

Spring 2020 Faculty Survey

SJSU Team Members: Patricia Backer (PI), Dr. Laura Sullivan-Green (co-PI), Dr. Maria Chierichetti (co-PI), Dr. Liat Rosenfeld (co-PI), Cynthia Kato

There are four parts to this study. Part 1 was designed to survey all Spring 2020 students and faculty in the SJSU College of Engineering about their experiences after the move to 100% online instruction in March 2020. The SJSU team submitted an IRB application and it was approved on 5/28/20. According to the Spring 2020 SJSU numbers of faculty in the College of Engineering, there were 287 faculty, lecturers, tenure-track and tenured faculty. Dr. Backer sent an email to each faculty member using the College's lists in Google Groups. The two groups sent the email were ENGR_Faculty and ENGR_LEC. The first email with the survey was sent on 6/1/20 with follow-up emails on 6/7/20, 6/15/20, 6/21/20, and 7/3/20.

Demographics

Overall, 104 faculty completed this survey. Based on the number of COE faculty in Spring, 287, this equates to a confidence level of 95% with a margin of error of 8%. Because of this low margin of error, we can be fairly confident that this survey is representative of the faculty teaching in the College in Spring 2020.

The majority of the respondent who answered the question about rank were lecturers (58); there were fewer tenure-track (18), tenured (13), adjunct (1), and Teaching Associates (1) responding. Of the faculty who responded to identify their gender, 66 were men and 27 were women. It is interesting to note that there were more responses from newer faculty; 45.1% of the faculty responses were from faculty with five or fewer years teaching at SJSU. Before Spring 2020, only 26 of the 88 faculty responding had taught a course online. Of the faculty who previously taught online, only 7 had taught online five or more years.

Figure 1. Years teaching at SJSU of Faculty Responding to the Survey

Answer	Count	Percent
0-5 years	41	45.1%
6-10 years	15	16.5%
11-15 years	12	13.2%
more than 15 years	23	25.3%

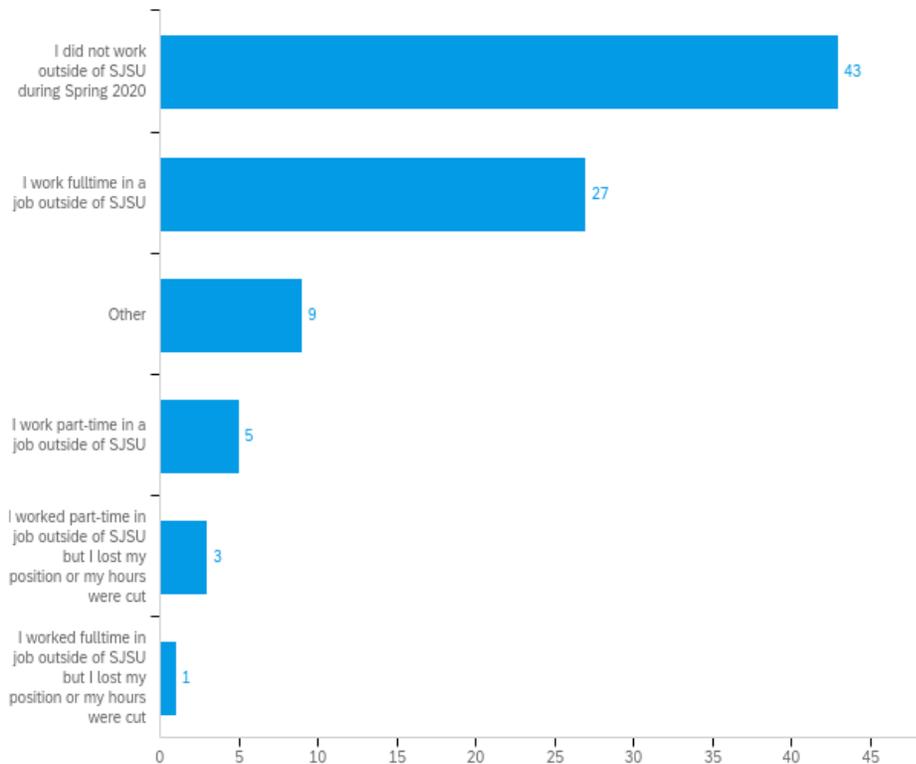
Faculty from every department in the College responded to the survey. The survey respondents were generally representative of the faculty in the College of Engineering (department data gathered from the IEA website). The total number of faculty is higher than for the college overall as faculty teaching in more than one department will be counted multiple times. Comparing the IEA data with the survey respondents, faculty in Computer Engineering were over-sampled and faculty in Civil and Environmental Engineering were under-sampled.

