ITPC Report 2020-2021

This report summarizes the activities and recommendations of the 2020-2021 Information Technology Policy Committee (ITPC).

1 Charges

The ITPC received the following charges from the Senate Agenda Committee:

1. The ITPC shall:
    a. review the impact of the COVID-19 pandemic on IT infrastructure and policy changes in support of both teaching and research,
    b. analyze availability of and investments in short-term and long-term computing resources in support of remote teaching and research,
    c. identify the mechanisms for collecting, sharing, and reporting faculty suggestions on these topics, and
    d. provide recommendations to for improvements. Preliminary report by January 4th, 2021.
2. The ITPC shall:
    a. identify and engage with interested faculty, connect them with ITS, NULab, and library leadership,
    b. work with these stakeholders to construct and document a set of resources specifically targeting public-facing datasets, interactive web pages, and public computing and project sharing platforms, in order to boost the availability of computational resources for faculty in the social sciences and humanities, and
    c. provide recommendations for future maintenance and improvements of this infrastructure.

2 Membership

- Gunar Schirner (chair) COE-ECE
- Cole Camplese (VP-IT & CIO; ex officio)
- Xiaomu Zhou, CPS-Informatics
- Matthew N Smith, CSSH
- Stephanie Sibicky, BCHS-Pharmacy
- Peter Whitney, COE-MIE

3 Charge 1: Impact of COVID-19 on Teaching and Research

Pursuant to Charge 1, the ITPC conducted focus groups with key contacts in each college. Based on the findings from these focus groups, discussion with ITS and Academic Technologies, the ITPC conducted a university-wide instructor survey. Each activity, and their findings are described in the subsequent subsections.

3.1 College Focus Groups

Each member of the ITPC was tasked with reaching out to colleagues in their respective colleges/schools to gather information about feedback already collected regarding the switch to NUflex in the fall of 2020. Any feedback from faculty, teaching assistants, and students about suggestions for improvement or

immediate needs pertaining to teaching during the COVID-19 pandemic with a focus on technology-related items.

Feedback from the colleges included technical support to be provided for classes meeting outside of regular hours (i.e., evening classes), student space constraints between in-person classes and others held online (mostly due to the scheduler), multi-tasking by instructors within Zoom, poor in-person classroom attendance, and faculty needing to switch to all remote to better facilitate team-based learning.

Based on the information gathered, it was deemed necessary to administer a survey to all faculty to gain a broader understanding of what technological improvements could be recommended to better facilitate the NUflex model.

3.2 Instructor Survey

The IPTC Instructor Survey was created based on the focus group results in collaboration with ITS and ATS. The survey included a section to gather demographics (e.g., if the faculty was in-person, remote, or both in Fall 2020), enrollment in the class including number and grade level (for the largest class taught in Fall 2020), as well as inquiry into the number of students who attended class in the classroom and if this was the expected attendance. The next section focuses on hardware and classroom technology, asking if classroom technology supported connection to students, issues with audio and video, and what additional hardware would be requested to improve the teaching-learning interaction. The next section included questions about these teaching and learning interactions, including using classroom technology for active and/or group learning, using break-out rooms, the chat feature in Zoom/MS Teams, and if assistance monitoring the chat would be desired. Any limitations with using the technology were also solicited. Working with ATS, the next set of questions asked about the use of Canvas and the training provided by the University including a question about using the NUflex Seats report and which training resources were utilized. Finally, two open response questions asked faculty to provide additional comments about course delivery and student attendance and what three changes to educational technology and classroom improvements would improve teaching in 2021.

The survey was distributed to all NU faculty on December 15, 2020 and 366 faculty responded (approximately 11% response rate). In terms of demographics, most faculty taught remote (51%) compared to in-person (32%) or both (17%). Instructors hosted their courses on Canvas (99.7%) and used Zoom (95%) to deliver their class meetings. Class demographics were split between students in all grade levels, the total enrollment on average was 39 students (range 3-160), and on an average day, the number of students attending lecture in the classroom was on average 11 students (range 0-125). Seventy percent of faculty perceived a significantly less than expected attendance in the classroom when compared to the NUflex Scheduler. It is notable that 22% indicated that they did not track or have a sense of attendance and 24% indicated that they taught online only.

