

Designing For Academic Resilience in Hands-On Courses in Times of Crisis: Two Models for Supporting Hands-On Online Learning Drawn From the COVID-19 Pandemic

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Abstract

Expanding on academic continuity planning research in higher education, this article presents two models for transitioning hands-on coursework online. Integrating precedent, case study, and autoethnography methods, the article analyzes higher education leadership and faculty decision-making within the context of the onset of the COVID-19 pandemic at The College of Fine Arts at The University of Texas at Austin. When COVID-19 closed campuses worldwide, 98% of over 1,200 College of Fine Arts class sections were happening in-person; most of those courses required hands-on, applied learning, which is challenging to translate online. With few exceptions, these courses not only continued, but they also demonstrated academic resilience—the ability to survive, adapt, and grow. Academic continuity and planning researchers have reached consensus that institutions need to support high-quality online coursework to effectively manage disruptions; the problem presented in this article is that extant academic continuity models too often conceptualize faculty, students, and staff as a single user with a set of common characteristics and needs related to online learning. Such generalized conceptualizations lead to academic continuity planning strategies and tactics that do not account for the variegated complexities involved in online hands-on education.

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Designing Hands-On Courses for Academic Resilience in Times of Crisis

“In case of emergency, break tradition—teach online” (Young, 2009)

With a crisis that disrupted coursework for more than 220 million college and university students worldwide (UNESCO, 2021, p. 1), COVID-19 thrust academic continuity planning onto the front page of every higher education leader’s strategic agenda. Academic continuity planning is related to but more specific than emergency management or disaster planning. It refers to “maintaining continuity of learning in a situation caused by events that make it difficult or impossible for students and/or faculty to attend class” (Bates, 2013, p. 2). The strategy has a long history in higher education. However, pre-pandemic, the need to provide all-encompassing infrastructure, support, and policy to ensure continuous learning through high-quality online education for every student was not at the forefront of most leaders’ minds.

The objective of academic continuity planning is to ensure that leadership has provided a foundation for the continuance of core academic functions, such as teaching and learning, during a destabilizing event (Bartusevičiencė, 2021; Day, 2015; Dohaney et al., 2020; Regehr & McCahan, 2020; Regehr et al., 2017; SchWeber, 2013). Operationally, academic continuity planning involves leaders engaging in defining high-level strategy and tactics to help the institution recover and resume normal operations. Academic resilience is a related concept but extends continuity to include strategies to ensure that institutions, curricula, faculty, and courses withstand, bounce back, and then grow from disruptions. COVID-19 led to a historical moment in academic continuity planning when the pandemic resulted in a collective test of the limits of resilience among millions of college and university courses across the globe.

In the academic continuity planning literature, the tactic to move teaching and learning online during a disruption is ubiquitous (see Dohaney et al., 2020; Kapucu & Kohsa, 2013; Mackey et al., 2012; Mann, 2007; Regehr & McCahan, 2020; Regehr et al., 2017; SchWeber, 2008; Young, 2009). In 2009, Jeffrey Young, then a senior editor at the *Chronicle of Higher Education*, reported on an influx of academic continuity planning in higher education resulting from an onslaught of campus crises. In one article, he focused in on Valley City State University, a public university in North Dakota with 1,500 students. In April of that year, Valley City urged the evacuation of surrounding areas due to flooding of the Sheyenne River. While the university did not have an academic continuity plan that spelled out moving instruction online during a flood, broader, preexisting technology infrastructure and policy set the stage for a comprehensive shift to remote learning.

Valley City State University laid the groundwork for the campus to uphold academic continuity during the unexpected flood. The university had policies that required every student to own a laptop and every faculty member to post syllabi on the learning

management system. These policies undergirded the viability of remote, online instruction in the face of disaster-level flooding. Most of Valley City State University's courses transitioned successfully; hence, the headline command in Young's (2009) report: "In case of emergency, break tradition—teach online" (para. 1). Nestled in Young's advice, however, was a one-line caveat that could be easy to miss among all the online teaching and learning triumphs therein: "several courses—including a few music courses—were deemed too *tricky* [emphasis added] to teach online, and so the college skipped the last three weeks of them and gave the students the grade they had earned so far" (Young, 2009, para. 9). This caveat signals that moving hands-on coursework online poses unique challenges, and implies that academic continuity may not be possible for certain modes of learning.

Fast forward to the COVID-19 pandemic in 2020. COVID-19's omnipresence made canceling all "tricky" courses in the Spring 2020 semester impossible without devastating learning outcomes for millions of students. At the same time, the pandemic tested the resilience of masses of hands-on courses throughout the world. Ekwueme et al. (2015) define hands-on learning as a "method of instruction where students are guided to gain knowledge by experience" (p. 47), often through opportunities to physically manipulate objects of study. The academic continuity literature has established that academic continuity and resilience necessitates strategies and infrastructure for deploying effective online instruction (Bates, 2013; Day, 2015; Dohaney et al., 2020; Regehr & McCahan, 2020; Regehr et al., 2017). Differentiating transitions to online learning based on distinct learning modes is critical to effective and holistic academic continuity and resilience planning in higher education.

Outside of science and laboratory learning, there is strikingly little scholarship offering guidance on how to safeguard academic resilience in hands-on coursework (Day, 2015). Hands-on courses in the fine arts and design pose unique challenges for faculty and leadership alike. It is more complex to move painting, sculpture, and figure drawing studios, opera and ensembles, symphonies, and printmaking studios online than it is to move a lecture or a seminar to remote instruction. Leaders who oversee hands-on coursework of this nature need evidence-based models to aide in developing differentiated continuity and resilience-based readiness for online learning.

Extant academic continuity and planning models too often conceptualize faculty, students, and staff as a single type of higher education online user with a common set of characteristics and needs. Hands-on learning, however, presents a set of distinct requirements and complexities that demand differentiated guidance. With hands-on courses spanning fields and disciplines in every college and university worldwide, how did college and university leaders and their faculty design for academic resilience for tricky, hands-on coursework online? The purpose of this article is to respond to this question by focusing on the College of Fine Arts at The University of Texas at Austin.

