (1); Poland (1); Portugal (3); Romania (2); Russia (1); Slovenia (1); Spain (2) The Netherlands (1); Turkey (5); UK (2); Ukraine (1); and USA (3).

From the documents obtained through this search, starting with the most recent, the authors selected the relevant ones through several cumulative stages. This selection made it possible to reduce the number of articles analyzed in each stage until concluding in stage 3: (1) reading of the title; (2) reading of the abstract; and (3) reading of the full document to fulfil the goal of analyzing the consequences of the COVID-19 pandemic on the higher education arena.

3. Improvement of Digital Sustainable Development in Higher Education

3.1. Higher Education Culture

HEIs are extremely complex organizations because they deal with individuals and aim at their education/training [8,13–16]. Caliskan and Zhu [17] (p. 273) maintain that “Universities are people-oriented organizations in which the internal (academic staff, students) and external (local community, political activists, quality assurance agencies, press) stakeholders are involved”. Figure 1 depicts this complexity in any HEI’s strategy, characterized by diverse components.

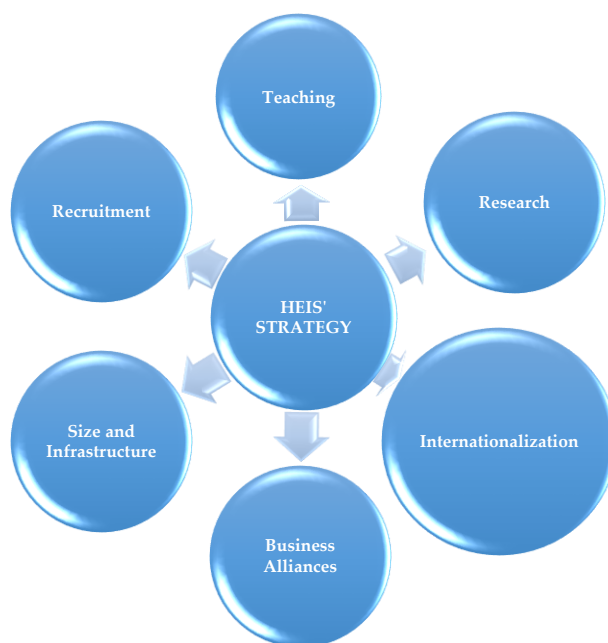


Figure 1. Dimensions of the higher education institutions’ (HEIs’) strategy. Source: Berisha, Mustafa, and Ismail [18] (p. 42).

The literature shows that organizational culture, which is unique in any organization, influences the way its employees respond to change and resist it. Organizational leaders have, in these situations, the role of both embracing the change and finding strategies to help their teams overcome possible foci of resistance. This culture, composed of rules, beliefs and values explicitly written or otherwise, “brings together individuals of differing opinions, beliefs, and values around a shared goal and thus helps the organization attain its goals” [19] (p. 46).

In this framework, organizational culture can work either as an enabler or an obstacle for educational innovations at the macro, meso and micro levels [17,20–22]. Warter [15] provides a good summary of the complexity of HEIs’ culture, features, decision-making processes, and internal and external influences:

Universities are complicated social organizations with characteristic cultures. On the one hand, academic freedom, critical thinking, and autonomy are protected values and, on the other hand, changing environmental conditions exert powerful impact on the primary functions of universities [. . .]. Unlike many other organizations, universities have certain particularities that need to be clearly understood and that dominate the organizational culture of academic institutions. In the first place, their goals are equivocal. Different objectives, procedures, and standards in teaching, research, and other processes as well as lack of agreement on rules for goal accomplishment result in a doubtful decision-making process [. . .]. The decision-making processes in universities are often complicated and long due to different points of view and interests of academic staff. This causes

conflicts between managers concentrating on processes and faculty staff focused on less important issues [15] (pp. 173–175).

A good example of the characterization of HEIs in terms of their organization is the classic study by Cameron [23], commented on by Bonisenha and D’Angelo [24]. The authors sustain that there are four types of HEIs:

1. The first group is effective in the academic and moral domain, but ineffective in the adaptation to the external environment and internal interaction;
2. The second group is effective in the external domain, but ineffective at all other levels;
3. The third group is low in quality and its effectiveness at all levels is below average;
4. Finally, the fourth group has average effectiveness in the moral domain, is effective in the academic domain and ineffective in terms of the external adaptation and external interaction.

Table 2 provides an overview of the four domains of organizational effectiveness in HEIs, as well as the areas each one of them favors and fosters.

Table 2. Four domains of organizational effectiveness in HEIs.

Academic domain	Favors students’ academic development, professional satisfaction of the teaching and non-teaching staff, as well as the ability to secure resources.
Moral domain	Favors the student’s educational satisfaction, the professional satisfaction of the teaching and non-teaching staff and the robustness of the internal institutional processes.
Adaptation and external interaction domain	Favors students’ career development.
Extracurricular activities domain	Favors students’ personal development.

Source: adapted from Bonisenha and D’Angelo [24], following Cameron [23].