Figure 2. Comparison of Institutional Research Faculty Numbers to Survey Respondents

Department	Spring 2020 IEA		Survey Responses	
	Number	percent	Number	Percent
Aerospace Engineering	15	4.9%	8	8.0%
Aviation and Technology	41	13.5%	11	11.0%
Biomedical Engineering	10	3.3%	3	3.0%
Chemical and Materials Engineering	26	8.6%	5	5.0%
Civil and Environmental Engineering	30	9.9%	15	15.0%
Computer Engineering	63	20.7%	12	12.0%
General Engineering	33	10.9%	16	16.0%
Industrial and Systems Engineering	21	6.9%	6	6.0%
Mechanical Engineering	35	11.5%	11	11.0%
Electrical Engineering	30	9.9%	13	13.0%
Total	304		100	100%

48.9% of the faculty did not work outside of SJSU in Spring 2020 (see Figure 3). However, a high number, 27, of faculty worked full-time outside of SJSU in Spring 2020.

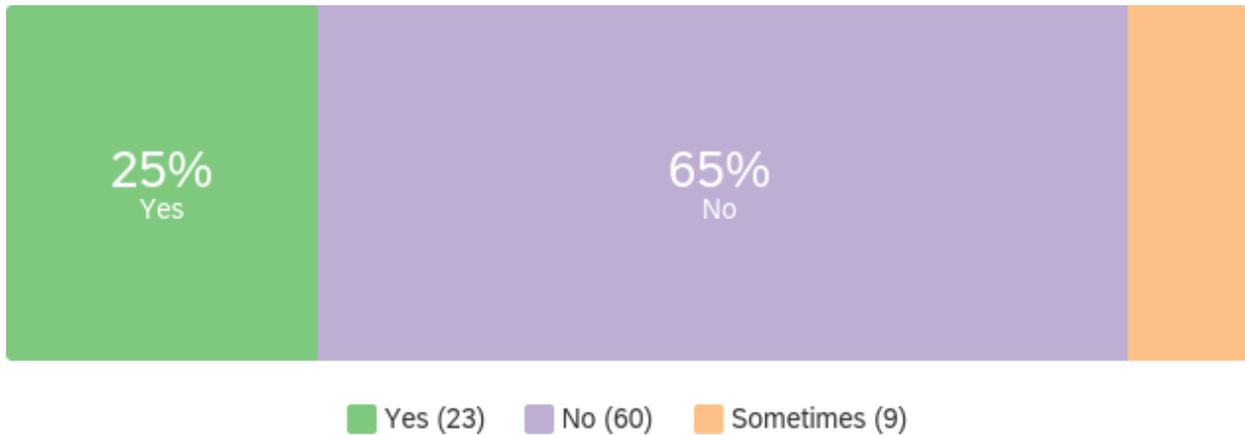
Figure 3. Responses to the question: In addition to being a lecturer in the College of Engineering at SJSU, what is your other work environment?



Living Conditions

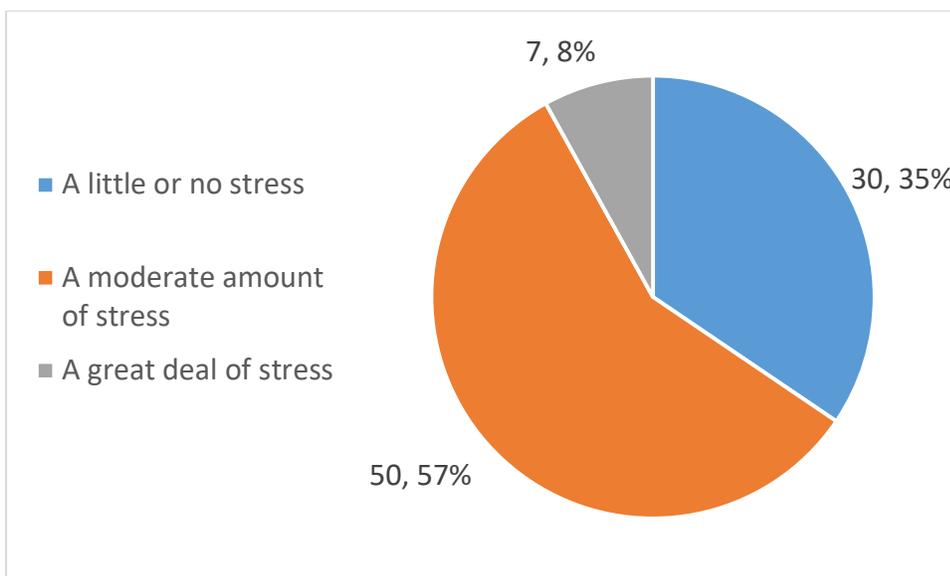
Several faculty members (29 responses out of 92 responses) are living with someone over the age of 65 or who has a risk factor for COVID-19. 34% of faculty either had to care for children or elderly either full-time or part-time during the shelter-in-place in Spring 2020.

