

Online Yet More Personal: Professors Respond to COVID-19 Crisis

Fredy R. Rodríguez-Mejía
MEERCat, School of Engineering
Education and School of
Mechanical Engineering
Purdue University
W. Lafayette, IN, USA
fredyrafaelrodriguez@gmail.com

Elizabeth K. Briody
Cultural Keys LLC
Troy, MI USA
elizabeth.briody@gmail.com

Daeyeoul Lee
Teaching and Learning Center
Rider University
Lawrenceville, NJ, USA
ORCID: 0000-0003-1111-9691

Edward J. Berger
MEERCat, School of Engineering
Education and School of
Mechanical Engineering
Purdue University
W. Lafayette, IN, USA
bergere@purdue.edu

Abstract—This article represents a Work in Progress. COVID-19 pandemic has affected the way we conduct our lives across different segments of society. Higher education’s organizational activities were rearranged as instructors and students were forced to switch from in-person to online and hybrid class activities. We examine how COVID-19 reshaped teaching at an engineering school in a large, public research university in the U.S. Midwest. In our earlier studies (during the pre-COVID-19 era) we found that faculty culture prioritized research over teaching. We also discovered that students avoided interactions with their instructors for several reasons, including the perception that their professors were too busy. Still, a professor’s role at a research university involves teaching one to two courses per semester. With the advent of COVID-19, one of the many emerging crises in higher education was that instructors were largely unprepared to teach online and were left scrambling to adjust. Our most current research revealed that instructors had to develop proficiency quickly in various technologies to enable them to pre-record lectures, offer help sessions remotely, and design and administer exams. The learning curve was steep and led to a significant increase in instructor preparation time. This rearrangement of activities seems to have influenced professors’ attitudes since they placed higher emphasis on quality of teaching, devoted more time to interacting with students outside class sessions and were more flexible in terms of students’ academic challenges.

Keywords—Distance teaching, faculty cultural change, COVID-19, crisis adaptation.

I. INTRODUCTION

The COVID-19 pandemic has propelled society to re-arrange itself in creative and unexpected ways. Education constitutes one of the social arenas that needed to implement significant changes to its *modus operandi* to maintain some sense of normalcy especially for instructors and students. While preliminary reports have begun to examine how engineering educators have responded to the COVID-19 pandemic in matters such as instructional impact, research, finances, productivity and personal well-being [1] [2], more time is needed to get a clearer picture of if and how cultural change in education settings has occurred as a result of COVID-19.

Our goal was to examine how COVID-19 reshaped teaching at a large, public research university in the U.S. In the pre-COVID-19 era, the increasing diversity with “very high research activity” [5] reinforced the high value tied to research relative to teaching. In our earlier research we discovered that students avoided interactions with their instructors for several reasons, including the perception that their professors were too busy [6]. Still, a professor’s role at a research university involves teaching one to two courses per semester. With the advent of COVID-19, two crises emerged. The first, related to public health, led to a state-wide shutdown of all but essential services (e.g., grocery stores, hospitals). Since one crisis can lead to one or more others [7] the combined effect can be both complex and unexpected. The second crisis, that instructors were largely unprepared to teach online, left them scrambling to adjust. This new pattern of distance teaching continued throughout the summer session.

II. LITERATURE REVIEW

A. Crises and Their Management

Business scholars, among others, have studied crises, events that negatively affect “the whole of an organization” [7, p. 34]. Neither the cause of the crisis, nor the appropriate response to it, may be known or understood by all of the organization’s stakeholders [8, p. 6]. Nevertheless, crises should be addressed as quickly as possible, with communications extended both internally to organizational members or employees and externally to relevant publics.

