Recommendations from the Task Force on Instructional Resilience

May 12, 2020

Introduction

In January 2020, a task force was formed to recommend how the campus would become instructionally resilient in the face of events or circumstances that disrupted on-campus instruction, like evacuations, power outages, wildfires and/or extremely poor air quality. This Task Force on Instructional Resilience—co-chaired by Chair of the Berkeley Division of the Academic Senate, Oliver O'Reilly, and Vice Chancellor for Undergraduate Education, Cathy Koshland—was charged with recommending to executive leadership by May 2020 how the campus will plan for and react to a brief and finite interruption of the educational mission. In March 2020, working groups within the task force had begun developing draft checklists and recommendations for faculty, students and support staff, when the scope of work changed drastically.

The arrival of the novel Coronavirus (COVID-19) pressed these draft recommendations into active use. Beginning on March 10, 2020, lecture, discussion, and seminar courses were required to use remote delivery of instruction strategies, followed by all lab courses (with some exceptions allowed). On March 17, 2020 the first Bay Area shelter-in-place decree was announced; all teaching and learning was mandated to be done remotely, without exception. Under the state-issued guidelines for non-essential staff, all academic and student services support, too, began to be remotely delivered. Students living in residence halls were permitted to stay, but by the end of March, over 70% of residents had officially moved out of the residence halls.

COVID-19 adjustments required the Task Force to write and implement significant aspects of its recommendations in real time. The recommendations are being tested in real time as well, though it will be the work of a different group to assess and improve upon them. As operations and instruction needed to adjust drastically, many members of the Task Force took the lead and joined additional work groups to address the evolving needs of the university. The Task Force, like so many on campus during this challenging time, worked thoughtfully, but quickly, and made indelible contributions to faculty, student, and staff support and success. Many of the recommendations and best practices in this report apply whenever there is a disruption, not just for temporary power outages or air quality issues.

In late March, VC Koshland and Senate Chair O'Reilly were tasked with chairing the Online Exam / Proctoring Working Group. An outline of this group's recommendations are included in this report. In late April, VC Koshland and Senate Chair O'Reilly were then tasked with co-chairing the Fall 2020 Instructional Planning Task Force to utilize the recommendations from the Task Force on Instructional Resilience and Online Exam/Proctoring Working Group to develop guidelines and recommendations for three different instructional scenarios for Fall 2020.

Executive Summary

The Task Force broke into work groups focused on best practices, approaches to pedagogy, how to deal with assessment, expectations and responsibilities for students, and student support services. The work groups developed best practice recommendations, checklists, and a set of resources needed to solidify the instructional resilience of the campus. Initial work began with a focus on the temporary disruptions similar to what campus experienced during Fall 2019 power outages, but that quickly shifted with the arrival of COVID-19.

Best practices

During periods of campus disruption, the instructional experience is significantly improved through advance preparation, practiced technologies to deliver instruction online, and a clear, cohesive, and consistent communications plan.

In terms of preparation and communication, the Task Force outlined **how central campus can play a role** in ensuring resilience of instruction. The Task Force recommends that central campus: provide thorough, ongoing synchronous and asynchronous training to instructors, GSIs, and students; ensure that online instruction and assessment does not compromise access for students with disabilities; ensure there is a clear and focused website to help instructors prepare for, respond to, and exit from interruptions of on-campus instruction; and develop a crisis communications plan marked by the traits such as clarity, predictability, simplicity and social media savvy.

The Task Force developed checklists and best practice recommendations for students taking classes instructors, graduate student instructors, and student services staff. These documents cover what to do to prepare for a disruption, at the beginning of each semester, and during a disruption. With the arrival of COVID-19 the checklists were finalized and distributed to the campus community much earlier than initially anticipated—in March 2020, via CalMessage. The best practices for each stakeholder group include, but also go beyond, items in the checklists. The Task Force proposes that future efforts can be focused on developing and implementing these best practices.

Examples from each stakeholder group's checklist and best practice recommendations

Instructors

- Checklist for Instructors of Record
    - Develop a plan for make-ups or removing content, if/when one or more labs have to be missed. Coordinate this plan with the graduate student instructors for the course
    - Schedule office hours (offering both in-person and remote options).

    - Inform students and graduate student instructors of communication plans in the event of a disruption.
    - Ask students in each course to consider instructional resilience at the start of each semester, inviting them to think about how they would maintain their engagement with the course and stay on schedule.
    - Leverage bCourses and seek out training offered through the Academic Innovation Studio.
- Instructional resilience resources are posted and regularly updated on the Center for Teaching & Learning website. These cover a variety of topics, including remote examinations, adapting for courses held in labs, studios, and other non-classroom spaces, remote teaching tips from faculty, and much more.

Students

- Academic responsibilities of students
    - Students should ask instructors what their plans for disruptions are.
    - Days of modified instruction are not vacations. Students are expected to continue working on their coursework and education.
    - Students must communicate with instructors regarding any needed accommodation (e.g. can't access power/wifi to download or complete take-home exam).
- Improve support for students:
    - Prioritize having libraries open, and designate other study spaces with power.
    - Provide support for students who do not have wifi at their residence, i.e., by setting up a hotspot.
    - Support departments with the costs of implementing resilience, for example video course capture.
    - Develop additional accommodations for DSP students.

Staff

- Checklist for Student Service units
    - Determine how teams will continue business processes remotely (e.g. employer interviews, in-person events, petition review, admissions review, dismissal decisions, etc.). Designate criteria and plan for cancelling, postponing or offering events online, e.g., career fairs, student workshops, etc.
    - Ensure that you, your staff, and colleagues are prepared to provide or request accommodations for interfacing remotely if a student is deaf or hard of hearing. Also, review these tips for making your remote/virtual services accessible, provided by the Disabled Students' Program.
    - Begin transitioning all student paper files to web-based electronic files, including scanned documents uploaded to files.
- Resources for student services staff hosted on the Advising Matters website.

Resource Recommendations

The Task Force advises that the campus support the following:

Technical tools for building and ensuring instructional resilience

A. *Zoom Pro* (video conferencing) - became widely used for online instruction during COVID-19 crisis, with IST acquiring Zoom licenses for all faculty, staff and GSIs. There is currently no funding source for the ongoing costs and additional licenses that will inevitably be needed.

B. *Kaltura* (video management product for creating and managing recorded content) - integrates with bCourses and also provides auto-captioning of videos.

C. Cidilabs (cloud-based software that integrates with bCourses for course authoring, templating, and course management toolsets that create, customize, and deliver accessible bCourse sites easily to faculty, GSIs, and Instructional Designers).

Staffing resources

The Task Force recommends additional staff to lead and support these tools. During the COVID-19 response, existing staff in Research, Teaching and Learning (RTL) and Information Services & Technology (IS&T) were deployed to provide immediate, critical support. To ensure continued resilience during the COVID-19 pandemic and beyond, and to avoid crippling the other services these units provide whenever their staff are redeployed as critical responders, additional staff support is needed.

Computer-based Testing

Building and supporting dedicated computer-based testing centers is an approach to student assessment that would help improve student learning, and the process of assessing their learning. It is also a powerful means of adjusting to exam disruption associated with short-term campus shutdowns as it will alleviate some of the need for faculty to find physical alternative proctoring spaces. It also carries a very affordable, steady-state cost of $1-2 per exam (*not* per student)

More detail and the cost associated with these recommendations are found in the appendix.

Communications

One of the biggest challenges the Task Force heard from students, instructors and staff was related to **communication**; be it over-communication, under-communication or confusing communication. There was general acknowledgment that communication improved during the second set of power outages in 2019 and the COVID-19 pandemic proved a sooner-than-expected opportunity to test some of these recommendations (e.g., link to a central website for more detailed information, do not communicate decisions late at night that affect activities the following day, etc). In addition to communication from the central campus, the report includes recommendations for improving communication from departments and instructors.

