Horizontal Scaling: How Experience in MOOC Programs Helped a College Strategy in Emergency Response

Norma Scagnoli[a] and Martin Maurer[b]

Abstract

This chapter shares an evaluation of the response to the "emergency remote teaching" situation in March of 2020 due to the outbreak of the COVID-19 pandemic. The authors focus on how capacity building in eLearning rendered positive results internally and allowed for the quick and successful horizontal scaling at the Gies College of Business at the University of Illinois at Urbana-Champaign. They placed specific emphasis on strategies and tactics implemented by the Gies eLearning team to expand their services to all college faculty and students in making a rapid transition to online teaching. A post-implementation analysis explains the implications to this transition on the organization and changes of practices and policies related to scaling online best practices to residential courses and programs.

Keywords: At scale, emergency response, emergency remote teaching, ERT, horizontal scaling

Introduction

The rapid spread of COVID-19 during the spring of 2020 and the sudden end to face-to-face instruction at U.S. campuses has forced many higher education institutions to transition to remote teaching and learning virtually overnight. The Gies College of Business at the University of Illinois at Urbana-Champaign was no exception. However, because Gies had initially invested in eLearning staffing and infrastructure, the college was well positioned to face the challenge compared to schools and colleges which had no internal online learning services and had outsourced their online initiatives to Online Program Management providers (OPM).

The AACSB accredited Gies College of Business currently serves nearly 7,000 students. It hosts over 3,000 students in undergraduate programs and close to 4,000 students in various specialized master's and Ph.D. programs. The iMBA, a fully online MBA program, makes up the lion share of the College's graduate students. It was launched in 2015 in partnership with Coursera and has grown to over 3,200 students to date. It was recently dubbed the "fastest-growing MBA on the planet" by Poets and Quants. Since 2017 the College also offers a fully online MS in Accounting program (iMSA), which has become one of the largest accounting

[a] Northeastern University, n.scagnoli@notheastern.edu, ORCID: 0000-0003-4358-0191
[b] University of Illinois at Urbana-Champaign, maurer1@illinois.edu, ORCID: 0000-0002-0672-7177

master's programs in the country, and in the fall of 2020, Gies added a third online master's program to its portfolio – an MS in Management (iMSM). In addition to the online degree programs, the Gies College of Business also offers a fully online business minor that is open to all students at the Champaign-Urbana campus, and many of its other courses are offered in a blended and flipped format. The Gies eLearning Office played an integral role in the successful launch and scaling of Gies' online programs and the recent horizontal scale needed to develop and support the "move to online" that all residential courses experienced in mid-March of 2020. The office was established in 2006 and consisted only of two full-time staff members. To support the rapid expansion of the Gies online programs, the eLearning Team has grown rapidly over the past years. Today it consists of a large team of over 30 full-time and 20 part-time highly skilled instructional designers, digital media specialists, videographers, and project managers, who partner with faculty to produce high-quality and state-of-the-art online and blended courses. Additionally, the office employs several student workers trained in course support, course production, and contributing to assisting the office's research and evaluation efforts in their constant improvement approach to course design and teaching in business education.

When "At Scale" Became the New Normal

From the perspective of a unit with an infrastructure set up to serve 3000+ learners in the online space, and which has done it successfully every day over the last three years, the response to the "emergency remote teaching (ERT)" (Hodges, Moore, Lockee, Trust, & Bond, 2020) seemed simple. It was about replicating the success of online at scale, hence, it was attainable because of the infrastructure and know-how. The know-how was influential and useful, and reflecting on our experience, we realized that moving away from the traditional online in our at-scale experience, we could provide a fresh perspective and successful response to a residential set-up in an emergency call that needed a quick turnaround.

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Framework

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To evaluate our horizontal scaling efforts, we used the CIPP evaluation model (Stufflebeam & Zhang, 2017), and we analyzed the context, input, processes and products, guided by these questions:

1. How much of our existing resources were necessary to support this transition? What aspects of the institutional context affected the feasibility and effectiveness of the transition? (context)
2. To what extent was our technology infrastructure sufficient to handle the needs of ERT? (input)
3. How did we adapt our processes to respond to such operational challenges? (process)

4. How did feedback from learners, faculty, and support teams inform the results of horizontal scaling, and how could it be used as response to needs in the future? (product)

First, we analyzed how much of our existing resources were necessary to support this transition, and what aspects of the institutional context affected the feasibility and effectiveness of the transition. As shown in Table 1 and Figure 1 below, the equivalent of one instructional designer's time was moved from the full support of online programs to support ERT; one staff time from digital media and one from the learner experience team were also moved to support ERT. Additionally, college staff from public-facing units volunteered or were reallocated to our eLearning unit, so they received training to support students' requests (see Figure 2 for additional tasks assigned).

