



University setting and infrastructure for the people's well-being: Universidad de Guadalajara in the face of the pandemic

Ricardo Villanueva Lomeli¹, Paola Lyccette Corona Gutiérrez^{2*}, Rafael Serrano González²

¹Av. Juárez No. 976, Edificio de la Rectoría General, piso 11, Col. Centro, C.P. 44100, Guadalajara, Jalisco, México

² Pedro Moreno No. 966, Col. Centro C.P. 44100, Guadalajara, Jalisco, México

*corresponding author: paola.corona@cgpe.udg.mx

Article Info

Received:

14 March 2022

Accepted:

25 May 2022

Published:

30 June 2022

DOI:

[10.14710/jsp.2022.15482](https://doi.org/10.14710/jsp.2022.15482)

Selected papers from the 7th International (Visual) Workshop on UI Greenmetric World University Rankings (IWGM 2021)

Abstract. From the beginning of the COVID-19 pandemic in Mexico, the University of Guadalajara (UdeG) placed its infrastructure, — particularly schools, laboratories, research centers and institutes, and departments related to the areas of health and human resources— at the service of civil authorities and the population in general. Before any other public university in Mexico, UdeG implemented and published measures to prevent COVID-19 infections, which began with the suspension of public meetings and face-to-face activities, and the installation of a Health Situation Room, and which continued with the Enabling of the Active COVID-19 Detection System, the reconversion of the Civil Hospitals of Guadalajara, until reaching the Design of the Vaccination Plan, to name a few. The objective of this article is to describe how actions related to the management of the university environment and infrastructure not only put the largest state public university in the country at people's service as never before, but also about how we have been forced to reconceptualize the mission and vision of higher education based on the needs identified during the pandemic, from a humanistic, integrative, unitary, global and interdisciplinary perspective.

Keyword:

COVID-19, universities, setting and infrastructure, health sciences, innovation

1. Introduction

At the beginning of March 2020, the world started to realize itself at the edge of an unprecedented event. The size of cities and their populations, as well as the arrival and speed of spread of the SARS-COV-2 virus determined the response given to back away its

effects. In Jalisco, a state in Western Mexico, the response of its flagship higher education institution was largely expected, but probably not imagined as the altogether heartwarming-on action social plan it resulted to be. The SARS-COV-2 pandemic led the University of Guadalajara (UdeG), one of the largest public and autonomous university networks in Mexico, to make the most out of its global vision and strong commitment to society.

A tradition of constant innovation and quality has made UdeG one of Mexico's leading institutions of higher education. The University of Guadalajara is conformed as the University Network of Jalisco with 16 university centers or campuses, a Virtual University System, and a High School Education System, where 310,845 students enrolled in vocational, high school, undergraduate, and graduate academic programs throughout the state.

Naturally, its influence and repercussion in local and national education cannot be understood without the partnership and goodwill that the University has rooted with external social actors, such as federal public institutions, state and municipal governments, private companies, and associations of parents and graduates. In this fraternal and effective spirit of dialogue and good treatment with different sectors, as well as with the members of the university community, who in a horizontal leadership practice [1] made it possible to listen to and incorporate different opinions and points of view regarding action plans to meet the institutional mission and offer solutions to the global challenge.

2. Institutional infrastructure in action for people's good

In the case of the University of Guadalajara, the institutional experience of the pandemic made it possible for a large number of academics to become familiar with digital platforms and online courses. As it happened in most of the academic communities around the world, an aspect that facilitated the continuity of tasks related to substantive functions was to take the dramatic curves of digital evolution and adopt virtual educational environments in full swing as the only option to continue with academic life.

In this way, traditional functions of teaching and research prevailed on track thanks to virtuality, but it was a bigger pending task to maintain knowledge transfer, the extension of culture and healthcare services programs available to the students and the public. At this critical point, actions were undertaken in collaboration with federal and state authorities, with the private initiative and organizations of civil society, to prevent and counteract the effects of the COVID-19 pandemic among members of our community and citizens in general.

For example, the *Health Situation Room*, which continues in operation to this day, was installed with the active participation of researchers, hospital managers, and educational and government authorities. Its main purpose relies in communicate opportunely to the university community, and the population in general, the characteristics of the COVID-19 disease, as well as the most appropriate methods for its prevention and care.

The above allowed UdeG to implement and make of public dominion, measures to prevent COVID-19 infections—before any other public university in the country—, among which stand out the suspension of public meetings as of March 15th, 2020, and suspension of face-to-face activities and academic events in high schools and university centers as of March 17th, 2020.