HEIs’ leaders have to carefully consider the organizational culture of HEI they manage, otherwise, the intended organizational change may fail [16,18,22]. This assertion is emphasized by Berisha et al. [18] (p. 37) when the authors argue that “[...] organizational culture plays an important role on strategy as practice; top management is perceived to primarily provide sense through face-to-face interaction and procedural measures of strategy practices; staff members are mostly involved in implementation”.

When addressing the complexity of higher education organizations, it seems to us unavoidable—given its heuristic potential—to focus on the already classic proposal by Leydesdorff and Etzkowitz [25] of a *Triple Helix Model* that emphasizes the close relationship between the Triple Helix of University–Industry–Government Relationships that undergoes changes in time, both in the type of interactions and even in the features of each of these three helices. Furthering the analysis, this framework puts forth that “Innovation is initially the result of a local interaction between scientific invention, economic diffusion, and political power” [25] (p. 202). According to the authors, this model has the main purpose of “analyzing innovation in a knowledge-based economy. This model accounts for the phenomenon of emergence, that is, it helps us to understand how the innovation system is based on expectations” [25] (p. 198). Moreover, Lawton Smith and Leydesdorff [26] (p. 3) envision the model’s “three functional dynamics – wealth generation, governance, and novelty production—as further heuristics in the application of a Triple Helix model in theory and in practice” (for further development of this proposal, with the increase in additional helices, which fall outside the scope of this paper, see [25,26]).

3.2. Digital Sustainable Development in Higher Education

Higher education is paramount in the promotion of sustainability at the environmental, economic and social levels [27–29]. Building on Kuzma, Doliveira, and Silva [30], Table 3 depicts the main competences for sustainability, as well as the definition and characteristics of each one of them.

Table 3. Competences for sustainability and characteristics.

Competence for Sustainability	Definition/Characteristics
Focus on systemic thinking	Ability to collectively analyze complex systems in different domains (society, environment, economy, etc.) and at different scales (from local to global), thus considering feedback and other resources related to sustainability issues and sustainable problem-solving frameworks. The ability to analyze complex systems includes understanding and verifying empirically, articulating their structure, main components and dynamics. The ability to analyze is based on the attained systemic knowledge, including concepts such as structure, function, cause and effect relationships but also perceptions, decisions and regulations.
Preventive	Ability to collectively analyze and assess the future setting related to sustainability issues and scenarios for solving sustainability problems. The ability to analyze future scenarios includes being able to understand and articulate their structure; the ability to assess regards comparative skills that relate to the “state of the art”; finally, the ability to create integrates creative and constructive skills.
Normative	Ability to specify, implement, reconcile and negotiate sustainability values, principles, objectives and goals. This ability allows us, first, to collectively assess the sustainability of current and/or future states of organizational systems and then to collectively create the visions of sustainability for those systems. It is based on attained normative knowledge, including concepts of justice, equity, socio-ecological integrity and ethics. These skills are adapted to address key-issues of socio-ecological sustainability, including integrity, logical systems and organizational equity.
Strategic	Ability to implement interventions, transitions and strategies of transformational governance towards sustainability. This ability requires a deep understanding of strategic concepts, such as intentionality, systemic inertia, path dependencies, barriers, carriers, alliances, etc.; knowledge of feasibility, effectiveness, efficiency of systemic interventions, as well as the potential for unintended consequences, etc.
Interpersonal	Ability to motivate, enable and facilitate collaboration and research on participatory sustainability and problem-solving. It includes advanced skills in communication, decision-making and negotiation, collaboration, leadership, pluralist and cultural thinking, and empathy. The ability to understand, accept and foster diversity across cultures, social groups, communities and individuals is acknowledged as a key-component of that competence.

Source: Kuzma et al. [30] (p. 435).

Table 4 provides guidelines regarding the ways in which HEIs may change to meet the demands of sustainable development.

Table 4. HEIs’ organizational change towards sustainable development.

Structural transformation and entrance of sustainable development into universities’ organizational structures.
Decision-making processes, leadership strategies, and strategic planning dynamics.
Role of internal factors (e.g., institutional culture, strategic agency, relationships and power on campus).
Role of external factors (e.g., funding/regulative bodies, networks, other higher education institutions).
Focus on organizational learning, to explicitly investigate the process of change.

Source: adapted from Bohunovsky et al. [27] (p. 2).

Conclusions of the study by Bohunovsky et al. [27] on pushing organizational transformation towards sustainability across 13 Universities in Austria are enriching for other HEIs, respecting the internal and external characteristics of each one. First and foremost, and prior to any changing process in HEIs towards sustainable development, it is important to bear in mind that organizational change processes towards sustainable development in these institutions are complex and experience numerous parallel developments, and have a wide range of institutional actors involved in this process, who may react differently to change. Furthermore, HEIs are influenced differently by internal and external factors. The main drivers of organizational transformation towards sustainable development in HEIs can be, for example, individual institutional actors, HEIs' management and rectorate organs and inter-HEI networks through inter-influence, enabling this transformation by creating conditions and opportunities and/or leading this organizational transformation [27].