A quick response by college administrators to eLearning requesting volunteers from units that had staff members with extra capacity was key to achieving effective support. The dean, department heads and directors of different units within the college, including the director of IT, enlisted personnel that were willing or available to get trained and become skilled in managing and triaging online support requests from residential students that were moved online. Their interest in contributing to improving the situation by providing some help was the aspect of the institutional context that affected the feasibility and effectiveness of the transition. About thirty members of the college staff volunteered and were trained to participate in the online support shifts that were going to be launched the first week of classes after Spring Break (mid-March 2020). The staff members were assigned in groups to an eLearning staff mentor who would meet with them once a week for training. In the next six weeks from Spring Break to the end of the semester, student support used staff volunteers and eLearning staff to support students during the weeks that led to the end of the spring term. These staff members were not familiar with online support. The training of the staff focused on the identification, and recognition of the nature of online requests and triage them to experienced personnel with expertise in troubleshooting. Data from the request were collected and used for training and for data collection purposes. The eLearning staff supporting the groups used the data to build information sites based on the frequently asked questions by students in the spring and then in the summer semester.
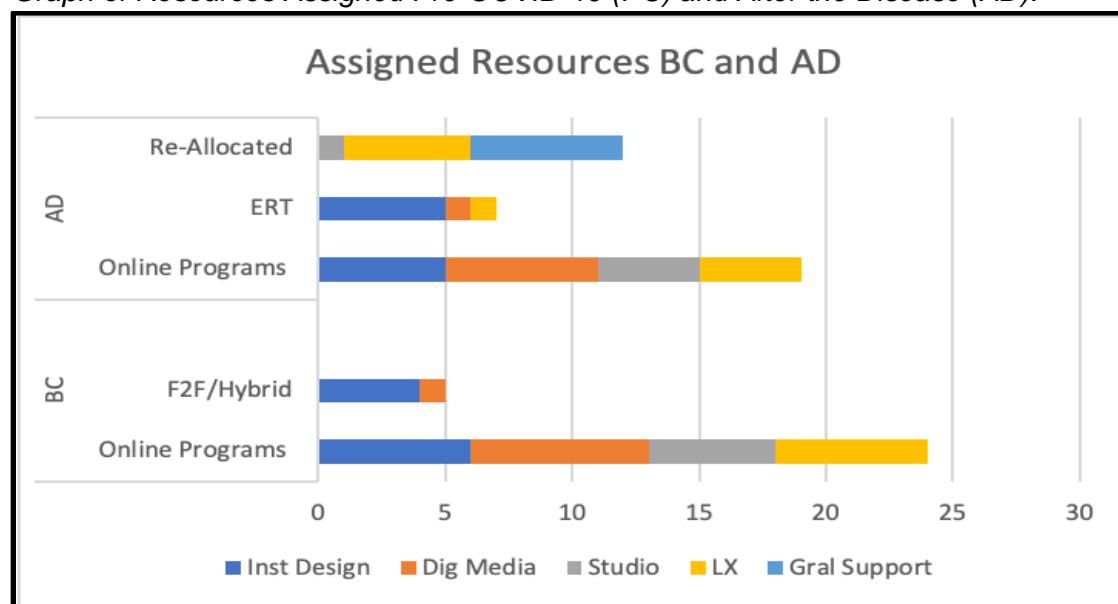
Table 1

Detail of Allocation of Resources Before and After the Emergency Remote Teaching.

Roles	Before Covid-19			After Disease (ERT)		
	Total Staff	Online Programs	F2F/Hybrid	Online Programs	ERT	Re-Allocated
Inst Design	10	6	4	5	5	0
Dig Media	8	7	1	6	1	0
Studio	5	5	0	4	0	1
LX	6	6	0	4	1	5
Gral Support	0	0	0	0	0	6

Figure 1

Graph of Resources Assigned Pre-COVID-19 (PC) and After the Disease (AD).

