

Yale University and the Impact of Future-Oriented Leadership During the Covid Pandemic (by: Chichi Ezenwa and Alfred Akakpo).

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YALE UNIVERSITY AND THE IMPACT OF FUTURE-ORIENTED LEADERSHIP DURING THE COVID PANDEMIC

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Abstract

This case study explores futures thinking and organizational policies in higher education, with a specific focus on Yale University. The aim of the study was to analyze and discuss Yale University's experience in using foresight to plan and adapt to the needs of a 'new future' in higher education stemming from the Covid-19 pandemic. It was found that Yale University: (1) conducted scenario-building for long-term strategic planning; (2) used AI-driven software (including chatbots) as a strategic tool to improve online learning; and (3) developed organizational policies to institutionalize and sustain new learning strategies and new employee roles to support these strategies. This case chapter concludes with discussion of the implication for use of foresight and futures thinking across higher education more broadly.

Keywords: Future-oriented leadership, futures thinking, organizational policies, Covid pandemic, Yale University.

INTRODUCTION

The purpose of this study is to use the process of futures thinking as a lens to analyze and discuss how Yale University successfully utilized future-oriented leadership to identify, implement and sustain innovative strategies for online learning during the Covid pandemic, and to use such strategies for continued remote learning after the pandemic (when students are not physically on-campus nor in-person with the professor). Yale University is a private institution founded in 1701 (Yale University, 2023a). The campus includes 373 acres in New Haven, Connecticut (USA), and the students follow a semester-based academic calendar. The enrollment in Fall 2022 included 6,590 undergraduate students and 5,344 graduate and professional students, as well as 3,296 international scholars (Yale University, 2023b). Yale University is widely regarded as one of the most prestigious institutions of higher education in the world, with one of the top rankings for top-tier student employment outcomes (Khan, 2022).

In today's rapidly changing world, Yale University, as well as other institutions of higher education, increasingly navigates a complex landscape of ongoing technology advancements, demographic shifts, and student expectations. However, in Spring 2020, the unthinkable happened – a global pandemic occurred and shuttered all but essential public, private and nonprofit buildings. Yale University immediately cancelled all onsite classes and reorganized students into remote learning environments. Online learning was not a new concept for Yale or other higher education institutions (HEIs), however up to this point, it had often been viewed as supplemental – an accommodation to evolving student needs and the availability of computer and digital capabilities (Yale News, 2021).

Needless to say, there was not only a pandemic but pandemonium in the halls of academia. Heated debates about online pedagogy erupted (Garcia-Morales et al., 2021). Yale, like many other universities, already had a course management system in place for learning remotely, having replaced Class*v2 with Canvas in 2017 (Ye, 2016). But now questions arose about issues of connectivity and differential access, as well as best practices for curriculum development and delivery. The successful transition to a world of 100% online learning was going to require leadership with insight, foresight, and an orientation toward the future. Fortunately, Yale University was up to the task.

DISCUSSION

The Covid pandemic and abrupt transition to remote learning presented challenges across the board for HEIs. Some students reported feeling isolated by the online context, and/or bored, less organized (Carolan et al., 2020). Professors, with diverse levels of computer and digital backgrounds, often experienced a digital divide between themselves and their students (Garcia-Morales et al., 2021). University administrators, tasked with budgeting and managing resources, found planning difficult due to conflicting reports from politicians and medical professionals on the severity and duration of the pandemic (Bulla, 2020).

The impact of the pandemic touched every aspect of university life, from classroom learning to research projects and extra-curricular activities. Yet Yale University remained committed to a swift but measured, collective, integrated, and high-quality effort (Shelton 2021).

The following discussion describes how Yale University accomplished its successful response to the Covid pandemic and continues to meet *new futures* through future-oriented leadership. Discussion topics include Yale's initial response to campus shutdown and use of foresight to identify more adaptive and sophisticated teaching and learning strategies, as well as integration of new technologies to support evolving action plans. Further discussion describes organizational policies developed and implemented by Yale to institutionalize its futures thinking efforts and the management strategies utilized to support success and sustain market competitiveness.

Initial Response to Campus Shutdown

On March 14, 2020, Yale University president Peter Salovey stated that initial campus shutdown status would continue through the remaining spring semester and further, as determined by circumstances defined by the Covid pandemic (Yale University, 2020a). The announcement described roles and responsibilities of faculty and staff during this time. The provost and deans guided faculty changes in class schedules and delivery, as well as office hours. The vice president of Human Resources (HR) provided outreach for community safety and care of personnel, including "select administrative and operational functions... integral to the transition to online learning" (para.13). The Yale Poorvu Center for Teaching and Learning began working with faculty members, teaching fellows, and academic staff to ensure successful remote delivery of classroom experiences; and the ITS (Information Technology Services) department reviewed current digital platforms of Zoom and Canvas and increased engagement with vendors for support as needed (Yale News, 2020b).

Faced with an unprecedented circumstance, Yale University leadership demonstrated future oriented thinking in response to the pandemic. Mauri (2023) describes such a "future-focused" perspective as leading and managing the community to challenge the way things had always been done and cultivate a spirit of performance that turns uncertainty into bold action (para. 3). To this end, the Yale executive administration pulled together a wide range of campus experts to consider all issues related to the business of providing quality higher education at a distance. A network of campus partners (i.e., health personnel, facilities staff, ITS workers, professors, administrators, students) gathered and analyzed data, and revised and/or reinvented systems and protocols that inspired new behaviours (Shelton, 2021). The objective was to discover new teaching and learning strategies, develop new capabilities, be innovative, and experiment with new ideas in intelligent ways in order to successfully navigate the campus shut down.

Online Learning

Following spring break of 2020, and through the summer into the 2020-2021 academic year, essentially all instructional activities, including class lectures, recitations, peer

tutoring sessions, and office hours were hosted online. Live lectures were delivered for synchronous learning, and recordings were made available to students immediately after each live session to support asynchronous learners (Shelton, 2021). Such strategies, as noted by Perets et al. (2020), provided an emergency transition to effective new ways of teaching and learning, although questions remained regarding best practices for individual student engagement.