This process of promoting sustainable development, in which higher education can potentially play a critical role [31], takes place in a context increasingly shaped by a growing presence of technology based on digitalization [32–35]. In particular, the Internet is at the core of this digitalization of daily life and is, according to Gomez Zermeño [36] (p. 1) “[. . .] the struggle for permanent connectivity, for being present in the world, for apprehending what happens in reality and building reality becoming the vehicle that stores key information for social life, builds environments and, links objects and people”. Some authors even make reference to a digital society, notably in “Society 5.0”—a super-smart society—and sustain that “Society 5.0 is the consequence of a technological revolution that will eventually affect not just the production but all parts of today’s life as well” [37] (p. 1085). Table 5 exhibits these forms of digitalization and their main features.

Table 5. New technologies.

IoT	IoT has been developing rapidly in recent years, with billions of connected devices. IoT is becoming a global infrastructure, enabling advanced services through the interconnection of things that belong to both the physical and virtual worlds.
Blockchain	Blockchain was developed to support the bitcoin currency, and has the characteristics of decentralization, persistence, anonymity, and auditability.
Virtual Reality/ Augmented Reality/ Mixed Reality	The demand for all types of interactive experiences, whether from scientists, business people, government decision makers, or ordinary citizens, will continue to grow.
Artificial Intelligence (AI)	A broad term that includes deep learning, knowledge graphs, and brain-inspired computing, is one of the most prominent technologies currently being advanced.
Hyper-Connectivity	The volume of available data is now growing at an unprecedented pace.
5G, Fog/Edge Computing	Many connected devices (including those using AI) require the transmission of huge amounts of data to the cloud for storage and processing. The advent of the 5G (the fifth generation of mobile wireless technologies) network will dramatically increase this demand and, in particular, demand for real-time processing services.
Progress in Computing and Microelectronics	Big Data analytics and AI require new types of computing to address emerging needs to support parallel and tensor processing, overcome the traditional computer architecture latency problem, embed machine learning, deploy processor-in-memory, 4D virtual reality and augmented reality, to visualize and, notably, to consume less energy.
In-memory Computing	In-memory computing stores data in RAM rather than in databases hosted on disks. This eliminates the I/O latency and the need to implement database transactions reliability and consistently.

Source: van Genderen et al. [35].

For the digital transformation in the educational arena to be successful, namely in terms of implementation and adaptation to new technologies, it must be based on sustainable management. HEIs are increasingly aware that digitization is inevitable to attract more and better students and improve the quality of the study programs they offer, as well as teaching materials and methods, i.e., digitization integrates the entire educational process.

Digital technologies in education allow the transition from learning as an individualized and passive process to learning as a co-creation of knowledge involving several institutional actors, namely the student, his peers and the teaching staff, in a logic of communities of practice. These profound changes are caused using digital demand, different and new skills, which are critical for students or future professionals, to move and succeed in the digital economy of the 21st century [36].

3.3. *The Role of Leadership in Higher Education Sustainability*

Putri, Mirzania, and Hartanto [38] draw attention to the role and responsibility of the leaders in fostering sustainability in the institutions they manage. Leaders are accountable for steering and managing the organization's members towards the attainment of the institutional targets, whichever leadership methods and styles they use to do so. Moreover, "Cultural diversity within an organization will certainly enrich the organization's perspective to establish the right organizational culture. This is the responsibility of a leader in determining the shared culture that will be believed and applied by each member of the organization" [38] (p. 51).

Specifically in the management of HEIs, in their study on "distributed leadership"—as an alternative to more traditional forms of leadership—Gosling, Bolden, and Petrov [39] conclude that there are numerous institutional actors involved in leadership and organizational processes that are central in shaping their engagement to leadership and the HEI. However, there are tensions between individual autonomy and organizational coherence, which are embodied in tensions between professional, academic and managerial identities. This often causes a big contrast between how institutional actors describe their perceptions of sound leadership and how they experience it. Gosling et al. [39] offer a systematization of the diverse accounts on leadership based on their study and presented in Table 6.

In turn, Leal Filho et al. [40] (p. 1) define sustainability leadership as the "processes, which leaders, policymakers, and academics undertake in order to implement sustainable development policies and other initiatives within their organizations". The role of HEIs, particularly that of their leaders, is pivotal in the promotion of sustainable development.

The authors claim that management and leadership in organizations, and HEIs in particular, are distinct but complementary systems. Table 7 presents Leal Filho et al.'s [40] perspective on the differences between leadership and management. The authors choose the following variables to distinguish leadership from management: (i) agenda and goal setting; (ii) way of thinking; (iii) employee relations; (iv) mode of execution and operation; (v) governance; and (vi) outcomes.

Table 6. Alternative accounts of leadership in higher education.