Figure 4. Responses to the question: Do you currently have to care for children or elderly while under quarantine?



Several faculty members reported difficulties in traveling (22 faculty), changes in their living situations (5), and adverse discrimination (2) since the shelter-in-place in March 2020. With respect to all three of the five questions relating to different aspects since the shelter-in-place, faculty reported that their ability to socialize with peers (89.5%), ability to socialize with friends (91.9%), time management (43.2%), and overall psychological well-being (47.7%) was worse or much worse since the shelter-in-place began. Most faculty reported feeling more stress as a result of COVID-19.

Figure 5. Responses to the question: Overall, how much stress are you feeling about the consequences of COVID 19?



31 faculty members added comments about their quality of life. As Figure 6 shows, the most common words mentioned were work, home, and stress. Some of the faculty comments are below. All of the faculty open-ended responses are in the Appendix.

“Spending all my time on the computer, dealing with email and Zoom meetings, is draining. There were a lot of additional workloads to put together a strong online class in addition to extra administrative workload and stress.”

“Making the change in pedagogy with little notice and not being able to do anything about mine or student's issues with the internet, or feelings of isolation, lack of engagement, etc. and inadequate communication from all SJSU leaders regarding the COVID situation added a lot of stress.”

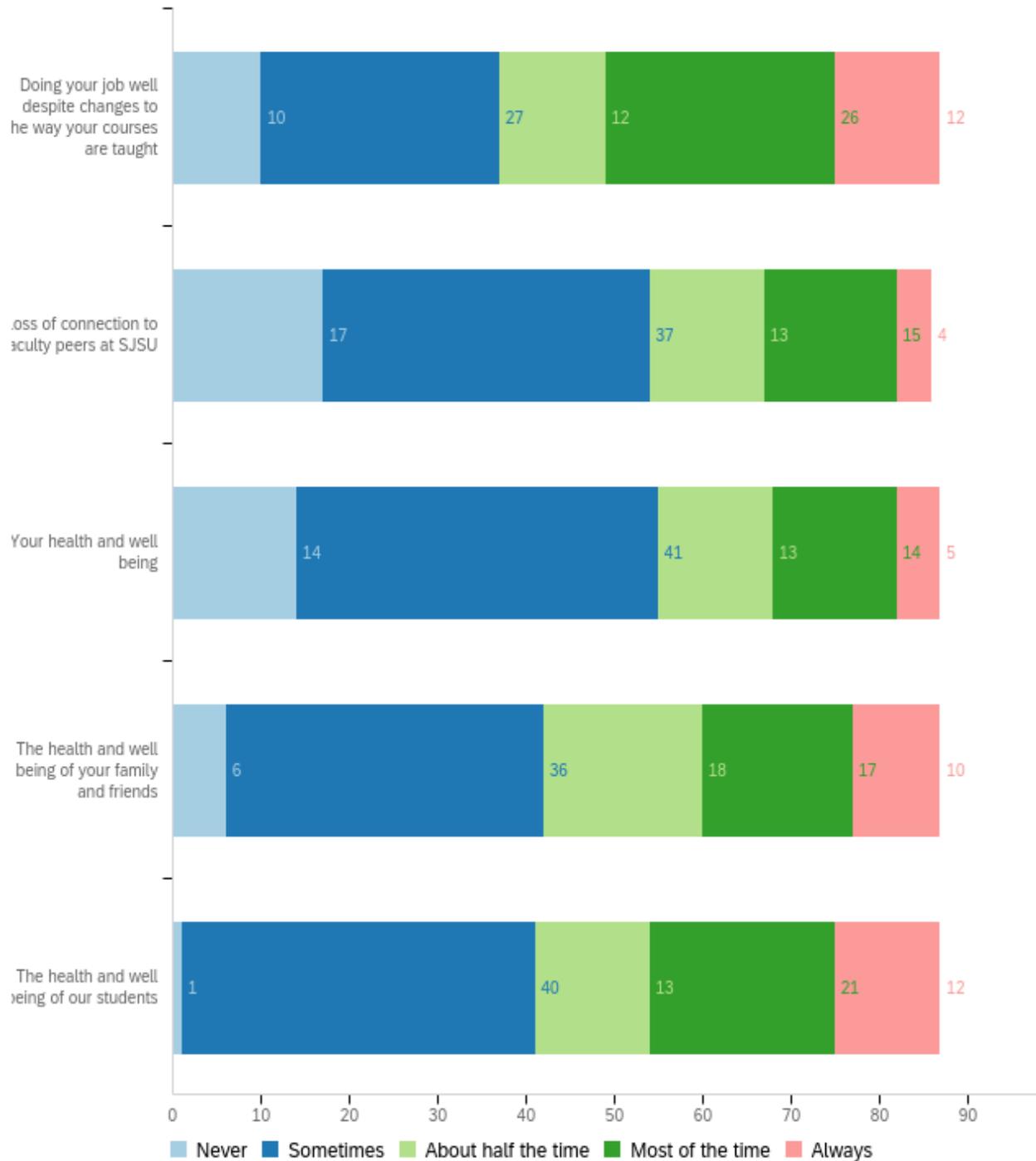
“During the semester, I felt completely stretched thin. Everything was a tradeoff between taking care of myself and fulfilling my responsibilities. I frequently felt like I was failing at both.”