Emergency Response and Tactics

The rapid response to the transition to remote instruction required leadership, skilled personnel, expertise, and infrastructure.

Leadership: Pilot, Communication, Training, Implementation

Similar to what happens in other situations of crises (UNESCO, IIEP, 2011), creative ideas and interest in problem-solving arose among staff members in the eLearning Office, who immediately assumed leadership of contingency planning processes and communication.

Multiple ideas were discussed, and in a short time, a committee of crisis arose among the eLearning staff community. The experience of the personnel working at scale was evident, and their response to making the horizontal scaling possible was key to this initiative's success. Personnel that was familiar with providing support to massive online courses took the lead to create venues that would enable online synchronous and asynchronous training for teaching or taking classes online. Preparation started in early March with a plan to experiment with remote instruction the week right after Spring Break.

Table 2

Timeline Proposed for Remote Teaching Response

Wk 1 (Orgnztn)	Week 2 (Comm)	Wk 3 (SpringBreak)	Week 4 (Pilot)
Preparation	Town Hall	Training	Pilot / Implement

Contingency planning for residential classes to be moved online at Gies started in early March of 2020. On March 10, the College's Dean held a Town Hall during which he prepared faculty for the most likely of scenarios as a result of the COVID-19 outbreak. By March 9, the eLearning Team had already put in place a detailed support plan for faculty and students and started preparing its staff members for what will most likely go down as one of the busiest weeks of their lives – the week of March 16 – which also happened to be the week of Spring Break. Under normal circumstances, this is a time when many employees and faculty enjoy some time off. Instead, the week became an all-hands-on deck approach that pushed each member of the eLearning staff to their limits.

**Skilled Personnel with Expertise, and Infrastructure**

A decision made five years pre-COVID-19 marked the college readiness to respond to this emergency. To support the rapid expansion of the Gies online programs, the college administration had to make a decision that many colleges face when they are on the verge of growing their online presence: building capacity in house or outsourcing. Gies leadership, after careful assessment of the pros and cons of the two options, decided that having in-house expertise and technology infrastructure would make the response to current and future online initiatives more sustainable. Therefore, creating and supporting a team that would design, develop, and implement online courses was an investment that would match their strategic development. So, the decision was to focus on the capacity development of the existing eLearning Team. In March 2020, the college had skilled personnel to help develop the support infrastructure required for training and implementation of remote teaching starting at the end of

March. A strong infrastructure will provide the sustainability and support that a college needs to maintain the level of quality service in current offerings when a new area of the college requires additional support (Woods, 2020).

During week four, the eLearning office began extending its services that it normally provides to online programs and hybrid and online courses to all residential programs and courses. The services focused on three areas of need: Online Help Desk, Faculty and Student Training, and Support for teaching and distribution of information. The three instances were managed by eLearning personnel with expertise in online learning and online support and staffed with personnel from student services and eLearning. Figure 1 and the paragraphs below illustrate this extended service model.

Figure 2

New Services and Reskilling of Staff Designed to Respond to Remote Teaching Strategy
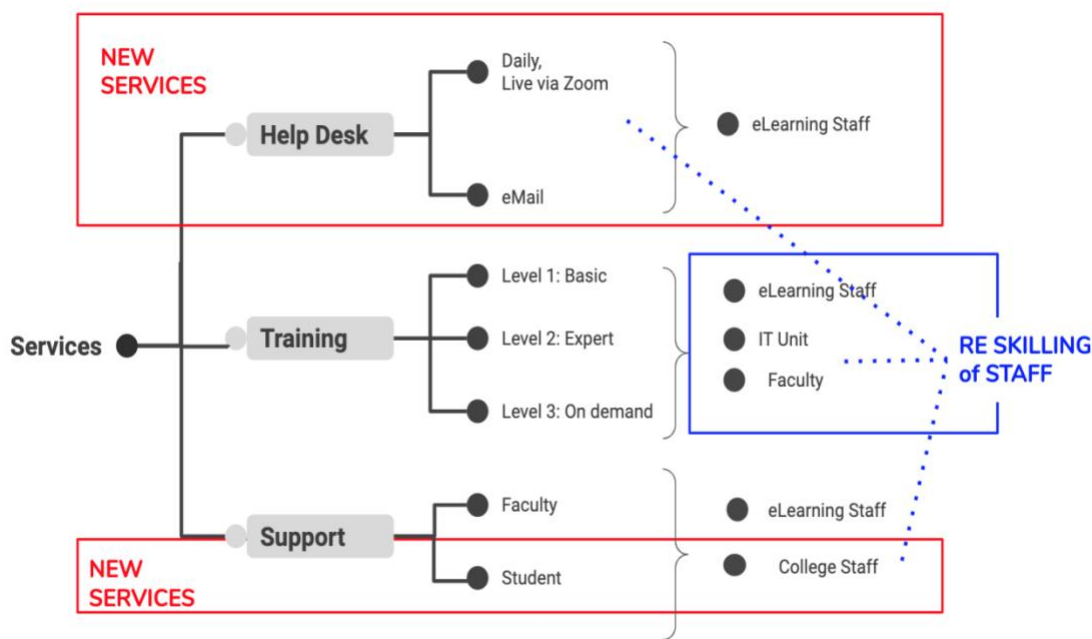
The Online Help Desk was open 9 to 5 every day via Zoom to respond to instructors' questions. The Help Desk was staffed by members of the eLearning Team.