Assessment and Examinations

Instructor recommendations include best practices for creating flexibility within their syllabi to deal with disruptions to instruction, including assessing students and delivering examinations. With the mid-semester move to remote delivery of all instruction in March 2020, immediate guidance was required to support instructors as they finished the semester's coursework and delivered final exams. To that end, the Working Group on Online Examinations and Proctoring produced guidance and recommendations on proctoring and final exams for the Spring Semester 2020. An outline of their report is found on pagse 28-29 of this document. The full report can be found here and on the Academic Senate website.

Remote proctoring options were also discussed widely by the working group and considered products were formally audited by IST. These options include commercial programs from third-party vendors and video-based proctoring. There were significant issues with accessibility, privacy and compatibility with the computers the school has loaned to students.

Other Recommendations

The Task Force proposes **changes to how faculty plan for the semester** that include planning for a 13 week semester with a 14th week for flexible/optional content. Not only would this allow for adjustments during future shutdowns, but would also relieve some pressure from packed syllabi. There are also additional recommendations for faculty to **build flexibility into their instructional plans**. It is **imperative that RRR week remain free of new instructional content** and not be relied upon to make up work that was missed as a result of campus disruptions.

Best Practices

Central and Cross-Campus Administration

I. Preparation

There are a number of actions that central administration can do to prepare for a disruption of on-campus teaching.

a. Provide thorough, ongoing ***training***

i. ***Provide training to all instructors and GSIs, not just new hires, about how to respond to interruptions of on-campus instruction***. The campus needs to engage in proactive outreach to make instructors and GSIs aware of the need to plan ahead and to provide instructors with the tools and guidance to do so. High-touch technical support is needed to ensure widespread adoption of best practices. Training and workshops

should be available to instructors and GSIs through recordings to allow for asynchronous opportunities.

ii. ***Make regular announcements prior to the beginning of semester about the need for instructors to prepare for interruptions.*** Provide guidelines and resources with these announcements.

iii. ***Mandate and organize a campus-wide preparedness drill every semester.*** There should be no on-campus instruction that day. All instruction should be done remotely. Regular test runs will encourage instructors to learn about and deploy online instructional technologies in the most effective way possible.

iv. ***Include GSIs in all of the above initiatives.*** GSIs are likely to be on the frontline in any campus crisis. Like instructors, they need training and access to remote technologies. They also need practice running online discussion sections and office hours. It is important to note that disruptions may create more work, but the demands on GSIs must remain within the bounds of their appointment contracts. Looking ahead, the university should strive to negotiate a clause in GSI work agreements allowing for an adjustment of duties in the event of a disruption.

b. Ensure that online instruction and assessment does not compromise the ***access of students with disabilities.***

i. The university deploys considerable resources to ensure that course instruction and methods of evaluation are available to students with disabilities. Accommodations include not only extra time or a quiet room for an exam, but also videotaped lectures with captions, remediated materials for readers, and classrooms that can be accessed by students in wheelchairs. Such accommodations are legal rights for students with disabilities, not privileges. In the rush to provide alternative instructional materials or forms of evaluation during a crisis, it is not acceptable to neglect the needs and rights of students with disabilities.

ii. It is imperative that instructors and the university more generally work with DSP and Disability Access & Compliance to ensure that any course materials produced during or immediately following a campus interruption (lectures, assignments, make-up tests, etc.) are fully accessible to students with disabilities. DSP has posted a helpful link detailing ways to make online teaching accessible, while Disability Access & Compliance has provided guidelines for all members of the campus community with disabilities on a range of issues.

iii. Taken together with the findings of the Working Group that there were no viable options that addressed accessibility issues with proctoring software, currently no outside proctoring products or Zoom proctoring is allowed. We will continue our search for a product that addresses technical, access and privacy concerns.

c. ***Prepare multiple locations in advance where students can power up devices and have internet access during a partial or full power outage.*** Make sure that students are aware of these locations as part of their orientation and post signage to make the locations easy to find.
d. *Be prepared to* ***address the disparities among students and how they manifest during campus disruptions.*** These disparities include but are not limited to access to technology and internet, the ability to focus on school in a quiet location, family responsibilities, economic stressors and basic needs, possible exacerbations of mental health conditions, and a safe home environment. During the COVID pandemic response units such as Equity & Inclusion, Basic Needs, Student Affairs IT, and Financial Aid were heroic in trying to meet these needs, but more needs to be done to be prepared to mitigate these systemic equity gaps.

II. Website

Central Campus should ensure there is a clear and focused website to help instructors prepare for, respond to, and exit from interruptions of on-campus instruction.

The Center for Teaching and Learning (CTL) should be commended for completely remaking the instructional resilience resources area of its website - https://teaching.berkeley.edu - on the fly during the spring semester of 2020 in response to the needs of instructors and students during the pandemic. CTL transformed the website from a list of links to an intuitive and user-friendly site grouped around basic instructional needs: updates and communications, best practices, Zoom, options for digital tools + resources, consultations, students and instructor checklists, and course capture videos. This website should continue to be updated and its maintenance should be well-resourced by campus. In addition, the Task Force notes that materials are currently found on a variety of websites hosted by different campus units. Its recommendation is to consolidate all resources so that one can easily go from Berkeley homepage to this information.

Many universities have developed websites to deal with possible disruptions of on-campus instruction. Done properly, such websites provide an invaluable resource in a crisis; done poorly, they are a source of confusion and frustration. Fortunately, there are a number of excellent examples – such as Indiana University, Tufts University, and Georgetown University – from which we can learn and borrow. An effective website displays some the following characteristics:

a. ***It is clear and simple to use.*** It is important to resist the temptation to pile on more information and links. Sending instructors down a rabbit hole of nested links is counterproductive. Sometimes, less is more: a clear and simple website is more effective than a massively detailed website. For example, Indiana

University's home page lists three "steps," each with its own box to click: "Step 1: Get Started," "Step 2: Strategies," and "Step 3: Resources." Clicking on each step provides clear and concise information about how to move instruction online. What is more, within each step, the information is presented in plain English, and additional links are kept to a minimum. Georgetown's home page is likewise organized around three themes: "How can I prepare for a disruption?" "In the event of campus closure, how can I communicate with my students?" and "Adjusting assignments in the wake of disruption." Clicking on a theme leads to a checklist or set of suggestions, each accompanied by a link to the relevant online tools.

b. ***It provides answers to all stakeholders.*** The Indiana University website, like many such sites, is targeted at instructors only. The home page for Tufts University is a little more inclusive, listing resources for students as well as faculty. The student portal details student responsibilities during an emergency closing and provides a "Student WebEx Cheat Sheet" explaining how to access different kinds of online instruction. Ideally, though, the home page should provide a portal for all of the key stakeholders, most notably, instructors, GSIs, administrators, and students.
c. ***It features a prominent link to technical support.*** Indiana's home page has a link entitled "We're here to help." The link provides chat, phone, email, and online contact information for all of the IT support centers throughout the IU system. It also provides the physical location and hours when the help desk is open. Of note, Indiana's tech support is available 24/7 via phone, ensuring that an instructor needing help will be able to speak to an actual person, as opposed to submitting a request and waiting hours or even days for IT to respond.
d. ***It is organized around tasks or scenarios, rather than technological resources.*** Tufts University is a model in this regard, The Tufts University tools page lists five scenarios, with the tools to be used in each case: "If I want to hold a class session online…" "If I want to record lectures for students to view…" "If I want to create a quick survey or quiz…" "If I want to use interaction tools that are built into Canvas…" "If I want to learn more about Canvas…" The Tufts University page on video tools for teaching is likewise organized around scenarios: "Capture lecture in a classroom or other teaching space," "Quickly create short videos," "Make notes and sketches over a presentation or video," "Create videos to use in a flipped classroom," "Make studio-quality recordings of lectures for an online or blended course," "Share videos with or from students." Under each scenario is a drop-down menu with associated resources and instructions. Tufts University also offers a "Faculty WebEx Cheat Sheet" with step-by-step instructions for common tasks like scheduling a session using WebEx Meeting Center or inviting students to attend the session electronically.
e. ***It provides helpful examples***. Georgetown University provides a page of "faculty examples" describing various ways that faculty have deployed technologies during past campus closures. Georgetown University also presents

a number of online assignments that faculty have substituted for on-campus assignments.

