Pathways for Improving Doctoral Education – Using Data in the Pre- and Post-COVID Era

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The onset of the COVID-19 pandemic altered the perception of the management challenges facing universities, globally. It has changed the market for domestic and international students, required institutions to move rapidly to online and remote teaching, and brought into question the funding model for many universities, particularly with the specter of reduced tuition income and state funding under the assumption of a global recession.

But is also true that the pandemic, and its impact on higher education, varies by nation, and even by the collective pan-regional response – e.g., Europe vs nations along the Pacific Rim. It is hard to assess its full implications: will it be a temporary, year-or-more long process of coping, or does it mark a significant shift to a new normal?

The safe bet is something in-between: online and hybrid courses will become a more significant component of universities curriculums and degree programs; international research collaborations, already highly dependent on remote communication and coordination of activities, will become more so; universities will build into their operations planning for any future pandemics or other forms of disruption, like the impact of climate change; student markets may be altered, with international student mobility declining for a period but then increasing once students find other locations to travel to which they feel are safer and that more affordable quality education.

In this chapter, we focus on the student experience, and specifically the graduate student experience and their perceptions of what improvements are needed to provide a quality education that also recognizes the contemporary world of work and citizenship. In the United States and Europe, faculty positions are extremely limited; most doctoral degree recipients find jobs and careers outside of academia.

Based on survey data generated by the Student Experience in the Research University (SERU) Consortium, we can look at graduate student's responses both before and during the COVID-19 pandemic. Their responses provide guideposts for university leaders to assess ways to improve their teaching and research activities. We can also explore the differences between American/Canadian universities and a selected group of European universities.

Here, and in other previous publications, we argue that universities need to significantly redirect and improve their institutional research capability to help boost their management capacity (Aubrey and Chirikov 2020). Thus far, the COVID-19 pandemic is all-absorbing, requiring university leaders and academic staff to deal with major transitions in teaching to online formats, probable declines in revenue, hiring freezes and lay-offs and attempts to plan for what lies ahead. Few have formal or even very limited policies for gathering institutional data to use for institutional self-improvement. If they have systematically gathered data, it is often to meet the accountability regimes of ministries or respond to and develop strategies related to global and national rankings of institutions – almost always focused on research output. That must change if institution want to effectively deal with their own specific needs and develop a stronger culture of institutional improvement powered by data and analysis.

We have entered a world of 'big data', and it is essential that universities leverage and use data to improve institutional activities, practices and investment, and do so responsibly. And in this effort, university leaders need to understand that data and analysis should be widely shared and used.

Student survey data is not an end in itself, and there are significant limits and potential biases in the responses of students. But a coherent and systematic use of survey data, preferably longitudinal and with comparative institutional data, provides a significant window into the effectiveness of teaching and learning, and even the research productivity and mentorship competency of a university.

Again, in the following we explore comparative data between US and European universities related largely to graduate education and specifically to students in doctoral programs, in part because of the limited data that we have at the master's and professional level in Europe. We focus on two data sets: First, the results of SERU's graduate survey (gradSERU) administered at 10 universities between 2017 and 2019, which includes seven North American research universities and three north European research-intensive universities (in Sweden, Netherlands and Germany); second, data and analysis from a COVID-19 specific SERU survey administered in the summer and fall of 2020 in the US.

The SERU Consortium and Surveys

The SERU Consortium is a group of more than 40 top tier research-intensive universities that collaborate by the administering of SERU undergraduate (ugSERU) and graduate surveys (gradSERU) for policy and scholarly purposes. They share SERU benchmark data and best practices and seek paths for institutional self-improvement and collaborations. Based at UC Berkeley, the SERU Consortium was founded in 2008, but the SERU Project and census, consisting of online, customized, longitudinal surveys date back to 2002 with the development of an undergraduate student survey for all eight University of California (UC) undergraduate campuses (now nine).

In 2008, the SERU Project expanded the number of institutions administering the survey, forming a consortium of large, research-intensive universities that today includes most public members of the Association of American Universities (AAU) in addition to the UC campuses. Although still referred to as the UCUES in the UC system, the survey instrument is largely known outside of the UC System as the SERU Survey.

In 2012 a number of universities from Brazil, China, South Africa and Europe joined the consortium, forming the SERU International Division. In 2017 the project expanded its survey operations and launched the graduate survey, developed by the University of Minnesota together with UC Berkeley's Center for Studies in Higher Education.

This chapter explores the graduate student experience, but over the years the SERU Consortium has accumulated more than 1 million unique responses from undergraduate students enrolled at leading research universities worldwide. There are four key takeaways from our undergraduate surveys.

1. The variation in student engagement within the university is often much larger than between universities, even those in different countries. Differences in student demographics and disciplines contribute substantially to this variation.
2. Students spend their time very differently in different countries (Maloshonok 2020). For example, students in US universities focus more on their homework and study outside of class while students in China or Japan spend almost all of their study time in class.
3. We see that research universities worldwide put more emphasis on student research engagement and invest in providing research opportunities to students as part of their learning experience (Aubrey Douglass and Zhao 2012;

Douglass and Zhao 2013).