Regarding classroom technology, faculty were split on their agreement that classroom technology (cameras and microphones) supported their ability to feel connected with both in-person and remote students during real-time meetings (Strongly agree or agree 37%, neutral 30%, disagree or strongly disagree 33%). Classroom technology issues included poor microphones/audio for students speaking in the classroom (35%), audio feedback (29%), ambient classroom noise (27%), and other issues like not being able to hear audio playing on the instructor's computer or non-working technology in the classroom in general. Of note, 32% of faculty noted no audio issues. In terms of video issues, most faculty indicated

that students do not turn on their camera (41%), and the positioning of the camera needs adjustment (34%), among others. Major concerns about not being able to visualize the writing on the board, multi-tasking within Zoom using one screen, and lighting concerns were raised in the free-text response. Faculty overwhelmingly requested a digital writing surface (56%) when asked about additional hardware to help improve the interaction in the classroom and multiple screens to better multi-task.

Overall, faculty were split in agreement/disagreement about classroom technology supporting their ability to facilitate group learning with in-person and remote students (strongly agree and agree 39%, neutral 22%, disagree and strongly disagree 39%), using group break-out rooms was effective in the hybrid format (strongly agree and agree 64%, neutral 14%, disagree and strongly disagree 23%), using the chat in Zoom/MS Teams was easy to navigate (strongly agree and agree 47%, neutral 15%, disagree and strongly disagree 38%), and preferring assistance to monitor the chat by TA, grad students, etc. (strongly agree and agree 54%, neutral 19%, disagree or strongly disagree 26%).

Regarding classroom limitations, most faculty experienced difficulty monitoring the chat while teaching (52%) and mentioned issues with internet connectivity, eliminating group work due to difficulty with managing it, and Zoom-specific limitations in the free-text responses. Regarding training, faculty was in greater agreement that Canvas integrated tools were effective for administering course attributes, allowing effective communication with students, presenting content effectively, Northeastern provides a variety of applications to use, and that there was sufficient training on these educational technologies. Faculty were neutral, disagreed, or strongly disagreed that the NUflex Seats report helped them plan for in-person and remote students during real-time meetings (strongly agree and agree 14%, neutral 36%, disagree or strongly disagree 49%). Faculty used a variety of resources and training offered, including Instructional Technologists drop-in hours, Canvas training, and CATLR which they found helpful or very helpful. Most faculty found self-search and peer-to-peer mentoring were the most helpful, however finding NUflex classroom training, calls into the ITS Service Desk, and Northeastern's Knowledgebase Tech Portal least helpful.

3.3 Recommendations

The ITPC compiled and analyzed the survey responses and has determined that there is a desire for increased interactivity between instructors and students in order to improve the delivery of courses in the NUflex model. While our focus was on the impact of COVID-19, we acknowledge that the future of teaching and learning at Northeastern and its global campuses may also benefit from these recommendations. Based on this theme, the ITPC makes the following recommendations:

1. Instructors would benefit from ways to keep students connected to the topics they are learning. To do this, faculty need a digital writing surface to ensure students who are remote can see what is being written and not miss critical concepts due to technology limitations.
2. Instructors would benefit from multiple screens in class to better multi-task between seeing their students, monitoring the chat, and displaying course content (e.g., slides, videos). A monitor displaying students attending remotely would be helpful in front of instructors (i.e., as if they were sitting in class) versus displaying students at the front of the classroom.
3. For instructors to make the best pedagogical decisions when delivering their courses to students effectively in this model, instructors need knowledge and training support from "pedagogical assistants". This could include leveraging available resources through CATLR, including, but not limited to, a Fellowship program for faculty who have a passion and desire to be consultants or

mentors for peers. This Fellowship program ensures a formal recognition for faculty who are contributing in meaningful ways for tenure and promotion.

4. We recommend NEU to invest into a better understanding of student motivation for on-ground in-person attendance versus remote online synchronous lectures. Understanding the student motivation helps adjusting NUflex and shaping the future of teaching at NEU. If instructions remain largely remote, spaces to support student attendance to NUflex and/or remote classes should be assessed for continuous quality improvement by gathering feedback from students about the availability of spaces to attend class and stay engaged with fellow students and course instructors.

4 Charge 2: Boost Availability of Computational Resources

4.1 Identify and engage with interested faculty, connect them with ITS, NULab, and library leadership

Proactively engaging with members of the university community is a priority for IT Services (ITS), as is ensuring community members have easy ways to connect with ITS and access information and support in a manner that best addresses their circumstances. In addition to everyday one-on-one, committee, and project engagement between ITS staff and members of the university community—including between faculty and the ITS Academic Technologies and Research Computing teams—below are a number of the ways faculty can get access to support and engage with and hear from ITS.