f. ***It provides templates of policies on class interruptions for instructors to incorporate into their syllabi.*** The templates should cover basic issues like faculty modes of communication and instruction during a crisis, student responsibilities, and procedures for the resumption of classes and make-up exams or other assignments. Given the many different ways in which classes are organized, there is no single, one-size-fits-all language. Nonetheless, it is helpful to have templates for the most common kinds of classes, such as large lecture courses, small seminars, lab-based classes, classes centered on group projects, and classes necessitating a physical presence (e.g. labs, dance, theater).

g. ***It recognizes that instructors, like everyone else, may not be as prepared for campus disruption as they should be***. The top link on the Tufts University home page (https://sites.tufts.edu/ets/keepteaching/) is clearly targeted at instructors who have failed to prepare: “Campus is closed?! What do I do? Tips for instructional continuity on short notice.”

III. Communications

a. Develop a crisis communications plan marked by the following traits:

   i. ***Clarity*** - Inform the campus community ahead of time how and where the administration will be posting announcements during an interruption. Speak with a single voice during a disruption; avoid having multiple emails from multiple sources providing overlapping or contradictory directives. Be precise with language (campus closure vs. classes cancelled).

   ii. ***Predictability*** - During a disruption, make it as simple as possible for the campus community to access critical information. Ensure that student services staff are copied on or forwarded key messages to faculty and students so that they are prepared and informed when students approach them with questions. Ensure that campus-wide announcements are made by the same figure (e.g., Chancellor or Provost), at the same time(s) of day, and in the same way(s) (email, text, online site, etc.). Also announce decisions about whether the campus will be open at the same time and in the same way(s) every day, giving ample advance notice to instructors, GSIs, staff, and students (e.g., announcing every day at 5pm whether campus instruction will take place the next day). Do not communicate decisions late at night that affect activities the following day.

   iii. ***Simplicity*** - Make communications clear and concise. In addition, do not assume that recipients have read and retained all the information provided in prior communications. It is okay, even helpful, to repeat key information at the beginning of a new communication. Quickly bring the

campus community up to speed on the main lines of university policy so far before presenting and discussing new measures or changes. Link to a central website for more detailed information.

   iv. ***Social media savvy -*** Develop a social media communication plan, ensuring that clear, regular information comes from official sources. It is critical that the university community know which channels to trust. During the fall 2019 power outages, official-seeming social media accounts gave the (false) impression that they were distributing official information, sowing confusion about actual university policy. The university must make the sites and sources for official information clear to all.

b. In situations (e.g., fall power outages) where only the central campus is affected, make sure to ***provide clear communications to groups with off-campus classes***. We want to avoid confusing situations like last fall, when the Fall Program for Freshmen was able to stay open, but students listened to campus communications that classes were cancelled.
c. ***Create "gold folders" for instructors, GSIs, and students*** listing the main resources and providing concise guidelines on how to respond to interruptions of on-campus instruction.
d. ***Have each instructional unit designate a contact person to serve as liaison with central administration***. The liaison will help disseminate best practices to the instructional unit, provide feedback or questions from that unit, and serve as the point person in the event of a disruption of on-campus instruction. If necessary, a single liaison might represent several small instructional units.
e. **Have a "could" and not "can't" approach:** Approach faculty with a sense of what they COULD do (e.g., in terms of alternate class meeting, instructional technologies, etc.) instead of focusing on what they CAN'T do.
f. **Connect faculty with a library of alternative pedagogies based on course type** (e.g., lecture, discussion, lab, seminar, fieldwork). This approach will foster an environment of "understanding what your colleagues are doing" rather than "advice from above."

The university's initial communications approach to COVID-19 was somewhat muddled and confusing. In particular, instructors complained about receiving too many emails from too many sources and that these emails did not always send the same message. In addition, many of the emails were dense and included a number of different links, leaving instructors unsure how they were supposed to move instruction online. Over time, however, university messaging became more cohesive, as Chancellor Christ and Executive Vice-Chancellor and Provost Alivisatos became the main sources of information.

Hopefully, this and other lessons learned from the current crisis will help the university communicate more effectively from the very beginning of the next crisis.

IV. Policy and guidance

a. **Keep RRR week free of new instructional content:** Instructors and students overwhelmingly reported that while RRR week can be a tempting solution to making up for content lost during disruptions, it is actually needed for its intended purpose and should be kept free of make-up work, assignments and assessments. Campus communications should reinforce this message.
b. **Create a "Resilient Instruction Day"**: Perhaps held on the last Tuesday or Wednesday in September, this can help instructors, students and staff practice and prepare for continuing operations through the remote delivery of instruction.
c. **Make student access to course materials and textbooks easier** (i.e. accessible online): This is generally a direction that students are pushing for but is even more important when considering challenges associated with physical campus closures.
d. Since on-line resources are dependent on power, make sure there are **sufficient sources of backup power** on campus so that remote instruction can commence and continue in the event of power outages.

Instructors

I. Checklist

Some of the items below are included in the Instructional Resilience Best Practices + Preparation Checklist for instructors, published on the Center for Teaching & Learning's Instructional Resilience website in March to assist with the COVID-19 response.

II. Confronting challenges: in four phases

Instructors confront different challenges at different phases of campus disruption. By and large, the more planning that is done in the early phases, the more effective will be the instructor's response. Instructors should consider the measures that they will take at the following four moments:

1. Before Classes Start

The key to ensuring instructional continuity during a disruption is to plan ahead. The Tufts University website offers a handy checklist. Much of the preparation for an interruption of instruction needs to be done before the semester starts. If instructors wait until the disruption actually occurs, they will find it difficult to figure out how to provide effective instruction and send a coherent and consistent message to the students. There are many technological resources, but they require practice and planning to be deployed

in the best way. The bCourses platform, in particular, is very powerful, but difficult to learn on the fly.

a. ***Design the course for 13 weeks instead of 14 weeks of instruction***. Instructors should not assume that they will be able to teach an entire semester without interruption. The multiplication of threats (smoke, fire, power outage, earthquake, pandemic, etc.) means that there is a non-negligible chance of course interruptions every semester. Consequently, instructors should adopt an approach much like that of "snow days" for schools in cold-weather climates. Just as schools typically provision one week of snow days, which may or may not be used depending on the weather, Berkeley instructors should provision one week for potential disruptions of instruction. In the event that no disruption occurs, instructors can add lectures, guest talks, bonus materials, exercises, discussions, movies, etc. but the new normal for class planning should be 13 weeks, not 14 weeks.

