



# A synthesis of surveys examining the impacts of COVID-19 and emergency remote learning on students in Canada

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## Abstract

During the COVID-19 pandemic numerous institutions around the world have surveyed students to gain an understanding of their experiences. While these surveys are valuable at a local institutional level, it is unclear as to which findings from individual surveys reflect the broader higher education environment, and which patterns may be consistent across student surveys. It is worthwhile to synthesize survey findings in order to explore patterns and potentially new understandings that may arise from such analysis. In this paper, we reviewed and synthesized 21 surveys examining the impacts of COVID-19 and emergency remote learning on approximately 155,000 student respondents in Canada. Findings reveal that the impacts of COVID-19 and emergency remote learning on students centered around (1) educational experiences, (2) mental health and wellbeing, (3) financial concerns, (4) impact on future plans, and (5) recommendations for future practice.

**Keywords** Emergency remote learning · COVID-19 · Canada · Student surveys · Synthesis · Relational approach

## Introduction

In March and April of 2020 as the risks of the COVID-19 pandemic became increasingly apparent, higher education institutions in Canada transitioned to emergency remote teaching (Hodges et al., 2020) as part of lockdown restrictions and pandemic mitigation strategies. As with many institutions around the world, in 2020 and 2021, many Canadian institutions and organizations have undertaken surveys of students

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to understand the impacts of the pandemic on students and their educational experiences. Our objective in this paper is to describe and reflect upon the findings that emerged in institutional surveys, and discuss possible recommendations for institutions, administrators, instructors, and student support services, while also suggesting limitations and gaps in the data collected to date as areas which need further attention. While this study focuses on Canada and its findings should be interpreted within the Canadian context, given the global use of emergency remote learning, the study's implications may be relevant to other countries and contexts.

Given the unprecedented historical circumstances beginning early in 2020, researchers have a unique opportunity to examine crisis-oriented responses, adaptation, and online learning capacities of institutions for navigating complex events and supporting the people within those institutions, both from the perspective of what worked and what didn't work. Of particular interest for us are the ways in which students experienced the changes in their educational experience, and the degree to which remote forms of teaching and learning facilitated their experience in positive and/or negative ways. While in some places, particularly in the Global North at the time of writing (May 2021), for now the pandemic appears to be on the threshold of improved management and control through various degrees of protective measures and vaccine rollouts, elsewhere in the world the pandemic is the worst it has ever been while some countries are predicted to not even receive any vaccines until 2023 (Belluz, 2021). In other words, while the people and nations of this planet grapple with an ongoing risk of unequal severity, the capacity for remote, online, and flexible education, and the possible large-scale need for it, appears to be here for the foreseeable future.

## Background

Studies from around the world examined how students coped with the transition to emergency remote learning, for example by identifying ways that students adapted their resource-management strategies (Biber et al., 2021) to how they described their experiences on social media (Literat, 2021). The bulk of these studies make clear that student experiences are unequally distributed due to myriad factors that include, for example, everything from socio-economic status and other social factors like race and gender, to infrastructure access and quality, to program and course requirements, and to personal health and safety risks connected to the pandemic itself (Bozurt et al., 2020; Clabaugh et al., 2021; Gillis & Krull, 2020; Shin & Hickey, 2020). In studies that included students from around the world, emergent challenges for students were not dissimilar from the challenges common in online education more generally, such as issues with student motivation and engagement, as well as a sense of loss over the social experience face-to-face learning provides (Jeffrey & Bauer, 2020; Nguyen et al., 2021) and a need for pedagogical models that foster community and connection (Bahamondes Rivera & Abarca Millán, 2021). Struggles with mental health and emotional wellbeing have also been common concerns across the globe (Clabaugh et al., 2021; Gillis & Krull, 2020; Islam et al., 2020). While much of the literature focuses upon various challenges and

uncertainties learners faced (e.g., Guest et al., 2021), some studies identify some positive experiences tied to emergency remote learning, such as ease of interaction and comfortable learning environments (Shim & Lee, 2020), and expressions of gratitude and hope (Gaeta et al., 2021), as well as student recommendations for future pedagogical efforts (e.g., Nguyen et al., 2021).