1. Faculty and student training were provided in three ways:

   a. Level 1: Basic Live (Zoom) Training Sessions on topics of interest for faculty who had never taught online and needed to learn the basics to carry on with their teaching. The eLearning office is equipped with trainers and resources for

training faculty. The novelty was that all training had to be conducted online, but we leveraged existing eLearning training materials and staff.

    b. Level 2: Expert Seminars via online training sessions that focused on specific topics and were hosted by experts on those topics, such as faculty with extensive experience teaching online

    c. Level 3: On-demand video tutorials via the eLearning training website for faculty and students and asynchronous communication through emails, forums, and mailing lists.

2. Continuing Support consisted of assistance to faculty and students in their online classes and also in overall support in the diffusion of information via webinars, or Zoom sessions, which were done in collaboration with IT partners and our Marketing and Communications team.

    a. Faculty support. Supporting faculty in online environments is a service that eLearning provides as part of its ongoing offerings. While this service and training faculty were not new for the eLearning unit, it required expansion to a much broader audience. Online help desk and email communication were used for just-in-time and on-demand support.

    b. Student support, on the other hand, was more challenging because the eLearning office was not equipped with the staff needed to serve twice the number of students. The strategy to respond to this challenge was to train existing college staff who had reduced hours because they served the residential students on site. When the college closed, some of their responsibilities were put on hold, allowing the eLearning Office to train and develop staff from other college units to help triage student requests for support. eLearning managed the organization, supervision, and mentoring of the new staff for the six weeks that followed the college lockdown.

Analyzing the extent to which our technology infrastructure was sufficient to handle ERT's needs, we concluded that we met those needs and exceeded the expected outcomes. Moreover, our experience helped us set up a system that served us in the upcoming summer semester and was improved and re-implemented in the fall. It will probably continue in spring and in the future with or without a crisis. We had managed to scale our infrastructure

horizontally, which taught us an essential lesson of better implementation for online and residential users, and the systems will persist "after disease."

Emergency Response Strategies

Following our CIPP evaluation framework, we examined how our processes had to be adapted to respond to new operational challenges at the time of analyzing our processes. Strategically, we determined four areas of importance for the deployment of the services. They included repurposing quality materials for a speedy response; prioritization of resources, identifying talent to train and expanding services; and monitoring deployed services to confirm results.

Quality and Speed of the Response and Deployment of Resources

By repurposing existing resources and infrastructure, quick adaptation and deployment of resources appropriately adapted to the new needs. In the early stages of the process, the value of existing infrastructure and in-house expertise at scale to provide an immediate response to the emergency was evident.

Prioritization in the Deployment of Resources

Use of Experts. To organize and deploy resources in a timely way, the eLearning team experts provided data on the use of resources and FAQs from similar times of the semester in previous years. The type of resources and training needed was determined by the activities that are commonly completed in class after Spring Break, that is six weeks before the end of the semester. Drawing from a database with questions, support and training information, a new training site and a suite of training materials was prepared.