At the time Covid hit, Yale's campus connectivity, as described by Cummings (2020), was supported primarily by three key technology tools – the community's virtual private network (VPN), Zoom (teleconferencing app), and Canvas (course management system). The Poorvu Center and ITS department worked closely with nearly 2000 faculty members across all professional schools to redesign courses for online learning. Following is a description of the related tasks and outcomes of this effort (Yale News, 2020b):

- ITS ensured the students and teachers had the technology and tools they needed.
- The Poorvu Center launched an “academic continuity” (para. 12) website in four days, offering huge amounts of information for faculty and students on how to teach and learn remotely.
- CIO (chief information officer), determined to get ahead of the curve, navigated through a tide of internal and external variables to identify what challenges might occur in transitioning to remote learning, and to find best possible outcomes for students, faculty, and the community; ITS worked with IT teams in the Poorvu Center and across all professional schools to determine possible issues that may arise, and concluded that high-volume support services were needed for faculty and students, as well as the need to provide students and instructors necessary software and hardware (Cummings, 2020).
- Workshops and one-on-one sessions were provided to explain how to use digital platforms such as Zoom (for live course delivery and teleconferencing) and Canvas (the learning management system).
- Practice sessions were provided to build teaching skills for remote delivery.
- Resources such as updated laptops, iPads, and cameras capable of running conferencing apps and other new software were provided.
- Members of the ITS help desk attended relevant training to prepare them to troubleshoot problems that faculty and students might encounter.
- ITS worked to increase the community's VPN capacity to accommodate initial full transition to remote instruction.

These efforts of the Poorvu Center and ITS staff, as well as executive leadership, HR, and administrators of operational support reflect banding together and going above and beyond the call of duty for the good of the organization. Such a mindset however was not inconsistent with the culture of Yale at the time of the Covid pandemic onset. The student body at Yale University has described their community as “committed to learning and to each other” (Cullins, 2022, para. 8); and President Salovey's March 2020 announcement (upon initial campus shutdown) encouraged all to “take care of yourselves and each other – and to let Yale help you to do that” (Yale University, 2020a, para. 19). Staff and students were innovative and open to experiment with new ideas in intelligent ways; and the president, as well as Provost Strobel, recognized that this creativity and resilience played a key role in

supporting the University's effort to respond to the lockdown in ways that would not only sustain but advance Yale's mission of teaching and learning (Cummings, 2020).

Challenges

Yale University, without a doubt, transitioned quickly and nearly seamlessly to online learning when Covid hit and the campus shut down. Cummings (2020) noted that Yale's ITS department recorded on April 2, 2020, more than 77,000 individuals participated in Zoom lectures and meetings, compared to an average 2500 users per day before the pandemic. These numbers continue to grow at Yale today, with approximately 424,743 participants logging on in June 2023 for 18 million minutes of Zoom activity (Maloney, 2023). The problem, however, is that although live and recorded video has been shown to be a highly effective learning tool, some challenges have surfaced. Recent studies show that learners' attention wanes during Zoom sessions – students often stare at the screen, immobile, listening to the speaker provide a lecture, ultimately struggling to stay engaged (Smith, 2021; Ye & Lombardo, 2021). Additional studies have actually documented that attention during educational video can drop to 50% after 9-12 minutes (Yale Poorvu Center for Teaching and Learning, 2023).

Despite early successes, Yale, like many HEIs, began to experience challenges to online teaching and learning as the pandemic continued. The first most obvious concern arose when student engagement during zoom classes began to significantly decrease. Such a lack of engagement then begins a cycle of deterioration – students become frustrated, apathetic, and less motivated to pay attention (Smith, 2021). The Poorvu Center (2023), agrees, describing that overtime “remote class session[s]... seem like one long educational video to students” (para. 1).

Challenges to teaching and learning online faced not only students, but faculty and staff as well. Professors who reported that they used to move physically around the classroom engaging students in conversation and debate, reading faces, looking for expressions of understanding or confusion, now found themselves sitting or standing in front of a stationary camera, lecturing to the students. As one professor explained “I can do this in this tiny little box you're seeing... via Zoom call... but it's a lot different” (Kristoffersen, 2020, para. 20). Professors began to recognize that lack of physical interaction with individuals during class time resulted in a significant unintended consequence - disengaged students who miss or misunderstand the professor's message (Yale Poorvu Center for Teaching and Learning, 2023).

Staff, such as peer tutors, also experienced difficulties when transitioning to the online learning environment. As Perets et al. (2020) noted, Yale peer tutors reported significant instructional challenges related to lack of agility with virtual learning tools, including Zoom functions for use of breakout rooms and screen-sharing. Some peer tutors reflected that these challenges were due to delay in training for them during the initial transition period. Yale Poorvu Center's Annual Report (2020) supports this perspective, stating “high-touch”, “guided”, and “self-guided” support was provided to over 500 faculty of approximately 50 courses (introductory and high enrollment) following initial campus shut down (p.13); while few similar support sessions were available at this time for peer tutors, with only

approximately “58 peer teaching observations” noted (p.14). Yale University is nothing if not a quick learner, however. The following academic year, the Poorvu Center’s annual report (2021a) noted “1,577 faculty consultations” and “1,454 peer review” attendances (p.5). Primary topics covered included the Canvas course management system and Zoom teaching and learning tools.

Futures Thinking and Use of Foresight Methodologies

The abrupt transition to remote learning at the onset of the pandemic presented many challenges to all higher educational institutions. Yale University however, upon initial campus shut down, accomplished significant outcomes when transitioning courses and administrative tasks to online, and continued to grow and strengthen its efforts. Yale also recognized a greater insight – the ongoing need to further develop new and innovative modalities for successful pedagogy, as well as continued robust training and support for all faculty, staff, and students to ensure successful teaching and learning (Brown, 2021; Yale News, 2020b; Yale University, 2020b).

Many organizations, including HEIs, manage change through urgency (Fredberg & Pregmark, 2022; McNaughton & Smith, 2023). Yale University, as a forward-thinking institution however, established two Centers (one nearly a decade ago) to support proactive response to potential future challenges – the Yale Poorvu Center for Teaching and Learning (2020) and the Center for Innovative Thinking (Yale News, 2016). A shared vision across the University encourages proactive behaviours through intellectual collaboration which creates knowledge and embraces responsibility and accountability (Sheldon, 2021; Yale University, 2020b; Yale University, 2020c).

The success of Yale University’s response to Covid-19 reflects insight, foresight, and an orientation toward the future. This orientation toward the future, or *futures thinking*, is described by Schreiber as a systems approach to managing organizational response to critical disruption(s) through understanding the source of the change, building scenarios for navigating the change, and developing internal organizational policies to institutionalize and sustain successful efforts (Schreiber, 2019). Scenario-building, as a part of this process, reflects one type of foresight methodology that helps an organization to formalize its observation of internal and external threats and develop action plans for near- and far-term future outcomes (Schreiber, 2019a).

Scenario Planning

Yale initiated activities at the University upon the onset of the pandemic that represent a unified response (Brown, 2021). Contingency planning committees were organized across all professional schools in medicine, health, engineering, and technology (Yale University, 2020b). The ITS department initiated broad communications with all IT functions in the professional schools, as well as the Poorvu Center for Teaching and Learning (Cummings, 2020).