This article follows the tradition of academic continuity planning studies by drawing on retrospective, autoethnographic, and case-study style methods (see Day, 2015; Lorenzo, 2008; Regehr & McCahan, 2020; Regehr et al., 2017). The findings include two models that provide differentiated guidance for leaders and faculty who

need to pivot hands-on coursework online for any reason. The models offer strategic and tactical guidance on how to turnkey holistic preparedness in response to the demand to advance online teaching and learning practices during the ongoing pandemic and in anticipation of the inevitable next disruption. While the article focuses specifically on hands-on and applied coursework, the implications of the findings are broadly applicable for anyone hoping to prepare their colleges, departments, and faculty to better engage students in hands-on learning online.

Literature Review

Prevalence of Academic Continuity Planning in Higher Education

Academic and cocurricular disruptions to continuity are common occurrences on college and university campuses and have been so for centuries (Thomas & Foster, 2020). While hundreds of thousands of students, parents, faculty, and staff were stunned by fluctuating communication on delayed starts, canceled graduations, empty football stadiums, and dark academic performance halls at the onset of the pandemic, it was not the first time such events occurred. For example, an analysis by Thomas and Foster (2020) reveals that higher education responses to COVID-19 appear similar to the 1878 Lower Mississippi Valley yellow fever epidemic and the 1918 to 1920 Spanish Flu outbreak. Both periods were marked by ambiguity and uncertainty among governmental and institutional leaders who were ill-prepared in the face of the imminent threat of an epidemic-related disaster. Academic continuity research aims to address the tension between the predictability of future disruption to the academic core, and the recurrent lack of preparedness or readiness to act when crisis strikes.

Spanning the last two decades, an influx of natural disasters, campus massacres, and the H1N1 pandemic led many higher education institutions to engage in serious and intentional academic continuity work (see Fox & Savage, 2009; Kapucu & Kosha, 2013; Mann, 2007; Santibañez et al., 2009; SchWeber, 2008; Van et al., 2010). Indeed, in a review on academic continuity planning, Kapucu and Kosha (2013) reported that, “more than 4,000 public and private institutions of higher education [were] involved in developing policies, procedures, and strategies to maintain a safe campus life and environment” (para. 2). Despite such planning, the speed and scale of the COVID-19 pandemic worldwide left many higher education leaders unprepared (Thomas & Foster, 2020).

Although college and university closures are frequent in higher education, the collective nature of COVID-19’s worldwide continuity context was unprecedented. In a UNESCO (2021) report on the pandemic and higher education, the organization noted, “over 1.5 billion students in 165 countries were out of school,” (p. 1) with 221 million of those students comprised of higher education learners. The universal impact of the pandemic demanded (and, to date, continues to demand) daily academic continuity planning discussions in higher and postsecondary education. Academic continuity researchers have developed several models to aide higher education leaders in times of crisis. A subset of these models is reviewed below.

Models for Academic Continuity Planning

The literature on academic continuity planning in higher education relies on retrospective examination of real-life cases that shut campuses down. Mann (2007) reviewed institutional responses to Hurricane Katrina and the Virginia Tech Massacre to offer a four-stage emergency management framework that explains how these two disruptions were addressed: (a) Emergency planning; (b) Emergency response; (c) Emergency management; and (d) Campus continuity and recovery.

In the fourth stage, Mann (2007) emphasized that “the focus is on coordinating the development of both short-term and long-term plans to get mission-critical operations back up and running. The goal is to get to operational and program normalcy in as short a time as possible.” (p. 56). Mann’s model was designed to provide generalized advice to respond to campus emergencies and offer guidance for higher education leaders.

Anticipating future disasters, Mann (2007) argued that the complexity of addressing multi-institution continuity demanded a need for consortiums. SchWeber (2008) detailed the effectiveness of one academic-continuity consortium approach that emerged in a first-of-its kind innovation in online learning known as The Sloan Semester (see also Lorenzo, 2008). Deployed in the aftermath of Hurricane Katrina, The Sloan Semester was a truly herculean feat. The initiative pulled together more than 150 colleges throughout the United States in less than 40 days, to offer a catalog of more than 1,340 online courses for students displaced by Katrina.

Lorenzo (2008) published a paper titled “The Sloan Semester” that tells the story of the initiative. In the article, Lorenzo offers the most comprehensive analyses of one of the most creative, and vast online teaching and learning innovations in the history of academic continuity in American higher education. While it is clear that The Sloan Semester achieved its stated goal to “keep students moving along their educational pathways during an unexpected time of need” (p. 30), it is unclear how students and faculty in hands-on courses responded and fared. Much like COVID, Hurricane Katrina led to a disruption that impacted multiple institutions, academic units, and disciplines for an extended duration of time. However, the most comprehensive narratives on The Sloan Semester operate from the standpoint that there is a general higher education learner and the recommendations are therefore undifferentiated by complexity, context, or mode of learning.

Like Mann (2007) and SchWeber (2008), Regehr et al. (2017) developed a model for academic continuity by referring to actual campus events. Regehr et al.’s model drew on The University of Toronto’s actions in response to both a labor strike among 6,000 teaching assistants, course instructors, and lab educators and the possible threat of the H1N1 pandemic. Regehr et al. proposed a four-phase model for academic continuity planning that includes the following dimensions: (a) Pre-planning for continuity; (b) Mobilizing when a possible threat to continuity is perceived; (c) Managing academic continuity during the crisis; and (d) Post-crisis review.

Regehr et al. (2017) emphasized that planning and addressing threats to continuity can lead to more than recovery of normal operations. For example, The University of

Toronto's work led to an academic continuity policy requiring instructors to prepare "syllabi in a manner that supports continuity, [revise] course procedures and requirements, and [make] reasonable accommodations for students who are unable to attend classes" (p. 78). These tactics were maintained post-disruption. While the narrative of Regehr et al.'s study demonstrated that the institution innovated due to academic continuity work, documentation of innovations that were specific to the unique context of hands-on courses and learning are absent.

In a more recent paper dedicated to COVID-19, Regehr and McCahan (2020) critiqued and updated their original four-part model. The new model follows academic continuity research tradition in relying on The University of Toronto's lived experience with the pandemic. Of note, the updates also accommodate academic continuity planning scenarios that involve extensive, unprecedented uncertainty as well as adding adaptation along with recovery as necessary dimension of readiness: (a) Pre-planning; (b) Approaching crisis; (c) Immediate crisis; (d) Prolonged uncertainty; and (e) Planning for recovery and adaptation.