Indoors, the institution was aware that taking care of the UdeG community should be considered as a priority for the sake of institutional life. It was determined that the

vulnerable population within the University offices (older than 60 years, pregnant women, and workers with compromised health conditions due to some other previous illness) would adopt the modality of remote work, while for the parents responsible for the care of minors, reduced working hours and staggered schedules were designed, among other initiatives.

Not only for the UdeG community's sake but also for the society in general, an *Active COVID-19 Detection System* was launched by the University of Guadalajara, the Civil Hospitals of Guadalajara (HCG), and the State Government of Jalisco. It was coordinated in order to apply PCR and antigen diagnostic tests to the population with a potential risk of having contracted the virus, with 10 laboratories across Jalisco: 5 in the Guadalajara Metropolitan Area (ZMG) and 5 in the interior of the state. Altogether, the 10 Molecular Biology units, all certified by InDRE¹, have an installed capacity of 840 daily tests. As of June 2021, more than 145,000 tests were applied between these and another 5 units specialized in antigen tests. The modalities of application included drive-thru and at-home service.

Without a doubt, one of the most innovative and outstanding actions in which UdeG trusted its capacities and infrastructure was the *Reconversion Plan for the Civil Hospitals of Guadalajara*, to make the 2 medical units able to serve COVID-19 patients. On a regular day, the hospitals can count around 2,800 visits, adults and children included [2].

This ambitious and challenging plan was carried out as a response to the number of positive contagion cases reported at the state level in the first stage of the pandemic. It was implemented under the guidelines of the COVID-19 Hospital Reconversion Plan issued by the National Health authorities, which implied the expansion of the installed capacities to have the equipment and personnel necessary to provide timely care to patients infected with the coronavirus. In particular, it was implemented to guarantee the adequate operation of the substantive areas with isolation barriers and defined transit routes to avoid approaches between patients, as well as training in biosafety and special equipment for personal protection. The hospitals' adaptation and equipment of spaces to meet the demand for clinical care by COVID-19 reflected in a capacity of 191 hospital beds, 96 beds in the Intensive Care Unit, and 96 volumetric ventilators in the 2 Civil Hospitals of Guadalajara [3].

Moreover, as an additional effort to decrease possible infections, a *Call Center* was enabled by the University of Guadalajara in the facilities of the Public Library of the State "Juan José Arreola" to provide advice and permanent channeling to the population regarding the virus [4], and attending around 185,000 calls by volunteer staff.

One of the most applauded and better-welcomed initiatives among the people was the *Voluntary Isolation Center for COVID-19*, given the fact that this center was opened in the Hotel Villa Primavera, which is part of the University Business Corporation of the University of Guadalajara. Before its start-up, it was estimated that each positive case infects three family members or friends, and that 70% of infections occur at home. In each hosted positive case that cannot be handled well at home but does not require hospitalization, chains of contagion were cut, minimizing the risk between relatives and avoiding saturation of the local hospital system. In total, 99 rooms, 20 suites, and 53 cabins were allocated; 100 employees gave their support in the areas of food, maintenance, and cleaning, containing

¹ Spanish acronym for Instituto de Diagnóstico y Referencia Epidemiológicos (The Institute of Epidemiological Diagnosis and Reference, "Dr. Manuel Martínez Báez"), This is the institution dependent on the Ministry of Health of Mexico, in charge of the diagnosis, control, reference, research and technological development for the surveillance of epidemiological diseases.

an estimated 34,408 chains of contagion.

3. Knowledge and technology transfer

On the other hand, research gave more than data and possibilities of tracking the pandemic's behavior. | Our researchers developed a *mechanical ventilator* for the treatment of COVID-19 and other respiratory diseases, and at the request of CONACyT², a protocol was created to evaluate the mechanical ventilators currently being developed in the country. The University of Guadalajara was the only institution in the country authorized to officially conduct the evaluation protocol, due to its capabilities in human resources and infrastructure. [5]

In addition, several *webinars* have been broadcasted on topics of general interest, including physical health, mental health, and wellbeing. Only in the last year, over 45 *webinars* have been transmitted all through the institution's TV channel and social networks. In parallel, UdeG put these communication capabilities in service of the strategy of the Ministry of Public Education to transmit educational content in support of the imminent beginning school year for basic and secondary levels. Besides the mandatory classes that students must take, TV programs, radio spots, and information campaigns for the detection and prevention of the virus were daily transmitted.