4. Students in American universities also tend to be more engaged in extracurricular activities that contribute toward their capabilities and future employment, including voluntary and university sponsored public service activities in local communities (Kwon, et. al. 2020).

Working in collaboration with SERU member institutions, we identified the need for a coherent graduate student survey. All our SERU members have extensive graduate programs, including master's, professional and doctoral degree programs. Designed to provide comparative benchmarks to help educators understand student experiences, gradSERU provides the contextual information that is being used by member institutions to pursue meaningful improvements in graduate education.

Within SERU surveys, institutions are able to address potential biases by using sampling weights after the data is collected to improve representativeness. On the international side, we validate translations with our partner universities and consider cultural differences and survey taking patterns during data collection and analysis. International benchmark data often show differences between universities. Our member institutions, in the process of analyzing survey data and during discussions at our SERU conferences and events, explore the reasons for those differences.

The Changing World of Graduate Education – Advising and Skills Development

Historically, there has been a great diversity in the approaches to graduate education, in terms of what type of students enter graduate programs (e.g., domestic versus international students), how they are educated, what professions they are trained for, and how they find employment. But the elevated role of graduate education has brought an increased focus on the structure and quality of graduate education.

Even before the onset of the COVID-19 pandemic, graduate education was already undergoing significant change. In virtually all corners of the globe, graduate education has not only grown tremendously in the number of programs and enrollment but has incorporated reforms. This has included:

- More deliberately structured curricular requirements geared toward the array of professions the program is intended to serve – not just academia.
- Increased use of English in courses and for master's theses and dissertations in programs attempting to attract and retain international talent, and for preparing future academics and business leaders whose professions are increasingly global in context.

- Clearly stated skills that students should acquire and expectations on their academic performance.
- Articulating the mentorship responsibilities of faculty.
- Coordination with the professions and businesses to better match training with labor needs (Nerad and Evans 2014; Douglass 2016).

The gradSERU Survey was deigned to develop a greater understanding of the graduate student experience to pursue improvements in graduate education by examining how differences in the educational experiences of students enrolled in research universities relate to their intellectual, emotional, ethical, professional, and psychosocial development. This is of particular importance, and interest, to research intensive universities in an era of increased global competition for talent.

There are a wide range of topics that we can explore with the SERU data. As noted previously, we focus our initial analysis on a comparative set of gradSERU student responses regarding their skills development and the value of academic advising, in particular the sense of students regarding their preparation for the world of work that is often outside of academia (noted above). Our point of comparison is data gathered at a number of major North American (US and Canada) research intensive universities and a similar group in the EU. But first, we provide a brief discussion on the design of gradSERU.

gradSERU Design

Grounded in the tenets of Tinto's (1993) "theory of graduate communities and doctoral persistence," and Alexander Astin's theory of student involvement, the survey design conceptualizes the graduate student experience as a three-stage process that encompasses the entry/transition stage, the development stage, and the degree completion/exit stage.

The theory posits that individual attributes, such as the socioeconomic background of students, prior educational experience, and financial resources, shape students' goals and their educational, occupational, and institutional commitments. External commitments and financial resources also impact the process of students' integration into the academic and social systems of their program, department, and university.

Figure 1. gradSERU Design

Like the SERU Undergraduate (UG) Survey, gradSERU is an online, census survey of all graduate students that uses a module design. Developed in collaboration with North American and international member campuses, the design of the survey recognizes the complexity of the graduate student experience within institutions and the differing structures and cultures of graduate programs in the US and internationally. Figure 1 provides an outline of the survey's design, including seven modules that include a core module and a "wildcard" module where universities ask customized questions. Depending on the cultural and program needs of each university administering the survey, universities can also pick which modules are of priority.

As noted, in 2017-2018, the SERU Consortium administered its gradSERU Survey to doctoral students at ten major research universities – three European Universities in Sweden, the Netherlands and Germany (EU) and seven North American universities in the United States and Canada. The total number of responses was 5,467 (EU, n = 1,582, NA, n = 3,885).

Data collection allows for analysis by discipline, gender and other factors related to the background of students. It also allows for a certain level of customization, including a recognition of differences in nomenclature and the structure of graduate programs between, for example, US and EU countries. This includes the fact that issues related to student finances differ considerably, with students in EU

countries often fully funded as employees. And finally, the survey instrument also allows SERU member campuses to benchmark their own responses with other member campuses – an important level of analysis useful for program review and other forms of institutional self-accountability.

In the following, we focus on two areas of universal concern, whether at Berkeley, Lund or Uppsala University, namely advising and skills development in doctoral education. We have organized the data into the EU and NA university comparison groups and then look at subgroups by discipline and gender.

Advising

Advising is a key component for the successful progress of students toward the degree, and satisfaction levels related to this component of the student experience also correlates with the health and wellbeing of students. Student perceptions regarding academic advising depend not only on the skills and knowledge of faculty, but also on the structure of doctoral degree programs, including whether there is a team approach or a single faculty mentor and advisor. Indeed, academic advising is a surrogate for the mentorship capacity of doctoral programs and the faculty that lead them.

