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Universities and Policies for Science and Higher Education

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Abstract

Envisaging universities of the future requires taking into account the speed of change and faster transformational processes that characterise contemporary societies. To succeed in such a scenario, individuals must have the ability to continue learning throughout life. Lifelong learning is closely dependent on a general, broad, non-specialised initial training. Higher education and science institutions face the ongoing challenge of the pedagogical and curricular organisation of their courses and training programmes, responding both to the need for generalist vs. specialised skills, and the need for lifelong training. At the root of such dynamics are the principles of autonomy and freedom to teach and undertake research, followed by a virtuous balance of openness to society and the incorporation of certain issues on the scientific agenda (social, economic, technological, public health, etc.). Taking the multilevel impact of the current COVID pandemic as a starting point, this chapter reflects on universities of the future and their role within the 2030 Sustainable Development Goals framework.

Keywords

University; Post-Covid Universities; Policies for Higher Education and Science

Bios

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Universities and Policies for Science and Higher Education

Introduction

Envisaging universities, science and higher education policies demands a brief reflection upon the current situation and the effects of Covid-19. The crisis caused by the pandemic has generated great uncertainty regarding the future, especially the near future. Public debate about this, including what universities will be like, is dominated by utopian and dystopian visions and scenarios about how our lives and institutions will change. This applies primarily to the most economically developed societies and is seen by many as a great opportunity for transformation.

Regardless of the interest of such debates, future uncertainty and assessments of different crisis response policies, now is the time to reflect on what we know and beyond doubt. The crisis has revealed serious problems that are invisible to the public. It has shown weaknesses, as well as strengths that have allowed us to protect public health and preserve the economic and social fabric. We must reflect on what we already know and draw conclusions to facilitate recovery and face the near future.

In addition to public health problems, the Covid-19 pandemic caused crises due to the necessary restrictions on business and social activities, generating highly complex economic, social and political problems. It has also uncovered "forces" and solutions that have been mobilised by different institutions and actors, including universities. When this crisis is eventually over, the

OECD report, *The state of higher education. One year into the COVID-19 pandemic* recommends that universities and “policy makers re-examine their established educational and policy models. New policy measures and institutional choices are needed to make more innovative use of blended provision for traditional student populations, to offer new credentials fitted to mature learners focused on re-skilling and up-skilling; to achieve a balanced and sustainable internationalisation; and to ensure that the funding of higher education is robust to disruptions and equitable to all learners" (OECD, 2021, p.3).

In this chapter, we will comprehensively analyse the problems demonstrated or aggravated by the pandemic crisis. We will also examine the "forces" that made it possible to face them, identifying the way in which universities, directly or indirectly, were challenged and were able contribute to solutions. Based on this analysis, which is intended to be transnational but is undertaken from the perspective of an EU country such as Portugal, we imagine the university of the future, or the future with universities. Undoubtedly, this will involve some rupture and innovation, as well as continuity. "New" public policies should be effective, providing higher education institutions with the tools to continue fulfilling their mission.

Universities during the COVID crisis

The Covid-19 crisis has revealed or aggravated numerous social and economic problems which, although not new, did not figure on the public debate agenda, nor were they top priority for the authorities and public policy.

Firstly, the crisis has demonstrated how territorial and socioeconomic inequalities impact access to communications, as well as technological and informational means. This dramatically

affects the educational opportunities of thousands of young people, who have been excluded from distance learning.

Secondly, a deficit of investment in digital technologies and the modernisation of educational institutions led to a scarcity of resources (computers, network connections) to meet the demands of distance learning for students, teachers and educational institutions. It also meant that some teachers lacked the skills to use technology for pedagogical purposes effectively, as well as a dearth of pedagogical and didactic content in digital format.

Thirdly, the crisis highlighted a lag in the digital transition process in most companies and public administration bodies. This is evident in areas such as the dematerialisation of processes, the organisation of teleworking, or competencies when using digital technologies, especially in non-routine contexts.

Fourthly, and particularly pertinent to Portugal, a serious external vulnerability was discovered that stemmed from the Portuguese economy's dependence on the tourism sector and excessively concentrated markets. Another critical problem in most countries has been the negative effect on long logistical chains and the dependence on delocalised suppliers of essential goods and products within a poorly regulated global division of labour.

Finally, the crisis has highlighted the frailty of certain sectors and accentuated traditional inequalities between manual/face-to-face work (industry, catering, tourism, hospitals and health services, nursing homes and social work, agriculture, fishing, etc.) and more skilled intellectual or service work. Inequalities also determined levels of exposure to risk, be it health protection, lockdowns, income or unemployment.