Figure 6. Word Frequency from Comments to the Question: Please help us understand the diversity of experiences by sharing any further information on your quality of life here.



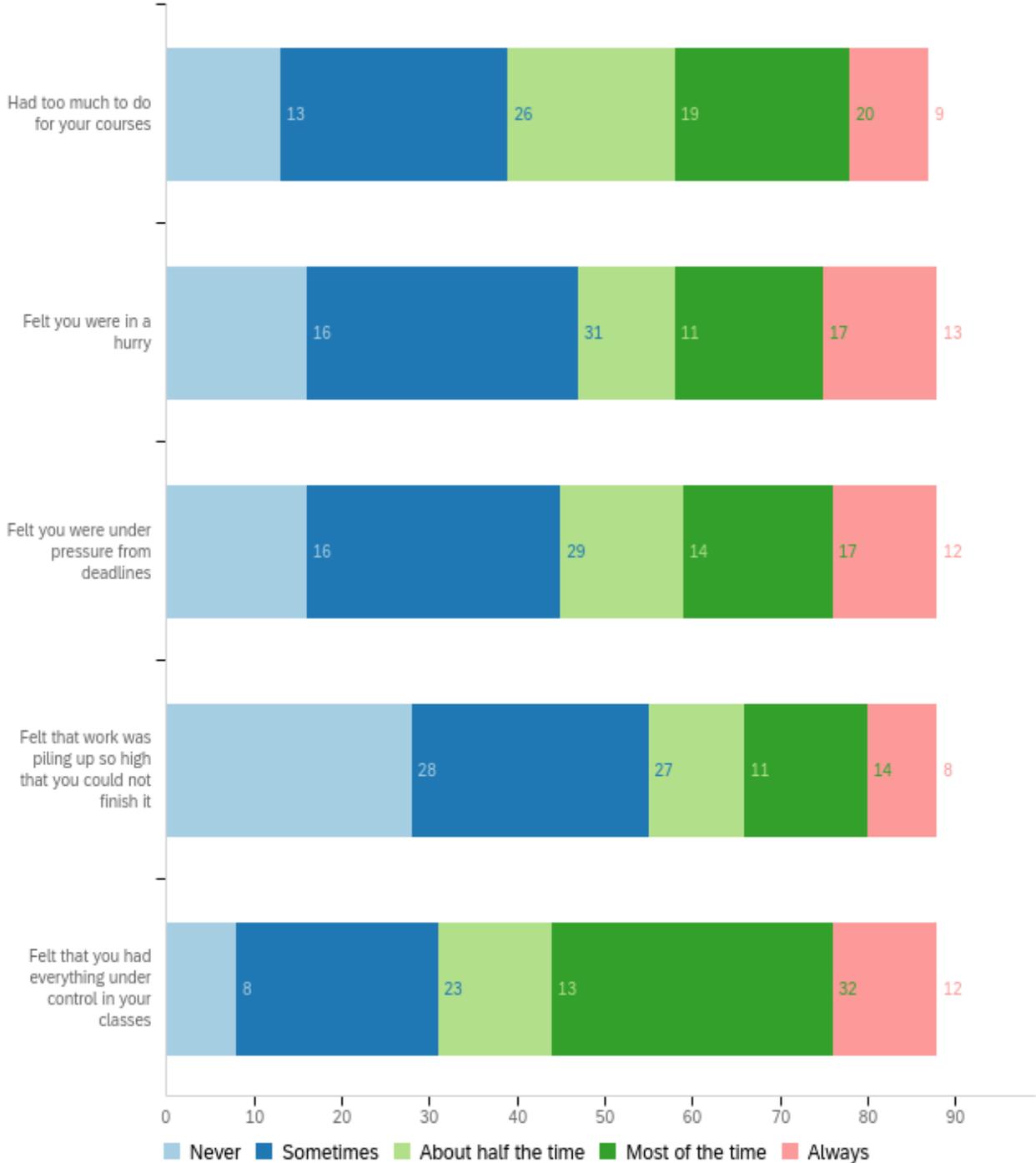
Faculty reported that both their expenses (41%) and their income (20.7%) had decreased since the shelter-in-place. The survey showed that faculty worry about several things since the shelter-in-place. We asked faculty to respond to about five areas. The responses of the faculty show that they worried about the health and well-being of their families, friends, and students. As well, they worried about doing their job well despite the changes made to classes when the classes moved 100% online.