Because “any crisis is capable of setting off any other crisis,” multiple crises may be in play simultaneously [7, p. 38]. Bernstein (2011, 2) identifies types of crises, two of which are relevant. In “creeping crises,” foreshadowed events are not viewed as contributing to a pattern and little preparation for interruption of activities occurs. The U.S. response to COVID-19 is one such example. “Sudden crises,” as the name implies, appear quickly; damage is incurred and stakeholders seek a response [9]. We liken this crisis category to the successive changes that took place in higher educational systems as mandatory lockdowns got underway. Indeed, the lockdown was the “trigger event” [8, p. 6] that put in motion

“emergency remote teaching” [10] and numerous other follow-on crises for individuals associated with universities.

B. Adjusting to New Social Realities

As a roadmap that informs people’s realities, behaviors and decisions, culture plays an intrinsic role in how people adjust to social changes. Ratten (2020:510-11) has argued, for example, that “culture influences the behavior of individuals and how they act in a collective manner...[in this sense], culture is viewed as a way to understand shared meaning systems” [11]. With a focus on organizations, organizational culture includes the “signs and symbols, shared practices and underlying assumptions” of a given organization [12, p. 1737]. When significant changes occur in the organizational environment, organizations are compelled to re-adjust their culture to work within emerging “environmental realities” [12, p. 1737]. In the same vein, other scholars have written about people’s ability to cope, culturally, in times of crises. For example, with a focus on cultural identities, Guan et al. (2020) argued that identities can be “activated by relevant cues to help individuals adapt to the changing situational demands” [13, p. 3]. Understanding the role of culture during crises, can “provide important guidance for individuals to develop a more flexible and adaptive way to cope with...emerging challenges” (13, p. 3).

C. Emerging Technical Demands During COVID-19

In the realm of teaching, many faculty members across the nation have focused their energies adapting to “digitally enabled” teaching strategies; others continued to teach without using technology tools. A related issue, as described by Bowles & Sendall (2020) emphasizes the importance of educators moving “beyond the fads of the latest educational technology to a robust discussion about creatively engaging with student perspectives and learning preferences” [14, p. 157]. COVID-19 affected both issues and led to the surge of “emergency remote teaching,” involving the use of fully online formats. Considering that emergency remote teaching provides students with access to instruction—whether synchronously or asynchronously—it has been difficult for many faculty members to offer a high-quality course during a crisis [10].

Some studies have focused on the development of effective teaching methodologies during social distancing restrictions. An important consideration for successful digitally-enabled instruction is maximizing simplicity, communicating frequently with students, and being more flexible in terms of performance expectations [15]. Technical proficiency is another key consideration for a successful transition to distance teaching. In a study that examined both faculty and students’ reactions to the online-teaching and learning transition, Roy & Covelli (2021, 11) found that the transition was easier for individuals who were somewhat proficient and comfortable with online teaching and learning settings [16].

Once new content delivery methods are designed and implemented, students begin to adapt to new forms of learning. Sadid-Zadeh’s (2020) study examined the insights of presenters and participants of a series of 81 virtual lectures. Over 96% reported being satisfied while 79% of the audience

indicated that the virtual lectures “were as effective as traditional classroom lectures, or more effective” [17, p. 1].

D. Increasing Evidence of Technology’s Benefits

Although the transition to online or distance teaching and learning has been challenging for many students and instructors, the increased connectivity provided by online tools has enabled some universities to bring students, alumni and industry personnel together via platforms like Zoom [18]. Since the late 2000s, universities have been emphasizing the development of online teaching tools and platforms. As Appana (2008) indicated, “There are many rationales for offering and investing in online education, ranging from increasing access, to improving the quality of learning, to reducing costs, to preparing students better for a knowledge-based society” [19, p. 5]. Other studies have emphasized the increase in student enrollment in online graduate programs which offer students the opportunity to work with each other despite geographic distance [20].

The role of teaching at undergraduate institutions in relation to other elements of university culture (e.g., research) has been examined by some seminal works [21], [22] that call into question the “publish-or-perish” model that dominates R1 institution culture. Thus, the expansion of teaching opportunities afforded by new digital technologies has the potential to reinforce the central role of teaching in university culture (Barnes et al., 2018).