The analysis of how institutions, organisations, companies, employees, workers and professional bodies have responded to lockdowns, and the suspension of most face-to-face

activities, makes it possible to identify the success factors of those same responses. The main "strength" of all success factors is related to the contribution of higher education institutions. As the European University Association states in one of its reports (EUA, 2021), universities are fundamental pillars for social change, creating common spaces for sharing and joint production of knowledge. Universities provide forums to experiment with new ideas, alternative knowledge, while also establishing links with society and other social agents, with whom it is important to create synergies.

Universities' true nature and capacities have been demonstrated in their responses to the crisis. The more robust the scientific and higher education system, the more effective these responses have been. The national health systems showed solidity in terms of capacities, resources, organisation and mobilisation, including public health monitoring, information processing and follow-up. That said, nowhere in the world are health systems designed to face public health crises, and differences in response stemmed from various factors, such as quality of staff performance, capacity and competency in planning and organisation, mobilising resources, supervision and information-based monitoring. In the decades preceding the crisis, it was universities' ongoing commitment to training health professionals, as well as producing knowledge and information that made more fitting responses possible. Equally, responses to the crisis were shaped by the quality and quantity of staff and leaders working in companies, as well as central and local public administration. These professionals were trained by universities in different areas, such as teaching, research, information and communication technologies, and the management of projects and organisations during emergencies.

Another decisive factor in response to the crisis has been the capacity of internationalised scientific systems to produce and disseminate scientific and technological knowledge in life and

health sciences, applied digital sciences and technologies, as well as social and behavioural sciences. Given the diversity of the problems generated by the crisis, all knowledge areas have been called upon to find answers, with collaborative and multidisciplinary work within national and international networks being key.

Furthermore, the availability of digital communication infrastructures in all territories was essential, as it allowed large flows of data and communications to be processed. Higher education institutions' capacity regarding technological means and ICT use for distance learning and networking was crucial to fulfilling their mission, in stark contrast to what often happened in basic and secondary education. In fact, despite all the limitations and difficulties, higher education institutions responded more quickly and effectively to the challenges of compulsory distancing, mobility issues and distance learning than other educational institutions.

Finally, another important factor has been the capacity to adopt public policies based on knowledge, information and coordinated negotiation at the level of different institutions, sectors and bodies. Once again universities and scientific institutions played a vital role.

With no precedents in modern and contemporary history, the nature of the current crisis is particularly challenging. However, even in a situation of great uncertainty, an analysis of the problems generated, the success factors of responses and the scientific knowledge available points to future paths.

Building the future with universities

When we talk about the future - competences for the future, the future of universities or the future with universities -, it is important to remember that the future is constructed daily, and does not

exist as a separate entity from the present. It will always be the result of multiple actions and decisions taken today, based on what we want but also on what we have already learned and know.

As such, it is important to underline that the core objectives of any actions or decisions taken will continue to be the democratic foundation of our political institutions, improving all citizens' living conditions, reducing social and economic inequalities, widespread access to education, information and knowledge. The values of democracy, freedom, the rule of law, equal opportunities and the preservation of the dignity of all citizens will remain widely shared and essential to the organisation of future societies. As such, the mission of universities, as stated in the report *Thinking Higher and Beyond* (UNESCO, 2021, pp.13-20) is and should remain the promotion of the well-being of populations globally, economic and social development, public good and cooperation within their internal and external eco-systems. Universities can promote disruptive thinking and change in regional and global development paradigms with a view to sustainable futures for the good of humanity. Research must address new challenges and respond to new problems, creating new knowledge to inform public policy.

These premises will be important to build a future with universities, braving paths of innovation and continuity. An analysis of Portugal's experience and a review of recommendations from international bodies (OECD, EUA and UN-SDG) has made it possible, with an eye to the future, to produce a list of 10 science and higher education policy measures that support recovery during this decade and beyond, namely:

1. Consolidating and empowering national health systems, improving organisation to ensure quality and sustainability. Health professional training and integrated teamwork should be top of the list of higher education policy priorities. Universities are key players in overhauling

health professionals' training and work organisation, ensuring it is more comprehensive, multidisciplinary, collaborative and interdependent.

2. Continuing to fund and develop scientific systems to produce and disseminate knowledge, boosting researcher training and scientific employment with incentives for collaborative work and multidisciplinary research. Mechanisms to stimulate collaborative and multidisciplinary work in research should be revisited with regard to science policy. Equally, the quantity and quality of human resources in science are decisive in any crisis. Bearing in mind current social and technological dynamics, particularly the development of digital technologies, universities need to adjust their structure, function, organisation, knowledge production, research and teaching to be more fit for purpose. In terms of knowledge production, one of the challenges of scientific research is creating interdisciplinary overlap, which generally results in innovation and new knowledge. Such discoveries may never have been reached without such interdisciplinarity and cooperative work, where the contributions of social sciences and humanities are also key (EUA, 2020_a; UNESCO, 2021, p. 22).