Furthermore, the institutional capacities in service above described, the University of Guadalajara worked in close collaboration with other higher education institutions, among which the Massachusetts Institute of Technology (MIT) stands out. This partnership consisted of a *tool developed through machine learning* (automated learning): a system that will be able to recognize the voice and characteristic sounds of healthy people and those with coronavirus disease. With this, a diagnosis could be generated through a smartphone, and for free. The development of this innovative experiment has made it possible to make decisions based on scientific knowledge from the update of the epidemiological scenario of COVID-19 in the state of Jalisco.

As well, a *CoV-19 diagnostic kit* for the identification and semi-quantification of the Sars-Cov-2 genome was developed, in parallel with a *COVID FLU diagnostic kit* whose mission is to simultaneously diagnose SARS-Cov-2 and Influenza A and B. The Institute for Epidemiological Diagnosis and Reference (InDRE) *confirmed the presence of the E484K mutation and the Brazilian variant P.2*, detected by academics from the University of Guadalajara and GENES2LIFE.

Another critical implementation was the *Oximeters Loan Program*, which was launched for COVID-19 positive cases, to monitor, in a non-invasive way, the levels of oxygen saturation in the blood of these patients. Through this program, 1,980 devices were acquired and assigned for those in need and were isolated at home.

On the other hand, in order to contribute to the economic reactivation of the state, the University of Guadalajara created *Mercadito Vecino*³[6], a web platform which aims to encourage local consumption through solidarity purchase across the different municipalities of the state of Jalisco. As of June 2021, *Mercadito Vecino* has more than 50,700 registered businesses and more than 348,650 visits.

² Spanish acronym for Consejo Nacional de Ciencia y Tecnología (National Council of Science and Technology). This is Mexico's federal entity in charge of the promotion, government policies, and scholarships for scientific and technological activities, as well as for completing postgraduate studies.

³ Spanish for "Neighboring Little Market".

Final but not least important was *RÉPLICA*, a computational model of geographic concentration created to measure the impact of crowds linked to daily activities on the behavior of epidemics in urban areas. With the appearance of the COVID-19 pandemic, the model was updated with information from the Guadalajara Metropolitan Area on possible points of population concentration, such as businesses, hospitals, and schools, in order to make simulations and generate reliable and useful information for managing the health crisis.

4. Students at the heart of the institutional mission

Likewise, initiatives were developed both to alleviate the psychological discomfort of the members of our community produced by the isolation and fear that caused the initial lockdown, as well as to show solidarity with those students with difficulties in accessing Internet connection. In addition, food support was given to those who had financial difficulties to make it through the financial constriction due to the economic impact of the virus.

For example, the *Psychological Support Line* was available to those in need of someone to talk to when feeling discomfort and anxiety. Similarly, UdeG supported students to go through virtual training processes, implementing the *From Home* program, through which 1,000 laptops and 500 electronic tablets were loaned, to avoid school desertion due to lack of resources. Through the *Help Others to Stay Home* program, more than 60,000 grocery packages were delivered to students from 174 schools [3] across the university's network. This action was part of the "Jalisco without Hunger" strategy, promoted by private initiative, civil society, and the state government.

Like countless schools and universities across the globe, the University of Guadalajara has not been able to reopen fully its educational spaces, counting to this date 3 school calendars inaugurated during the pandemic in a virtual way. This has led the institution to adopt severe institutional *measures so that aspiring first-time entrants* will carry out their procedures remotely, therefore aligning to color-coded risk identification models established by government authorities and diminishing risks of contagion and disease when Jalisco is coded in high-risk phases.

5. Vaccination Plan Design

In order to contribute to the immunization of the Mexican population, UdeG made available for the federal government its infrastructure and members of its community as volunteers to join the biological application phase. This, in accordance with the provisions of the National Vaccination Policy against SARS-CoV-2 for the prevention of COVID-19.

In such a manner, the University Network was transformed into a network of vaccination all across the state by putting at the service of the population 18 vaccination points, 75 vaccination certificates, and 4,304 registered and trained volunteers, with remarkable participation of the following educational undergraduate programs: Nursing (880), Chemistry Pharmacist Biologist (515) and Surgeon and Obstetrician (698). Overall, it can be remarked that the first drive-thru vaccination point in Mexico was installed in one of the university centers/campuses of the network, and as of June 2021, more than half a million doses have been administered throughout the University of Guadalajara's facilities.