   The Task Force also recommends this change to 13 weeks be communicated from Central Campus to encourage and support instructors in this effort. The Task Force acknowledges that removing one required week of instruction would require some adjustment for some courses, particularly gateway courses that introduce content relied upon in successive courses.

b. ***Prepare to deliver two weeks of content remotely***. Another way of enhancing instructional resilience is to prepare to deliver two weeks of instructional materials remotely. Preparation does not necessarily mean choosing and uploading the specific materials ahead of time, since the materials to be taught will depend on when the interruption occurs. At a minimum, though, instructors should know what format they plan to use to deliver content remotely and to have practiced and mastered the necessary technologies. In addition, instructors should work with DSP to ensure that online materials and make-up tests or assignments are accessible to students with disabilities.

c. ***Prepare alternative assignments and means of assessment.*** Many kinds of assignments, such as papers or problem sets, do not have to be modified, since they are done at home and submitted online. In other cases, however, instructors may need to be more creative. Georgetown University's website offers a number of suggestions for alternative assignments and modes of evaluation using Canvas. For example, in place of a classroom discussion, students might be asked to write short response papers, post these responses, then have other students respond to the responses. Instructors should also think about what they will do if a disruption occurs when an exam is scheduled: postpone the exam, assess the students in a different manner (e.g., a take-home exam), or cancel the exam and have fewer assessments that semester. It is essential for instructors, when devising alternative assignments and modes of assessment, to work with

DSP to ensure that the new assignments and modes of assessment are accessible to students with disabilities

d. ***Assess students on the basis of multiple, low-stakes evaluations***. It is increasingly recognized that students learn more effectively when they are evaluated on the basis of multiple low-stakes assessments instead of one or two high-stakes assessments. In addition to pedagogical benefits, such an approach can provide valuable flexibility in dealing with missed exams due to an interruption of on-campus instruction. Any online or make-up assessment poses risks and challenges (ensuring academic honesty, arranging accommodations for students with disabilities, dealing with student scheduling conflicts, etc.). In many cases, the simplest solution may be to cancel an exam. However, such a solution is difficult to implement if the exam is one of only one or two for the course and counts for a significant portion of student grades. Conversely, if students are being assessed weekly or bi-weekly, then canceling one test still leaves many data points for assessing academic performance. Thus, moving to more frequent, low-stakes assessments improves both student learning and instructional resilience.

e. ***Schedule a practice drill.*** The university may organize a campus-wide preparedness drill, but if it does not, instructors may want to run drills of their own. A practice run, with instruction delivered online, allows instructors to be sure that they have mastered the necessary technologies and work out any bugs or problems that arise. The same holds true for students, who are able to make sure that they can properly access instructional content.

f. ***Prepare a work and communication plan with GSIs.*** Instructors need to have a plan for a disruption of on-campus instruction and communicate that plan to the GSIs. Instructors cannot simply leave GSIs to fend for themselves. The plan should include changes to deadlines and assignments along with modes of instruction in both lectures and sections. It should also include multiple forms of contact information (email, cell phone, bCourses, etc.) and delineate the means of communication during a disruption.

g. ***Schedule Office Hours.*** Instructors should always host regular office hours. We recommend allowing remote access to office hours. This process has the advantages of facilitating access for students and enabling students and instructors to become comfortable with remote access office hours should the campus need to curtail access.

2. First Day of Class

Instructors should detail their policies regarding course disruptions on their syllabi. In addition, they should go over those policies on the first day of class. It is important to allow time for questions to ensure that students understand what is expected of them. Syllabi and first-day presentations should cover (at least) three topics:

- Expectations of students.
- Methods of communication during an interruption.
- Online delivery of course content.

A. ***Set expectations of students.*** Instructors and students often approach interruptions of on-campus instruction differently. Whereas instructors tend to want to ensure that instruction is provided either that day or via a make-up class, many students regard interruptions of on-campus instruction as simple class cancellations. Both understandings are reasonable, so it is incumbent on instructors to set expectations on the first day of semester. For example, UC Davis follows the "Carnegie rule", meaning that students are expected to work 3 hours per week for each unit of credit received (i.e., 12 hours per week for a 4-unit class). UC Berkeley may opt to do something similar, but in the absence of a campus-wide policy, individual instructors should let students know what work is expected during an interruption, both the amount (e.g., 12 hours/week) and the character (e.g., 2 hours of online lectures, 6 hours of reading, and 4 hours of writing or problem sets). Instructors should also describe any alternative modes of assessment that may be deployed during an interruption of on-campus teaching.

B. ***Detail methods of communication during an interruption***. Instructors should provide multiple ways of reaching them as well as their GSIs (bCourses, email, text, etc.). Instructors should also be sure that they have all the necessary contact information from their students and GSIs and that they have downloaded that information to a hard drive. Finally, instructors should let students and GSIs know where they will be posting announcements during an interruption and at what time of day. Given that students and GSIs may not have access to power and the internet all the time, instructors should plan to make announcements every day at a predetermined time or times known to all.

C. ***Describe how instruction will take place during an interruption.*** There are a plethora of options for delivering content during an interruption. Much will depend on instructor preferences and the nature of the course materials. Consequently, instructors need to let students know ahead of time what technology they will be using, so that the students can master the technology at their end. Again, running a practice drill may be helpful to all concerned.

3. During Interruption of On-Campus Instruction

As noted above, the key to a successful response to a disruption of on-campus disruption is to plan ahead. While each crisis is different, and unexpected challenges are inevitable, working from a well-defined plan will make things easier to manage. Instructors should follow three main guidelines during the period of interruption:

- Be calm and reassure students.
- Roll out the plan as announced.
- Communicate regularly.

A. ***Be calm and reassure students***. Instructors are important authority figures to students, who are looking to them for reassurance and guidance during a disruption. Students may be stressed, and the uncertainty of a temporary campus shutdown can ratchet up their anxiety. Consequently, it is important for instructors to send the message that they have prepared for this situation, that they have a plan, and that they are now putting that plan into action.

B. ***Roll out the plan as announced.*** Instructors should deploy the plan that they included on the syllabus, discussed the first day of class, and maybe even practiced earlier in the semester. It is important to stick to the plan as announced, unless some circumstance prevents it. Students will be experiencing enough disruption without having the plan changed on them, and some students may miss the announcement of changes and fail to access course content or complete assignments per the revised guidelines. If the plan does not work perfectly, it is probably better to wait until next semester to correct it, rather than trying to do so in the middle of a crisis.

C. ***Communicate regularly.*** An interruption of on-campus instruction is a very uncertain time, and students will no doubt be looking to instructors for guidance. It is probably a good idea to repeat the main points made on the syllabus and the first day of class: how instruction will be organized, the work that students are expected to perform, the modes of assessment, etc. Instructors should remind students of the time(s) each day and manner in which they will be posting announcements and stick to those parameters. Instructors should also be sure to communicate with GSIs, who are on the front lines in dealing with students and will likely need help managing the situation.

4. When Classes Resume

The end of a disruption is not the end of the challenges confronted by instructors. Instructors should take several measures to ensure that the rest of the semester goes smoothly.

- Review materials covered during the interruption.
- Refrain from holding exams or having major assignments due for two days following the resumption of classes.
- Avoid teaching new materials during RRR week.

A. ***Review materials covered during the interruption of on-campus teaching***. Obviously, instructors should not teach the same materials all over again. However, some students may have been unable to access all the materials or missed an assignment, while others might have some questions that they would like to pose face-to-face. Instructors should take a moment at the beginning of the first class meeting to remind students of what was covered during the interruption. They should also allow time for questions, so that students have a chance to ask about materials taught during the interruption that they did not fully understand.

B. ***Refrain from holding exams or having major assignments due for two days following the resumption of classes.*** As noted above, students may have missed or been unable to understand materials taught during a disruption of on-campus instruction. They need time to ask questions and get help in person before being assessed on their mastery of materials taught online. The same holds true for major projects or papers: students should have a chance to get in-person help before turning in these assignments. UC Davis recommends waiting a minimum of 48 hours before giving an exam.

C. ***Consider dropping some assessments.*** There is no perfect alternative to in-class assessments. During a crisis, online assessments are difficult to deploy in a sophisticated manner and confront the challenge of academic honesty. After the crisis, make-up assessments run the risk of overloading students and conflicting with other student obligations. Both kinds of assessment require making new arrangements with DSP to ensure accessibility, a process that can take time, especially if all of the instructors are trying to schedule make-up exams right after classes resume. The best solution in such a situation may be to simply drop some assessments. Obviously, this solution is more feasible in classes with many low-stakes assessments than classes with one or two high-stakes assessments, so instructors may wish to adopt the multiple, low-stakes testing approach going forward.