Form	Description	Example
Dislocated	Top-down and bottom-up systems do not match up; leadership does not occur where it is needed.	Weakened central leadership where budgets are devolved to schools or faculties that make it difficult to initiate and sustain institution-wide initiatives such as corporate branding and IT.
Disconnected	Different parts of the institution pulling in different directions; lack of consistent/coherent direction/vision; competing agendas.	Formation of a “silo mentality” within schools, with holders of devolved budgets pursuing their own objectives, not aligned with (or even counter to) the overall university mission and objectives.
Disengaged	Staff avoid becoming involved in leadership and management of the institution; leadership is seen as unappealing, unrewarding or unnecessary.	Leadership viewed as administration/bureaucracy rather than strategic and inter-personal—e.g., leadership and management of school/university versus academic leadership of research or discipline.
Dissipated	Leadership is too broadly diffused across groups with little accountability or responsibility for implementing decisions and actions.	This was a frequent criticism of the committee structure, described as a “washing machine” where decisions go round and round remaining unresolved and disowned.
Distant	Leadership is felt to be removed from the operational level of the organization; inaccessible, imposed; not necessarily ‘in our best interests’.	Decisions taken at senior management level and imposed with limited consultation. This situation seems to be amplified where senior managers are physically distant from academic departments.
Dysfunctional	Leadership fails to achieve its intentions; results in unexpected/undesirable outcomes; misalignment of performance measures.	Negative reaction to performance review and appraisal process by senior academic staff; performance measures driving individual rather than team behavior; risk aversion and dysfunctional systems arising from failures of senior leadership.

Source: Gosling et al. [39].

Table 7. Differences between leadership and management.

	Leadership	Management
Agenda and goal setting	Develops and articulate a vision, establishes directions, develop change strategies	Executes plans, improves the present, creates detailed steps/time tables
Way of thinking	Focuses on people, looks outward, “sees the forest”	Concentrates on issues, looks inward, “sees the trees”
Employee relations	Empowers colleagues, trusts, and develops	Controls subordinates, directs, and coordinates
Mode of execution and operation	Does the right things, inspires, creates change, serves subordinates	Does the things right, manages change, controls, and organizes to solve problems, serves superordinates
Governance	Uses influence, uses conflict, and acts decisively, inspires and energizes others to overcome barriers	Uses authority, avoids conflicts, and acts responsibly, organizes to solve problems
Outcomes	Potentially revolutionary change	Consistent key results

Source: Leal Filho et al. [40] (p. 3).

In their study, Leal Filho et al. [40] surveyed a sample of leaders and top-management actors from a set of universities from around the world. Table 8 depicts the actions indicated by the respondents to overcome sustainability leadership challenges in their institutions.

Table 8. Actions to overcome sustainability leadership challenges.

Topic	Actions
Involve high administration	Greater sustainability awareness at the highest level of the university (e.g., Vice-Chancellor, Deputy Vice-Chancellor, etc.)
	Involve university rector board and administration office
	Must be presented at all managerial levels
	Convincing administration that sustainability is not an option but a necessity for remaining a relevant educational institution and leading by doing
	Only when a benefit for the University appears, interest may be created
Partnerships/public relations	Establishment of partnership with institutions that are making greater progress and impact
	Development of joint projects with universities, which have expertise in sustainable leadership
	Good public relations
	Cooperation in sustainable local development projects with municipalities
	Development of stakeholder organization networks
	Leadership on the basis of local knowledge practice

Source: adapted from Leal Filho et al. [40] (p. 11).

In the face of these results, Leal Filho et al. [40] (p. 12) offer the following set of measures that HEIs may adopt to improve their performance:

Measure 1—a greater focus on practical aspects of governance, better integrating governance issues into university life.

Measure 2—institutionalizing the incorporation of SD issues at universities, by means of a stronger embedment of concrete activities, such as the elaboration of sustainability action plans and strategies or work programs, via which senior management can be better related to academic and non-academic staff, all to the advantage of institutional practices.

Measure 3—a greater focus on the contributions from leadership towards the attainment of the SDG targets. Here, the current levels of emphasis on the SDGs could be measured, a set of SDGs-related goals could be set, and progress toward their achievements could be assessed. The fact that senior staff act as drivers and/or moderators means that the visibility of such action will be assured.

Measure 4—identify the means via which leadership may engage in fostering the capability of staff at their organizations to promote sustainable development. There is a paucity of leadership-led training initiatives aimed at raising awareness among academic and non-academic staff, so such an initiative may help to move this important area forward.

The authors advocate that well-implemented sustainability leadership fosters the institution's relationship with sustainable development. However, this might not be attained unless the institution takes on a culture of institutional change, which enables the institution's search for the best ways to address and respond to local, regional, and global challenges [40].

3.4. The COVID-19 Pandemic and the Role of Higher Education Institutions in the Promotion of Online Learning

The most recent literature on the topics of COVID-19 and the consequences of the pandemic in educational processes is unanimous in advocating that HEIs have a leading role in the promotion of distance learning via the use of digital tools. While this turbulent context poses many hindrances and challenges to the learning and teaching process, it should also be viewed as an opportunity for change. More than ever before, the traditional learning and teaching methods are changing to accommodate the new educational needs. Albeit institutional actors did not have much time to prepare for this change and many are struggling to keep pace, the shift to e-learning or b-learning is inescapable. Cheema [2] proposes a set of strategies that may help to improve this new way of learning and teaching (Table 9).

Table 9. Instructional strategies to improve online learning.