Within stage four, Regehr and McCahan (2020) emphasized the need to support "high-quality online delivery, new models for assessing learning and expanding teaching resources" (p. 113). While all modes of learning share some characteristics of quality, such as accessibility, active learning experiences, and effective learning outcomes, online learning does not operate the same in lectures, seminars, and hands-on coursework. In their more adaptation-centered model, Regehr and McCahan noted that internship and practicum student learning were of particular concern to faculty. However, their updated analysis did not differentiate how hands-on learning in these cocurricular activities or hands-on coursework more specifically was supported at The University of Toronto.

Each of the models reviewed above provide general recommendations for higher education leaders that conceptualize students, faculty, and staff as general education users and online learning as a single type or mode of learning. While general advice may be useful as a starting point, the infrastructure necessary for moving a course such as a dance studio online is distinct, and more complex, than what is necessary to move an art history lecture online. Given the extent of hands-on courses, higher education leaders would benefit from more specific guidance in the academic continuity research on pivoting hands-on coursework online.

Models on Academic Resilience

As academic continuity events have increased over time, the concept of academic resilience has emerged as a theme in the continuity scholarship. Herbane et al. (2010) described resilience as the ability to manage and recover from threats and respond effectively to the consequences of disruption. Regehr et al. (2017) viewed academic resilience as a precursor to academic continuity. They recommended a range of best practices for ensuring academic resilience, emphasizing the importance of defining core academic values that can serve as pillars for decision-making during a crisis. Using academic values as guideposts during crises can help leadership engage

in consistent and strategic decision-making, thereby fostering resilience. Ensuring holistic academic resilience, however, requires an understanding of the various needs of learners who experience disruptions, and the complexities involved in ensuring that learning outcomes across learning modes are met.

In reviewing Xavier University's response to Hurricane Katrina, SchWeber (2008) also identified four principles that are "commonly associated with resilient organizations," (p. 40) including the ability to: (a) Adapt to the situation and problem solve; (b) Expand on existing resources, (c) Quickly implement decisions; and (d) Manage effectively in uncertain and unexpected situations.

The aforementioned Sloan Semester is SchWeber's (2008) prime example of an innovation that resulted from an academic continuity event. Certainly, some hands-on coursework must have demonstrated resilience in the over 1,300 courses offered through The Sloan Semester. However, SchWeber and the majority of other academic continuity and resilience models from disruptions caused by Hurricane Katrina do not differentiate based on modes or types of learning experiences. More differentiated models would support leaders overseeing hands-on coursework and for whom the nature of long-term academic disruptions make canceling or pausing hands-on coursework implausible.

Mackey et al. (2012) provided a four-part model for academic resilience that signals the importance of adaptation over recovery. Based on The University of Canterbury's earthquake responses, the model's dimensions are: (a) React, Recover, and Redesign; (b) Restart; (c) Reconsolidate; and (d) Review and Reflect.

The review and reflection portion of the Mackey et al. (2012) model recommended retrospective analysis in the fourth phase as follows: embed "resilience changes into the teaching programs to ensure staff and students are well equipped for future interruptions" (p. 43). What are the unique strategies and tactics that need to be deployed to support resilience changes for hands-on courses? How do they differ from those that support resilience in other learning modes? Specific guidance drawn from real-life episodes that explore and learn from the unique complexities of moving hands-on coursework online is necessary to advance holistic resilience to academic disruptions in higher education.

Extant Models on Resilient Faculty

Dohaney et al. (2020) developed a model based on the attributes among resilient faculty specifically. Dohaney et al. draw from experiences at the Victoria University of Wellington, New Zealand during earthquake responses and disaster planning. The authors offer the following specific three-part framework for resilient faculty based on interviews with 18 participants (see p. 3): (a) Attributes of resilient faculty: flexible, adaptable, emotionally resilient, collaborative, empathetic, and open-minded individuals; (b) Capabilities of resilient faculty: respond quickly during a disruption, are digitally literate, organized, prepared, and creative thinkers; and (c) Knowledge of resilient faculty: have a sound awareness of their courses, learner-centered approaches, learning and teaching delivery options during disruptions, emergency protocols, and the wider institutional system.

Dohaney et al.'s (2020) model is useful because it provides a set of differentiated areas for academic continuity-related faculty development. Moreover, the authors also discussed hands-on instruction in STEM fields directly, noting that continuity planning for laboratory-based instruction requires specific attention to physical infrastructure and equipment that is often inaccessible to students when a campus crisis hits. In their interviews with resilient faculty, educators identified the need to pivot in such cases as opportunities "to develop alternative settings/models of learning and teaching rather than an insurmountable challenge" (p. 7). One noteworthy recommendation from Dohaney et al.'s study includes providing incentives to encourage academic resilience.

One of Dohaney et al. (2020)'s recommended incentives was a resilience buyout. A notable effect of the pandemic was that it led to a population of higher education faculty who are now far more skilled in digital pedagogies. While hands-on courses must (and should) certainly work to recover the benefits of in-person instruction, the upskilling and new ways of teaching using digital, online tools should not be lost. Instead, these innovations should be embedded into future coursework. Resilience buyouts would allow for and promote such reverse transformations, ultimately leading to diffusion of improved teaching and learning across campuses. That said, the cost of buyouts is likely to be prohibitive for many colleges and universities.

Bricolage as a Tactic for Academic Resilience

SchWeber (2008) pointed to one possible attribute of organizational resilience that may help differentiate how to support hands-on course pivots: bricolage. He defined bricolage as "developing solutions out of existing conditions and being creative under pressure" (p. 40). Lévi-Strauss (1974) referred those who perform bricolage as bricoleurs—individuals for whom the "rules of his game are always to make do with whatever is at hand." (p. 17). More recently, Carstensen (2015) documented bricolage as episodes where organizations have developed new structures and set ups through combining and "reordering existing . . . elements" (p. 139).