To date there has yet to be a pan-Canadian study that examines the student experience in the pandemic context, even as some Canadian experiences have been included in international studies (e.g., Bozurt et al., 2020). No doubt while some findings in other countries will be transferable to the Canadian context, each context is itself unique given the differences in variables that shape the student experience (Berliner, 2002), such as those directly tied to online education including access to technology and infrastructure, as well as broader financial obligations and opportunities determined by national context (e.g., tuition costs and funding), and the degree to which the pandemic has impacted social and economic norms, for example. Given these differences in factors, a specific Canadian analysis is necessary to (a) best inform Canadian institutions and educators about the experiences and subsequent needs of their students, and (b) enable comparative studies between Canada and other countries.

## Methodology

A structured and systematic methodology was used to identify, review, and analyze the literature on student experiences with remote teaching and learning during the pandemic. We first engaged in a systematic search strategy to identify relevant studies. Once such studies were located, we applied a set of criteria to decide whether to include or exclude each individual study. The studies selected following this process were analyzed and critiqued inductively using the constant comparative method, and combined together using the qualitative metasynthesis approach. These steps are described in more detail below.

## Search strategy

The data collection for this paper first involved a scholarly database search to attempt to identify any reports on the student experience with emergency remote learning in Canada during 2020. Keywords for this search included “pandemic,” “Canada,” “student experience,” “higher education.” While some relevant research literature was identified as noted above, no Canadian reports on surveys appeared in this search. We followed this search with a manual Google search, which began May 1, 2021 and ended May 31, 2021. This was a necessary step as much of the early and rapid investigation into student experiences comes from institution-led reports that are only available through institution websites, rather than in peer-reviewed journals indexed in scholarly databases. This is not unexpected given the speed with which these surveys were undertaken, and the need for useful data to guide institutional responses to the pandemic and in service of student needs. To expand our

search beyond the reports indexed by Google and identified for inclusion, one of the authors posted on Twitter a call for relevant reports and was directed to four more Canadian surveys.

### **Inclusion and exclusion criteria**

We included all manuscripts and reports that (a) focused on Canadian student experiences during the pandemic, (b) were accessible online, (c) were completed at the time of writing, and (d) were published between March 2020 and March 2021. Manuscripts that did not satisfy the inclusion criteria were excluded. These criteria led to the exclusion of studies that were incomplete (i.e., were ongoing, such as a project which was in the process of analyzing data at the time of writing) or were otherwise inaccessible. A total of 32 surveys were identified. Twenty-one reports featuring approximately 155,000 student respondents met all the inclusion criteria (see Table 1). Of the eleven reports excluded:

- Four were unavailable (two were produced by education consulting firms and required a fee to access; one was private to the institution and unavailable; and one the authors were unable to share their results at the time of writing).
- Three were global surveys that included Canada but we have excluded them as the scope of their reports are beyond this paper.
- Four were in the data collection or writing stage as of this writing.

### **Analytic method**

The analysis of the articles included in this review adopts an evaluative and integrative approach. The data (survey reports) were analyzed using the constant comparative method (Glaser & Strauss, 1967), arriving at salient categories and data patterns. Each survey was individually read by one of the authors and assigned emerging codes. The codes were iteratively expanded and revised as more surveys were read and added to the dataset. Understandings from each paper were collected and analyzed individually to note emerging patterns and to gain a broad understanding of the issues arising. Next, both authors reviewed all the codes and surveys and discussed emerging findings over four meetings. These discussions questioned the codes, probed the data, investigated relationships between the codes and data, and established the final set of codes. During these meetings, the two authors compared, contrasted, and analyzed the codes in search of common themes and meanings. By arranging and rearranging codes, thematic categories emerged that seemed to describe student experiences with remote teaching and learning during the pandemic. These themes were compiled and examined to identify the degree to which they were present across survey reports. The themes were then composed using the qualitative metasynthesis approach (Finfgeld, 2003; Sandelowski & Barroso, 2007)