D. ***Avoid teaching new materials during RRR week.*** Instructors are invariably tempted to make up for canceled classes by extending instruction into RRR week. UC Berkeley authorized this practice during the fall 2019 semester, when classes were canceled several times due to power shutoffs. While helping instructors, extending teaching into RRR week posed major problems to students. Students find it extremely difficult to prepare for exams or complete assignments during RRR week if they are also being required to learn new material. The extra work provokes a lot of anxiety and can place students in an impossible situation. Hopefully, most instructors will have planned to

teach 13 weeks of content instead of 14 weeks and organized online instruction during interruptions, so they will not feel the need to teach new material during RRR week. In those instances in which all the course material cannot be covered during 14 weeks, it is better to remove the least essential parts of the course, as opposed to piling on new learning in week 15.

V. Expectations of departments

A. Designate a team/individual to take responsibility for communication and implementation.
B. Provide a contact or route for students to bring up concerns.
C. Make sure that professors are trained on and understand the current tools and technology available (e.g., bCourses). This should be more comprehensive than an optional workshop offered during emergencies. They need these skills to communicate with students and to deliver information and exams.

VI. Alternative approaches to pedagogy

The research into alternative pedagogies that can be utilized during on-campus disruptions was itself interrupted by the COVID-19 crisis. The Task Force acknowledges that further work is necessary. However, in direct response to the Spring 2020 move to remote instruction, best practices for remote teaching and learning were developed and posted to the Instructional Resilience Resources webpage, including:

- Remote examinations
- Labs, studios and other non-classroom spaces
- Determining how to best present your lecture for virtual access (decision tree)
- DSP, LOAs and accommodations for your students
- Large course content delivery
- Remote teaching tips from faculty

Instructional formats fall into two broad categories, mentioned here along with a sampling of some high-level conclusions. More detail is available on the work group's interim conclusions document as what follows is a broad overview.

1. **Students communicating with themselves or an instructor in a classroom setting (e.g., Discussion, Lecture, Seminar)**
    a. Berkeley faculty have implemented a broad range of creative solutions for continuing course work during campus disruptions. Some of the solutions are simple, while others may require more time and preparation.
    b. The level of advance planning is the foremost consideration in determining readiness for instructional resilience.

c. Discussion sections - particularly for large lecture courses - can be challenging for both the GSIs and the students. Additional work is needed to improve this learning environment.

2. **Students working in specific non-classroom spaces on campus (e.g., Lab, Studio)**
    a. A course that requires a specialized space presents unusual difficulties regarding choice and implementation of alternative pedagogies. While these may be available, they are typically farther from ideal than alternative pedagogies deployed in lieu of a classroom space..
    b. Many alternative pedagogies require support, for staff to crew a studio space, a reader to assist in assignment alteration, simulation software, etc., which may require campus support.
    c. The diversity of activities usually performed in these spaces suggests that there will need to be a diversity of alternative pedagogies available.

Instructors can consider approaching the activities in their courses through the lense of t*ypes of resiliency* and ensure they have a backup plan for each type.

Resiliency	**Examples**	**Contingency plan**
Highly Resilient	Didactic lectures, individual assignments, individual reading/research	None needed
Somewhat Resilient	Synchronous or semi-synchronous but remotable tasks: Office hours, pair programming, group problem work	Remote access, e.g., Zoom
Somewhat Brittle	Synchronous face-to-face activities not requiring specialized facilities: ensemble performance/rehearsal,	Remote, or rent/borrow alternative physical space
Brittle	Group or individual activities requiring specialized facilities: group music performance, specialized lab work	Substitute another activity and/or sacrifice some learning goals

Students

I. Checklist

Some of the items below are included in the expectations/responsibilities of students, distributed to students via Calmessage in March to assist with the COVID-19 response. It lives on on the Center for Teaching & Learning's Instructional Resilience website.

II. Undergraduate & Graduate Students' Responsibilities

While central campus administration and instructors are the main actors in preparing for and responding to interruptions of on-campus instruction, that does not mean that students have no responsibilities. Tufts University explicitly states student responsibilities on its instructional continuity website, and UC Berkeley should also follow this practice. Whatever the university policy, students would be advised to prepare for interruptions of on-campus teaching. There are actions that students should take on the first day of class, early in semester, during an interruption of on-campus instruction, and when in-person classes resume to enhance their ability to learn the necessary material and complete graded assessments.

A. ***Please pay particular attention on the first day of class when the instructor covers the plan for the interruption of on-campus instruction.*** The first day of class is the moment to find out how the instructor plans to handle an interruption of on-campus teaching. If the instructor does not go over an emergency plan in class or has no plan, students should be proactive and ask the instructor what will happen if on-campus instruction is disrupted. How will instructors and GSIs communicate with students? How will course content be delivered? What technologies will students need? How will assessments be conducted?

B. ***During the first two weeks of class, please take the time to gather contact information and become familiar with the technology to be used in the event of an interruption***. Students are advised to gather contact information for the instructor and GSI and to store this information online and as a hardcopy. familiarize themselves with the technology that the instructor plans to use to deliver course content during an emergency. Hopefully, the instructor will conduct a trial run of that technology early in the semester, but even if that does not occur, students are advised to become comfortable with the technology on their own or with the help of classmates, GSIs, or IT support. Students are expected to be in communication with their instructors, especially as any problems arise.

C. ***Students are advised not to treat an interruption of on-campus instruction as a pause in instruction and academic engagement.*** In most cases, remote instruction

will be up and running and, even if not, under the Carnegie rule, students are still expected to put in 3 hours of work per week for each credit earned (12 hours per week for a 4-credit class). Students are advised to check for instructor communications at the time and in the manner described in the syllabus. Interruptions of on-campus instruction may prompt changes in content delivery, advising, and assignments, so students should be prepared to join remote sessions by instructors and GSIs and to complete alternative assignments geared to remote instruction.

D. ***Students are encouraged to be knowledgeable, communicative, and prepared.*** Students must be aware of each instructor's plans for modified instruction and preferred method of communication. If students are unable to make timely progress in their work (e.g., no access to power or internet, or a need to care for children whose schools are closed, etc.), it is important to communicate with the instructor in a timely manner regarding any needed accommodation. Students should make sure that they are signed up for WarnMe/Nixle, UC Berkeley's mass notification system to stay informed. If possible, students should consider ways to access power if they lose it at home, such as putting together a "device charging emergency kit" (e.g., portable charging cord/adaptor, car charger, solar charger, etc) and identify locations where they could go to charge devices. See the "Student Expectations of campus" section below for examples of proposed ways for campus to improve its support to students.

E. ***Double check progress and exam schedule when classes resume.*** Interruptions of on-campus instruction can be chaotic, especially if communications and the internet are disrupted as well. Consequently, once classes resume, students are advised to take stock of their progress. For instance, making sure they have not missed any presentations during the campus closure, touching base with their GSI to ensure they can catch up if necessary. Students are advised to check that they have not accidentally missed any tests or graded assignments and, if they have, to explore how they can make up the tests or assignments. Finally, if the instructor reschedules exams or assignments, students should check their schedules and notify their GSI or instructor of any resulting conflicts (e.g., the new exam is scheduled while a student will be away at a swim meet) as soon as possible..

III. Student Expectations…

...of campus

A. Develop: Clearly delineated policies regarding instruction during modified instruction periods.
B. Communicate: Resources available to the campus community during the modified instruction. Include community resources such as local food banks, for example, for students who are food insecure.