Topic Priorities. The topics were prioritized by seasonal needs and by faculty training needs. By seasonal needs we mean activities that commonly happen at this time of the year. For example, after Spring Break, students usually start working on final group projects or exam assignments. Most faculty did not know how to teach using synchronous tools to monitor and track assignments submitted online. So, the first training sessions focused on faculty and students' presentations in Zoom, student interaction with teams, engaging the class in live sessions, and tracking and grading online assignments.

Synchronous vs. Asynchronous Help. The daily help desk received between 8-15 daily visits by faculty members. To use resources efficiently, the office manager and office assistant served as "receptionists" in the Zoom help desk. After greeting the faculty member and identifying the issue, they would use Slack to call a team member with expertise in the specific questions, and they would be placed in a breakout room so faculty did not have to wait, they

would be sent to breakout rooms based on the topic of consultation. This system allowed for on-demand use of resources.

Online live seminars on the basics and advanced topics to teach online were deployed weekly and recorded. These seminars had been traditionally offered once a month in regular semesters, with an attendance of 5-8 faculty members per session. Now the Zoom-based seminars had an attendance of 20-30 participants every week.

We recorded all online seminars and the interactions with faculty in the daily help desk were recorded and we added the most representative or relevant topics to a video channel called "eLearning Tutorials". The contents of a blog following the recommendations of the type of resources and training needed was determined by the activities that are commonly completed in class after Spring Break.

Identification of Talent to Train and Expand Services

A new strategy was implemented in order to be able to comply with the services proposed without increasing the number of staff members in the eLearning office. The talent was recruited and trained in three fronts, and the volunteers received some "reskilling" training to help under the support and guidance of eLearning experienced staff. As shown in Figure 1, the incorporation of staff followed three groups:

Non eLearning Staff. The eLearning office requested from the college the reassignment of public facing staff who saw their hours reduced because of the campus offices closing. These were not affiliated with the eLearning office, but they had expertise working with students, most of the staff trained were from student affairs or student support offices. They were trained to work with the eLearning ticketing system and help triage requests for help from students.

Re-assignment of elearning Staff. Staff reassignment occurred, for example, by training the office managers to use Zoom to serve as the first point of contact in the daily Help Desk.

Faculty Mentors. Volunteer faculty helped in on-demand requests, seminars, and as point of contact for faculty who wanted to reach out to them for examples or further pedagogical strategies discussion. We invited them via email to join eLearning staff in the Help Desk, they would teach short sessions on key topics. The names of faculty volunteers were listed in the training blog.

Monitoring of Deployed Services to Confirm Results

We defined the reference points for data analytics that would help us monitor the ongoing remote teaching support. The tickets received from faculty and students were two of

those data points. We added three additional data points: faculty interviews; reskilled staff surveys; and students' end of course surveys. The information we collected helped us in the planning and creation of the Summer Teaching Academy and summer student support. Horizontal scaling of our services could not have been possible or successful without looking into the tracking and ongoing evaluation of results.

Implications for eLearning and the College

Lessons Learned

Finally, we assessed how feedback from learners, faculty, and support teams informed the results of horizontal scaling and how it could respond to future needs. Thanks to the feedback collected in surveys, analysis of tickets, interviews with faculty, conversations with administrators, and internal community discussions, the experience assisting large enrollment courses in our MOOC based degrees was critical in the rapid and effective planning and implementation of support in this crisis. The process of horizontal scaling left several lessons learned from our perspective:

The investment *in capacity building* showed its value in this emergency response. We had not considered emergencies when assessing the ROI for developing in-house capabilities to build our online initiatives. By having the infrastructure and resources available, we could respond quickly and effectively, using untapped college resources, reskilling staff, and creating collaboration channels where there were none before.

The *generations of learners* born in the XXI century, such as our undergraduate students in 2020, have more familiarity and confidence in using learning technologies that become evident in the ways they solve common technology issues in their courses. We saw that *self-support* is very common. Students reported that they troubleshoot themselves before asking for help, then asking their networks, and, finally, using the school provided resources when they have exhausted their channels.

Building a *knowledge base with information* that can help feed commonly asked questions, and recommendations should start as soon as possible in normal life in crises. When data is collected and cataloged right, the opportunities for artificial intelligence (AI) systems to help are enormous.