4.1.1 Accessing Service, Support, and Consultations/Training

The **Tech Services Portal** provides information on all major services offered by ITS, including an extensive knowledge base of instructional and troubleshooting articles. The portal also provides methods for faculty to directly request services and seek additional support. ITS **training and consulting** services provide faculty who are in search of training or one-on-one consultations, with a wide-array of self-guided, online, and in-person opportunities.

Faculty have access to live, just-in-time support via the IT Service Desk, which is available 24/7, year-round, by phone at 617.373.HELP [4357], by **email**, and by chat via the Tech Services Portal.

In addition, for faculty teaching on the Boston campus, more than 300 student instructional assistants are available to provide on-call, in-classroom support Monday through Friday, 7 a.m. to 6 p.m. More information about classroom support and technology is available on the **Classroom Technology page** of the Hybrid NUflex website.

4.1.2 Engaging with ITS

Faculty with a new or unique need or request can **Submit an Idea** to ITS. Submitted ideas are reviewed weekly, and while not every submitted idea can be taken up by ITS, a member of the ITS team will reach out to discuss the idea and possible solutions.

ITS maintains an open **Northeastern Tech Talk** community on the university Communities platform. Faculty can post a message in Tech Talk to connect on technology topics with ITS and other members of

the university community. In addition, a new Office of the CIO community will be added later this semester, where CIO Cole Camplese will be available to directly engage with the community.

4.1.3 Hearing from ITS

As a part of the response to the pandemic, ITS modified its communication practices to reduce the number of generalized and single topic emails and messages sent to the community, instead focusing on fewer more timely, relevant messages. Among these messages, ITS now produces the occasional Tech Update email, which contains four to six timely updates in each edition, sent to all faculty and posted on the **ITS website**. In each message, members of the community are also encouraged to submit topic ideas.

At the start of each academic year, ITS participates in new faculty orientation and highlights many of the resources noted above. A **Connect to Tech** guide is also produced each academic year, to help new as well as returning faculty connect to essential technology resources.

4.2 Work with these stakeholders to construct and document a set of resources specifically targeting public-facing datasets, interactive web pages, and public computing and project sharing platforms, in order to boost the availability of computational resources for faculty in the social sciences and humanities

Over the past year the Research Computing (RC website: https://rc.northeastern.edu) has developed, formalized, and deployed many new systems and services that are available to all faculty, staff, and students across the Northeastern global network. This includes the expanded availability of the file sharing and transfer platform Globus, the development of a Secure Data Enclave for sensitive research activities, and the participation in regional initiatives around storage and computing.

All faculty members, including those in the social sciences and humanities (SSH), are provided terabytes of enterprise level storage for their research groups. Any and all datasets can be shared publicly from RC resources using Globus, allowing open access to public facing datasets.

The availability of computational resources to SSH faculty was simplified through the implementation of a web-based portal (Open OnDemand) that allows seamless access to all RC high performance compute and storage systems from any platform (Windows, macOS, Linux), significantly reducing time to research from hours to minutes. This same platform can be leveraged for teaching and learning purposes without any additional training or guidance. This web-portal provides SSH faculty free access to commonly used tools and packages including Jupyter Notebooks, Python, R Studio, Matlab, Stata, CPLEX, SPSS, and many other open source and commercial packages for data analysis and computing.

An important addition for SSH faculty is the development of the Secure Data Enclave that will include access all of the same resources listed above, but in a highly secure environment suitable for research that handles sensitive data.

Additional work is underway to integrate interactive research web pages with the available computational resources maintained by the RC team. The ability to connect compute power and storage to research web pages is expected to be available this calendar year (2021).

The collaboration between the Northeastern RC team and the Northeast Research Cloud (NERC), Mass OpenCloud (MOC), and the Northeast Storage Exchange (NESE) also provides SSH faculty additional variety when selecting computational resources appropriate for their research.

Additional collaborations underway with SSH faculty include the deployment of the Facebook Open Research Tool platform, an open-source environment that was developed to serve the Social Science One community. Collaborators include David Lazer, Alisa Lincoln, and Dan O'Brien.

4.3 Recommendations

1. Future work in support of SSH faculty will be centered around the expansion of data storage and sharing options. This includes continued investment in and maintenance of enterprise storage systems to reduce the risk related to research data security.
2. In addition, investing in improvements to the regional and global connectivity of Northeastern Research Computing resources to external collaborators and partners should be prioritized. Redundant, high bandwidth and low latency internet connectivity between campuses and around the globe are critical.
3. ITPC should continue to be involved in assessing the effectiveness of the provided resources, evaluate and improve the connection with interested faculty.