3. Training graduates at first and second cycle levels, as well as executives, in the private and public sector, continues to be a priority. In addition to this, changes in demand for higher education in the different education cycles should be monitored, thus anticipating possible interruptions due to families' economic difficulties. As far as training courses and programmes are concerned, the development of distance learning platforms and the production of teaching content in digital format must be supported, with priority - in the case of Portugal - given to the Portuguese-speaking areas of the globe, which includes over 260 million citizens. Given the foreseeable continuity of restricted international mobility, producing distance learning degree courses will broaden access to higher education, boost Portuguese as a language of knowledge and meet the

demand and expectations of international students from Portuguese-speaking African Countries (PALOP) and Brazil.

The challenge of promoting inclusive internationalisation, as proposed by Nath Varma (UNESCO-IESALC, 2021, p. 40), in which "big, renowned universities should offer networking with universities in less developed countries as a compulsory requirement, so that the students in less developed regions are not left behind, and for the world to benefit from the skills and knowledge of a wider network of learners" is fully appropriate here. Identical guidelines can be found at EU level, in the recent European Universities Initiative regarding the Erasmus+ programme. Here, it is expected that established or yet-to-be-created inter-university alliances should become part of geographically balanced institutions that are complementary, inclusive and expand internationalisation by enhancing, among other combinations, cooperation through virtual mobility (European Commission, 2020, p. 134; EUA, 2020-b). The university of the future will, in all its aspects, be an international university, physically as well as virtually (Rüland, 2021)

4. Providing much-needed multi-level training for professionals and executives in data science and applied digital technologies. It will be necessary to support and stimulate innovation in this field, so that skills in data analysis, statistics, computer science and programming can become more widespread and disseminated to all knowledge and activity fields. The challenge will be changing the paradigm from training excessively focused on engineering to training that concentrates on solving problems that arise from the application, use and appropriation of digital technologies (i.e., customisation, interoperability and security of systems and data). Issues of digital transition are found in all disciplinary areas, however, for there to be more inclusion and participation, there needs to be sharing, diffusion and dissemination of digital technology knowledge among young people and adults. Particular attention must be given to the participation

of women in these new and emerging areas of professionalisation, addressing gender equality Sustainable Development Goals to close the gender gap divide (Mlambo-Ngcuka, 2016).

5. Launching policies to support digital transformation processes in small and medium-sized companies, as well as in public administration, facilitating the digitalisation of processes and products. Developing new feasible and sustainable ways of teleworking that complement face-to-face work requires staff training and the creation of competence centres within institutions that link universities to companies and public administration. Also, teleworking regulation must consider the specific situation of women (especially women with children of school age), so that their participation in public life is not affected.

6. Supporting municipalities and local authorities to develop management plans for natural and public health risks, including strategies to strengthen the sustainability of local production and other territorial resilience strategies. Universities can play a key role in this endeavour. As stated in the UNESCO report (2021, pp.19-20), universities, when defining their mission, should allow themselves to be shaped and influenced "by the cultural, historical, social, political contexts of where they are", developing programmes aligned with the local setting. They should interconnect with primary and secondary education, as well as promote lifelong learning. This means being proximity policy vehicles, remaining without walls, open and committed to the communities of which they are a part (Idem, *ibid.*; EUA, 2021).

7. Launching programmes to equip schools and families with technology (hardware, connections and content) and train teachers and trainers how to use platforms, content and teaching methods specific to distance learning. As stated in the OECD report (2021, p. 37), the use of digital technologies in universities offers great opportunities for "transforming teaching and learning practices (e.g., virtual teaching, experimental learning, real-time assessment); widening access to

non-traditional learners, reducing instructional costs; improving opportunities for student and teacher collaboration; and expanding individualised and adaptive instruction”. Such opportunities require universities "to commit to the development of a next-generation learning environment, which may include large-scale investments in hardware and software, revisions to academic contracts and workload models, sufficient time and training for teaching staff, and adopting pedagogical and assessment approaches to the new digital environment" (Idem, *ibid.*).

8. Supporting teacher and trainer training for primary and secondary education using a new format that includes digital competences, and which is completed with an in-service, paid placement. The training of new generations of teachers, like health professionals, is the responsibility of higher education institutions. Their vision of the new profiles and challenges of basic education should be subject to permanent analysis and updating.