C. Communicate: In the text of communications, make clear the different responsibilities of and resources available to faculty instructors and GSIs. Often GSIs are unclear of whether the resources for ‘instructors’ apply to GSIs or not.
D. Accommodate: Make reasonable accommodations for continuing the academic mission that balances the constraints of the emergency and the academic needs of the students. Keep in mind that for some community members, being on campus may be safer than staying home (i.e., during times of heavy smoke and poor air quality).
E. Improve support for students, by:
    a. Prioritizing having libraries open and other study spaces with power.
    b. Providing support for students who do not have access to computing devices - i.e., tablet and/or laptop loans
    c. Providing support for students who do not have wifi at their residence. I.e., set up a hotspot
    d. Supporting students to print materials required by instructors for modified instruction
    e. Supporting departments with the costs of implementing resilience, for example, video course capture
    f. Developing additional accommodations for DSP students

...of departments

A. Be knowledgeable: Follow campus policies and support instructors in carrying out these policies.
B. Be comprehensive: Develop strategies that encompass the needs of undergraduate and graduate students in your department, including those enrolled in formal classroom instruction and independent research credits.
C. Communicate: Designate a person or team to be responsible for orchestrating communication and policy implementation (ideally, someone involved in instruction (chair or head of curriculum committee). Have a clear chain of command for making local decisions in response to the campus’s modified instruction.
D. Support instructors: Work with instructors as they develop implementation plans for courses. For example, review syllabi and/or offer suggested text.
E. Support students: Provide a contact or route for students to bring up concerns about the implementation of modified instruction policies in particular courses and communicate this to students (undergraduate and graduate), ideally on the syllabus and during the modified instruction period.

...of instructors

A. Be knowledgeable: follow campus and department policy.
B. Make a plan: Clearly state their implementation plan of the policy appropriate for their course in their syllabus.

C. Communicate: Communicate with GSIs and undergraduate teaching assistants and any other instructional staff/support associated with the course how the policy will be implemented in their course. Remember to also develop and communicate a plan for undergraduate and graduate students involved in independent research.
D. Reimagine: Revise course curriculum, ideally before the start of instruction, to be consistent with best practices and campus expectations of students (see below for details).
E. Accommodate: Refer to DSP guidance to provide appropriate accommodations for students.
F. Adapt: Be willing to adjust expectations for students with any outstanding situations that alter their ability to participate in the course like the majority of the students.
G. Support: Encourage students to keep in mind their own health, safety and public health in the decisions they make, and support them through this process.
H. Grades: Ensure that at least one other person has full access to your grades and will be able to assign grades in the event that you are not available.

...of GSIs

A. Be knowledgeable: Be aware of course policies and support instructors in implementing them.
B. Communicate: Communicate instructor and campus procedures and information with your students.
C. Accommodate: Communicate any obstacles to being able to carry out your GSI duties to the instructor.
D. Support: Encourage students to keep in mind their own health, safety and public health in the decisions they make, and support them through this process.
E. Grades: Ensure that the instructor has full access to your grades in the event that you are not available.

IV. GSI Responsibilities

Most of the recommendations for students apply to GSIs as well. Additional GSI-specific guidelines include

A. Like students, GSIs are expected to continue with their duties – teaching sections, holding office hours, and administering and grading assessments – during an interruption of on-campus instruction.
B. Please make sure that the instructor has a crisis plan spelling out the GSI's duties during a disruption. The crisis plan should also cover the ways that the instructor and GSI will communicate with the students as well as with each other, the technologies that will be used to deliver content, and the alternative modes of assessment that will be deployed.

C. GSIs are advised to gather emergency contact information for instructors, fellow GSIs, and students in their section(s). Storing this information online and in hardcopy is advised.
D. GSI are encouraged to have a communication plan for students in their section, detailing when and how announcements will be posted during a disruption and methods for the students to contact the GSI..
E. GSI are advised to practise the technologies necessary for moving sections and office hours remotely, and are encouraged to conduct a practice run, for example, teaching one section online.
F. When classes resume, GSIs should take stock of student progress and provide an opportunity for students to ask questions and catch up on what they may have missed during the disruption.

Student Services Staff

The resilience of a large decentralized public research institution like UC Berkeley is contingent not only on faculty readiness, but student service readiness as well. There are over 900 student services staff, and less than half directly serve the Schools and Colleges of the University. Student services professionals are also located in University Health Services, Student Affairs, Equity and Inclusion, Undergraduate Education, University Extension, Summer Sessions & Study Abroad, Graduate Division, Administration, Berkeley International Office, Athletics, and Cal Performances. Each of these service areas embody institutional knowledge and information essential to the teaching, learning, and overall academic development of our student body, and also ensure that our students have equitable access to opportunities for achievement.

The Institutional Resilience Task Force recognizes the importance of student services by including a work group focused on Student Services. The products of this work group were compiled based on the group members' expertise as well as drawn significantly from town hall meetings, surveys, and interviews conducted up to the campus closure in early March.

In addition to the work done by the Task Force members, examples of COVID-responses can be found across campus, including in Equity & Inclusion, University Health Services/CAPS, the Basic Needs Center and Student Affairs.

I. Checklist and COVID-19-specific resources

These three documents were developed by the student services-focused work group with input from members of the student services community. Links to all three documents can be found in the COVID-19 area of the Advising Matters website, a website devoted to supporting, lifting up and informing the student services community.

- The Days of Modified Instruction: Checklist for UC Berkeley Student Services Units was created with the Task Force's original charge in mind - preparing for fall power outages. However, like the instructor and student checklists, it was deployed for use during COVID-19 response.
- UCB Student Service Updates- shared internal document for staff co-created by roughly 100 student services programs to update each other on late-breaking changes to policy and service models. Student services staff use it to inform one another as to how they have adjusted to remote learning and work, and to better serve our students in the transition.
- UC Berkeley Student Services COVID-19 Questions and Tips- shared document for student service units to ask and answer questions during this period of modified instruction.

II. Recommendations to Campus regarding Student Services

Note: these recommendations were drafted with the understanding we were preparing for a possible fall semester disruption.

Due to urgency around developing a COVID-19 response and necessity being the mother of invention, most of the following recommendations were institutionalized after feedback from the Advising Council and the Task Force

1. **Set and communicate clear expectations** among units that student services will continue to be available (whenever possible), even during days of modified instruction. *Clarify whether tutoring, workshops, and other services can be offered at off-campus locations and, if so, which off-campus locations.*
2. **Include directives for student services in any campus-wide website/communications** on the topic of Instructional Resilience (resources, expectations, good practices, etc.). Ensure that student services staff are copied on or forwarded key messages to students and faculty.This should also include recommendations for off-site student-facing staff. Ensure that units are also communicating with colleagues across campus (e.g., changes in service delivery, exceptions to deadlines, etc.).
3. Create a **Student Services Checklist** to parallel faculty and student checklists
4. **Ensure that departments/programs know the Office for Disability Access & Compliance** can help them provide disability access to online appointments, meetings or calls.
5. **Inventory/assess each department/program's ability to offer student services remotely** and identify gaps (this effort is underway - see "Student Services Updates" and "Student Services Interviews").

6. As a campus, **ensure that technology gaps are filled** (e.g. Zoom Pro, assistance with conversion from paper files to Berkeley Online Advising and other web-based systems).
7. **Provide resources/trainings for student-facing staff** re:
    a. Relevant technology and tools to schedule and offer services remotely (including accessibility of communication), and
    b. How best to assist students who may be impacted or traumatized by the current event. See CAPS video of self-care tips for students.
8. **Provide virtual and cross-divisional forums for student services staff** to plan, share strategies/tips/resources, as well as update each other on changes to policy, services, etc. If resources allow, the campus could develop an on-line course or other virtual platform for the exchange of resources and strategies (see SP20 Advancing Practice programs as examples).
9. **Identify in advance units/administrators who will determine exceptions to policies and deadlines, if needed** (e.g., add/drop, admissions, incomplete deadlines, graduation deadlines, fee payment due dates).
10. Create a **"practice day"** on which all student services are provided remotely.
11. Share the results. **Evaluate** and improve.