Figure 7. Faculty Responses to the Question: Given the changes in your classes in Spring 2020 and the shelter in place, how often do you worry about the following?



Most faculty (64.8%) generally felt that they had everything under control although they also felt that there was too much to do in their classes (55%) and they were under pressure from deadlines in their courses (48.9%). All of the responses to this question are shown in Figure 8 below.

Figure 8. Faculty Responses to the Question: Since SJSU made the decision in March 2020 to move to 100% online instruction, how often have you:



Most of the faculty, almost 80%, who responded to the survey taught either one or two classes for the College of Engineering in Spring 2020.

Figure 9. Number of Classes Taught by Faculty Survey Respondents

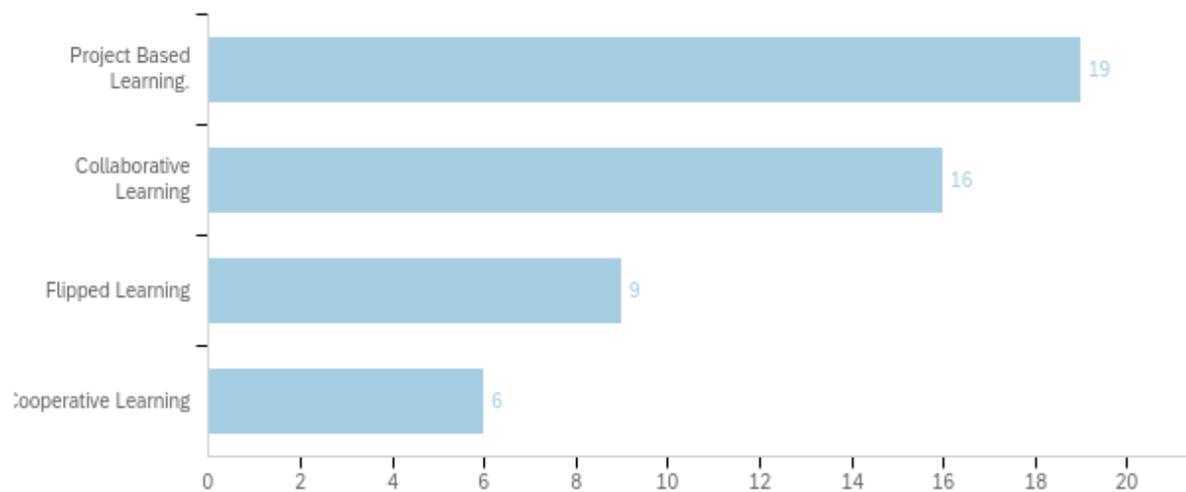
No of Courses Taught	No. of Faculty	Percent
1	26	29.5%
2	44	50.0%
3	11	12.5%
4	2	2.3%
5 or more	5	5.7%

Pedagogy

We were interested in seeing how many faculty had ever used active learning in their in-person courses. Despite increasing research on active learning, the teacher-centered lecture model still persists in STEM fields [1]. Although the number of faculty using active learning (or student-centered) methods has increased in the last ten years, the Higher Education Research Institute survey of faculty in 2013 showed that half (50.6%) of faculty use a lectured-based classroom instead of active learning [2]. The number of engineering faculty using active learning is lower than in other fields: a national survey of engineering faculty [3] found that only 47% of engineering professors use active learning in their classrooms. Indeed, Lord and Camacho [4] found that most teaching-oriented engineering faculty know there are problems with lecture-based instruction; yet 60% of them still teach that way.

The results of this survey showed that most faculty (62 out of 88) used active learning in their in-person classes. Also, most faculty (60%) took training to learn about online tools; the most common training was for audio or video conferencing tools, Canvas, controlled testing environments, and online videos or tutorials. Figure 10 displays the most common active learning pedagogies used by the faculty survey respondents. Most faculty were satisfied with the support they received from SJSU after the shelter-in-place with 63% of the faculty indicating that they were moderately or extremely satisfied with the support.

Figure 10. Faculty Responses to the Question: What active learning pedagogies have you used in your classes?



Faculty reported using a wide variety of online tools since the move online in March 2020. Not surprisingly, before the shelter-in-place, almost all faculty used Canvas and online videos and tutorials in their in-person courses (see Figure 11).