With the decision in Spring 2020 to transfer all courses to remote learning, the Poorvu Center for Teaching and Learning brought together 1,200 faculty members, teaching fellows,

and academic staff to make plans on how best to engage students while online (Sheldon, 2021). The goal was to introduce the concept of scenario-planning and facilitate participants in brainstorming about the institution's strengths and vulnerabilities to major economic, social, political, and environmental shifts driven by the pandemic. The participants understood that scenario-planning, or scenario-building, is a process used to "recognize changing events and accurately... [describe] ...viable and executable response[s]..." to disruption (Schreiber 2019a, p. 3).

Scenario-planning is one type of foresight methodology. The concepts of foresight and foresight methods are described in the literature by many researchers. According to Heger and Boman (2015), foresight methods include scanning, sensing, interpreting, and utilizing internal and external signals to plan for change. Conway and Voros (2003) suggests that foresight informs thinking that occurs before arriving at strategic decisions. Keenan and Miles (2001) state that foresight is "...a systematic participation-based process of building a medium- and long-term vision aimed at present decisions and putting forth common actions" (p. 3). What all of these definitions agree upon is that use of foresight helps an organization to formalize its observation of internal and external changes and build knowledge for informed decision making.

The process of scenario planning often concludes with development of action plans for the organization to implement (Schreiber, 2019a). Future-oriented leaders do not predict the future, but rather work to anticipate obstacles and plan ahead (Wooll, 2022). Obstacles may include regulations, technology, or customer demands. Ultimately, the future-oriented leader must ensure that his or her organization sustains structures and functions that are flexible and adaptable to these changes.

Action Plans

By July 2020, initial activities of scenario planning in response to the onset of Covid-19 were concluded. Yale's President, Peter Salovey, and Provost, along with senior officials of the University, announced next steps. First, nearly all undergraduate courses would remain online for Fall semester; and graduate and professional school courses would be conducted primarily online, but with in-person sessions when needed and deemed safe (Yale University, 2020c). A mix of online and in-person activities would also support research and other operations on campus for faculty, staff, and trainees, again when appropriately safe.

Action plans evolved at Yale based on the organization's strengths and weaknesses identified during scenario-planning meetings and workshops. Three key plans surfaced as viable options to move the University forward. These three plans focused on the following courses of action: reinvent course content to facilitate and ensure learning while initially 100% remote and later as hybrid (both online and on-campus); integrate new technologies, including AI-driven software; and identify and support health safety protocols both on-campus and at a distance. Driving and guiding these plans was the aspiration at Yale to be a research institution that "provide[s] an unsurpassed campus learning environment that cultivates innovators, leaders, pioneers, creators, and entrepreneurs in all fields and for all sectors of society" (Yale News, 2016, para. 3). Smart management of talent and financial resources continued as top priorities.

Reinventing Course Content. The Poorvu Center at Yale worked with faculty, teaching fellows and support staff over the summer to adapt, and some cases reinvent, course content for remote learning. With the majority of classes to be conducted online during the 2020-2021 academic year, even for students living on campus, the goal was to create as meaningful and engaging experiences as possible, and to continue to ensure *an unsurpassed learning environment*. The primary challenge now was that students lived far afield, across multiple time zones, and with varied expertise for using teleconferencing software (I.e., Zoom) and course management systems (I.e., Canvas) to complete course work.

The professors in particular worked hard during this time to minimize barriers to learning online. Yale faculty spent time talking with students to assess preferences, and also began summarizing best practices across disciplines (Shelton, 2021). Three conclusions surfaced that relate to online course content: students prefer live lectures; traditional in-class quizzes appear misaligned; and remote lab activities may need innovative workarounds.

Regarding lectures delivered for remote learning, students found that they benefitted more from live, real-time, spontaneous delivery “...even if there was an occasional glitch” (Yale News, 2021, para. 44). Highly polished, recorded lectures were perceived as TV documentaries, and with shortened attention span for such venues, student engagement waned.

In-class quizzes, traditionally used by professors for interim assessment and student learning, also began to be reconsidered by faculty. In addition to the technological burden of administering virtual quizzes, the distribution of students across time zones prevented all individuals in the course from taking tests or quizzes at the same time (Perets et al., 2020). Rather than discontinue use of quizzes as a learning tool however, faculty reinvented the quiz as a pre-class exercise, sometimes designed as course-specific and other times with community-based interaction (Morrisey, 2020; Shelton, 2021).

Regarding student lab work during initial onset of the pandemic and transition to online learning at Yale, there was no shortage of need by the Schools of Biomedical Engineering, Chemical and Environmental Engineering, and Mechanical Engineering and Materials Science to reinvent course curriculum (Yale News, 2020a). Instructors began by redesigning class activities in their laboratories using remote-controlled web cams and extra mics which were manipulated to clearly project at a distance the steps in an experiment or procedure being taught. Faculty partnered with the Center of Engineering Innovation and Design (CEID) to enable students to use 3-D printers remotely. One professor actually gave “access to a milling machine from his home” (Yale News, 2020a, para. 6).

Integration of New Technology and AI-driven Software. Within months of the onset of the Covid pandemic and shift to 100% online course delivery, Yale University launched an aggressive and intensive effort for improved learning. The goal was to reinvent course content by preparing faculty and graduate professionals to deliver first-rate intellectual experiences using data-fed (or data-powered) virtual teaching tools (Yale University, 2020d). As described by the Yale Poorvu Center for Teaching and Learning (2021a), these tools include software applications driven by artificial intelligence (AI); and these tools may come

in the form of a computerized virtual teaching assistant or enrollment counselor chatbot (Neelakantan 2020). A chatbot is a computer program designed to simulate conversation (Yale Poorvu Center for Teaching and Learning, 2021b). Chatbots perform routine behaviors efficiently and can be engaged for administrative and academic tasks.

Yale University adopted AI-driven software to promote both student work online and health and safety across the university community. First, the smart software known as ProctorU and Respondus' LockDown Browser were selected to promote teaching and learning remotely during the pandemic. ProctorU is a proctoring software used to maintain academic integrity during online exams (Yale University, 2020d). It records student behaviour through "...[individual] screen, keyboard, webcam, audio and system activity" (Griffith University, 2021, para. 1). Online proctoring with ProctorU may occur through use of humans or artificial intelligence. Yale University faculty, with support from the Poorvu Center for Teaching and Learning, utilized instructors and teaching fellows connected to students through Zoom to provide the proctoring role (Yale University, 2020d).

Respondus' LockDown Browser is another AI-driven software application which Yale University began to use in the early months of the pandemic. This software is a specialized web browser installed on a student's computer. It "promotes online examinations" while "limit[ing] use of [non-related] desktop features" (Skshidlevisky, 2022, para. 3).