We present our preliminary results on how the pandemic-related restrictions for in-person teaching led instructors to teach differently. Our research questions were:
RQ1: How did instructors respond to the new teaching conditions they faced?
RQ2: What effect did the instructional changes that instructors made have on their role in the university?

III. DATA AND METHODS

This research is part of a five-year study about organizational-culture change in an Engineering School (ES) at a large, public university in the U.S. Midwest. Our ethnographic methods involved a combination of approaches (i.e., interviews, focus groups, documents, surveys, observation) [24], [25]. Here we examine responses from individual interviews and focus groups. From June – July 2020, we interviewed all 11 of the instructors teaching ES summer courses. The interview on teaching experiences was divided into four segments: 1) prior to spring 2020, 2) during spring, 3) during summer, and 4) expectations beyond summer. Our questions pertained to prior familiarity with distance teaching, resources used, workload, synchronous vs. asynchronous teaching, concerns expressed, and lessons learned. The average interview length was 58 minutes. Among the sample were eight tenured faculty members and three lecturers.

IV. RESULTS

Our initial findings are suggestive; we expect more insights to emerge as we continue to analyze our data. We have identified two salient findings: 1) contextual adaptation to distance teaching formats based on individual circumstances; 2)

increased instructor attention to the quality of teaching and learning. These findings are situated within the period of time transitioning to and during the pandemic. Before COVID-19, instructor time was minimized when teaching materials had been previously developed and when instructors were able to respond to any student concerns (and resolve these concerns) during in-person class sessions. Furthermore, at least half of the faculty members interviewed were already using a “flipped classroom” teaching methodology wherein students are given access to online materials and class meetings are devoted to discussion.

A. Responses to Distance Teaching based on Individual Circumstances

When social distancing requirements compelled universities to make the switch to distance teaching, many instructors faced significant challenges. The majority of the faculty interviewed (at least 80%) reported an increase in workload related to setting up virtual meetings, responding to student concerns via e-mail, and figuring out the best way to deliver discussion and problem-solving sessions. Moreover, factors such as prior technical experience, parenthood, health conditions and language barriers influenced different faculty members’ decisions to adopt different teaching strategies. For example, some instructors chose to implement asynchronous teaching formats because their health conditions would have made it too risky for them to plan hybrid (i.e., in person and remote) sessions. However, if they did not have prior experience recording class material, they found the process challenging and time consuming. Some instructors sought out another professor for specific advice and mentoring on the technology – someone who had previously taught online global courses. Others spent significant time recording their lectures to eliminate any accidental errors. As one faculty member indicated: *“I think...recording things is definitely a challenge compared to in-person, because...it’s just easier to...recover from mistakes when you’re in person and therefore it’s less of a concern of messing something up...”*. Similarly, instructors whose native language was not English had to be extra careful when recording their presentations and even sought technical support to make their recordings more professional. As one lecturer indicated: *“I cannot deliver information, the content and the technical information at the same speed as native speakers...the point I’m trying to make is that in the regular semesters, I try to overcome that with more and better interactions, personal interactions in the classroom...so I feel like I could overcome those kinds of areas having better interactions at office hours and even classroom interactions”*. Other instructors had young children, so it was easier for them to record lectures on their own time and make them available for students rather than follow a traditional live teaching schedule.

B. Increased Instructor Attention to the Quality of Teaching and Learning

Most members in our sample had to develop remote teaching proficiency quickly in various technologies to enable them to pre-record lectures, offer help sessions remotely, and design

and administer exams. The learning curve was steep and led to a significant increase in instructor preparation time. The centrality of teaching became evident in various changes implemented by instructors. First, they made themselves more available for students when students needed help. One faculty member said: *“I offered many additional office hours so that the students had as much access to me as possible based on my other time commitments.”* Another instructor indicated that due to increased opportunities to meet virtually, students began to attend office hours more regularly and *“ask questions more freely [during these sessions]”*.