Strategies	Description
1. Be prepared (preparedness planning and contingency planning)	<ul style="list-style-type: none"> • Prepare content before class and inform students in advance. Preferable time for each online session is about 30 ± 10 min. • Check capability of institution online education platform to host large scale users. If not, find alternative online platforms (e.g., Google Classroom, Microsoft Teams, Zoom, Webex, etc.). • Check educators' and students' bandwidth to do a live synchronous online session. If bandwidth is low, do asynchronous online learning. • Have information technology/support team on standby in case of technical glitches. • Provide pre-class reading materials to students to ensure engagement and in-depth discussion. • Gauge online learning behavior characteristics of students.
2. "Bite-sized" information is gold (dividing teaching content into smaller units)	<ul style="list-style-type: none"> • This is to increase student attentiveness and concentration during online learning. • Breakdown the content of the in-class teaching into different topics and adopt a modular teaching method. Ideally each online session address one learning outcome. If learning outcomes are huge, break it into smaller chunks. • Interlay quizzes, discussion, games with the module if possible.
3. Personalize/Humanize (use of "voice" in teaching)	<ul style="list-style-type: none"> • Body language and facial expressions are restricted in online learning. • Personalize your online teaching by creating your own videos with voices. Creating animation, digital stories are other options. • Educators should appropriately slow down their speech to allow students to capture key knowledge points. • Use interactive teaching pedagogy where possible.
4. Teamwork makes the dream work (working with teaching assistants, technologist and online support team)	<ul style="list-style-type: none"> • Educators are insufficiently trained or supported to operate online learning platforms. • Educators should communicate with teaching technologist/ information technologist support team prior and during each online session and prepare contingency plan. • Create "teaching assistant" between educators. Make them aware of the objectives, knowledge framework, and teaching activities of each session.
5. Empowerment (strengthening students' active learning ability outside of class)	<ul style="list-style-type: none"> • Educator has less control over student engagement and participation during online learning and are more likely to skip classes. • Educator should use various methods to modify students' homework, activities and reading requirements to strengthen students' active learning outside of class.
6. Flexibility (combining online learning and offline self-learning effectively)	<ul style="list-style-type: none"> • Integrate both online learning and offline self-learning. • In the offline self-learning phase, students are given course-specific reading materials both before and after class with activities or assignments. • In the online teaching phase, educator should encourage discussions, group activities for students to exchange their understanding based on their reading. Thus, students will not learn ambiguous, fragmented, and surface knowledge. Instead, they will experience deep learning during the discussion. • Encourage global, community and collaborative learning.
7. Reflection (gauge students' understanding, learning outcome attainment and improvement for next session)	<ul style="list-style-type: none"> • Educator should provide feedback to students' assignments and know the learning cognitive levels of students. • Provide continuous feedback, quizzes and assessment to ensure learning outcomes are achieved. • Allow students to provide suggestions and feedbacks on the learning session. • Reflect on ways to improve the next online learning session.

Source: Cheema [2] (p. 3).

Academics and students are, thus, facing a new way of interacting with each other. Like all forms of interaction, the online teaching and learning process has its advantages but also some drawbacks. Above all, it is a challenge for all involved. Traditional strategies no longer work in this new setting, and HEIs, academics and students have to adapt to change, so as to move forward to a distance educational process that is the “new normality” [3].

Overall educational institutions, and in particular HEIs need to reinvent themselves and reshape the learning and teaching process. This complex, yet urgent need encompasses, according to Darling-Hammond, Schachner, and Edgerton [41], 10 key areas that HEIs have to address so as to achieve transformational, equity-oriented and quality learning (Figure 2).

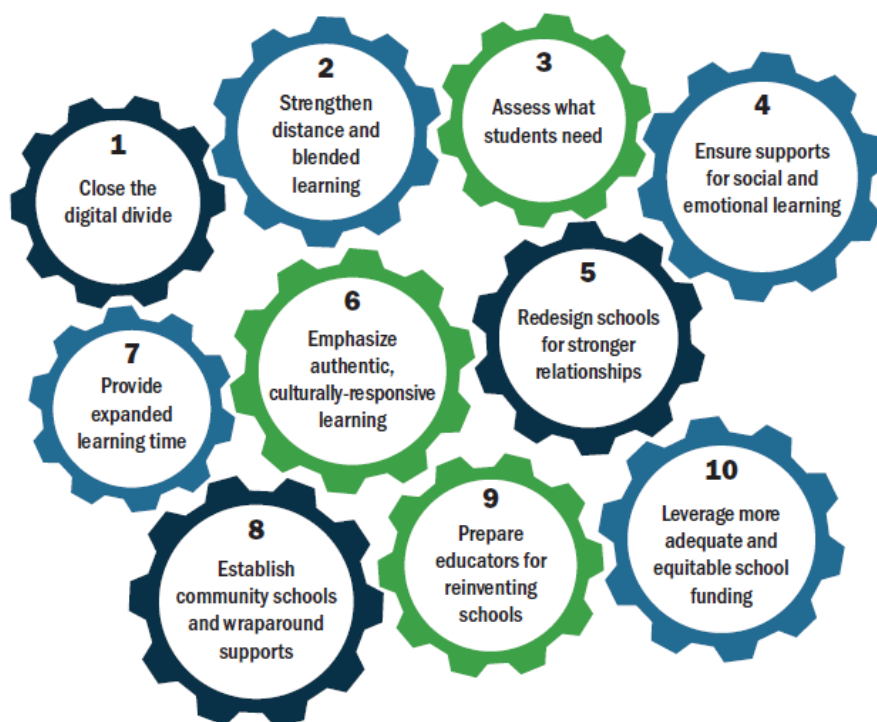


Figure 2. A Framework for Restarting and Reinventing School. Source: Darling-Hammond et al. [41] (p. 3).