Yale University faculty worked with the Poorvu Center for Teaching and Learning and ITS department to integrate Respondus software and secure a student's testing environment. This smart application then prevented students from accessing external web pages or opening other applications on the device during an exam. To use this browser, students installed it when taking a Canvas Quiz that an instructor had configured within the LockDown environment. Such AI-driven proctoring tools helped to maintain academic integrity during times of online examinations (Yale University, 2023d).

In addition to utilizing AI-driven software to secure students' online learning and testing environments, Yale University leveraged advanced technologies to support more physically interactive experiences such as lab work. The need across science and engineering programs particularly required a capability to provide students time with equipment, machines, and other learning manipulatives. Initially, the University had formed a course task force with faculty of Arts and Sciences (FAS) called FAS Task Force. Their work, along with collaborative efforts by ITS and CEID, resulted in the development and implementation of Labster, which provides guidance for teaching and learning in many courses, including remote-laboratory experiences aligned to equipment manipulation and simulation of advanced experiments (Yale News, 2020a; Yale Poorvu Center, 2023).

One particularly innovative accomplishment using smart technology in remote lab work occurred in the Medical Device Design & Innovation course. Pre-Covid assignments included "organ transportation equipment and a device for concussion treatment" (Yale News, 2020a, para. 4). To overcome online learning constraints in this instance, collaborative efforts between medical and engineering faculty and CEID resulted in "...a plan to 3-D print components for student teams..." (para. 5). Solutions for additional lab course experiences within the School of Engineering and Applied Science included using multiple motion-

sensitive cameras and extra mics to project instructor manipulations, as well as providing remote access to students to control in-lab equipment and machines (Yale News, 2020a).

Finally, use of AI-driven software also extended to ensuring the health and safety of the Yale community both at a distance and on-campus. Further discussion is provided below regarding specific action taken to facilitate testing and contact tracing; however, it is advanced technology that enabled these actions. For example, an innovative patient triage platform powered by AI, and developed by a team of researchers from Yale University and other institutions globally, provides a capability to predict Covid patient disease severity and duration of illness (Poltras, 2023). This platform not only informs patient health outcomes and management of hospital resources but is critical when building “...a proactive and methodical approach to addressing... viral outbreaks” (para. 6).

Another smart tool driving health and safety protocols across Yale University is the Hunala app. Hunala was developed by a team of Yale researchers and provides real time personal assessment of risk of contracting respiratory diseases, including Covid (Belli, 2020; Donk, 2020). Hunala works as the “Waze for coronavirus” – using crowd-sourced data to create snapshot of personal and regional risk of Covid-19 based on input from “...the Centers for Disease Control and Prevention and users’ self-reported health and demographic information” (Belli, 2020, para. 2).

Providing Health and Safety Support. The third key action plan implemented by Yale University soon after the onset of Covid-19 and initial scenarios planning sessions concluded, concerned the health and safety of the entire Yale community – both onsite and off-campus. Collaborative efforts by Yale medical personnel, public health experts, policy modelling analysts, ITS and other operations and facilities staff resulted in the integration of various smart technologies and use of multiple social media platforms to increase communication and engagement with the University community, as well as utilization of new software applications to support procedures and protocols to facilitate testing and increased contact tracing (Yale News, 2021).

The goal of Yale University early on in the pandemic was to invite at least some students and researchers back to the campus in Fall 2020 for a meaningful academic experience if possible. The chief quality officer for Yale and chair of the Covid-19 Testing and Tracing Committee worked with a broad team throughout that summer to build models for housing, food preparation, and laundry service, as well as teaching and research. The role and protection of essential workers was a priority, as was the health and safety of students, faculty, and administration. The result was a transformational experience for the entire Yale community – health and safety workers distributed “personal protective equipment to faculty, staff, and students”; the university mill shop installed “plastic partitions” around workspaces and “added desks and tables... to minimize spread of the virus”; faculty began reshaping curricular activities for learning online; scientists in Yale laboratories found “cautious but effective ways to continue [interdisciplinary and] cutting-edge research”; and facilities “built and maintained self-testing pods” across the campus (Sheldon, 2021, para. 35).

Testing protocols for Covid-19 at Yale University included “pre-arrival” and “at-arrival” asymptomatic testing for students, as well as ongoing screening of asymptomatic

individuals throughout the community (Yale News, 2020c, para. 2). Resident students quarantined 14 days after arrival, and those in high-density dormitory housing “tested twice each week” (Sheldon, 2021, para. 18). All resident students in both on-campus and off-campus housing were required to conduct a viral (PCR) test; and all undergraduate, graduate, and professional students coming from out of state had to abide by any additional State of Connecticut requirements for Covid-19 testing and contact tracing (Yale News, 2020c). Contact tracing at Yale was accomplished through a partnership between the University’s ITS department and Yale Health, utilizing Salesforce applications and support (Yale University, 2020e). The team delivered a scalable solution whereby individuals who were diagnosed with Covid-19 would then list the names of those with whom they were in contact while being infectious. Those contacted would be notified of potential exposure (without identification of the person who was diagnosed with the virus) and then guided on how to take care of themselves, as well as prevent transmission. The overall process for contact tracing at Yale University:

...integrated several enterprise applications (e.g., EPIC, Banner, the COVID-19 DataMart, People Hub, and Qualtrics) with... positive test cases [fed] into Salesforce from EPIC... processed by the resulting nurse team and categorized appropriately. Students on campus testing positive would then be moved into isolation housing provided by the University. Workflow to manage the building and room assignments [was] handled with an integration to a Qualtrics form that... [was] completed by the isolation housing team (Yale University, 2020e, para. 4).

Policies to Support Futures Thinking

The outcomes accomplished by Yale University immediately following campus shutdown and in the months leading up to the Fall 2020 semester resulted in a coordinated network of campus partners “...including Yale health personnel, public health experts, facilities staff, ITS workers, Yale Hospitality employees, professors, administrators, students, and many others... [who] transformed the operations of a complex residential research university to meet the demands of collegiate life in a time of pandemic” (Sheldon, 2021, para.5). Individuals from across the University worked together to gather and analyse data and devise or reinvent systems and protocols that inspired new behaviours. More adaptive and sophisticated teaching and learning strategies emerged, as well as a large-scale Covid-19 testing and contact tracing program that enabled meaningful academic experiences for both remote and onsite students.

As the pandemic waned, Yale leadership recognized the need for university-wide policies and procedures to sustain its transformation. The University needed to continue to guide and communicate Yale’s continuing expectations to its community, as well as “enhance operational efficiency, mitigate risk, and support compliance” (Yale University, 2023c, para. 1). The development of such internal policies to support the institutional change which occurred at Yale reflects increased capability for futures thinking (Schreiber, 2019b). Future-oriented leadership at Yale University enabled it to not only restructure its organization but also successfully implement the following policies to institutionalize and sustain its efforts.