Second, instructors expressed greater flexibility in terms of their academic expectations of students. One faculty member explained that *“It was okay to relax a little bit in terms of academic rigor and to really put focus on, Are they doing okay? Are we all doing okay? Are we all staying connected?”* Another professor indicated: *“[it was important to be] fair...at the same time being compassionate—that students could be experiencing challenges”*.

Third, instructors sought feedback from students and implemented changes. One professor stated, *“[I sought feedback by] sending additional surveys, getting feedback. I had an FAQ to-do list that...they could anonymously submit questions through and I would address those”*. Another instructor said, *“I think that’s part of what has made me a successful instructor...is just the ability to adapt and adjust and take in their feedback and they see that I’m using it and I value it”*.

Fourth, instructors worked closely with teaching assistants (TAs) to maximize adequate class content delivery. One faculty member indicated: *“I told the TAs to actually sort of take care of them [students] when they do meet and then try to accommodate [them] as much as possible—ask them questions with how they’re doing. If the time has to be changed because of time zone we can do that.”* Another instructor offered, *“In addition to making it a group project, I also required them to...have a WebEx meeting with the TAs weekly, which again helped with that connection, making sure that they were at least talking to each other at least once a week”*.

Allocating time to design engaging teaching approaches was a fifth change in instructor behavior. Faculty members used a combination of reflection time, discussion boards, live problem-solving sessions in-class, and interactive tutorials. One professor stated: *“I want students to reflect in real times [sic] in corona. And I give them time, so if the question is posed, we take 10 minutes [to] write down their thoughts, and then they crystallize them as much as they can in a given time, and then they talk. So, it is the interactive dialogue”*. Another professor said: *“my style has been to write things with them, solve problems with them so that they can ask me questions”*.

A related result was the professors’ involvement with research during summer 2020. Of the 11, only two individuals freely indicated that they engaged in research. We know that at least five of the remaining nine did not conduct any research—due to their ES administrative or teaching roles. In general, we suspect that research output was low because

campus laboratories were closed due to the pandemic. In addition, teaching preparation time increased significantly as this individual stated: *“I spent much more time/effort considering student interactions and fostering student engagement (both during class and with each other). Looking ahead, I feel my teaching has improved, having experienced/survived the last year + of altered class delivery”*.

V. DISCUSSION

We start with RQ1: How did instructors respond to the new teaching conditions they faced?

The crisis experienced in ES seems to have refocused attention on the fundamental element of university life: teaching [21], [22]. Members of our sample reported spending their work hours teaching or preparing to teach. Much of this time, of course, was connected to learning and using the various technologies in order to teach [10]. As the pandemic-induced crisis impacted the organizational culture of ES, faculty members activated the teaching aspects of their cultural identity to adapt to fluctuating “situational demands” [13] and new “environmental realities” [12].

However, the adoption of “emergency remote teaching” [10] among ES faculty reveals a high level of variation. Those who had prior experience with distance teaching technologies expanded their knowledge base and use of the available technologies. For example, the delivery of their lectures was highly polished and produced in a studio setting. There they had access to multiple cameras making the integration of video clips, the professor speaking, and white board problem solving seamless. By contrast, other instructors were either not able or chose not to access such resources. Similarly, while some instructors sought and/or contributed to an ES lessons-learned document related to distance learning teaching tips, others never tapped that resource. These differential behavior patterns indicate that adaptation was not monolithic. While instructors had no option but to engage in the distance teaching mandate, their accommodation of it was a function of individual circumstances and their prior experiences with distance teaching. Our study helps make explicit that crisis response may be “successful” from the standpoint of delivering a course using distance teaching methods, though the preparation and quality of that delivery had the potential to be far less successful in terms of student learning.

Another critical aspect involved the time instructors devoted to students and their ability to learn the course material. There was an outpouring of concern by instructors for their students—in an effort to ensure that the students were coping with the effects of the pandemic as well as the distance teaching format. Instructors sought to maximize connectivity between themselves, students, and TAs. The sentiment was much more about the “whole” person rather than the mastery of the course content. Several instructors increased their interactions with students (e.g., additional virtual office hours, more emails) and expressed greater flexibility in terms of performance expectations—all of which are considered intrinsic to the success of “digitally enabled instruction” [15].