9. Encouraging and supporting university initiatives to create online degree courses, as well as the conditions for their accreditation. It is important to stress, however, that the essential part of training at universities should be provided face-to-face. Students seem to show "a clear preference for face-to-face teacher-student interaction (...)", not being willing to invest "time and money to study exclusively online. These students go to universities to meet great people, to have inspiring conversations with faculty, to collaborate with researchers in the laboratory and to experience the social life in the campus" (OECD, p. 4). To meet these students' expectations, universities must create learning environments in which digitisation gains prominence and largely complements, but does not replace, the relationships between students, and between students and teachers" (*idem, ibid.*). Indeed, face-to-face interactions, which create networks and foster interpersonal experiences, are of paramount importance and cannot be replaced by exclusively virtual communication. As Rüländ (2021, p. 11) states: "The younger generation deserves the

chance to get to know each other personally, build intercultural skills, meet people in a foreign country, learn about different perspectives, develop trust and networks and all the benefits deriving from physical mobility".

10. Creating monitoring mechanisms and consolidating social support programmes for students in difficult economic situations to prevent further inequality regarding access to higher education. Faced with potentially higher levels of unemployment, public financial support may be geared towards qualifications. To this end, it is important to design higher education for all, giving everyone the right to higher education, in which each student is "enabled to develop their full potential, so they may put their own life project into practice" (UNESCO, 2021, p. 20). Recognising higher education as a human right, it should be inclusive regarding a student's gender, ethnicity, age and socio-economic situation. Flexible, creative and inclusive programmes should be designed for those most vulnerable. To this end, it is also important to establish a mentoring scheme to support students and encourage better integration into the academic setting (idem, p. 21), meeting the Sustainable Development Goals with regard to inclusive and equitable education, as well as lifelong learning for all (UN, 2015; OECD, 2016).

Conclusion

Firstly, when considering competences for the future, one must remember that contemporary societies change very quickly, making it impossible to predict and plan the specific competences required in the medium and long term. To succeed in such a scenario, individuals must have the ability to continue learning throughout life, which is dependent on general, broad, non-specialised initial training; this is entirely dependent on universities' capacity to provide decisive experiences for students to continue learning throughout their lives.

Universities are cornerstones of social change, creating common forums for sharing and joint knowledge production. They offer space to experiment with new ideas, alternative knowledge, while establishing links with society and other social agents, with whom it is important to create synergies. "The higher education learning experience will nurture and enable the development of learners as creative and critical thinkers, problem solvers and active and responsible citizens equipped for lifelong learning. It will kindle curiosity and creativity and support personal development through familiarity with the scientific method and the traditions of human knowledge and commitment to evidence-based discourse." (EUA, 2021).

However, both now and in the future, there is a need for general and specific skills, which causes tensions and problems for pedagogical organisation and syllabus design. There is a need for highly specialised and complex competences acquired through intensive work over time. This very specific knowledge (e.g., doctors specialising in certain surgical interventions) coexists with the multidisciplinary and comprehensive competences that facilitates the interdisciplinary dialogue needed to solve complex problems. Higher education and science institutions face the constant challenge of pedagogical and curricular organisation in which they must respond to the need for generalist vs. specialised competences, while responding to the need for lifelong learning.

Secondly, the development of knowledge and higher education and science institutions allows us to identify dynamics of anticipation, innovation and adaptation to the future, which should be encouraged. These dynamics are undoubtedly inspired by the principles of autonomy and the freedom to research and teach, providing a virtuous balance of openness to society while making social, economic, technological and public health issues part of the scientific agenda. "Academic freedom plays little or no role in university rankings, yet makes all the difference between a thriving academy and regime-controlled higher education. Adjusting a well-known

university ranking to include academic freedom easily shakes out "top" universities under totalitarian regimes. If our values are due more than lip service, then the current system of university rankings is in urgent need of reform." (Holz, 2021, p.3). It is Holz (idem, ibidem) who quotes Robert Hutchins: "a university cannot exist without freedom of enquiry, freedom of discussion, and freedom of teaching," and that "the purpose of education is not to fill the minds of students with facts; it is not to reform them, or amuse them, or make them expert technicians in any field. It is to teach them to think, if that is possible, and to think always for themselves."

Higher education and science institutions also face the ongoing challenge of keeping their doors open, renewing their links with business institutions and their commitment to the local communities, without giving up the hard work of producing knowledge as an end in itself. As the Magna Charta Universitatum (2020) advocates, "universities acknowledge that they have a responsibility to engage with and respond to the aspirations and challenges of the world and to the communities they serve, to benefit humanity and contribute to sustainability." Furthermore, that "intellectual and moral autonomy is the hallmark of any university and a precondition for the fulfilment of its responsibilities to society. That independence needs to be recognised and protected by governments and society at large and defended vigorously by institutions themselves." By putting these premises into practice, universities fulfil their mission and pave the way to the future.

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