Redefining Employee Roles

The concept of evolving employee roles at Yale University, including student, faculty, and staff, is part of Yale's institutional culture. Prior to the pandemic, the Yale Poorvu Center for Teaching and Learning (2017) engaged faculty and students in online learning, introducing new roles for instructors to deliver course work remotely. The ITS department took on an active role in strengthening internet connections and course management systems (Cummings, 2020). The provost developed policies about the numbers and types of online and blended courses, as well as establishing guidance for online curricular materials (Yale Poorvu Center for Teaching and Learning, 2017).

During the pandemic, Yale University policies evolved for not only online learning but other operations as well. Regarding online learning, policies clarified expectations and responsibilities for faculty, students, and staff. IT took on the role of integrating technologies and ensuring secure and stable learning and administrative experiences (Maloney, 2023). Faculty fulfilled the role of course overseer but now in a virtual environment – designing active learning at a distance; clarifying technology policies (including digital devices) within remote classrooms; and supporting varying degrees of digital capability by participants (Yale Poorvu Center for Teaching and Learning, 2023). Finally, the University implemented, and continues to support, information and communication (ICT) literacy through its policies for “computing and communication infrastructure, services, support, and innovation for Yale’s instructional, research, public service, and administrative programs” (Yale University, 2023d, para. 1).

Regarding additional operations within the community, Yale University implemented Policy 1101 PR.06 Approval Authority to empower the employee role for granting or delegating approval of certain operational transactions (Yale University, 2022). This policy evolved as an outcome of the experiences of the University during the pandemic, and clearly outlines the processes, responsibilities, and accountabilities related to approval authority of transactions that arise across campus. Approving or delegating approval of Yale operational transactions requires an Approver with appropriate level of authority; is knowledgeable and can recognize any irregularity in the transaction; attests to available funds from an approved budget to support the transaction; and is not the transaction’s requestor nor personally involved with the transaction (Yale University, 2022). The goal of a policy like 1101 Pr.06 is to facilitate collaborative efforts supported through decentralized organization structure and function, such as that as approval of general operations within cross-functional and interdisciplinary teams (Yale University, 2020f).

Creating Cross-functional Teams

In the wake of the pandemic, the need for constant communication, adaptability, and quick decision making prompted many institutions to reexamine current practices and procedures for doing business. Yale University responded by making it a priority to set up cross-functional teams to draw on the depth and breadth of knowledge and expertise across the community to analyze available information and plan for next steps (Yale News, 2020b). A significant goal was to prepare for academic year 2020-2021 and include both onsite and online learning. To accomplish this goal, several cross-functional and interdisciplinary teams

emerged, including ITS and the Poorvu Center for Teaching and Learning who immediately moved student courses to an online environment (Cummings, 2020); academic faculty from medicine, engineering, and arts and sciences who worked across disciplines to create continuity of student laboratory experiences online (Yale News, 2020a); and Yale health, hospitality, and physical plant employees who, with testing and contact tracing, readied dorms and other campus facilities to be safe for onsite engagement (Sheldon, 2021).

Previous discussions in this chapter highlight the significant and positive impact of each of these cross functional teams – from initial collaboration of the University president with executive leadership from ITS, Poorvu Center, HR, operations, and the provost office, to engaging in foresight activities with faculty members and staff from all schools, to reinventing course content and integrating AI-driven applications, and finally implementing action plans to provide health and safety support onsite and remotely to all members of the Yale community. It is the institutionalization of these cross-functional efforts however that is crucial to the ongoing futures thinking capability of an organization (Schreiber & Berge, 2019). At Yale University, this capability comes in the form of recognized interdisciplinary committees overseen by the provost (Yale University, 2023e). Institutionalized efforts by interdisciplinary and cross-functional teams then give rise to collective communication and finding “common ground” toward development of best practices (Novak, 2020, para. 4).

Identifying Best-practice Teamwork

A number of collaborative teams exist at Yale University to facilitate futures thinking and sustain success at the institution, as described in the previous section. An attempt to identify best-practice teamwork however resulted in not one but several suggested activities, until two collective efforts surfaced to the top – the IT Zoom Governance Committee and the Poorvu Center for Teaching and Learning. The Zoom Governance Committee began during the pandemic (Malooney, 2023); and the Poorvu Center was created in 2014 (Yale Poorvu Center for Teaching and Learning, 2021c). Both entities continue as significant best practices across the University, and each has been institutionalized through organizational policy and committee support (Yale University, 2023e).

Regarding the Zoom Governance Committee, Yale IT leadership convened this group soon after the onset of the pandemic and the recognition of a significantly increased reliance on videoconferencing to deliver online classes (Yale University, 2023d). IT partnerships were established across three campuses (including Central Campus, School of Medicine, and West Campus), and this partnership enlisted 30 members from the University community, along with a representative from Zoom, to participate on the Committee (Maloney, 2023). The goal of the Zoom Governance Committee was, and is, to take responsibility for understanding user experiences and making decisions about how the technology may be deployed, as well as securing administrative support to make it happen (Maloney, 2023). Initial tasks of the Committee focused on connectivity – the “security and stability” of it (para. 4); whereas overtime this focus has evolved to issues of usability and best practices for active and engaged teaching and learning.

The Yale Poorvu Center for Teaching and Learning (2021c) similarly works collaboratively, however, specifically to “promote equitable and engaged teaching throughout

the University, and support students across the curriculum as they take ownership of their learning” (para. 1). The Poorvu Center enlists more than four dozen staff, over a dozen residential college writing tutors, and nearly one hundred and fifty graduate student fellows and consultants and undergraduate course-based tutors to make teaching and learning more collaborative, highly satisfying for instructors, and with strong critical reflection by students. The Yale Poorvu Center for Teaching and Learning (2021c) aligns with the University president’s goal of creating a “more unified Yale” (para.4), and shares the following values as guiding principles: “...supports... and promotes inclusive teaching... values research-based decisions about teaching and learning... partners with instructors, departments, and programs to measure and evaluate impact... [and] responds to instructors’ vision and students’ needs, and fosters experiments in pedagogy, technology, and student support” (para. 2).

Strategic Programs to Sustain Future Success

Yale University supports a number of strategic programs which strengthen its market competitiveness and currently ensures sustainability of future success. These programs evolved from the institution’s use of foresight and future-oriented leadership in the areas of advanced technologies, management of talent and financial resources, and broadening its global presence. Following is a brief discussion of three of these programs, including the Yale Jackson School of Global Affairs, the International Partnership for Learning, and the Yale Institute for Global Health.