Specific to education, Campbell (2018) argued that bricolage offers a standpoint for viewing teacher work as having both creativity and agency in the face of demanding and complex systems. Picking up on the common tactic among new teachers to modify existing resources to enable instruction, Hatton (1989) noted the "bricoleur reorganizes or improves ad hoc responses to the environment" (p. 88). Hatton warned that overreliance on bricolage can create ineffective pedagogy, especially among novice teachers who may be working off-the-cuff and without expertise. Such novices may then codify more idiosyncratic rather than evidence-based approaches. Such dangers of bricolage are mitigated, however, when teachers (and other professionals) engage in communities of practice that allow them to learn from shared expertise, domains, and interactions with knowledgeable others (Wenger, 1999). Bricolage as a pedagogical method is a process that higher education leaders could draw on to provide differentiated support among faculty who may need to prepare to teach hands-on courses online.

Need for Differentiated Models in Academic Continuity Planning

Overall, the literature on both academic continuity and academic resilience offers many similar models drawn from an array of destabilizing events worldwide. Each model offers four to five strategic priorities to help guide higher education leaders facing academic continuity situations, and who are interested in promoting academic resilience. However, with few exceptions, the models largely treat all students, faculty, and staff as general education users engaged in a single mode of learning online when both are in fact, differentiated. As such, the models overlook the needs of academic stakeholders for whom academic rigor relies on hands-on, experiential learning. Because hands-on pedagogy is more challenging to translate to online institutions, leaders and faculty will often develop hacks and new ways of delivery. Preservation and diffusion of such pedagogical innovations are crucial to holistic readiness to meet the next major academic disruption. Moreover, supporting preservation especially of the skills in digital pedagogy faculty gained throughout the pandemic may result in broader teaching improvement results.

Method

This article follows the design tradition of precedent research (Lawson, 2004), in addition to retrospective case study (Yin, 2009) and autoethnographic approaches (Ellis & Bochner, 2000). Precedent research promotes building knowledge and understanding in the arts and design disciplines, and involves isolating episodes or cases, identifying units of analysis, and posing analytical questions (see also Glass, 2018). Precedent research emphasizes learning from “episodes” or cases that can be built upon, rather than from existing theories, which in their canonization, may limit new combinations or transfer to novel conceptualizations (Lawson, 2013; Lawson & Dorst, 2009). Precedent research also helps provide scaffolding for discovering creative, previously unconceived ideas or models (Lawson, 2013).

In addition to precedent research, this article draws on case study methods due to: (a) Limited control over the research context; (b) The research context involving contemporary rather than historical events; and (c) The analytical design involving “how” questions (Yin, 2009). Specifically, the article relies on the spirit of extreme case study approaches (Seawright & Gerring, 2008) to develop the framework for attributes of course resilience. Extreme cases, or cases that demonstrate maximum or minimum variation, are useful for demonstrating phenomena distinct from the majority of a sample (Mills et al., 2010; Patton, 1990; Seawright & Gerring, 2008). According to Patton (1990), extremes “focus on cases that are rich in information because they are unusual or special in some way” (p. 169). The extreme case selected for the present article was an opera course. The criteria used to select this course were maximum variation, rare complexities, and unusual success. The course included the need for students, faculty, and instructional staff to sing, perform, act, dance, engage in set design, and tell stories in front of an audience as it transitioned online despite those complexities.

Finally, as an administrative leader within the College of Fine Arts at The University of Texas at Austin, I also relied on autoethnographic experiences of academic continuity and innovation in the College. According to Ellis and Bochner (2000), autoethnography is “an approach to research and writing that seeks to describe and systematically analyze (graphy) personal experience (auto) in order to understand cultural experience (ethno)” (p. 1). Sources included digital documentation, direct observations, participant observation, survey results, and archival artifacts. I served as the Assistant Dean for Instructional Continuity and Innovation and oversaw the Office of Instructional Continuity and Innovation during COVID-19. This office was launched to support instructional continuity during the pandemic and preservation and diffusion of pedagogical innovation after the pandemic’s end.

Research Questions

My overarching research question was: “How did college and university leaders, and their faculty, design for academic resilience in hands-on coursework in a context that required 100% online and remote instruction?” The unit of analysis in this paper is academic course resilience, specifically applied to tricky, hands-on courses that transitioned to online models. My analytical questions were as follows:

1. How did one College of Fine Arts support academic resilience for thousands of hands-on, online course sections during the early stages of the COVID-10 pandemic?
2. What are the key attributes of online academic resilience in one extreme course heavily reliant on hands-on, in-person instruction?

Site

The University of Texas at Austin (the University) is located on 420 acres in Central Texas with a teaching faculty of over 3,100, serving over 51,000 graduate and undergraduate students (UT Austin, 2021). The University is a Hispanic-Serving Institution, with 61% of the students being non-White. Fifty-four percent of students are female, and 45.6% male (UT Austin, 2021). The College of Fine Arts is one of the 18 colleges and schools within the University, with 181 teaching faculty, 76% are White only. Forty-five percent of the teaching faculty are female, 55% are male. The University does not collect sexual or gender identity demographics (College of Fine Arts, 2021).

Findings

This article provides two models with differentiated guidance on academic continuity and resilience planning for leaders and faculty who need to prepare for continuing hands-on courses in the face of a disruption. The first model offers a framework for leaders who may want to increase their readiness for supporting hands-on coursework online. The second model outlines the attributes of academic resilience in hands-on

online courses themselves, which leadership and faculty may use to strategically advance quality hands-on online learning. These models are illustrated with case examples from the College of Fine Arts at The University of Texas at Austin during the first year of the COVID-19 pandemic.

Model 1: An Organizational Model for Designing Academic Resilience in Hands-on Courses

How did one College of Fine Arts support academic resilience for thousands of hands-on, online course sections during the COVID-19 pandemic? The specific context of COVID-19 decision-making at the start of the pandemic sets the stage for findings, which is described in the following section.