III. Training and community-building for student services staff

Another outcome from the above recommendations directly related to the COVID-19 response is a very well-attended Advancing Practice workshop series. Advancing Practice is Berkeley's professional development program for staff in the student services job family of which a large part is in-person workshops. In January 2020 campus filled a brand-new position - the Manager of Advising, Strategy and Training - sitting in the Center for Teaching and Learning within the Division of Undergraduate Education and with a mission to work closely with the Divisions of Student Affairs and Equity & Inclusion. This position also oversees the Advancing Practice curriculum and created a COVID-specific menu of over a dozen virtual workshops that have brought the student services community closer together and provided them with vital information.

The Spring '20 series includes the following topics [with attendee numbers in brackets]

- *Understanding the CE3 Student Experience with COVID-19* [181]
- *Difficult Decisions, panel of student services staff on helping students with end-of-term decisions* [139]
- *Supporting Ourselves and Our Students* - Counseling and Psychological Services [232]
- *Best Practices for the COVID-19 Era: Paperless Advising in Data Science* [140]
- *Career Planning Strategies to Support Students During Covid-19* [160]
- *SP20 Undergraduate Grading Option Policy Updates [212]*
- *Summer Session Updates* [247]

- *Got KIDS? At Home?* For student services staff who are juggling work, child care, and home-schooling [19]
- *Social Change Roles in Times of Crisis* - Virtual Reflection [75]

Weekly student services socials, co-hosted by staff across divisions and units, have created a community during a time of intense social isolation. These Zoom gatherings regularly draw 50-90 attendees and give student services staff a virtual space to share ideas and connect.

Requests for Tools and Resource

Tools for building and ensuring instructional resilience

The development of an instructionally resilient campus will require new tools and staffing that support alternative content delivery. We recommend funding to support three platforms that together provide a comprehensive solution to delivering course content online.

1. **Zoom** is a robust and accessible video conferencing solution that is designed to support instructional capacity. This product allows for online video conferencing with a variety of tools (e.g., the ability to dynamically create virtual discussion rooms) that support both synchronous and asynchronous course delivery. Zoom is being used widely for online instruction during the COVID-19 crisis.

2. **Kaltura** is a video management product that allows for the creation and management of recorded content. When integrated with the learning management system, this product allows faculty to retain an easy-to-access library of recorded lectures and other types of video content (i.e., created via Zoom). Kaltura also provides auto-captioning of videos uploaded into each library that serves as an intermediary, allowing students with disabilities to access course materials immediately while legal transcriptions are being created. In addition, studies have also demonstrated that the availability of captioning enhances learning for all students, not just those with disabilities.

3. **Cidilabs** is a cloud-based software that integrates with Canvas (bCourses) for course authoring, templating, and course management toolsets that create, customize, and deliver accessible bCourse sites easily to faculty, GSIs, and Instructional Designers. Cidilabs also improves the quality and consistency that students are requesting. It has been vetted for data privacy and ADA accessibility

as well as teaching efficacy. Additionally, Cidilabs gives academic departments the ability to monitor course development metrics and streamline faculty support. Finally, UCB could save money by purchasing this cloud-based vendor solution for templates instead of developing, maintaining, and supporting campus-wide Canvas templates in-house.

Zoom and Kaltura have been purchased by UC Berkeley, but with one-time funds and little staff support. With expanded use and the urgent need for online content, UCB will need to find on-going support for both of these products. Cidilabs has not been purchased. Costs associated with the software and staffing to make campus instructionally resilient are found in the appendix.

Computer-based Testing

Computer-based Testing (CBT) is an approach to student assessment that would primarily help improve student learning and the process of assessing their learning. It is a powerful means of adjusting to exam disruption associated with short-term campus shutdowns. It is also very affordable, with a steady-state cost of $1-$2 per exam (not per student).

With CBT, students take time-limited exams either in a dedicated proctored facility or, with appropriate remote proctoring options as determined by the instructor and Faculty Senate policy, at home or off-campus. Students in a class need not all take the exam at the same time; the key to CBT is sufficient differences among different students' version of the exam to thwart cheating by leaking information to other students when students take it at different times. There are three ways to do this:

- **Inter-question randomization** means that different students taking the same exam will get different variants of a question that test the same knowledge, where each variant has been constructed by the instructors.
- **Intra-question randomization** means that for a particular question variant, specific parameters of the question can be randomized; for example, the coefficients and exponents in an algebra equation, the forces and directions in a statics problem, the interconnection and signal values for an electrical circuit, and so on.
- **Order randomization** means that the order in which questions are presented, and (for selected-response type questions) the order in which answer choices are presented, is different for different students.

While bCourses supports all three of the above variants for very simple question types such as multiple choice and numerical-response, we are working with the University of Illinois to adapt their technology, described in this whitepaper by Craig Zilles and this slide presentation by Armando Fox, which allows extremely rich, interactive, multi-part, and graphical questions to be included in CBT exams. UIUC data from extensive use of CBT in two dozen courses has shown that sufficient randomization reduces the advantage of cheating to less than 3 percentage points overall.

Pedagogically, CBT allows for mastery learning—many medium stakes assessments as opposed to few high-stakes assessments—and data from UIUC shows better retention and fewer Ds/Fs as a result. Students also respond positively to both the focus on mastery learning and the assurance that CBT thwarts cheating.

How can CBT help with resiliency?
With the Fall19 power shutdowns many scheduled exams had to be cancelled. It was at times very difficult to find available rooms and times of day to reschedule the exams, especially for large classes.

With CBT, we see the following benefits for resiliency during short-term campus shutdowns:

- There is no need to find a single room to accommodate hundreds of students at once
- Many DSP accommodations become easier, and part of "mainstream" workflow
    - Extra time, limited scheduling window: students can self-schedule
    - Distraction-free: partitions to block visual distractions, noise-cancelling headphones, separate cubicles…
- Rescheduling whole exam or individual students is easy
- Can combine manually-graded and auto-graded questions, w/Gradescope
- With appropriate types of exam questions and remote proctoring, CBT exams can potentially be administered at home at a time convenient to the student

While the testing center itself cannot be used for remote instruction, the question bank that is created as part of delivering exams with CBT can be very helpful for remote examinations. The questions can be delivered remotely to help thwart cheating.

The start-up and ongoing costs associated with developing, launching and maintaining a computer-based testing site are found in the appendix.

Assessments and examinations

Recommendations & Guidance from the Working Group on Online Examinations and Proctoring

A Working Group was convened in March 2020 with the charge of very quickly producing guidance and recommendations for instructors and students on proctoring and final examinations for the Spring Semester 2020. Their report can be found here and on the Academic Senate website: https://academic-senate.berkeley.edu/issues/coronavirus.

Their guidance was founded on the notion that an "examination is a two-way pact between students and instructor. Conducting examinations, particularly under the unprecedented

circumstances we find ourselves in the spring of 2020, ultimately relies on trust: Instructors must be able to trust students to act with academic integrity and students must be able to trust their instructors and peers to do the same. Instructors need to convey an expectation of integrity and dedication to learning to the students, and instructors need to live up to student expectations of instructor fairness and commitment to teaching."

Their recommendations and guidance cover the following topics:

1. Communication, the Honor Code, and examinations
2. Student expectations of instructors and other students
3. COCI's guidance on final examinations
4. Surveying students prior to the examination
5. Online resources that exacerbate or enable academic misconduct, and reporting student misconduct to the Center for Student Conduct.
6. Providing clear written guidance to students on expectations for conduct during collaboration. Providing clear written guidance on the availability of GSIs and Instructors during the exam to address students' questions, concerns, and internet connectivity issues.
7. Providing students with an opportunity to test drive the online submission procedures for the exam and requesting student feedback.
8. Reducing Incentives for misconduct and perceptions of misconduct, and the goals of "deterrence" versus "apprehension" as a factor in a proctoring approach.
9. Guidance for different types of exams.