Use as many varieties of *formats to provide help* as possible. If you are recording a video, you need to be aware of text to speech capabilities, so the video becomes text, and the audio becomes sound files that can be enhanced, adapted and deployed separately. Appealing to users' preferences, even when everything is going to be online, makes a difference in users' satisfaction and comfort accessing your training or support materials.

It is important to *maintain focus* and be reminded of the mission of the unit. In spite of the response to the COVID-19 crises, our team did not lose focus on our key strategic objectives of expanding our portfolio of online degree programs and non-credit online offerings. During a crisis response, it is easy to lose sight of strategic priorities that were in place prior to the crises, but we helped launch new courses and a new online degree program in the midst of the crises.

Never underestimate the power of crisis to bring people together and show where the leaders are. From the staff perspective, we learned that the staff in each department, including our own eLearning staff, found this *challenge very rewarding* in the sense that they had the opportunity to interact with and meet new people from the same college with whom they would not have interacted with before; and because they also had the opportunity to show leadership in new areas, where they had expertise, but it was unused before. For example, staff provided support to graduate students, helped design a new structure for undergraduate student support. And because this infrastructure ended up being more modern and proved to be successful, it was later adopted by those who helped create it.

What If…?

We have often wondered what if we did not have the online learning expertise in house, how would we have handled the change? In conversations with colleagues of several institutions, in meetings with our Educause and AACSB counterparts, we learned that those schools that did not have the resources in house followed one of these options:

- They used campus resources, and this seems to be the most common alternative. Those universities that have existing campus resources had the opportunity to highlight their services and expand their customer base, learning more about all units' needs, even those that would not have normally used services for online learning. This shift to remote teaching showed faculty that they have to take more control of their own course design, development, and implementation process. Many faculty in need of support and development demonstrate that colleges and campuses have to consider building capacity for development and support teams that will meet the institutional need to provide instructional continuity.

- As Hodges et. al. (2020) say, "institutions must rethink the way instructional support units do their work" and they should use the lessons of this crisis to make decisions today for the next five to ten years. Being complacent with your achievements at the end of the spring semester of 2020 should not be evidence that the educational community knows how to come together and respond in a crisis. All academic institutions and the members of the academic communities worldwide should be taking responsibility to make sure that everybody plays a role in the instructional continuity in the future.

- Faculty helped other faculty, and they created communities where they mentored each other. The interactions with colleagues at a time of crisis has built networks that faculty members will grow to appreciate and probably maintain. The new nature of interaction when mentoring happens online and in virtual communication channels creates the possibility of lasting relationships that may continue even when faculty members may move to different university campuses in the world. Zellers, Howard, and Barcic (2008) make a point that has been seen in this ERT situation, when "dynamic organizational change, increased specialization and innovation, and the acceleration of technological advances prescribe a new mentoring paradigm in which mentoring relationships are pluralistic and reciprocal" (p.563).

- Schools extended their contracts with their OPMs or others servicing online learning to support the needs of instructional continuity for their residential courses. This move may not be sustainable over time. Schools that used OPMs wanted to get experts' help to be ready to go online soon, and they could move some of the risks to the OPM provider in exchange for a share of the tuition revenue (Zipper, 2016). However, in ERT times, they have to share the revenue of the tuition of previously agreed online courses, but they have to share 100% of all course revenues if schools have all their classes remotely.

From the New Normal to the Future

Having been forced to expand our services from a vertical scale to a horizontal scale and use our resources and infrastructure to assist the whole college in a short time has made us realize that colleges will need ongoing support of units dedicated to educational innovation and faculty development. Our eLearning unit was ready to help but, we were not prepared to work with those who were required, hence not ready or interested in teaching online. The usual drill of showing the possibilities and opportunities of learning technologies to enhance and enrich the teaching in a discipline was no longer an appealing message for the emergency remote teachers. We realized then the need for groups that focus on educational innovations that can help faculty members at all times.

We value the importance of having a "teaching and learning" group that serves each and every college or university. Not just an "eLearning" group, but a unit that will provide leadership in the area of teaching and learning innovations for a particular discipline seems to be the next thing to consider by higher education administrators. The world has become more professionalized, and academic institutions have stayed as is for many years, without considering what is needed "to get their job done" as expected by the society where they are immersed. Colleges expect that instructors will keep up with their research, teaching, and service and apply innovative teaching strategies in their discipline, when they mostly attend

conferences that do not focus on the teaching of the discipline but on their area of research. New teaching strategies become shared word-of-mouth or in a campus conference that is not well attended.