With the shutting of HEIs’ campuses at a global scale and the shift of all learning, teaching, and assessment from traditional face-to-face delivery modes to online learning and teaching, HEIs, as fundamental education providers, have faced and are still facing the great challenge of adapting and reshaping their educational strategies, techniques and tools. For many of them, this may be the ultimate test on their ability to survive and strive amidst these turbulent times.

4. Conclusions

This piece of research sought to analyze the most recent scientific publications and provide insights on the COVID-19 pandemic envisaged as an opportunity to improve sustainable development in higher education, so to attain its central goal, which is to understand and make known the consequences of the COVID-19 pandemic specifically in higher education. The literature on this topic widely acknowledges that higher education needs, in the context of the COVID-19 pandemic, to reinvent itself. It is about improving sustainable digital development in higher education with profound challenges to be faced and overcome by those HEIs that want to put themselves at the forefront of success in the international educational market.

As an implication, it may be ascertained that, as a transformative process, the COVID-19 pandemic may have created the conditions to ease adherence to new processes that foster sustainable development in higher education, in its individual actors (such as students, academics and higher education managers) and collective actors, as well as stakeholders (either government entities or private financiers). In this respect, Leydesdorff and Etzkowitz [42] (p. 285) advocate that “the knowledge-based economic regime has made the distinction between *laissez faire* and active-state intervention obsolete: governance nowadays means codifying high-quality selections that set free new areas of activity as zones of recombination”.

However, this process, while requiring a predisposition of the actors involved to be successful, will take place within a framework defined by the leadership, by the top of the pyramid, both in HEIs and in governments, which it directly refers to in terms of law compliance. Such a framework that potentiates this change, in its entirety and without being naïve or concealing the difficulties inherent in a shift in individual, collective and organizational cultural, may be created, which encompasses the various dimensions of the HEIs’ action: teaching, research, and service to the community, adding to the progress of society [43–46]. However, teaching will, predictably, be one of the primary functions that define higher education, with the application of the digital to foster sustainable digital development in this educational level through collective learning, considering different national and international contexts [47].

In the current challenging scenario caused by the COVID-19 pandemic, the answer to the issue of determining the fundamental role of education may be that the whole educational system, and specifically the higher education one, needs to engage in and commit to a transformational process. Education has to question its own role in these troubled times, notably in promoting a fair, equitable and sustainable society for all. It is the role of education to permanently question the whole notion of sustainable development as the right path to follow, instilling in its students the will to “create new visions and paradigms to make this world a better place” [48] (p. 4). Surely there is no “one-size-fits-all” solution, but aspects such as training, internet access infrastructures, hardware and software, digital literacy, and teaching and learning strategies for students and academics will be critical in this transformation.

This perspective paper seeks to add to the analysis of the COVID-19 pandemic, envisaging it as an opportunity to foster the sustainable development of teaching in higher education. Thus, it intends to offer insights to be developed and furthered in future scientific works with distinct scopes (research paper, review, essay, etc.), aiming to understand this potential phenomenon, while concurrently providing contributions for policy implications, so that this process may be achieved effectively and efficiently. The authors allow themselves to conclude this perspective paper with Seneca’s immortal words: “If one does not know to which port one is sailing, no wind is favorable”.