RQ2: What effect did the instructional changes instructors made have on their role in the university?

The university switch to distance learning had the effect of compelling instructors to allocate more time to their teaching obligations. The technologies were in place, as were the levels of connectivity that facilitated more opportunities for interaction with students [18]. Not in place, among most of our sample, was the expertise required to apply these technologies effectively. A significant amount of instructor time was devoted to becoming proficient in the use of these technologies. (While we are unable to assess the impact of COVID-19 or the subsequent shutdown on faculty research, we can say that no one in our sample mentioned research activities during the interview.) Currently, it is unclear if this ability to use and apply new technology in distance teaching will endure; it is contingent on several factors including 1) routine technology integration into course content, 2) continued expansion of a global curriculum, 3) instructor choice, 4) university administration decisions about the relevance of crisis preparedness in the university’s future.

VI. CONCLUSION

As we continue to move forward with a potential return to in-person teaching in the upcoming academic year, the organizational culture changes at ES have offered some lessons. 1) Teaching has gained prominence during the COVID-19 pandemic, but it remains to be seen whether this emphasis will continue after the crisis. Many instructors continue to be uncomfortable with distance teaching and would prefer to revert to their prior in-class courses. Crisis management experts would advise an all-instructor proficiency strategy in distance teaching to reduce future risks. 2) Teaching was possible because of online technology which forced instructors to learn how to master at least some of its functionalities quickly so that they could fulfill their university obligations. Universities had this option available and in use prior to COVID-19. From both a cultural change and crisis management perspective, distance teaching with its various technologies should be expanded and strengthened or universities will not be able to address similar future crises. As Mitroff (2001:127) pointed out, “the fatal error is not to learn from previous mistakes.” 3) As some instructors expressed concerns about their students’ ability to cope during the pandemic, they put strategies in place to maximize both their and their students’ abilities to complete the course successfully. Instructors and their students seemed to pull together to deal with both the unexpected and the frightening. Indeed, we had the sense that the professors took on a kind of protective role, in loco parentis, because of the enormous pandemic challenge and its consequences for teaching and learning. Organizational culture changes such as the one experienced by ES during COVID-19 contributed to some unexpected modifications in instructor behavior that speak to human adaptability in moments of crises.

ACKNOWLEDGMENTS

We are thankful for our participants' willingness to interview with us during a time of hectic teaching changes. Their perspectives and actions helped us understand and identify important cultural changes at ES during a pandemic-induced crisis.

This research was supported by the U.S. National Science Foundation under Grant No. 1519412. For one author (EJB), this material is based upon work supported by (while serving at) the National Science Foundation. Any opinions, findings, and conclusions expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