What would it take to start funding an office of teaching and learning in every college or campus? Very few colleges have 'teaching and learning' centers that help the faculty members in the discipline be up to date in learning innovations specific to their area of expertise. Sometimes IT staff are used to help with setting up online classes, but they usually lack the pedagogy skills needed for developing high-quality online courses. Or a willing faculty member or staff member becomes the guru of setting up a teaching strategy for a college, disregarding that the advances in technology and practices make it almost impossible for a part-time or volunteer member to keep up with changes in all areas all the time.

The response to COVID-19 has demonstrated the need to keep up with trends and advances in teaching and learning at the college or unit level. One size does not fit all anymore in teaching and learning, and we have seen that having the expertise in-house has helped move from a vertical and very specific type of service to scale horizontally and serve the whole college.

Conclusion

Capacity building in eLearning was key for the quick and successful horizontal scaling that helped colleges and universities at the outbreak of COVID-19 pandemic in March of 2020. The infrastructure built to support eLearning initiatives proved to be critical to support the response to the crisis. However, the knowledge and experience assisting learners at scale, as in massive open online courses, made a big difference. Our existing resources and processes in place to respond quickly and to large groups helped enormously to support this transition. Not only was our technology infrastructure sufficient to handle the needs of ERT, but the crisis also sparked innovation, and we certainly learned new possibilities for implementation that will change some of the processes we had PC (pre-COVID -19). Forced to interact with other internal groups such as the IT unit and the residential programs support teams, together, we came up with new ways to deploy some of our services. Including managing help desks, collecting information from new ticketing systems, and responding to emergency online requests from a population not ready to take online classes. We adapted our processes and set up new processes based on newly defined priorities. We did all this getting together in multiple meetings as a group, we discussed, proposed, analyzed and set up new rules, new processes and new priorities. The common goal of instructional continuity kept us focused and creative. The feedback from learners, faculty, and our own support teams showed us that what we had

learned in the process of scaling our services had been crucial to enable this horizontal scaling that will probably render processes that will continue to be used in the near future and long term.

Overall, we have learned that colleges and organizations need to sustain and keep training the muscle of educational innovation in their disciplines internally. Hiring good instructors and excellent researchers will not be enough to respond to new educational needs and be ready to keep teaching in crisis times. The exploration and examination of best practices, the readiness to adapt, and the flexibility to respond and meet all constituents' needs have to be an integral part of the mission and vision of colleges and institutions. The so-called *instructional continuity* is the job that society expects an educational institution to fulfill, so investing in the creation and development of resources that will support innovation in teaching and learning internally, is a must. Organizations have to rethink decisions about the physical infrastructure, the new use of physical spaces, the ways in which each institution will address possibilities for hybrid learning, the openness to new ways of teaching, and the new normal for academic and administrative interactions. Those institutions that started at scale are today in a better place to respond. Where is your institution?

References

Davies, L., & Bentrovato, D. (2011). Understanding education's role in fragility: Synthesis of four situational analyses of education and fragility: Afghanistan, Bosnia and Herzegovina, Cambodia, Liberia. *International Institute for Educational Planning. UNESCO*. Retrieved August 19, 2020, from https://unesdoc.unesco.org/ark:/48223/pf0000191504

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). *The difference between emergency remote teaching and online learning*. Retrieved July 18, 2020, from https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Stufflebeam, D. L., & Zhang, G. (2017). *The CIPP evaluation model: How to evaluate for improvement and accountability*. New York, NY: The Guilford Press.

Woods, J. (2020). *A strong online learning infrastructure is key to higher ed's future*. Retrieved September 1, 2020, from https://www.ecampusnews.com/2020/09/07/a-strong-online-learning-infrastructure-is-key-to-higher-eds-future/?all

Zellers, D. F., Howard, V. M., & Barcic, M. A. (2008). Faculty mentoring programs: Reenvisioning rather than reinventing the wheel. *Review of Educational Research, 78*(3), 552-588. doi:https://doi.org/10.3102/0034654308320966

Zipper, T. (2016). *The value of the online program management industry*. Retrieved September 1, 2020, from http://www.uncompromisingedu.com/2016/06/23/the-value-of-the-online-program-management-industry/