Figure 11. Online Tools that Faculty Have Used in their In-person Classes

Tools	Never Use		Sometimes Use		Always Use		Sometimes & Always Use	
Canvas	3	4.4%	2	2.9%	64	92.8%	66	95.7%
Online videos or tutorials	9	13.6%	38	57.6%	19	28.8%	57	86.4%
YouTube	14	21.2%	36	54.6%	16	24.2%	52	78.8%
Collaboration tools (Google Docs or other collaborative tools)	21	35.6%	30	50.9%	8	13.6%	38	64.4%
Audio or video conferencing tools (Google Hangout, Zoom, Microsoft Teams, etc.)	23	37.7%	15	24.6%	23	37.7%	38	62.3%
Real-time polls	26	41.9%	28	45.2%	8	12.9%	36	58.1%
Discussion Boards	27	43.6%	24	38.7%	11	17.7%	35	57.4%
Text-based chat	31	53.5%	21	36.2%	6	10.3%	27	46.6%
Controlled online testing environments (ProctorU, Proctorio, Lock Down Browsers, etc.)	40	63.5%	15	23.8%	8	12.7%	23	36.5%
Video editing software	43	70.5%	17	27.9%	1	1.6%	18	29.5%
Digital whiteboard apps (Names)	47	75.8%	8	12.9%	7	11.3%	15	24.2%
Podcasts	53	94.6%	0	0.0%	3	5.4%	3	5.4%

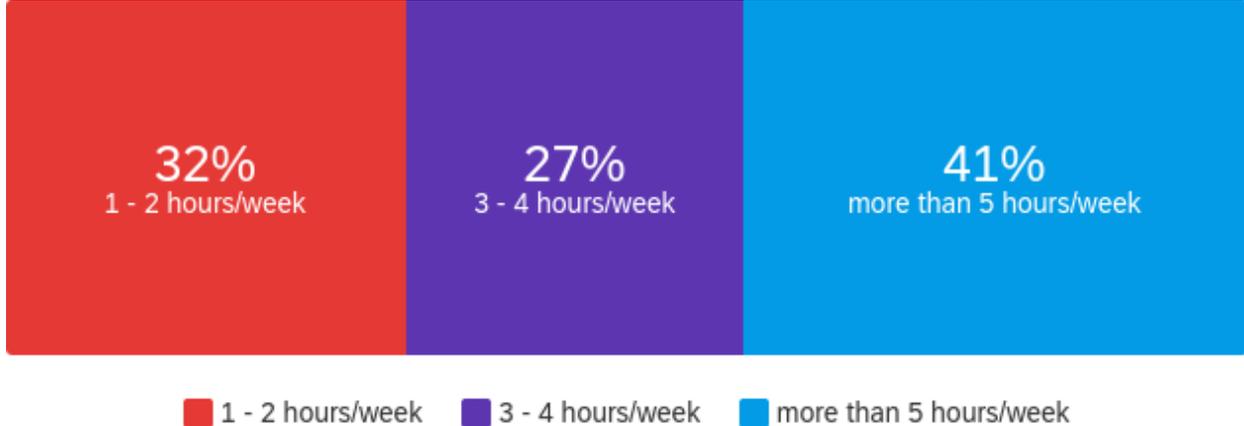
The tools used by faculty after the shelter-in-place was different than before with in-person classes. More faculty used audio and video conferencing tools (90.6%), webcams (77.3%), online videos or tutorials (68.8%), and YouTube (50%).

Figure 12. Online Tools that Faculty Have Used in their Online Classes after the Shelter-in-place

	Yes, tool used		No, tool not used		Sometimes		Not needed		Total
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Computer or laptop	83	96.5%	2	2.3%	1	1.2%	0	0.0%	86
Canvas	80	96.4%	3	3.6%	0	0.0%	0	0.0%	83
Audio or video conferencing tools (Google Hangout, Zoom, Microsoft Teams, etc.)	77	90.6%	7	8.2%	0	0.0%	1	1.2%	85
Webcam	58	77.3%	10	13.3%	2	2.7%	5	6.7%	75
Online videos or tutorials	55	68.8%	13	16.3%	5	6.3%	7	8.8%	80
YouTube	39	50.0%	18	23.1%	13	16.7%	8	10.3%	78
Text-based chat	37	49.3%	21	28.0%	9	12.0%	8	10.7%	75
Collaboration tools (Google Docs or other collaborative tools)	35	46.7%	23	30.7%	9	12.0%	8	10.7%	75
Controlled online testing environments (ProctorU, Proctorio, Lock Down Browsers, etc.)	37	45.7%	27	33.3%	7	8.6%	10	12.4%	81
iPad or tablet	32	42.1%	32	42.1%	5	6.6%	7	9.2%	76
Real-time polls	32	42.1%	28	36.8%	7	9.2%	9	11.8%	76
Scanner	30	41.1%	31	42.5%	7	9.6%	5	6.9%	73
Discussion Boards	28	35.9%	29	37.2%	8	10.3%	13	16.7%	78
Digital whiteboard apps (Names)	26	34.7%	33	44.0%	3	4.0%	13	17.3%	75
Video editing software	19	26.0%	37	50.7%	6	8.2%	11	15.1%	73
Document camera	15	20.8%	42	58.3%	2	2.8%	13	18.1%	72
Podcasts	3	4.3%	46	65.7%	2	2.9%	19	27.1%	70

Faculty responses were mixed when we asked them about concerns related to privacy and security of online tools with 44.6% indicating they were concerned, 42.2% indicating that they were not concerned, and 13.2% indicating they were unsure. Most faculty spent more hours than usual on course preparation after the shelter-in-place with 70.4% reported spending more time. The additional hours spent by faculty are significant as shown in Figure 13.