The gradSERU Survey asks fourteen questions related to the advising of doctoral candidates by academic staff. This includes whether the advisors provide helpful information on future career choices, advice on teaching, good research practice, a match for the student's scholarly interest, and advice on professional skills.

We also include a question on how helpful the adviser is in getting financial support, which has more relevance in the North American group of research intensive universities. For a listing of all questions, see Figure 2.

Q: To what extent do you agree or disagree with the following statements concerning your current, primary advisor? (% answered "agree", "strongly agree"). Note: *** p<0.01, ** p<0.05, * p<0.1

Social Sciences

***Advisor advises me about teaching
***Advisor has experience in area I'm researching/studying
***Advisor provides w/ helpful information for future career
Advisor assists me in writing presentations/publications
Advisor considers my personal abilities/talents/interests
Advisor has reputation of being good advisor
Advisor has time for me when I need help/advice
Advisor helps me get financial support
Advisor helps me network w/ researchers/scholars
Advisor is able to effectively help me
Advisor is interested in collaborating on research
Advisor respects me as individual
Advisor teaches details of good research practice
Advisors intellectual interests match mine

■ North America ■ EU

Physical Sciences

***Advisor has experience in area I'm researching/studying
***Advisor helps me get financial support
***Advisor provides w/ helpful information for future career
***Advisor teaches details of good research practice
***Advisors intellectual interests match mine
**Advisor assists me in writing presentations/publications
**Advisor helps me network w/ researchers/scholars
Advisor advises me about teaching
Advisor considers my personal abilities/talents/interests
Advisor has reputation of being good advisor
Advisor has time for me when I need help/advice
Advisor is able to effectively help me
Advisor is interested in collaborating on research
Advisor respects me as individual

■ North America ■ EU

Life Sciences

***Advisor advises me about teaching
***Advisor helps me get financial support
***Advisor provides w/ helpful information for future career
***Advisor teaches details of good research practice
**Advisor has reputation of being good advisor
**Advisor has time for me when I need help/advice
**Advisor helps me network w/ researchers/scholars
**Advisor is able to effectively help me
Advisor assists me in writing presentations/publications
Advisor considers my personal abilities/talents/interests
Advisor has experience in area I'm researching/studying
Advisor is interested in collaborating on research
Advisor respects me as individual
Advisors intellectual interests match mine

■ North America ■ EU

Engineering

***Advisor advises me about teaching
***Advisor is able to effectively help me
***Advisor is interested in collaborating on research
***Advisor provides w/ helpful information for future career
***Advisor teaches details of good research practice
***Advisors intellectual interests match mine
**Advisor assists me in writing presentations/publications
**Advisor has time for me when I need help/advice
Advisor considers my personal abilities/talents/interests
Advisor has experience in area I'm researching/studying
Advisor has reputation of being good advisor
Advisor helps me get financial support
Advisor helps me network w/ researchers/scholars
Advisor respects me as individual

■ North America ■ EU

Figure 2. Advising – Social Sciences, Physical Sciences, Life Sciences, and Engineering

Analysis of the survey results for doctoral students leads to four general conclusions:

1. Doctoral students in the US/Canada demonstrate higher levels of satisfaction with advising in life sciences, engineering and physical sciences (but not social sciences).
2. EU female students are less satisfied with advising than EU male students. There are no gender differences in NA.
3. EU students across all disciplines are dissatisfied with the role of the advisor in exploring career options (both academic and non-academic).
4. Satisfaction with advising is associated with better mental health.

Figure 2 provides results on advising and the difference in responses between EU and North American doctoral students in four disciplinary areas: social sciences, physical sciences, life sciences and engineering.

Figure 3 provides an analysis of major differences between EU and North American students across the disciplines. When it comes to the personal qualities of advisors (e.g., if the advisor has time when advice is needed or if the advisor respects the student as an individual), there are no differences between the EU and NA students within all four disciplinary areas. However, in most disciplines students in NA tend to disagree with their EU counterparts concerning whether their advisor has experience in the area they are studying, gives advice about teaching or teaches details of good research practice. The most significant difference regards the question "does your advisor provide helpful information regarding your future career."

	LIFE	SOC	ENG	PHYS
Advisor provides w/ helpful information for future career	■	■	■	■
Advisor has experience in area I'm researching/studying		■	■	■
Advisor advises me about teaching	■	■	■	
Advisor teaches details of good research practice	■		■	■
Advisors intellectual interests match mine			■	■
Advisor is able to effectively help me	■		■	
Advisor helps me get financial support	■			■
Advisor assists me in writing presentations/publications			■	■
Advisor helps me network w/ researchers/scholars	■			■
Advisor is interested in collaborating on research			■	
Advisor has reputation of being good advisor	■			
Advisor has time for me when I need help/advice				
Advisor respects me as individual				
Advisor considers my personal abilities/talents/interests				

Figure 3. Advising – Comparison Across the Disciplines

We further explore the role of advisor in career guidance by asking students how helpful academic advisors have been about career options, both academic and non-academic – see Figure 4. Generally, as shown in Figure 4, this is an area across disciplines where faculty in North American universities appear to do a better job. For example, only 53 percent of EU doctoral students in the social sciences state that faculty have been helpful, very helpful, or extremely helpful; in NA universities, 72 percent provide a positive response.