Context: The COVID-19 pandemic response at UT Austin. On March 13, 2020, the Governor of Texas declared a state of disaster for all counties in the state (Office of the Texas Governor, 2020). In that declaration, Governor Abbot noted that universities were beginning to alter their schedules in advance of the pandemic's imminent threat. Indeed, on March 11, 2021, the President of the University of Texas at Austin explained to the university community via email that Spring Break would be extended by 2 weeks and that lectures would need to shift to online instruction. Anticipating the difficulty of shifting hands-on content online, the President wrote that there would be a need to "develop alternative instructional modes for classes that must continue to meet in person, such as laboratories and performing arts courses" (Fenves, 2020, para. 6). The following day, in an email titled "Continuing the Academic Mission," the UT Austin Provost informed over 3,100 teaching faculty that while all educational activities were expected to continue, campus safety measures would "require many faculty members to shift most in-person classes to alternative modalities." She added the caveat that "we understand that many in-person activities do not translate well, or at all, to an online or alternate format (e.g., labs, performing arts, physical education)" (McInnis, 2020a, para. 5). In these communications, both the President and the Provost acknowledged the need for differentiated academic planning based on hands-on modes of learning.

In her March 12, 2020 email, the Provost instructed faculty to work locally with their deans to develop course plans for those hands-on course activities. Due to the rapidly changing nature of the virus, on March 16, 2020 the Provost announced via email that in 13 days, *all courses* would need to "transition to Zoom, Canvas, or some other mode of remote instruction" (McInnis, 2020b, para. 4). Local, dean-level crisis management became even more important as the university announced two unexpected executive leadership transitions. On March 26, 2020, in the middle of the early COVID-19 crisis on campus, the Provost resigned to serve as the next President of Stony Brook University. Then, on April 7, 2020, the President resigned to assume the Presidency at Emory University. While the two transitions were smooth with immediate interim replacements, deans had to adjust to new leadership in these key roles while simultaneously engaging in complex, highly uncertain academic continuity

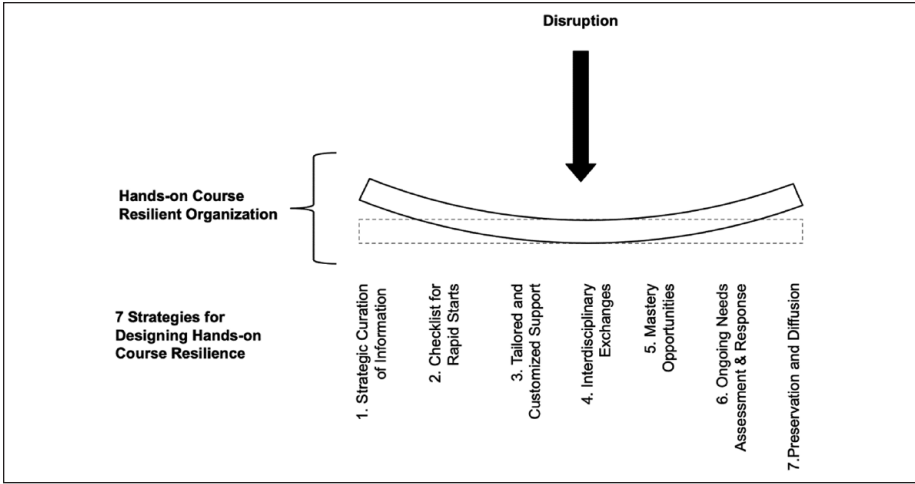


Figure 1. An organizational model for designing academic resilience in hands-on, online coursework.

planning. Deans in heavily hands-on colleges, such as the College of Fine Arts, the School of Architecture, College of Natural Sciences, College of Engineering, and Schools of Nursing, Social Work and Medicine, developed local plans for the transition.

Figure 1 visualizes the seven-pronged approach used in the College of Fine Arts, designed through collaborations among executive leadership in the Office of Instructional Continuity and Innovation, to support high-quality delivery of hands-on courses online during the first year of the COVID-19 pandemic. The dotted rectangle and flexible rectangle represent an organization that can bend, adapt, and grow in response to disruption to hands-on courses. In the analysis section below, I review the model’s seven overarching strategies and provide tactical examples under each dimension.

Analysis: Hands-on courses at UT Austin following the organizational model in Figure 1.

Strategy 1. Strategic curation of information. During COVID-19, faculty, students, and staff received volumes of communication from dozens of sources, including live synchronous meetings, texts, email, and phone calls regarding academic continuity. Guidance from the central university administration and Dean’s offices related to the university’s expectations for instructional modality (e.g., synchronous online, asynchronous online, hybrid, and face-to-face), attendance policies, instructional technology access, federal Family Educational Rights and Privacy Act regulations, and health and safety precautions. These messages often required interpretation for faculty, students, and administrators who were unfamiliar with terms such as “hybrid dual-mode instruction” or “asynchronous assignments.” Moreover, leadership guidance often included gray areas that left faculty confused about how to proceed with an array

of instructional decisions, including attendance and academic accommodations. For example, one point of confusion was whether faculty could (or should) require arts and design students to turn on their cameras during an online class. Our faculty, students, and administrators demonstrated the need for a local, reliable source of information that would allow them to engage in confident decision-making specific to the college's context. In the College of Fine Arts, this policy and procedure-based curation and interpretation were more critical than in some other schools and colleges who could rely on more general advice for teaching online that was provided centrally. This curation strategy continued to guide faculty and staff action throughout the multiple pivots and stages of the pandemic.

Strategy 2. Checklists for rapid start and immediate application. Since most of the University's faculty had never taught online, and most fine arts faculty were teaching hands-on coursework, self-efficacy (Bandura, 1997) for the coursework transitions was initially low. As the lead of the Office of Instructional Continuity and Innovation, I targeted faculty self-efficacy for online instruction as an overarching strategy by developing checklists. Checklists are established tools for guiding and triaging in times of urgency (Gawande, 2009). The Managing Online Learning Checklist (Schell, 2020) featured five easy-to-implement, high-impact, evidence-based pedagogical principles to prepare all faculty to teach fine arts courses online in 10 days. The checklist was one-page, with supplemental guidance for faculty who wanted to delve deeper. The purpose of the checklist was to provide all faculty with scaffolding for a rapid start to online instruction supported by research-based principles from the science of learning. The Office of Instructional Continuity continued to develop rapid checklists throughout the pandemic, on topics ranging from asynchronous learning to steps for taking attendance in ways that would aide contact tracing.