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References

1. Sá, M.J.; Serpa, S. The global crisis brought about by SARS-CoV-2 and its impacts on education: An overview of the Portuguese panorama. *Sci. Insights Educ. Front.* **2020**, *5*, 525–530. [CrossRef]
2. Cheema, M.S. Covid-19 revolutionising higher education: An educator's viewpoint of the challenges, benefits and the way forward. *Life Sci. Med. Biomed.* **2020**, *4*, 1–6. [CrossRef]
3. Tesar, M. Towards a post-Covid-19 'new normality?': Physical and social distancing, the move to online and higher education. *Policy Futures Educ.* **2020**, *18*, 556–559. [CrossRef]
4. Aristovnik, A.; Keržič, D.; Ravšelj, D.; Tomaževič, N.; Umek, L. Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Preprints* **2020**, 2020080246. [CrossRef]
5. Geng, Y.; Zhao, N. Measurement of sustainable higher education development: Evidence from China. *PLoS ONE* **2020**, *15*, e0233747. [CrossRef] [PubMed]
6. Nicolae, M.; Nicolae, E.E. Development, competence and performance—Who does what in higher education? *Proc. Int. Conf. Bus. Excell.* **2017**, *11*, 332–338. [CrossRef]
7. Abad-Segura, E.; González-Zamar, M.-D.; Infante-Moro, J.C.; Ruipérez García, G. Sustainable management of digital transformation in higher education: Global research trends. *Sustainability* **2020**, *12*, 2107. [CrossRef]
8. Kalkan, Ü.; Altınay Aksal, F.; Altınay Gazi, Z.; Atasoy, R.; Dağlı, G. The relationship between school administrators' leadership styles, school culture, and organizational image. *SAGE Open* **2020**, *10*, 1–15. [CrossRef]
9. Flick, U. *Métodos Qualitativos na Investigação Científica [Qualitative Methods in Scientific Research]*; Monitor: Lisbon, Portugal, 2005.
10. Lalanda-Gonçalves, R. O Documento nas Ciências Sociais: Construção e Contextos Sociais [The Document in Social Sciences: Construction and Social Contexts]. In Proceedings of the Anais do 3.º Colóquio Internacional da Rede MUSSI “As transformações do documento no espaço-tempo do conhecimento” [Proceedings of the 3rd International Colloquium of the MUSSI Network “The transformations of the document in the space-time of knowledge”], São Salvador da Bahia, Brazil, 10–12 November 2014.
11. Biblioteca do Conhecimento Online. What is B-ON? Available online: <https://www.b-on.pt/en/what-is-b-on/> (accessed on 1 September 2020).
12. SCILIT. Available online: <https://www.scilit.net/> (accessed on 5 September 2020).
13. Santos, J.V.; Gonçalves, G. Organizational culture, internal marketing, and perceived organizational support in Portuguese higher education institutions. *Rev. Psicol. Trab. Organ.* **2018**, *34*, 38–41. [CrossRef]
14. Serpa, S. An overview of the concept of organisational culture. *Int. Bus. Manag.* **2016**, *10*, 51–61.
15. Warter, L. The impact of organizational culture in higher education. Case study. *J. Intercult. Manag. Ethics* **2019**, *2*, 173–200. [CrossRef]
16. Gebretsadik, D.M. Impact of organizational culture on the effectiveness of public higher educational institutions in Ethiopia. *Int. J. Leadersh. Educ.* **2020**, 1–20. [CrossRef]
17. Caliskan, A.; Zhu, C. Organizational culture type in Turkish universities using OCAI: Perceptions of students. *J. Educ. Cult. Soc.* **2019**, *10*, 270–292. [CrossRef]
18. Berisha, H.; Mustafa, S.; Ismail, Y. Strategy as practice: An organizational culture approach in a higher education institution in Kosovo. *J. Educ. Soc. Res.* **2018**, *8*, 37–50. [CrossRef]
19. Ozcan, O.; Ozturk, I. Impact of organizational culture and leadership styles on employee performance: A research study on the banking industry. *Pressacademia* **2020**, *7*, 45–55. [CrossRef]
20. Caliskan, A.; Zhu, C. Organizational culture and educational innovations in Turkish higher education: Perceptions and reactions of students. *Educ. Sci. Theory Pract.* **2020**, *20*, 20–39. [CrossRef]
21. Dolamore, S.; Richards, T.N. Assessing the organizational culture of higher education institutions in an era of #MeToo. *Public Adm. Rev.* **2020**. [CrossRef]
22. Murunga, E.S.; Karugu, J.E. Organizational culture and strategy execution at commission for university education, Kenya. *Int. J. Curr. Asp.* **2019**, *3*, 76–90. [CrossRef]
23. Cameron, K.S. Domains of organizational effectiveness in colleges and universities. *Acad. Manag. J.* **1981**, *24*, 25–47.