Yale Jackson School of Global Affairs

The Yale Jackson School of Global Affairs promotes education and scholarship on global and foreign affairs (Yale University, 2023f). It is the first professional school created at Yale since 1976 and promotes a community of colleagues and collaborators from around the world who come together as part of a diverse group, offering unique opportunities for curiosity and innovation across areas of study (Yale University, 2023g). The primary goal of the Jackson School is to train a new generation of future-focused leaders to tackle the world’s most daunting challenges through the development of thoughtful, evidence-based policy solutions. A range of programmes are available, including degree programs in global affairs and global health studies, as well as an interdisciplinary program in public policy (Yale University, 2023g). All of these programs equip graduates with the knowledge and skills needed to go out into an uncertain and tumultuous world and successfully lead and inspire.

International Partnerships for Learning

Another Yale initiative to promote futures thinking and future-oriented leadership is realized through international partnerships with world class institutions such as the University of Cambridge, the University of Tokyo, and the University of Ghana, to name just a few (Yale University, 2023h). Yale has enjoyed a strong relationship over the years with each of these leading institutions, with the goal to expand research across fields of international study. The resulting partnership may come in the form of an exchange programmes, clinical rotation during a medical research project, as well as participation in a joint interdisciplinary degree programme (Yale University, 2023h). These international partnerships for learning expose Yale graduates to other cultures around the world, while simultaneously enabling

students to engage with world experts and participate in complex research. Not surprising, these strong institutional partnerships that Yale has developed around the world have contributed to Yale's reputation and position of excellence, as it is recognized as a leader in world class research and currently ranks among the top 10 universities in the world (Times Higher ranking, 2023).

Yale's Role in Global Health

The final strategic program to be discussed is run by the Yale Institute for Global Health (YIGH). This program reflects a university-wide initiative led by the schools of public health, medicine, and nursing at Yale to address global health issues (Yale University, 2023i). This program also "serves as the focal point for research, education, and engagement with global partners to improve the health of individuals and populations worldwide (para. 1). Through this collaboration, Yale has been able to develop and nurture future focused leaders who are proactive in helping improve the lives of people and addressed global health challenges. As an example, Doctor Sten Vermund, MD, the Yale School of Public Health Anna M.R. Lauder Professor of Public Health, and former dean of the school from 2017-2022, was appointed president of the Global Virus Network (GVN). The GVN, as described by Yale University (2023j), represents a coalition of world-renown virologists from over 40 countries "...working collaboratively to advance knowledge about how to identify and diagnose pandemic viruses, mitigate and control how such viruses spread and make us sick, as well as develop drugs, vaccines, and treatments to combat them" (para. 2). Doctor Vermund advocates that the "GVN must ensure that the world will never again be unprepared, untrained, ill-equipped, and uninformed to deal with viral threats" (para. 6).

CONCLUSION

The success of Yale University's response to Covid-19 reflects insight, foresight, and an orientation toward the future. The institution managed an organizational response to an abrupt and extreme disruption – campus shutdown due to the pandemic – by building scenarios to navigate the change and implementing the most viable actions to attain effective outcomes. Embracing future-oriented leadership, Yale executive administrators pulled together a wide range of campus experts to consider all issues related to the business of providing quality higher education at a distance. A network of campus partners (i.e., health personnel, facilities staff, ITS workers, professors, administrators, students) gathered and analyzed data, and revised and/or reinvented systems and protocols that inspired new behaviours. The objective was to discover new teaching and learning strategies, develop new capabilities, be innovative, and experiment with new ideas in intelligent ways in order to successfully navigate a complete transition from onsite to online coursework.

To help institutionalize the University's efforts, Yale developed internal organizational policies which set expectations for behaviours and defined criteria for accountability. Three significant organizational policies developed by Yale during this time focused on redefining employee roles, creating cross-functional teams, and identifying and embracing best practices. Some of the roles that changed included faculty use of technology, and supervisors delegating approval authority for operations. Cross-functional and interdisciplinary teams gave rise to increased collective communication and finding common

ground toward development of best practices. One of the more important best practices to be identified was the teaming up of technology and digital experts with faculty, tutors, and teaching assistants (as learning experts) to maximize effectiveness of online delivery of courses.

Finally, a number of strategic programs have evolved at Yale as an outgrowth of institutionalized futures thinking within the organization, and each promotes unique opportunities for innovation across diverse areas of study. Through these programs, Yale students are exposed to other cultures around the world, while simultaneously engaging with world experts and participating in complex research. The primary goal is to train a new generation of future-focused leaders to tackle the world's most daunting challenges through the development of thoughtful, evidence-based, sustainable solutions.

In summary, this case study of Yale University highlights the significant use of foresight and future thinking in the context of higher education institutions (HEIs), and as the world continues its rapid and uncertain evolution, future focused leaders in colleges and universities must embrace foresight and futures thinking practices to better prepare for, mitigate, and respond to risks from changing trends and subsequent disruptions. The challenge for HEIs, however, is that although scholarly articles on strategic foresight and futures exist, the range of topics is almost too broad to sufficiently guide practitioners. For example, researchers discuss futures thinking as related to urban planning, agriculture, library science, climate, scientific research, and sustainability, but often the focus is social and political constraints rather than the process itself. Limited research exists on futures thinking from a systems approach, as is reflected by the case of Yale University. We hope and recommend that readers of this chapter explore further the phenomenon of futures thinking from a systems approach within the context of HEIs.

REFERENCES

- Belli, B. (2020, June 5). Yale app Hunala aims to be 'Waze for coronavirus'. Retrieved from <https://news.yale.edu/2020/06/05/yale-app-hunala-aims-be-waze-coronavirus>
- Brown, N.J. (2021). A unified response. *Yale Medicine Magazine, Issue 167*. Retrieved from <https://medicine.yale.edu/news/yale-medicine-magazine/article/a-unified-response/>
- Bulla, D. W. (2020, June 8). Pandemic creates university administrative challenges. Strategies for Successful Teaching. Retrieved from <https://successful-teaching.com/2020/06/08/pandemic-university-administrative-challenges/>
- Carolan, C., Davies, C. L., Crookes, P., McGhee, S., & Rox-Burgh, M. (2020). COVID 19: Disruptive impacts and transformative opportunities in undergraduate nurse education. *Nurse Educ. Pract.* 46:102807. doi: 10.1016/j.nepr.2020.102807. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7255089/>
- Conway, M. & Voros, J. (2003). Foresight: Learning from the future. *Semantic Scholar*. Retrieved from [file:///C:/Users/Owner/Downloads/PDF%20\(Published%20version\).pdf](file:///C:/Users/Owner/Downloads/PDF%20(Published%20version).pdf)