Strategy 3. Tailored and customized support. During the first 3 weeks of the pandemic, the Office of Instructional Continuity and Innovation and the Fine Arts Information Technology unit developed a detailed survey to assess the technology-based functional requirements for online, hands-on teaching. This was necessary because while general support for using the learning management system and Zoom were available from central University resources, infrastructure for supporting hands-on online instruction in the fine and performing arts and design was not. Our offices did not simply ask faculty what equipment they needed. Instead, the survey was focused on understanding how faculty designed and delivered instruction in courses such as museum curation, 3-D sculpture, jazz ensemble, and ballet. The two offices then combined expertise in technology and pedagogy to outline functional requirements and allocate hardware, software, and any requisite training.

The Information Technology unit anticipated the need for high-quality web cameras during the approaching crisis phase to allocate to all faculty who needed one. Early technology planning was critical because webcams became scarce in the early months of the pandemic. Through funding for emergency resources, the Information Technology unit built individually customized kits for College faculty to help them achieve their unique

functional teaching requirements. These kits included high-quality web cameras, microphones, monitors, ring lights, tripods, and stands for using mobile phones as document cameras. From a software perspective, arts and design education requires extensive visual work including “pinning up” student assignments for collaborative critique. We identified Mural.co and Miro as visual collaboration platforms that translated well online and led related workshops and 1:1 session for faculty.

In addition to online teaching kits and software solutions, the Office of Instructional Continuity and Innovation conducted needs assessments to determine pedagogical requirements for efficacious online hands-on instruction. Based on faculty responses, the office launched a series of differentiated professional learning experiences within three categories: (a) General effective online teaching practices; (b) Effective online teaching practices for studio-based (e.g. painting) and applied courses (e.g. 1:1 bassoon instruction); and (c) Effective online teaching practices for faculty teaching seminars and lectures.

The Office of Instructional Continuity and Innovation offered more than 30 online teaching and learning workshops throughout the immediate and ongoing crisis. The office delivered these workshops remotely and preserved recordings during the prolonged uncertainty phase for faculty. As the duration of the pandemic lengthened, specific needs for faculty especially reliant on audio and sound-based pedagogy extended beyond the expertise of the office. As such, support for high-quality, hands-on music instruction was hyper-localized within the school of music. Music faculty engaged in similar tactics including developing and delivering a music-specific, 100% online meta-course with synchronous and asynchronous modalities offered to all faculty in Summer 2020.

Strategy 4. Interdisciplinary exchanges and communities of practice. During the immediate and prolonged COVID-19 disruption, faculty used a “bricolage” approach by blending their creativity, expertise in their mediums, and collaborative tendencies as academic artists to invent new ways of teaching and learning in the arts. The Office of Instructional Continuity and Innovation promoted and cultivated interdisciplinary exchanges specific to pedagogy across 30 programs within four academic units: Music; Art and Art History; Theatre and Dance; and Design and Creative Technologies. The Office of Instructional Continuity and Innovation identified faculty from each unit to share with each other hands-on, online tools, assignments, lessons, and successful projects, as well as pedagogical efforts that were not successful. One of the silver linings of the pandemic was that a community of practice (Wenger, 1999) around digital arts pedagogy was born. For example, faculty came together around a shared domain of interest (arts pedagogy), collaboratively advanced their individual and collective practices across a variety of disciplines, and formed an interconnected pedagogical arts and design community. The college had long aspired to represent a digital arts pedagogy community of practice, and elements of the community continued throughout the pandemic.

Strategy 5. On-demand and comprehensive needs assessments and responsiveness. To accommodate the ongoing state of the pandemic—and the certainty of uncertainty—the Office of Instructional Continuity and Innovation conducted rolling, on-demand

needs assessments for faculty who taught hands-on, online coursework. The office launched an on-demand pedagogy-specific ticket system similar to a help desk. This ticket system was separate from the Fine Arts Information Technology's ticket system, providing dedicated support to faculty and staff coordinating courses and co-curricular activities. The decision to separate these systems was crucial given that the technology group was overwhelmed by an influx of faculty, staff, and student hardware and software requests. The primary mechanism for the ticket system was an intake form located on the top of the Instructional Continuity and Innovation website. It allowed faculty to submit on-demand requests for 1:1 support or to submit requests for specific topic-based workshops. Examples of requests included assistance transforming typically in-person acting lessons through video and managing breakout rooms to allow for the tricky business of pivoting our Conjunto (Texas Mexican music) ensemble online. To shed light on some of the complexities, note that our Conjunto courses are led by Grammy award-winning Professor Joel Guzman and feature multiple accordions, bajo sexto (12-string guitar), acoustic bass, and vocals. The on-demand ticket system provided a "one-stop" mechanism for faculty who needed pedagogical support. Our Conjunto studio needed training on breakout rooms, for example, to ensure the unique instrument groups could play together. Ultimately, the office provided timely help to hundreds of faculty similar to the examples above and developed an ongoing understanding of the unique instructional needs for teaching hands-on courses online.

During a leadership planning retreat in Spring 2021, the dean's office and unit-level leaders identified that continued teaching and learning support was a top priority for the college. As a result, the Office of Instructional Continuity launched an annual College of Fine Arts Teaching Needs Assessment. The survey was sent to all college faculty and collected information on needs specific to pedagogical support activities and topics of interest (response rate $n=110$, 55%). The top three needs for ongoing support identified by respondents were: Instructional Technology, Use of the Canvas Learning Management System, and Anti-Racist and Inclusive Pedagogy initiatives.

Strategy 6. Opportunities for mastery teaching experiences. Through the on-demand and annual needs assessment information and discussions with faculty during 1:1 and community workshops, the Office of Instructional Continuity and Innovation identified pedagogical mastery as a critical opportunity for advancing high-quality, hands-on instruction online. For example, as noted above, the majority of faculty expressed specific interest in anti-racist and inclusive pedagogical approaches. The Office of Instructional Continuity and Innovation developed and launched an inaugural Anti-Racist and Inclusive Pedagogy panel, which was since formalized into an annual event. The panel's expertise led to insights into how to enact anti-racist teaching from the discipline-specific standpoints of dance, music theory, graphic design, and painting pedagogy. Faculty interested in developing mastery in anti-racist and inclusive teaching were able to gain knowledge and new approaches to implement in their own classes. One-hundred twenty-five students, faculty, and staff attended the first panel. This is one example of an evolution driven by the COVID-19 disruption that the college recognized as valuable, and formally adopted for the future.