Q: How helpful was the guidance you received from your current, primary advisor in each of these areas? (% answered "helpful", "very helpful", "extremely helpful") categorized by Academic Careers and Non-Academic Careers.

Academic Careers

Non-Academic Careers
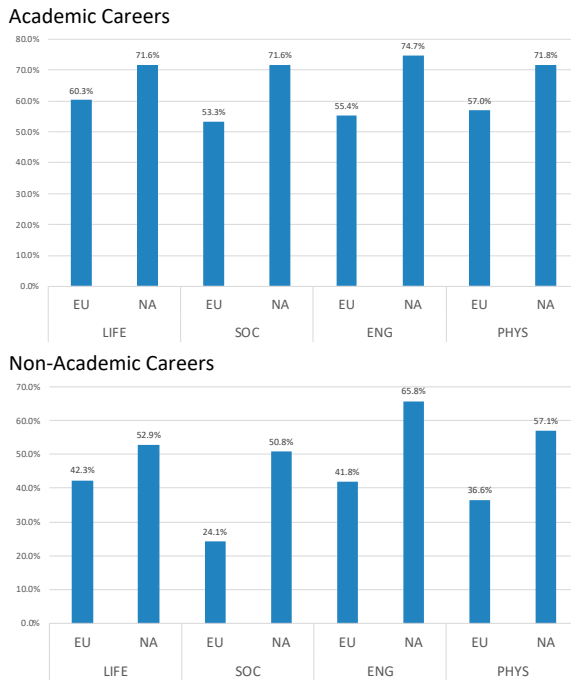
Figure 4. Advising – Guidance Academic and Non-Academic Careers

Just as importantly, and considering that the market in both continents for faculty positions are extremely limited, and that more and more doctoral degree recipients are finding jobs and careers outside of academia, there are again major differences between the EU and NA responses. Just 24 percent of EU social science students

stated that their academic advisor(s) provide helpful information and advice on non-academic career opportunities.[1] Perhaps not surprisingly, 68 percent of NA doctoral students in engineering state that faculty are helpful in non-academic career advice, reflecting the long association with the private sector and engineering departments and their faculty. But even here, EU faculty significantly lag behind their NA counterparts.

Skills Development

The SERU survey explores the perceived skills development by students in three general areas. The first are Core Academic Skills including the understanding of a student's field of study, the ability to think critically and analytically, and the design and conduct of original research. The second concerns Open Science Skills including the ability to make research understandable, navigate cultures in diverse communities, and understand how your research connects with broader issues. The third involves Transferrable Skills, which include the ability to work collaboratively, network, work internationally, manage a project or program, and innovate and be entrepreneurial.

Again, there are limits to student self-assessments regarding the complexity of their skills development, but self-assessment in this area does provide us a window into the strengths and weakness. Our main findings include:

1. EU students indicate greater gains in Transferable Skills across the disciplines, including working collaboratively and the ability to network, work internationally, and work across disciplinary boundaries.[2]
2. In both the EU and NA, students state relatively high levels of gaining Core Academic Skills, most notably understanding your field of study.
3. However, both EU and NA responses indicate a serious problem in the area of Open Science Skills, including making research understandable to beneficiaries and how one's research relates to broader research issues – perhaps reflecting the increasing specialization of research in specific sub-fields by faculty and students. The question regarding navigating diverse communities poses a problem with how students interpret this question, where, for example, diversity is largely described as racial in North America.

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1 Literature on non-academic career options for doctoral students includes Nerad 2015a and Nerad 2015b.

2 In the 2018 document *Internationalisation of Swedish Higher Education and Research - A Strategic Agenda.* Swedish Government Inquiries states as Objective 4: "Staff at higher education institutions, including doctoral students, have solid international experience and strong international networks."

See Figure 5 for EU and NA student responses related to skills development by our four disciplines, social sciences, physical sciences, life science and engineering. The fact that EU students state a higher level of development in Transferable Skills, including the ability to network and work internationally, may relate to the more insular and geographically isolated academic world found in the US and to some extent Canada. This is not to say that international collaborations are not a significant component in NA universities, particularly in the hard sciences.