Figure 13. Faculty Responses to the Question: How many more hours did you spend on course preparation after the move to 100% online instruction as compared to before for your average class?



Student Experiences

Faculty reported that students indicated they had issues with several digital technologies after the classes moved 100%. More than 2/3 of students have problems with Internet connectivity either always or sometimes during Spring 2020. Also, as can be seen in Figure 14, more than 50% of the students had issues with a physical space for studying and webcams.

Figure 14. Faculty Responses to this Question: Have your students indicated that they have issues with access to any of the following after the move to 100% online instruction in March 2020?

Issues for students	Yes	Sometimes	Yes + Sometimes	No	Not needed	Total
Enough Internet Access for doing your classwork online	32	22	54	26	0	80
Physical space for studying and doing assignments	26	14	40	38	1	79
Webcam	23	17	40	34	4	78
Computer, laptop or tablet	16	16	32	48	0	80
Library resources (including books, articles, etc)	14	5	19	53	3	75
Scanner	10	2	12	50	12	74
Printer	6	8	14	48	15	77

Appendix

Open-ended responses to the question: Please help us understand the diversity of experiences by sharing any further information on your quality of life here.

I average about 2 hours less sleep each night since March. I believe the cause is mostly due to persistent stress and a lack of socializing and variety in my life.

During the semester, I felt completely stretched thin. Everything was a tradeoff between taking care of myself and fulfilling my responsibilities. I frequently felt like I was failing at both.

I used to sleep at my parent's house for 3 nights a week when I had in-person classes. This gave me a place to work on my classes without disturbances. At my home, there are many more distractions, plus my wife works night shifts on different days each week, which contributes to my sleep problems.

My parents are both in their late 60s, so I stopped seeing them as soon as I knew the virus was in Santa Clara county. They have both lost their jobs. I am concerned about both their health and their finances. The teaching format changed but the students and I adjusted fine.

Now I have more time to read.

Having little to no physical contact from friends is more taxing than I thought it would be. I also worry about my grandmother so taking risks to travel is extremely depressing. I stay home and eat a lot of my own feelings

My husband has had "mild cognitive impairment" for some time, but his capabilities are diminishing more rapidly now, possibly as a side effect of our having less contact with the outside world as we "shelter in place." This has had a negative effect on my "quality of life."

New normal.

It has been beneficial in terms of commuting traffic. Don't care for Zoom versus face to face lectures.

I and my family took these challenges and turn into opportunities.

My children are effectively adults although they are living at home, so no worries there. My wife and I can work from home (at opposite ends of the dinner table), and we adapted to being home pretty well. There was a week where I had a bit of an identity crisis because part of my identity was being at work. Then I felt pretty good because I was prepared to teach online based on some prior work. My course and the courses I manage, transitioned pretty something to online. It has been nice being with the family more.

Right now, I am pretty angry/anxious/helpless that the university is taking too long to open up for research that cannot be done remotely. The top-down approach is a bit humiliating in that they think we do not know how to operate in a safe manner, or somehow not to be trusted. I am not saying their goal is to be humiliating, but it is.

I miss interacting with my students in person. I still stay in touch with them via email, and text messaging.

We have to minimize in-person contacts. When my friends stopped by to visit me, we met in the garden although we have not met in 35+ years. There is no visitation from local friends or family members.

With two young kids at home, it is impossible to work.

I feel I am on call 24/7 and it is difficult to take a break. Summer is the time I revamp my courses, work on educating myself, and other personal development routines. However, because I feel that I am on call 24/7 I am unable to do those.

It adds a tremendous burden to stay safe and up to date on top of the added workload to adapt teaching/research and on top of the regular workload.

Seeing the discussion of furloughs and seeing colleagues in the industry still getting bonuses and additional compensation or time off because of their higher workloads makes me feel even more disappointed that faculty aren't compensated for our work. It makes me feel like if we don't have superior job security, what do we have?

Not being able to travel.

Uncertain future as to when this will end.

Spending all my time on the computer, dealing with email and Zoom meetings, is draining. There were a lot of additional workloads to put together a strong online class in addition to extra administrative workload and stress. But overall it has been pretty smooth for me.

I have been spending my days zooming instead of meeting with people face-to-face. While I find meeting with people face-to-face is refreshing, zooming is exhausting. In addition, the inability to travel has hampered my ability to participate in conferences, visit my family, and take a vacation, which will have to wait until things get better.