Additional tactics to support mastery pedagogy experiences included: (a) Development of a centralized peer observation protocol for online arts and design instruction with accompanying training workshops; (b) Launch of a flexible certificate-based Transformative Teaching in Arts and Design Education Institute. (Faculty could take one or more of six short courses or enroll in five to receive a master's certificate. The courses were a mix of synchronous and asynchronous modalities and delivered 100% online); and (c) Programmatic-level deep dives and interventions on special topics. For example, the Office of Instructional Continuity and Innovation developed a customized pedagogical intervention for the MA in Design in Health program to advance online, team, and project-based learning in a studio-based course.

These strategies provided the college with a transformed faculty base equipped with dramatically improved digital teaching and learning skills.

Strategy 7. Preservation and diffusion of hands-on course resilience. As the pandemic continued, the Office of Instructional Continuity and Innovation actively preserved, cultivated, and diffused learnings from hands-on, online course resilience. These efforts included developing an understanding of the complexities involved in pivoting hands-on courses to online modalities in ways that maintain quality educational experiences. To ensure diffusion, the Office of Instructional Continuity and Innovation worked with the College of Fine Arts and the University to showcase faculty inventions through formal award procedures, archival documentation and writing, professional learning community exchanges, and scaling faculty creativity to other schools and colleges. For example, the Office of Instructional Continuity and Innovation strategically positioned faculty who successfully taught hands-on online courses online to share their discoveries in university-wide conferences and workshops on teaching and learning.

Model 2: Attributes of Resilience in a Hands-On Online Opera Course

What are the key attributes of academic resilience among hands-on courses that transition successfully online? To respond to this question, this article provides an extreme case precedent drawing on one course (see Patton, 1990). I used evidence from the case to build a framework for attributes of resilience in hands-on, online courses. In the episode described below, fine arts faculty were able to provide opera undergraduate students with an innovative and effective online learning experience at a time of crisis.

Context: Undergraduate opera ensemble 103P. The Butler Opera Center at the University of Texas at Austin provides highly applied performance training and background for future opera professionals, including singers, directors, and coaches. The undergraduate opera ensemble (ENS 103P) is a time-intensive, in-person, hands-on opera-based learning experience. The course meets three times a week, with additional student hours required for rehearsal and performance. Students learn in an intimate 1:1 studio setting with vocal coaches and performance halls for group rehearsals. Ensemble members explore every element of opera through applied, hands-on activities, including operatic acting, movement, make-up, costuming, and stage direction, in addition to vocal

technique. In March 2020, when COVID-19 hit, the Butler Opera Center Ensemble faced the reality of a monumental change in the planned learning experience. The disruption put the ENS 103P course and its faculty's academic resilience to an extreme test. The opera director decided not to cancel the ensemble, despite the challenges of moving such an intensely complex and applied course to a remote modality. Instead, she worked with the stage director, conductor, and other staff to transition the course online. During the first months of the pandemic, the course was deployed entirely remotely.

End-of-year performances are professionally critical for opera students. They involve face-to-face, live assessments that serve as culminating experiences for the ensemble. These end-of-year performances for ENS 103P also maintained resilience and pivoted online. Instead of canceling the end-of-year performances, the stage director attended multiple pedagogy workshops with the Office of Instructional Continuity and Innovation, which prompted her to collaborate with the office to design a Spring 2020 year-end concert to be held virtually. Modifying the tradition of live, fully produced scenes on stage in Austin, opera faculty conceptualized an event that would lead students through all the hands-on learning objectives of the regular performance but by using new modalities and backdrops.

Students selected solo pieces to study, practice, and perform. They also received feedback and coaching through remote, live, and asynchronous lessons via Zoom. After multiple rounds of feedback, students finalized video-based versions of their solos and final projects. Using mobile video and audio equipment, students recorded their final performances using backdrops from their home surroundings, some including their family members in the scenes. This bricolage approach of making due with what was available in the environment led to a uniquely Texas mix of classical operas such as songs from Mozart's *Die Zaubergeflöte* juxtaposed with ranch scenes, complete with cows and horses, and country-style home furnishings. Because community engagement is a nonnegotiable element of opera learning, the College of Fine Arts promoted the performance and the final show included guests, parents, siblings, faculty, and staff, all visible through a Zoom gallery. Students also provided peer-to-peer support and feedback using Zoom chat and feedback buttons throughout the experience, just as they would in an in-person show. To cap the experience, the stage director arranged for one of the most celebrated opera singers of our time, Grammy Award winner Renée Fleming, to prerecord a video personally congratulating the College of Fine Arts students on their final performance of the year.

While the case of this undergraduate ensemble is an extreme one in its complexity, it exemplifies a set of attributes to consider when designing hands-on courses for resilience in an online environment. These attributes are illustrated in Figure 2. Since these attributes are themes drawn from a single extreme case, they should be tested in further research or explorations of hands-on transitions to online environments in times of crisis.

Analysis: Resilience in an opera course (extreme case)

Attribute 1. Stable classroom learning models. ENS 103P demonstrates that hands-on online courses with resilience have stable classroom learning models. Such courses

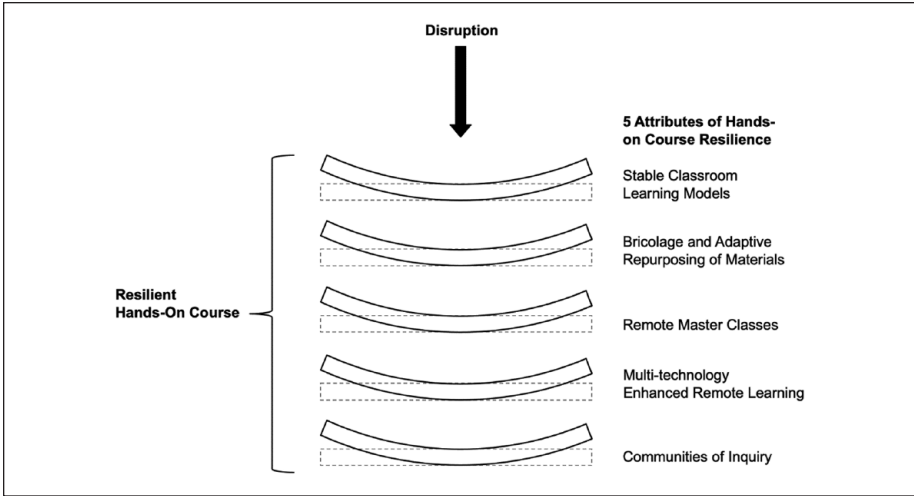


Figure 2. Model of attributes of resilient hands-on courses that transition online.