Q: Please indicate to what extent your skills in the following areas developed during your enrollment (% answered "to a moderate extent", "to a large extent", "to a very large extent") Note: *** p<0.01, ** p<0.05, * p<0.1
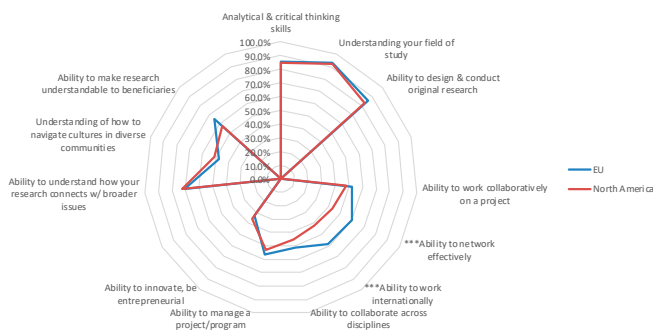
Social Sciences

Physical Sciences
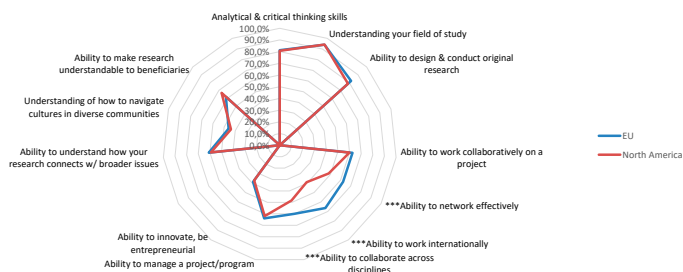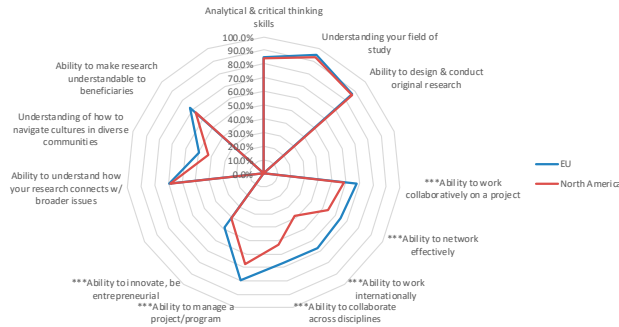
Life Sciences

Engineering
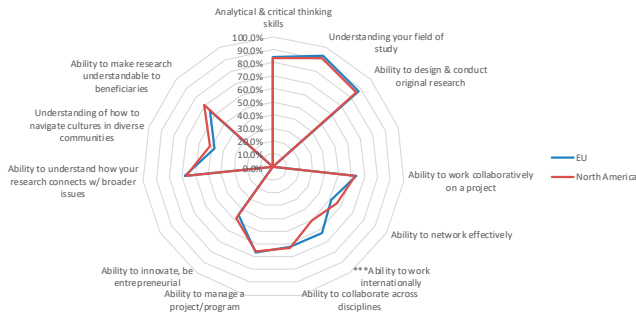
Figure 5. Skills – Social Sciences, Physical Sciences Life Sciences and Engineering

Also, NA universities have a significantly high percentage of international students at the graduate level. But EU students operate in a more internationally engaged world by necessity in part because of the relatively small size of nation-states like Sweden and the Netherlands, and also because of the significant influence of EU programs, including Horizon 2020 and predecessor initiatives, which encourage cross-national research collaboration.

Finally, we can also see a correlation between student responses to the set of skills questions with their responses regarding the efficacy of academic advising. Here we organize the analysis by grouping EU and North American students separately and providing a sense of the student's perceived gaps in their skills development.

Q: Please indicate to what extent your skills in the following areas developed during your enrollment (% answered "to a moderate extent", "to a large extent", "to a very large extent")
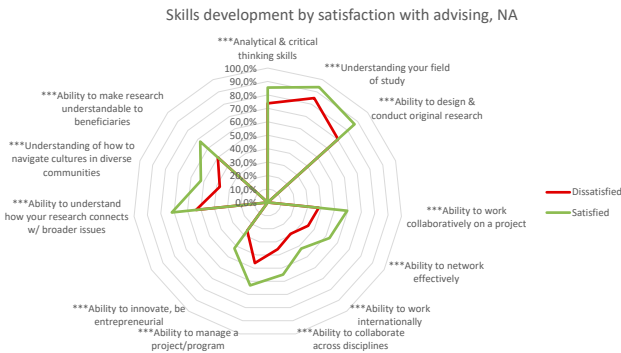Note: *** p<0.01, ** p<0.05, * p<0.1

European Union Students

Skills development by satisfaction with advising, EU

North American Students

Skills development by satisfaction with advising, NA
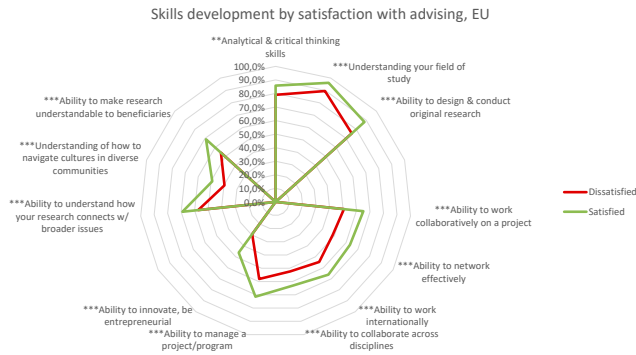
Figure 6. Advising – Skills Development and Satisfaction with Advising

In both the EU and NA universities, satisfaction with advising is positively associated with skills development.