Trying to help my family member to babysit my grandson, I am staying at my daughter's house. I had water damage on my MacBook, I still could not get it fixed. To teach courses, do research, and work on the NSF XXX proposal I purchased a new MacBook which took several weeks to arrive, and I borrowed my relatives' MacBook. It took me a while to reinstall all software needed and till now still keep installing the Software needed.

A lot of my work has been forecasting ... I've been saying the world is entering a period of epochal change. I see Covid-19 as the gateway to the complexities and difficulties ahead, the first of many crises. We've crossed a critical boundary. None of this is surprising to me, but what has surprised me somewhat is the degree to which we (humanity, and particularly the US) have not adapted very intelligently. At best we are just coping (at SJSU, I think pretty well) ... e.g., turning to Zoom so strongly. However, I don't see much in the way of using this crisis to become more cooperative or build better arrangements; we are still too wedded to prior arrangements, and this troubles me.

I am fortunate to be able to continue working. I am sheltered-in-place with my elderly mother and am her primary caregiver.

Our normal routines have been upended. Work at home and online lecture arrangements create additional stress. Further adding to the stress is the lack of recreational opportunities and childcare challenges.

Losing a relative due to respiratory disease was painful.

I've experienced less work-related stress. This might be attributed to working from home and not getting constantly interrupted by others.

Not much change

It has been extremely difficult to maintain the normal pace and responsibilities of this job while caring for two young children full-time at home. After mid-March, there was no childcare available for either, and we as faculty were expected to continue making progress, meeting deadlines, and fulfilling all our normal job responsibilities as if nothing had changed.

I am not happy about staying home all the time.

The primary concern is the potential loss of a job, the long-term impact on the economy, and, for those who are leaders, the pressure that comes from reducing our Teams.

My child is a 10-year-old only child and quite gregarious. Helping my child to keep spirits up has been difficult particularly since my parent had to spend 8 days in the hospital (non-coronavirus-related), which put a strain on all four of us: my parent, my child, my spouse, and myself.

Trying to maintain the family's well-being, keep my ADHD child on track with schoolwork, and manage my own classes was exceedingly difficult and overwhelming.

Making the change in pedagogy with little notice and not being able to do anything about mine or student's issues with the internet, or feelings of isolation, lack of engagement, etc. and inadequate communication from all SJSU leaders regarding the COVID situation added a lot of stress. Especially different people communicating info at irregular days/times and some not communicating almost at all. In contrast, state and national leaders were giving out information on regular days/times. The attitude of most leaders at SJSU was more like don't contact me. Lack of information and where to get information, and what was allowed or not added stress.

There are stress and extra time related to taking on chores for elderly parents (in their 90's) to minimize their exposure. There is also extra stress helping our grad students (particularly where I am the thesis advisor) finish their degrees due to the disruption of experiments. So, I will be working over the summer with many of them to try to graduate in August. And.. of course, the university is providing no extra support for them or me in terms of resources or compensation.

Teaching over Zoom was stressful at times due to a flaky Internet connection. I also missed watercooler conversations with colleagues.

-
- 1 Kardash, C. M., & Wallace, M. L. (2001). The perceptions of science classes survey: What undergraduate science reform efforts really need to address. *Journal of Educational Psychology*, 93, 199-210 AND Walczyk, J. L. & Ramsey, L. L. (2003). Use of learner-centered instruction in college science and mathematics classrooms. *Journal of Research in Science Teaching*, 40(6), 566-584 AND Seymour, E., & Hewitt, N. M. (2000). *Talking about leaving: Why undergraduates leave the sciences*. Boulder, CO: Westview Press AND National Governors Association Center for Best Practices. Building a science, technology, engineering and math education agenda: an update of state actions. Washington, DC: National Governors Association Center for Best Practices; 2012.
 - 2 Eagan, M. K., Stolzenberg, E. B., Berdan Lozano, J., Aragon, M. C., Suchard, M. R. & Hurtado, S. (2014). *Undergraduate teaching faculty: The 2013–2014 HERI Faculty Survey*. Los Angeles: Higher Education Research Institute, UCLA. Available: <http://www.heri.ucla.edu/monographs/HERI-FAC2014-monograph.pdf>
 - 3 Borrego, M., Froyd, J. E., & Hall, T. S. (2010, July). Diffusion of engineering education innovations: A survey of awareness and adoption rates in U.S. engineering departments. *Journal of Engineering Education*, pp. 185-207.
 - 4 Lord S, & Camacho, M. (2007). *Effective teaching practices: preliminary analysis of engineering educators*. Paper presented at: Proceedings of the 37th ASEE/IEEE Frontiers in Education Conference; 2007 Oct 10–3; Milwaukee, WI.