24. Bonisenha, C.N.; D'Angelo, M.J. O papel da cultura organizacional no desempenho operacional de uma instituição de ensino superior à luz dos indicadores de qualidade SINAES [The role of organisational culture in the operational performance of a higher education institution in the light of SINAES quality indicators]. *Base Rev. Adm. Contab. Unisinos* **2018**, *15*, 307–327.
25. Leydesdorff, L.; Etkowitz, H. The Triple Helix as a model for innovation studies. *Sci. Public Policy* **1998**, *25*, 195–203.
26. Lawton Smith, H.; Leydesdorff, L. The Triple Helix in the context of global change: Dynamics and challenges. *Prometheus* **2014**, *32*, 321–336. [[CrossRef](#)]
27. Bohunovsky, L.; Radinger-Peer, V.; Penker, M. Alliances of change pushing organizational transformation towards sustainability across 13 universities. *Sustainability* **2020**, *12*, 2853. [[CrossRef](#)]
28. Ruiz-Mallén, I.; Heras, M. What sustainability? Higher education institutions' pathways to reach the Agenda 2030 goals. *Sustainability* **2020**, *12*, 1290. [[CrossRef](#)]
29. Yalina, N.; Rozas, I.S. Digital workplace: Digital transformation for environmental sustainability. *IOP Conf. Ser. Earth Environ. Sci.* **2020**, *456*, 012022. [[CrossRef](#)]
30. Kuzma, E.L.; Doliveira, S.L.D.; Silva, A.Q. Competências para a sustentabilidade organizacional: Uma revisão sistemática [Competences for organisational sustainability: A systematic review]. *Cad. EBAPE.BR* **2017**, *15*, 428–444. [[CrossRef](#)]
31. Brudermann, T.; Aschemann, R.; Füllsack, M.; Posch, A. Education for sustainable development 4.0: Lessons learned from the University of Graz, Austria. *Sustainability* **2019**, *11*, 2347. [[CrossRef](#)]
32. Andriushchenko, K.; Buriachenko, A.; Rozhko, O.; Lavruk, O.; Skok, P.; Hlushchenko, Y.; Muzychka, Y.; Slavina, N.; Buchynska, O.; Kondarevych, V. Peculiarities of sustainable development of enterprises in the context of digital transformation. *Entrep. Sustain. Issues* **2020**, *7*, 2255–2270. [[CrossRef](#)]
33. Obukhova, A.; Merzlyakova, E.; Ershova, I.; Karakulina, K. Introduction of digital technologies in the enterprise. *E3S Web Conf.* **2020**, *159*, 04004. [[CrossRef](#)]
34. Metternicht, G.; Mueller, N.; Lucas, R. Digital earth for Sustainable Development Goals. In *Manual of Digital Earth*; Guo, H., Goodchild, M., Annoni, A., Eds.; Springer: Singapore, 2019; pp. 443–471.
35. Van Genderen, J.; Goodchild, M.F.; Guo, H.; Yang, C.; Nativi, S.; Wang, L.; Wang, C. Digital earth challenges and future trends. In *Manual of Digital Earth*; Guo, H., Goodchild, M., Annoni, A., Eds.; Springer: Singapore, 2019; pp. 811–827.
36. Gomez Zermeño, M.G. Massive Open Online Courses as a digital learning strategy of education for sustainable development. *J. Sustain. Dev. Energy Water Environ. Syst.* **2020**, *8*, 577–589. [[CrossRef](#)]
37. Záklasník, M.; Putnová, A. Digital society—Opportunity or threat? Case studies of Japan and the Czech Republic. *Acta Univ. Agric. Silv. Mendel. Brunensis* **2019**, *67*, 1085–1109. [[CrossRef](#)]
38. Putri, S.A.; Mirzania, A.; Hartanto, D. The importance of a transformational leadership model in managing organizational culture. *J. Leadersh. Organ.* **2020**, *2*, 49–56. [[CrossRef](#)]
39. Gosling, J.; Bolden, R.; Petrov, G. Distributed leadership in higher education: What does it accomplish? *Leadership* **2009**, *5*, 299–310. [[CrossRef](#)]
40. Leal Filho, W.; Eustachio, J.H.P.P.; Caldana, A.C.F.; Will, M.; Salvia, A.L.; Rampasso, I.S.; Anholon, R.; Platje, J.; Kovaleva, M. Sustainability leadership in higher education institutions: An overview of challenges. *Sustainability* **2020**, *12*, 3761. [[CrossRef](#)]
41. Darling-Hammond, L.; Schachner, A.; Edgerton, A.K.; Badrinarayan, A.; Cardichon, J.; Cookson, P.W., Jr.; Griffith, M.; Klevan, S.; Maier, A.; Martinez, M.; et al. *Restarting and Reinventing School: Learning in the Time of COVID and Beyond*; Learning Policy Institute: Palo Alto, CA, USA, 2020.
42. Leydesdorff, L.; Etkowitz, H. Emergence of a Triple Helix of university-industry-government relations. *Sci. Public Policy* **1996**, *23*, 279–286.
43. Sá, M.J. 'The secret to success'. Becoming a successful student in a fast-changing higher education environment. *Eur. J. High. Educ.* **2020**. Available online: <https://www.tandfonline.com/doi/full/10.1080/21568235.2020.1777445> (accessed on 4 September 2020). [[CrossRef](#)]
44. Sá, M.J.; Machado-Taylor, M.L.; Carvalho, T. "Learning to fly". Higher education students' and institutional leaders' perceptions of the relevance of institutional support mechanisms in their integration process. In *The Three C-s of Higher Education. Competition, Collaboration & Complementarity in Higher Education*; Pritchard, R., O'Hara, M., Milsom, C., Williams, J., Matei, L., Eds.; Central European University Press: Budapest, Hungary, 2019; pp. 151–166.

45. Sá, E.; Dias, D.; Sá, M.J. Towards the university entrepreneurial mission: Portuguese academics' self-perspective of their role in knowledge transfer. *J. Furth. High. Educ.* **2018**, *42*, 784–796. [[CrossRef](#)]
46. Compagnucci, L.; Spigarelli, F. The Third Mission of the university: A systematic literature review on potentials and constraints. *Technol. Forecast. Soc. Change* **2020**, *161*, 120284. [[CrossRef](#)]
47. Serpa, S.; Sá, M.J.; Ferreira, C.M. Organizational learning culture in effective improvement of educational organizations. *Int. J. Educ. Organ. Leadersh.* **2020**, *27*, 47–68. [[CrossRef](#)]
48. Wolff, L.-A. Sustainability education in risks and crises: Lessons from Covid-19. *Sustainability* **2020**, *12*, 5205. [[CrossRef](#)]

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