6. Concluding Remarks

Since the pandemic, we have learned to identify more clearly the gaps and challenges to operate training programs in virtual mode, and therefore adopt best practices not only for our community but for the civil society in general. From these first experiences during the pandemic, we emerged stronger and with greater clarity regarding institutional and community needs in aspects such as infrastructure, technological tools, applications, and platforms to manage learning and social services. Our efforts implemented throughout the state to mitigate the propagation of the Coronavirus have made us ask ourselves about the role we play, not only as a leading actor in the national higher education landscape, but also as one of the most notable institutions for sustainable development, technology transfer, and people's wellbeing.

It is clear that we need to learn to manage relevant innovation and governance processes to face unexpected challenges, and to successfully overcome frameworks of constant uncertainty, in the face of which we must promote bold initiatives, always based on scientific knowledge.

We conclude that we are already performing in such scenarios, and as the University Network of Jalisco, the University of Guadalajara must consider it unavoidable to articulate interdisciplinary and transdisciplinary research projects, establish open and shared data policies, and expand cooperation with external agents. Furthermore, it is necessary to strengthen research focused on social needs from a perspective of social responsibility, explore issues in emerging fields of knowledge, and promote permanent innovations around information technologies, as well as new learning strategies in virtual environments.

This paper is a summary of how innovation and best practices can transform not only the settings, surroundings, and facilities across a university, but also confirm the social spirit of a community during the preservation of lives and the tireless promotion of wellbeing: both essential aspects for sustainable development.

As the COVID-19 pandemic has proven, it can be assumed that, in the future, both local and global issues will demand the breaking of disciplinary boundaries, summoning the skills of scientists from various areas of knowledge. Given this fact, more than ever the 2030 Agenda must be considered as part of every institutional commitment within all universities. It is necessary to train professionals and scientists who practice and encourage interdisciplinary perspectives [7], but also to reaffirm ourselves as institutions that capacities and infrastructure are, from now on, on service not only for the training of such students but for their performance as global changing actors.

References

1. John Kotter, cit x Daniel Samoilovich, en "Liderazgo en tiempos de Covid-19". Disponible en: [LiderazgoZenZTiempoZdeZCOVID-19Z-ZSAMOILOVICHZDanielZ-Z04.2020-1.pdf \(unesco.org\)](https://www.unesco.org/document/112100)
2. Hospital Civil de Guadalajara (2021) Available at: <http://www.hcg.udg.mx/>
3. Villanueva, R. (2020) INFORME DE ACTIVIDADES 2020. 1. Identidad y vocacionamiento. Available at http://rectoria.udg.mx/sites/default/files/informe_de_actividades_2020_28junio_1009.pdf
4. En Villanueva, R. *Op. Cit.* p. 24

5. UdeG crea protocolo y evaluó los ventiladores mecánicos hechos en México para pacientes graves de COVID-19. Available at <https://www.udg.mx/es/noticia/udeg-crea-protocolo-y-evaluo-los-ventiladores-mecanicos-hechos-en-mexico-para-pacientes>
6. Mercadito Vecino (2021) Available at: <https://mercaditovecino.udg.mx/>
7. Miguel Román, José Antonio. (04-09-2020). “La educación superior en tiempos de pandemia: una visión desde dentro del proceso formativo”.revista latinoamericana de Estudios Educativos. Vol. 50 Núm. ESPECIAL (2020). <https://doi.org/10.48102/rlee.2020.50.ESPECIAL.95>.
8. Another consulted sources:
9. Coordinación General de Planeación y Evaluación. (2021) Institutional Statistics of the University of Guadalajara. Available at: <http://www.cgpe.udg.mx/content/numeralia-institucional-0>
10. García, G. (2020) Convierten hotel Villa Primavera en Centro de Aislamiento Voluntario por Covid-19. UdeGTV. Available at: <https://udgtv.com/noticias/convierten-hotel-villa-primavera-centro-aislamiento-voluntario-covid-19/>
11. The Role of Universities in Regional Innovation Ecosystems, Sybille Reichert, EUA, March 2019, disponible en: <https://eua.eu/resources/publications/819:the-role-of-universities-in-regional-innovation-ecosystems.html>
12. Villanueva, R. (2021). “Liderazgo y Gobernanza durante la Pandemia y la Pospandemia”, en el marco de la Conferencia Virtual Trienal IAUP 2021.