Across all types of skills and broad disciplinary areas, students who were satisfied with their advising reported better progress in skills development. The differences in self-reported progress are much larger for transferrable skills and open science skills, pointing to an important role of advisor in providing support beyond core academic skills.

Graduate Education in the Covid Era[3]

With the onset of the COVID-19 pandemic, SERU researchers worked with our member universities to develop a survey to assess the student experience, and specifically the challenges of what has been a difficult period marked by the transition to remote learning and closing campuses. Twenty two universities worldwide participated in the SERU COVID-19 Survey, including a number of non-member international universities that we invited to participate.

Here we provide an initial analysis of responses by some 7,690 graduate and professional students at five NA public research universities regarding the obstacles that student face in the transition to remote learning. We gained additional data from the survey, and so the responses related to their mental health include 15,346 graduate and professional students' survey results collected between May-July 2020 at nine public research universities.

While no EU universities chose to participate in the SERU COVID-19 Survey, we think the student responses provide an indicator of the probable similar challenges that students face in what we hope is a transition to the post-pandemic academic world.

Obstacles to Remote Learning

Some 88 percent of graduate students (doctoral, masters and professional students) stated that they faced at least one obstacle in the transition to remote learning and interaction with their faculty and student colleagues. Over half noted problems with a lack of motivation as well as problems communicating with other students (56 and 55 percent, respectively). A similar number of students stated they had significant problems with effectively learning in an online format and noted distraction at home because of a lack of appropriate study space (40 and 43 percent, respectively).

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3 This section is based on a series of SERU Research Briefs analyzing the SERU COVID-19 Survey. This includes Soria, et al. 2020; Chirikov, et al. 2020, and Chirikov and Soria 2020.
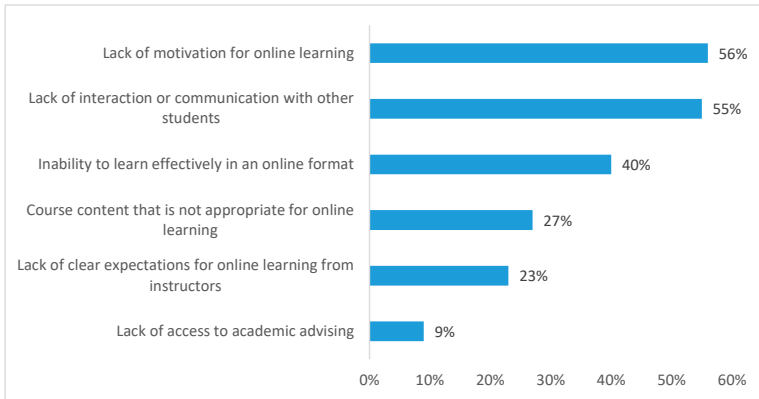
Figure 7. Selected Obstacles to Remote Learning for Graduate Students – SERU COVID-19 Survey (Soria et al., 2020)

And in a conclusion shared among 1st degree students who also participated in the survey, more than a quarter of graduate students stated that course content was not appropriate for online learning (much higher for undergraduates with 43 percent, likely reflecting the larger number of students in courses). But a relatively good sign is that only 9 percent of graduate students who responded said that were concerned with the lack of access to their academic advisor.

There are differences among graduate students according to their academic discipline as well as their socio-economic background. This perhaps reflects the need for on-site labs and team research, as graduate students in health sciences and some areas of engineering were more likely than students in other academic disciplines to indicate that the course content was not appropriate for online learning. Moreover, approximately 48 percent of low-income and working-class students experienced a lack of access to an appropriate study space and a distracting home environment compared to some 40 percent of middle/upper-class students. Twenty percent of low-income graduate and professional students experienced a lack of access to technology compared to 8 percent of wealthy students.

In addition, in our sample, 14 percent of graduate students are responsible for taking care of children during the pandemic, and another 18 percent of graduate and professional students were responsible for taking care of other adults.

Mental Health[4]

Graduate students at all program levels experience significant mental health challenges during the pandemic. It should be noted that the health and wellbeing of graduate students has been a growing concern, particularly doctoral students who, depending on their discipline and research specialization, faced uncertain job prospects even when the global economy was doing relatively well.

As part of the gradSERU Survey, we pose questions regarding the levels of anxiety and depression that students self-assess and report. This includes feeling nervous, anxious or on edge, and being unable to stop worrying as indicators of anxiety. To assess levels of depression, we ask two questions about whether they have little interest or pleasure in doing things or feel down, depressed or hopeless. Some NA and EU students demonstrate similar levels of anxiety disorder and depression disorder.[5]

Pre-COVID gradSERU responses (including the 3 EU and 7 NA universities) indicate that 19.2 percent of EU students and 22.4 percent of NA show signs of significant anxiety[6]. Another 14.2 percent of EU and 13.1 percent of students overall indicated a depressive disorder – although it is important to note that these students are also included in the students who report significant anxiety, see Figure 8. There are some gender differences, with female EU and NA students showing higher anxiety levels than their male counterparts.