After much discussion the Working Group also determined that remote proctoring options - such as video-based proctoring and commercial programs offered by third party vendors - would not be allowed for this semester. They were not able to identify a viable option that addressed both student privacy concerns and accommodations.

General suggestions for pedagogy & practices around assessment & exams

The Task Force produced these general guidelines to assist instructors in responding to disruptions to exams and assessment:

How can we help instructors change their pedagogy/practices?

1. Consider offering more frequent, lower stakes exams. They are shown to be better for the students and they also allow for more flexible adaptation after campus disruptions. Could also consider approaches such as "take best 3 of 4" which makes it easier to not have to reschedule.
2. Contingency plan outlined in syllabus for major exams / classes where majority of grade hinges on a particular assignment.

3. As a suggestion, but not a replacement to pedagogic re-evaluation, look to grade rebalancing as a last measure.
4. DSP should expand facilities to handle students who are affected by rescheduling of exams.
5. Need campus support for technology for instructorials (e.g., classes, workshop, in-person tutorials, help-line).

What if your major exam is disrupted? Do you reschedule? Move to take-home?

1. Move more exams for large classes to online randomized questions
2. Distribute example questions ahead of time for fairness
3. Take home exams can be problematic: integrity, equity for DSP students, electric power outages, and potential timing conflicts.
4. Consider an on-line oral exam of 10-15 minutes (with individual GSI, and and consideration of needed DSP accommodations for an oral exam, etc.). Bank of questions can be given ahead of time.

Items for other campus units

1. Best Practices for GSIs and Doctoral Students

a. These need to be created and distributed by the Graduate Division in consultation with the Graduate Council and Graduate Assembly.

2. Facilities

a. Provide and clearly communicate the location of (more) space on (or off) campus where students/faculty/staff can access power and WiFi. Also consider spaces close to campus but not on campus power such as University Village, other Bay Area universities, etc.
b. Making sure Moffit and other new buildings have a Tesla wall built in.
c. Create a “power map” of campus - which buildings are powered by city vs. campus.

3. Human Resources

a. Review the checklist for Student Services Staff.
b. Consider asking HR to create a checklist for staff.
c. HR responded to COVID with a UC-wide Administrative Leave policy, but how can this be modified/addressed during shorter disruptions (e.g. fall power shutoffs)?
    i. The differential between staff who are required to be in the office or working from home while their colleagues could be “off” (because their building on campus had no power, they had no power at home, etc.).

ii. How to ensure equity? Student services staff report inequities in how some managers/supervisors are communicating and supporting leave during the COVID-19-impacted period. Also, those with childcare, homeschooling and parenting responsibilities are asking for continued flexibility as campus returns to "normal" if schools and childcare are still disrupted.

4. Student Affairs

a. How to address student (and to a lesser extent staff and faculty) wellbeing?
b. Many students anecdotally express survey fatigue. Alignment of Colleges/Schools, campus and the Office of the President in sending surveys to students is important. We need to also consider the very students who are most impacted may not be responding to these surveys.
c. Residence Hall communications and safety.
d. Residence Advisors - ensure that they are properly supported.

5. Student Support Programs and other Advising and Academic Support Services

a. How can we ensure student-run support programs (e.g. Cal NERDS, College of Chemistry Scholars Program, etc) have the support they need to continue operations during periods of remote instruction and campus closure?
b. Departments & Colleges Academic Support need support to transition from paper files to BOA (Berkeley Online Advising).
    i. Recommend a) exploring virtual student support practices at other institutions, and b) providing training for student services staff on remote advising tools.

Task Force on Instructional Resilience Membership

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Susan Hagstrom, Manager, Advising Strategy and Training, Division of Undergraduate Education
Suzanne Harrison, Director of Digital Learning Services
Tony Mirabelli, Assistant Director, Athletic Study Center & Lecturer

Undergraduate Students

Aditya Varma, Associate for the Legislative and Communication Departments for ASUC Senator Haazim Amirali

Media Sina, ASUC Senator

Graduate Students

Adam Orford, GA President
Ryan Liu, Graduate Student, GSPP/SSW

Staff to the Task Force

Cindy Bumgarner, Assistant Vice Chancellor & Chief of Staff, Office of the Vice Chancellor for Undergraduate Education
Kristine Lee Wilby, Academic Affairs Manager, Office of the Executive Vice Chancellor & Provost
Leslie Harlson, Project Manager/Analyst, Office of the Vice Chancellor for Undergraduate Education

Appendix

Cost for technical tools & staffing needs

Zoom and Kaltura have been purchased by UC Berkeley, but with one-time funds and little staff support. With expanded use and the urgent need for online content, UCB will need to find on-going support for both of these products. Cidilabs has not been purchased. We recommend long term support for licensing all three products and 2.5 total FTE in staffing to support the services associated with each product, total for on-going costs is $905,000 per year or $2,715,000 over a 3-year period.*

UCB INSTRUCTIONAL RESILIENCE FUNDING NEEDS				
ON-GOING FUNDING REQUEST				
Item	**Year 1**	**Year 2**	**Year 3**	**Total**
Licensing				
Zoom License (Annual)	$165,000	$165,000	$165,000	$495,000
Kaltura License (Annual)	$200,000	$200,000	$200,000	$600,000
DesignPlus & ReadyGo License (Annual)	$45,000	$45,000	$45,000	$135,000
Staff Support				
2.0 FTE Service RTL Lead (Zoom & Kaltura)	$240,000	$240,000	$240,000	$720,000
0.5 FTE Service IS&T Lead (Zoom Tech. Coordination)	$85,000	$85,000	$85,000	$255,000
DesignPlus & ReadyGo Service RTL Lead	$170,000	$170,000	$170,000	$510,000
On-going Funding Total	**$905,000**	**$905,000**	**$905,000**	**$2,715,000**
ONE-TIME FUNDING REQUEST (3 YEAR PROGRAMMING)				
Presidential Chairs Fellow - Instructional Resilience Tracks				
Faculty Stipends (10 @ $20K per faculty for 3 years)	$200,000	$200,000	$200,000	$600,000
1FTE CTL Consultant	$170,000	$170,000	$170,000	$510,0000
Graduate Student Support	$40,000	$40,000	$40,000	$120,000
Subtotal	**$410,000**	**$410,000**	**$410,000**	**$1,230,000**

*not included here are the increased costs spent on vital services like remote captioning (estimated cost $8-$10K/semester during periods of predominantly remote instruction)

Costs for Computer-based Testing (CBT)

We recommend the implementation of Computer Based Testing facilities across campus. There are specific requirements necessary for implementation that allow for a suitable general assignment facility. RTL currently oversees a space in lower Heart Gym which can easily be used to pilot a testing facility. The budget below serves as a template for implementing a pilot program in Hearst Gym. Implementing a pilot program in Hearst Gym over the course of a semester would allow for us to better understand the feasibility of implementing CBT facilities across campus as well as identify a more reasonable cost estimate. In lieu of a pilot, we recommend using this budget as a multiplier for expanding the service across campus (minus a technical service lead, we only need 1 for this service) such that for every 50 seat computer lab there is an annual operational cost of $220,00.

Item	Year 1	Year 2	Year 3	3 Year Op Cost Total
Staff Coordinator	$ 110,000	$ 110,000	$ 110,000	$ 330,000
Student Staffing	$ 95,000	$ 95,000	$ 95,000	$ 285,000
Technical Service Lead	$ 135,000	$ 135,000	$ 135,000	$ 405,000
Hardware: 50 workstations	$ 100,000	$ 10,000	$ 10,000	$ 120,000
Furniture: 50 workstations	$ 30,000	$ -	$ -	$ 30,000
AV/IT (cameras, monitors, etc)	$ 25,000	$ 5,000	$ 5,000	$ 35,000
	$ 495,000	$ 355,000	$ 355,000	**$ 1,205,000**