REFERENCES

- [1] "COVID-19 and Engineering Education: An interim report on the community response to the pandemic and racial justice". American Society for Engineering Education. 2020. https://ira.asee.org/wp-content/uploads/2020/10/COVID-19-Interim-Report-Final_Sept2020.pdf Accessed May 15, 2021.
- [2] "Engineering Education in the Time of Covid". National Society of Professional Engineers. 2020. <https://www.nspe.org/resources/pe-magazine/may-2020/engineering-education-the-time-covid> Accessed May 15, 2021.
- [3] W. H. Bergquist, & K. Pawlak. *Engaging the six cultures of the academy: Revised and expanded edition of The four cultures of the academy*. San Francisco, CA: Jossey-Bass, 2008.
- [4] Roche, 2017
- [5] "The Carnegie Classification of Institutions of Higher Education" (http://carnegieclassifications.iu.edu/classification_descriptions/basic.php) Accessed May 15, 2021.
- [6] E.K. Briody, E. Wirtz, A. Goldenstein, and E.J. Berger. "Breaking the tyranny of office hours: Overcoming professor avoidance". *International Journal of Engineering Education*, 44 (5): 666-687, 2019.
- [7] I. Mitroff. *Managing Crises Before They Happen: What Every Executive and Manager Needs to Know About Crisis Management*. New York, NY: AMACOM, 2001.
- [8] W. Crandall, J. A. Parnell and J. E. Spillan. *Crisis Management: Leading in the New Strategy Landscape*. 4th ed. (Self-published: www.thecrisisbook.com), 2021.
- [9] J. Bernstein. *Manager's Guide to Crisis Management*. New York, NY: McGraw-Hill, 2011.
- [10] C. Hodges, S. Moore, B. Lockee, T. Trust, & A. Bond. "The difference between emergency remote teaching and online learning". *Educause Review*, 27, 2020.
- [11] V. Ratten. "Coronavirus (covid-19) and entrepreneurship: changing life and work landscape". *Journal of Small Business & Entrepreneurship*, 32(5): 503-516, 2020.
- [12] A. Spicer. "Organizational Culture and COVID-19". *Journal of Management Studies*, 57(8):1737-40, 2020.
- [13] Y. Guan, H. Deng, & X. Zhou, X. "Understanding the impact of the COVID-19 pandemic on career development: Insights from cultural psychology". *Journal of Vocational Behavior*, 119, 2020.
- [14] D. C. Bowles, & M. C. Sendall. "COVID-19: The Elephant in the Virtual Classroom". *Pedagogy in Health Promotion*, 6(3):156-158, 2020.
- [15] A. Ray. "Teaching in Times of Crisis: Covid-19 and Classroom Pedagogy". *Ps: Political Science & Politics*, 54(1):172-173, 2021.
- [16] S. Roy & B. Covelli. "Covid-19 induced transition from classroom to online mid semester: Case study on faculty and students' preferences and opinions". *Higher Learning Research Communications*, 11:10-32, 2020.
- [17] R. Sadiq - Zadeh, R., A. Wee, R. Li, & E. Somogyi - Ganss. "Audience and Presenter Comparison of Live Web - Based Lectures and Traditional Classroom Lectures During the COVID - 19 Pandemic". *Journal of Prosthodontics*, 1-8, 2021.
- [18] L. A. Tuma, C. Stanley & P. Stansbie, P. "Teaching Innovation Grant COVID-19 Online Social Distance Teaching Project & Virtual Event". *Journal of Teaching in Travel & Tourism*, 20(4):395-401, 2020.
- [19] S. Appana. "A Review of Benefits and Limitations of Online Learning in the Context of the Student, the Instructor, and the Tenured Faculty". *International Journal on E Learning*, 7(1):5-22, 2008.
- [20] K. J. Kim, S. Liu, & C. J. Bonk. "Online MBA students' perceptions of online learning: Benefits, challenges, and suggestions". *Internet and Higher Education*, 8(4): 335-344, 2005.
- [21] J. C. Shin, A. Arimoto, W. K. Cummings & U. Teichler. *Teaching and Research in Contemporary Higher Education: Systems, Activities and Rewards*. New York:NY, Springer, 2014.
- [22] E. Boyer, D. Moser, T. C. Ream, & J. M. Braxton. *Scholarship Reconsidered: Priorities of the Professoriate (expanded ed.)*. San Francisco:CA, Jossey-Bass, 2016.
- [23] F. Barnes, S. Cole, & I. Nix. "Supporting and Enabling Scholarship: Developing and Sharing Expertise in Online Learning and Teaching". *Journal of Perspectives in Applied Academic Practice*, 6(1): 66-74, 2018.
- [24] D.M. Fetterman, *Ethnography Step-by-Step*, 4th ed., Applied Social Research Method Series, Vol. 17, Thousand Oaks, CA: SAGE Publications, Inc., 2020.
- [25] M.D. LeCompte and J.J. Schensul, *Designing and Conducting Ethnographic Research: An Introduction. Ethnographer's Toolkit Book 1*, 2nd ed., Lanham, MD: AltaMira Press, 2010