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4 Mental health analysis is based on the SERU COVID-19 Survey conducted as a census survey administered from May 18 to July 20, 2020 to undergraduate, graduate, and professional students at nine large, public research universities. The report uses data from 30,725 undergraduate students and 15,346 graduate and professional students. The response rate was 14-41 % at the respective institutions.

5 We used the Patient Health Questionnaire-2 (PHQ-2) two-item scale to screen for major depressive disorder symptoms and Generalized Anxiety Disorder-2(GAD-2) two-item scale to screen students for generalized anxiety disorder symptoms (Kroenke, et al. 2007). The PHQ-2 asks two questions about the frequency of depressed mood over the past two weeks while the GAD-2 asks two questions about the frequency of anxiety over the past two weeks. Each question is scaled from 0 (not at all) to 3 (nearly every day). The responses to two questions in each scale are summed and, if the score for PHQ-2 >=3 (out of 6), major depressive disorder is likely. If the score for GAD-2 is >= 3 (out of 6), generalized anxiety disorder is likely. See Kroenke, et al. 2003 and Kronke, et al. 2007.

6 See more details on gradSERU assessment of the graduate student mental health before the pandemic in Jones-White, et al. 2020.

Generalized Anxiety and Depression Disorder 2-item (GAD-2, PHQ-2; Kroenke et al., 2007)

Figure 8. Mental Health – Pre-COVID Doctoral Student Anxiety and Depression Disorders

With the onset of the pandemic, there are significant declines in student wellbeing and health, more specifically increases in anxiety and depression levels. Using the same criteria as the gradSERU Survey, the SERU COVID-19 Survey responses show that some 39 percent of graduate students screened positive for generalized anxiety disorder. Total responses for levels of depression using the same criteria indicates that 32 percent experienced depression. Doctoral students had the highest levels of anxiety and depression when compared to graduate students in professional degree programs. Some 43 percent report high levels of anxiety, and another 36 percent a high level of depression (Figure 9). Furthermore, we see a correlation of even higher levels of self-reported anxiety and depression with the socioeconomic and racial/ethnic background of students.

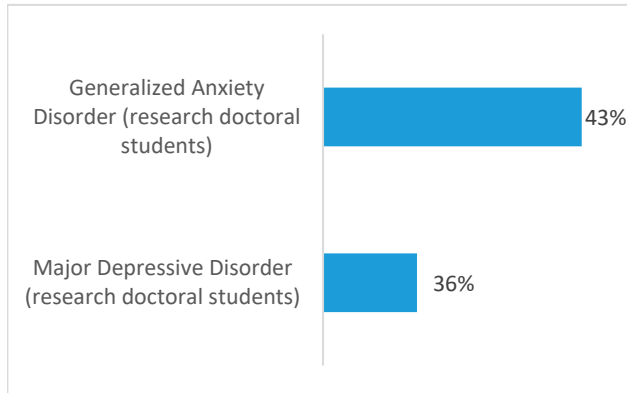Generalized Anxiety and Depression Disorder 2-item (GAD-2, PHQ-2; Kroenke et al., 2007)

Figure 9. Doctoral Student Anxiety and Depression – SERU COVID-19 Survey (Chirikov et al., 2020)

Policy Implications

To reiterate, SERU survey data provides student self-reports on their perceptions of advising and mentoring, skills development, and their general health and wellbeing. In analyzing the data, we need to understand the limits of student responses, including response rates and possible biases in both the sample size and the way students interpret questions. This gains even more saliency when comparing student data collected at universities in different national contexts.

General Observations

This noted, we do think the data analysis we provide in this essay provides an important window into aspects of the graduate, and in particular the doctoral, student experience. Among our observations:

1. Student responses regarding academic advising and their satisfaction levels indicate differences in the structure of the graduate programs. Doctoral programs in EU universities have largely followed the German model of a single professor directing the student candidate and less on a team approach that we find in NA universities – with an advisor or mentor, but

    with integration and support by other selected faculty members. There are significant differences among the disciplines.

2. However, we think the gradSERU data shown here does indicate a need for EU universities to develop stronger academic advising capacity and a more significant structure (including a required curriculum).

3. On the other hand, gradSERU data indicates that our EU universities, all located in northern Europe, are much stronger than their NA counterparts in exposing and encouraging international networking and research collaboration – a significant market advantage as the world becomes more economically competitive, and thus competitive for academic and non-academic talent. NA universities need to think about structural changes in their doctoral programs that can improve international engagement and knowledge.

4. In both EU and NA universities, it is apparent that their remains a significant lag in the expectation of students, and the market realities, for greater preparation for careers outside of academia. Again, this does vary by discipline – for example, engineering retains a long history of preparing doctoral students for the private sector and thus has networks with often regional and national businesses. Universities are making changes in their academic support services to help doctoral students assess and target possible private sector job sectors, but it appears that the structure of doctoral programs in fields like the social sciences, the life sciences and physical sciences, and the knowledge and networks of faculty, remain largely fixed on academic jobs.

5. The COVID pandemic has brought about rapid changes in how students are being taught, advised and mentored. It appears that some of these changes, including more remote learning and communication, limits on lab and other research space, and probable declines in funding for universities, will reverberate for years to come. We see increased levels of anxiety and real declines in the health and wellbeing of not only students, but also faculty and staff. This raises the question of how well research universities are coping with the initial impact of the pandemic, and what they can do to better support students in the new environment.