draw on established principles of student-centered learning (see Schell & Butler, 2018). For example, regardless of the online nature of the course, ENS 103P maintained authentic attention to learner needs and characteristics, retained the same course-level learning objectives as previous semesters, and upheld rigorous learning indicators. What changed were the instructional activities and assessments that the learning community engaged in to achieve the learning outcomes. As such, support for developing course resilience for hands-on learning online necessitates professional learning opportunities that help faculty in the development of dynamic activities and assessments for online deployment, rather than engaging in full course design, or worse, cancellation. Based on this attribute, leaders who hope to bring hands-on courses online should maintain the learning outcomes and content rigor, while developing alternative mechanisms for meeting those outcomes.

Attribute 2. Bricolage and adaptive repurposing of materials. Opera ensemble 103P exemplifies the “bricolage” approach—whereby faculty use, and encourage students to leverage, existing and readily available resources to create new work. Course resilience in hands-on learning environments may benefit from specific attention to lessons and assignments that involve using inexpensive and available materials and objects, such as opera student home contexts for props and backdrops. In addition, faculty from Opera 103P and other hands-on online courses, have adapted their in-person course to include some of their online innovations—such as prerecorded, faculty-led demonstrations of performing arts technique.

Attribute 3. Remote fine and performing arts and design master classes. While students in the opera ensemble experienced only a short greeting from René Fleming, it pro-

vided a snapshot into one of the most profound silver linings from the pandemic for hands-on courses. In the annual Office of Instructional Continuity and Innovation's Teaching Needs Assessment, faculty repeatedly emphasized that remote visits from globally stationed guest artists provided one of the most profound transformations to their courses. The ability to host and share perspectives from creatives, artists, and designers worldwide is part and parcel of an arts college but financially prohibitive to do at scale. During the pandemic, however, the College of Fine Arts was able to feature remote guest artists with mastery in specific topics. One of these guest artist residencies, which focused on the theme of Black Graphic Designers, was so successful that it led to the development and continuation of two new online courses taught by the same visiting artist (who resides on the East Coast). This specific pandemic-borne innovation was not a one-off; rather, it shaped innovations in the curriculum for the College of Fine Arts as a whole that have been maintained. The new graphic design curriculum exemplifies the benefits of preserving and cultivating pedagogical innovations that result from crises.

Attribute 4. Multi-technology enhanced education and blended remote learning. Faculty adeptness at using and supporting students in the blended use of multiple tools promoted resilience for the opera ensemble. Opera faculty did not teach with Zoom alone—they drew on a variety of hardware platforms, including industry-specific microphones, video cameras, instrumentation, and multiple software platforms, including Adobe, Zoom, and YouTube. As a result, faculty who traditionally taught face-to-face now have instructional technology and technology integration skills that are far advanced when compared to pre-pandemic. Leadership who aim to support moving hands-on courses online, should sponsor integrative technology workshops, rather than single software or hardware trainings.

Attribute 5. Communities of inquiry. Finally, faculty efforts to build a community of inquiry (Garrison et al., 2000) among students supported ENS 103P's resilience and online deployment. In the community of inquiry model, Garrison et al. defined three types of presence that support effective learning experiences online: teaching presence (which reflects the model of classroom learning and overall instructional design of the course), social presence (which involves strategies for creating belonging and ensuring that online participants view each other as "real" human beings), and finally cognitive presence (the different content-specific learning activities that the community explores). The opera ensemble final concert exemplified each of these presences in highly effective ways. First, the instructor maintained the classroom learning model and learning outcomes, while effectively altering the learning activities. Next, students were able to demonstrate their unique identities through showcasing their home environments through their videos. And third, students were deeply engaged in the ways of thinking and doing in which opera vocalists and actors engage. Altogether, the observability of these three presences resulted in a high-quality, hands-on learning experience online. Contrast this approach to what the faculty *could* have done to get through the first semester of the pandemic: watch a few operas along with the class

through Zoom. The course instructor surveys are public at the University. The pandemic version of the opera ensemble described above received a 4.8 out of 5.0, above the university and college average and higher than in previous semesters.

The resilience model in Figure 2 represents guidance drawn from a hands-on course content that was previously limited to in-person, face-to-face instruction but then transitioned online. Though based on the experience of only one course, leaders and faculty can take these five principles and use them independently or as a starting point for building course resilience in hands-on coursework so that it can be delivered online as needed.

Conclusion

The global impact of COVID-19 on millions of students enrolled in higher education courses has heaved the need for strategic and tactical academic continuity planning to the forefront of higher education leadership. Currently, the ultimate duration of the COVID-19 pandemic is unknown and the reality of future large-scale disruptions is inevitable. Indeed, The University of Texas at Austin experienced a double shutdown amid COVID-19. On February 12, 2021, when Winter Storm Uri hit, the Governor issued another disaster proclamation on top of those issued because of COVID-19 (Office of the Texas Governor, 2021). Extreme winter conditions shut down the Texas power grid with little warning, leaving millions of Texans without access to electricity, heat, and water in subfreezing temperatures. In addition to these hardships, 111 people died because of storm-related crises. Since most of the University's faculty and students were still engaged in remote instruction during the storm, when the grid wiped out power and internet, academic continuity and resilience were at risk yet again. Winter Storm Uri tested the models depicted in this article. Both Model 1 and Model 2 held up, demonstrating that the strategies to ensure course resilience were reliable. When Texas restored electricity, a centralized pedagogical infrastructure was readily available for our arts and design faculty. This infrastructure included curation of communication, rapid checklists, tailored support, and resources to aid in gaining mastery of asynchronous instruction.

With differentiated models for supporting and designing for resilience in hands-on, online courses described and elaborated in this article, higher education leaders and faculty can better heed Young's (2009) advice that, "in case of emergency, break tradition—teach online" (para.1), even with *tricky* hands-on courses.

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