Cullins, A. (2022, August 31). What is Yale known for? *Transizion*. Retrieved from <https://www.transizion.com/what-is-yale-known-for/#:~:text=Unlike%20some%20other%20prestigious%20universities,one%20undergraduate%20class%20each%20year>

Cummings, M. (2020, April 14). Quietly but effectively, Yale's IT staff keeps us connected. *Yale News*. Retrieved from <https://news.yale.edu/2020/04/14/quietly-effectively-yales-it-staff-keeps-us-connected>

Donk, K. (2020, August 19). The Hunala app can help you forecast your Covid-19 risk. Retrieved from <https://theprepared.com/blog/hunala-app-forecasts-covid-risk/>

Fredberg, T. & Pregmark, J.E. (2022). Organizational transformation: Handling the double-edged sword of urgency. *Long Range Planning*, 55(2). <https://doi.org/10.1016/j.lrp.2021.102091>

Garcia-Morales, V., Garrido-Moreno, A., & Martin-Rojas, R. (2021). The transformation of higher education after the COVID disruption: Emerging challenges in an online learning scenario. *Frontiers in Psychology*, v.12. Retrieved from <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.616059/full>

Griffin University (2021, August 4). How does ProctorU work? Retrieved from [https://studenthelp.secure.griffith.edu.au/app/answers/detail/a_id/3810/~how-does-proctoru-work%3F#:~:text=Proctors%20are%20bound%20by%20a,Artificial%20Intelligence%20\(AI\)%20software](https://studenthelp.secure.griffith.edu.au/app/answers/detail/a_id/3810/~how-does-proctoru-work%3F#:~:text=Proctors%20are%20bound%20by%20a,Artificial%20Intelligence%20(AI)%20software)

Heger, T., & Boman, M. (2015). Networked foresight: The case of EIT ICT labs. *Technological Forecasting and Social Change*, 101, 147-164. doi:10.1016/j.techfore.2014.02.002.

Keenan, M., & Miles, I. (2001). A practical guide to regional foresight. Seville: FOREN Network. European Commission Research Directorate General. STRATA Programme. Retrieved from <https://www.foresight.pl/assets/downloads/publications/eur20128en-APracticalGuidetoRegionalForesight2001.pdf>

Khan, A. (2022, August 9). How Yale University is helping US students find meaningful careers. Retrieved from <https://www.topuniversities.com/university-rankings-articles/world-university-rankings/how-yale-university-helping-us-students-find-meaningful-careers>

Kristoffersen, M. (2020, April 14). Teaching in the Ivy League may have changed more in the past month than ever before. *Yale News*. Retrieved from <http://features.yaledailynews.com/blog/2020/04/14/yale-online-can-a-remote-education-compare/>

Maloney, L. M. (2023, September 11). Can everyone see my screen? *It's Your Yale*. Retrieved from <https://your.yale.edu/youryale/can-everyone-see-my-screen>.

Mauri, T. (2023). How to spark future-focused leadership that matters. *Thinkers50*. Retrieved from <https://thinkers50.com/blog/how-to-spark-future-focused-leadership-that-matters/#:~:text=Future%2Dfocused%20leadership%20is%20defined,like%20yoghurt%20in%20the%20fridge>.

McNaughton, D. & Smith, M. (2023, October 17). Navigating structural disruption in higher education. *The Change Leader, Inc.* Retrieved from <https://changinghighered.com/structural-disruption-in-higher-education/>

Morrissey, K. (2020, May 11). Quizzes during quarantine: Community in a time of Covid. Retrieved from <https://resources.environment.yale.edu/blog/2020/05/quizzes-during-quarantine-community-in-a-time-of-covid/>

Neelakantan, S. (2020, January 2). Successful AI examples in higher education that can inspire our future. *EdTech*. Retrieved from <https://edtechmagazine.com/higher/article/2020/01/successful-ai-examples-higher-education-can-inspire-our-future>

Novak, D. (2020, September 22). Finding common ground. Retrieved from <https://davidnovak.com/writing/article/2020/09/finding-common-ground>

Perets, E. A., Chabeda, B., Gong, A. Z., Huang, X., Sang Fung, T., Yi Ng, K., Bathgate, M., & Yan, E. C. Y. (2020). Impact of the emergency transition to remote teaching on student engagement in a non-STEM undergraduate chemistry course in the time of COVID-19. *Journal of Chemical Education*, 97 (9), pp. 2439-2447. Retrieved from <https://par.nsf.gov/servlets/purl/10230926>

Poltras, C. (2023, August 28). AI-powered triage platform could aid future viral outbreak response. Retrieved from <https://ysph.yale.edu/news-article/ai-powered-triage-platform-could-aid-future-viral-outbreak-response/>

Schreiber, D. A. (2019a). Introduction to futures thinking in organizations. In Schreiber, D.A. & Berge, Z.L. (2019). Editors. *Futures thinking and organizational policy: Case studies for managing rapid change in technology, globalization and workforce diversity*. Ch. 1, Pp. 3-34. Palgrave Macmillan. DOI:10.1007/978-3-319-94923-9_1

Schreiber, D. A. (2019b). Organizational capability model for futures thinking. In Schreiber, D.A. & Berge, Z.L. (2019). Editors. *Futures thinking and organizational policy: Case studies for managing rapid change in technology, globalization and workforce diversity*. Ch. 2, Pp. 35-53. Palgrave Macmillan. DOI:10.1007/978-3-319-94923-9_1

Schreiber, D. A., & Berge, Z. L. (2019). Editors. *Futures thinking and organizational policy: Case studies for managing rapid change in technology, globalization, and workforce diversity*. ISBN : 978-3-319-94922-2

Yale University and the Impact of Future-Oriented Leadership During the Covid Pandemic (by: Chichi Ezenwa and Alfred Akakpo).

Chapter in *Futures Thinking and Organizational Policy (Volume 2): Case Studies for Managing Rapid Change in Social Media, Shift in Wealth, and Government Instability* (by: Deborah A. Schreiber and Zane L. Berge).