6. Survey data can help in identifying the biggest challenges facing students and faculty. It does not necessarily clearly provide answers or policy solutions. However, if collected longitudinally over the period of reforms to doctoral education, for example, it can offer a useful benchmark to assess the effectiveness and value of reforms.

Challenges of Refocusing IR

We conclude with perhaps our most important policy recommendation. The CO-VID-19 pandemic has forced major transitions in teaching with respect to online formats, research, talent mobility. The academic management of universities must deal with the current difficulties while attempting to plan for a post-pandemic world.

To navigate this difficult path, universities need to intensify their institutional data collection and analysis. Yet most universities, especially outside of the US and a few other countries, have limited formal policies and strategies for gathering institutional data and for employing trained staff to generate the information and analysis required for competent, informed, and innovative management, with or without the world changing circumstance of a pandemic.[7]

Internationally, the primary catalyst for increasing institutional research (IR) capacity has been largely reactive and focused on satisfying the growing demand of ministries of education for data to meet evolving accountability schemes and participate in the global ranking game of universities. Combined, this has led to relatively new campus efforts to generate and maintain databases and formulate strategies for boosting citation index scores and similar measures of research output, and not much else.

Universities should generate, organize and use data for their own strategic purposes. The best universities focus on their internal behaviors and policies with the goal of informed institutional self-improvement in every aspect of their teaching, research, and public service missions. The IR capability of a university is a key component to this end. It may also well prove a market advantage for universities dealing with the COVID-19 era.

Universities collect and analyze myriads of data about their admissions, student learning, faculty performance, operations, infrastructure and finance. However, most of the collected data is underutilized. This is especially true within centrally steered higher education systems, which is the norm throughout much of the world. There is also a long tradition of short-term university leadership that has expertise in academic affairs but little executive management experience or a sense of limited ability to engage in strategic planning.

In these circumstances, university leaders and staff are most in need of an organized IR effort that can inform decision-making. Yet most universities have placed a low priority on IR capacity, and have taken a piecemeal approach by identifying a problem or challenge for the university and then seeking the time and effort of a

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7 This section is based on Douglass and Chirikov 2020.

faculty person to provide analysis – sometimes with limited data and expertise for such an analysis. Indeed, many universities have only recently established IR offices with centralized data hubs.

Universities need to therefore refocus their IR capacity toward institutional self-improvement and quality controls, including internal accountability efforts like the review of academic departments, evaluation of campus initiatives, enrollment planning, and the consequences of external forces, like COVID-19, and spend less time on meeting the ministerial edicts and demands of the ranking industry. However, to do this, academic leaders and their faculty need to have a greater understanding of the value of IR as an essential tool for managing their universities. They need to systematically integrate data gathering, like student surveys, and analysis into their discussions and meetings on academic management and resource allocations. In regard to institutional efforts to improve the experience of students, and university teaching programs, the SERU Consortium provides models for doing this.

Institutional research that is focused on self-improvement does not need to be inward-looking. The use of benchmarking tools and multi-institutional surveys like SERU can provide useful comparative insights to universities. Presenting institutional data with benchmarks from other universities or academic programs allows for the creation of more convincing narratives and implementation of change. Multi-institutional data collection efforts or consortia also allow for the reduction of complexities and costs regarding collecting, managing, and reporting data, so institutions have more time to use their data and spend less time on administrative data tasks.

Based on our SERU experience there are at least three areas that both European and North American universities may consider focusing on in their current and future institutional research efforts in the post-COVID era.

1. First, the wide and hasty introduction of technology requires careful examination of its impact on student learning and skills development. Institutional research can support universities in developing a more strategic approach to online learning going forward, both in undergraduate and graduate education.
2. Second, institutional research will be instrumental in examining the financial impact of the pandemic on students, the affordability of college and the employability of university graduates. This traditional area of institutional research in the US will become increasingly relevant in Europe as well, considering the risk of economic decline brought on by the COVID-19 pandemic.

3. Third, institutional research can support universities by providing more information on student health, safety and wellbeing. Institutional research offices are uniquely positioned to provide strategic insights to university leadership by linking student learning data with information on their health, safety and wellbeing.

In an early moment of self-realization, an ancient Greek aphorism stated "know thyself." Aeschylus, Socrates, and Plato all integrated this concept into their teachings. While the focus can be on the individual, it can also apply to institutions, and more exactly to those who make it a collective whole. Yet many universities have not leveraged the deep knowledge, expertise and institutional memory within the academy to do just this for the improvement of their own institutions.

To know thyself can be, at times, uncomfortable – exposing not only institutional strengths, but weaknesses as well. But only through an analytical lens can universities strengthen an academic culture that is always seeking improvement and strategically dealing with its challenges, financial or otherwise. Gothenburg, Lund, Stockholm, and Uppsala are all great universities. But all universities should be in a constant quest for self-awareness and improvement.

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