Shelton, J. (2021, January 19). How Yale transformed itself in a time of pandemic. *Yales News*. Retrieved from <https://news.yale.edu/2021/01/19/how-yale-transformed-itself-time-pandemic>

Skshidlevisky, A. (2022, July 2). What is a LockDown browser? Does LockDown browser record you? *ProctorEdu*. Retrieved from <https://proctored.com/blog/tpost/4h1kdgu9s1-what-is-a-lockdown-browser-does-lockdown#:~:text=Can%20you%20use%20your%20phone,monitored%20by%20the%20lockdown%20browser>

Smith, A. (2021, February 18). Students struggle to pay attention on Zoom. *Golden Lines*. Retrieved from <https://spxgoldenlines.com/4246/opinion/attention-span-on-zooms/>

Times Higher Education (2023). Rankings. Retrieved from <https://www.timeshighereducation.com/world-university-rankings/yale-university>

Wooll, M. (2022, January 24). When the new normal is a no-show: Why future mindedness is the mindset organizations need now. *BetterUp*. Retrieved from <https://www.betterup.com/blog/future-mindedness-for-organizations>

Yale News (2016, December 1). Yale to build center for innovative thinking. Retrieved from <https://news.yale.edu/2016/12/01/yale-build-center-innovative-thinking>

Yale News (2020a, March 3). Maintaining lab continuity in the time of Covid-19. Retrieved from <https://seas.yale.edu/news-events/news/maintaining-lab-continuity-time-covid-19>

Yale News (2020b, April 14). Quietly but effectively, Yale's IT staff keeps us connected. Retrieved from <https://news.yale.edu/2020/04/14/quietly-effectively-yales-it-staff-keeps-us-connected>

Yale News (2020c, July 29). Yale updates fall Covid-19 testing protocols for students. Retrieved from <https://news.yale.edu/2020/07/29/yale-updates-fall-covid-19-testing-protocols-students>

Yale News (2021, January 19). How Yale transformed itself in a time of pandemic. Retrieved from <https://news.yale.edu/2021/01/19/how-yale-transformed-itself-time-pandemic#:~:text=Faculty%20members%20spent%20the%20summer,high%20numbers%20was%20too%20great>

Yale Poorvu Center for Teaching and Learning (2017). Teaching online at Yale. Retrieved from <https://poorvucenter.yale.edu/strategic-resources-digital-publications/teaching-online-yale>

Yale Poorvu Center for Teaching and Learning (2020). Annual Report 2019-2020. Retrieved from https://poorvucenter.yale.edu/sites/default/files/basic-page-supplementary-materials-files/2019-2020_poorvu_center_for_teaching_and_learning_annual_report.pdf

Yale University and the Impact of Future-Oriented Leadership During the Covid Pandemic (by: Chichi Ezenwa and Alfred Akakpo).

Chapter in *Futures Thinking and Organizational Policy (Volume 2): Case Studies for Managing Rapid Change in Social Media, Shift in Wealth, and Government Instability* (by: Deborah A. Schreiber and Zane L. Berge).

Yale Poorvu Center for Teaching and Learning (2021a). Annual Report 2020-2021. Retrieved from https://poorvucenter.yale.edu/sites/default/files/basic-page-supplementary-materials-files/poorvu_center_annual_report-111221.pdf

Yale Poorvu Center for Teaching and Learning (2021b). AI guidance. Retrieved from <https://poorvucenter.yale.edu/AIguidance>

Yale Poorvu Center for Teaching and Learning (2021c). About: Our mission, Retrieved from <https://poorvucenter.yale.edu/about#:~:text=The%20Poorvu%20Center%20supports%20teachers,to%20measure%20and%20evaluate%20impact>

Yale Poorvu Center for Teaching and Learning (2023). Engaging students through Zoom. Retrieved from <https://academiccontinuity.yale.edu/faculty/how-guides/zoom/engaging-students-through-zoom>

Yale University (2020a, March 14). Covid-19 update: First confirmed Yale Covid019 case; extending online instruction to end of spring semester; campus and staffing considerations. Retrieved from <https://covid19.yale.edu/university-announcements-about-covid-19/covid-19-update-first-confirmed-yale-covid-19-case-extending>

Yale University (2020b, April 15). COVID-19 Contingency Planning Committees. Retrieved from <https://covid19.yale.edu/community-messages/covid-19-contingency-planning-committees>

Yale University (2020c, July 1). Covid 19 information. Retrieved from <https://covid19.yale.edu/community-messages/fall-2020>

Yale University (2020d, September 14). Assessment and remote proctoring guidelines for 2020. Retrieved from <https://fas.yale.edu/faculty-resources/useful-links>

Yale University (2020e, October 15). Streamlining Yale's Covid-19 response with Salesforce platform. *It's Your Yale*. Retrieved from [Streamlining Yale's COVID-19 response with the Salesforce platform | It's Your Yale](#)

Yale University (2020f, December 4). 1101 Guiding principles for university operations. *It's Your Yale*. Retrieved from <https://your.yale.edu/policies-procedures/policies/1101-guiding-principles-university-operations>

Yale University (2022, January 20). 1101 PR.06 Approval Authority. *It's Your Yale*. Retrieved from <https://your.yale.edu/policies-procedures/procedures/1101-pr06-approval-authority#:~:text=Per%20Policy%201101%20Guiding%20Principles,within%20the%20University's%20mission%20objectives>.

Yale University (2023a). About Yale. Retrieved from <https://www.yale.edu/about-yale>

Yale University (2023b). By the numbers. Retrieved from <https://www.yale.edu/about-yale/yale-facts>

Yale University and the Impact of Future-Oriented Leadership During the Covid Pandemic (by: Chichi Ezenwa and Alfred Akakpo).

Chapter in *Futures Thinking and Organizational Policy (Volume 2): Case Studies for Managing Rapid Change in Social Media, Shift in Wealth, and Government Instability* (by: Deborah A. Schreiber and Zane L. Berge).

Yale University (2023c). Explore Yale's policies, procedures, forms, and guides. Retrieved from <https://your.yale.edu/policies-procedures>

Yale University (2023d). Information technology. *It's Your Yale*. Retrieved from <https://your.yale.edu/our-offices/information-technology>

Yale University (2023e). Office of the Provost: Committees. Retrieved from <https://provost.yale.edu/committees>

Yale University (2023f). Yale Jackson School of Global Affairs. Retrieved from <http://jackson.yale.edu>

Yale University (2023g). Yale Jackson School of Global Affairs: About. Retrieved from <http://jackson.yale.edu/about>

Yale University (2023h). Yale and the world: Institutional partnerships. Retrieved from <https://world.yale.edu/institutional-partnerships>

Yale University (2023i). Yale Institute for Global Health: Our mission. Retrieved from <https://medicine.yale.edu/yigh/>

Yale University (2023j). Yale Institute for Global Health: Vermund appointed president of the global virus network. Retrieved from <https://medicine.yale.edu/yigh/news-article/vermund-appointed-president-of-the-global-virus-network/>

Ye, J. (2016, April 18). Yale to replace Class*v2 with Canvas. *Yale News*. Retrieved from https://canvas.yale.edu/news/ydn-reports-yale-replace-classesv2-canvas#:~:text=The%20Canvas%20transition%20was%20highlighted,system%20Classes*v2%20with%20Canvas