**Table 1** Surveys not included

Author	Survey title	Jurisdiction	Status
Young, M. at McMaster University University of Northern British Columbia	Unnamed student mental health survey International student survey	Unknown University of Northern British Columbia	Ongoing Ongoing
Macleans McGill University Educause	Student survey 2021 EDUCAUSE COVID-19 QuickPoll Results: Fall Planning for Education and Student Support	Canada McGill University Global	Ongoing Ongoing Mixed data
Bozurt, A. et al	A global outlook to the interruption of education due to COVID-19 Pandemic: Navigating in a time of uncertainty and crisis	Global	Mixed data
Top Hat Higher Education Strategies Laurier University with National Survey of Student Engagement (NSSE) Pulse	Top Hat Field Report: Higher Ed Students Grade the Fall 2020 Semester The Future of Learning: A Report from the Front Line National Survey on Student Engagement	Global Canada Laurier University	Mixed data No access No access to Laurier data
Usher, A & Sullivan, M (2020) University of Manitoba Law Student Association	Examining Learning Experiences During COVID Covid-19 Student Impact Survey	Canada University of Manitoba	No access No access

so as to develop a “new and integrative interpretation of findings that is more substantive than those resulting from individual investigations” (Finfgeld, 2003, pp. 894).

## Limitations

There are limitations to this research. Without access to the data and survey instruments of these reports, it is unclear what remains publicly unreported or what may have been missed in the original analysis. Moreover, these reports are not representative of all Canadian institutions, so cannot provide a cohesive picture at the pan-Canadian level, even as some surveys were national in scope. The majority of this work was not peer-reviewed and there is a dearth of details on the methodological rigor of the studies. These limitations are to be expected given the nature of many of these surveys being a kind of rapid evaluation, feedback-seeking, and pulse-taking of the situation of students. Nevertheless, while we cannot make conclusive claims about the data, because of the unprecedented and rapid changes that followed from the onset of the pandemic, working with the available data still offers valuable perspective and captures an emergent picture of student experiences.

## Findings

Just over half of the surveys included were limited to one institution ( $n=14$ ). The rest were pan-Canadian through larger organizations and institutions such as Stats Canada, The Canadian Association of University Teachers (CAUT), and the Canadian Alliance of Student Associations (CASA). Three surveys were exclusively focused on graduate students and the rest examined undergraduate students or a combination of both. One survey focused exclusively on international students. Not all surveys covered all themes, but nearly all surveys mentioned all themes to some degree. We identified the impact of COVID-19 and emergency remote learning on students to center on the following themes:

- Educational experiences;
- Mental health and wellbeing;
- Financial concerns;
- Impact on future plans;
- Recommendations.

In Table 2, we identify all surveys examined in this paper and highlight their jurisdictional focus, sample population, and data collection dates. Further, we indicate which themes each survey addressed.

**Table 2** Canadian COVID-19 student experience surveys

Author	Survey title	Jurisdiction	Sample (n)	Dates of data collection	Mental health and wellbeing	Financial concerns and value of education	Impact on future plans	Educational experiences	Recommendations and support responses
Academica with Maple Assist	Delayed, Deferred, Determined: International Prospective Students discuss Fall 2020	International students and prospective international students studying in Canada	16,649 international students	Unknown			x	x	
CASA	Students are Still Worried: COVID-19 and Post Secondary Education	Canada	1000, post secondary students	May 14—May 23, 2020		x	x	x	
CAUT	How has the pandemic impacted students and what does it mean for faculty and instructors?	Canada	300 high school seniors; 800 continuing post-secondary education students	April 23—May 1, 2020	x	x	x	x	
CITL	Remote Instruction Student Survey: Results Summary	Memorial University	3585	October 23—November 4, 2020			x	x	

**Table 2** (continued)

Author	Survey title	Jurisdiction	Sample (n)	Dates of data collection	Mental health and wellbeing	Financial concerns and value of education	Impact on future plans	Educational experiences	Recommendations and support responses
CITL	Remote Instruction Technology Survey	Memorial University	4081	June 17—July 1, 2020			x	x	
Dahl, D. and Foley, R	Winter is Coming: A Review of our online teaching efforts	University of British Columbia Sauder Business School	791 undergraduate students; 173 graduate students	Published Dec. 10, 2020			x		
Lethbridge College	Lethbridge College Covid-19 student survey	Lethbridge College	899	Unknown	x		x		
Lethbridge College	Lethbridge College Covid-19 student survey	Lethbridge College	899	Published Fall 2020	x		x		x
McGill University Student Services	COVID-19 Student Impact Survey Results	McGill University	6600 undergraduate and graduate students combined	May 1—May 24, 2020	x		x		x
McGill University Student Services	Planning for a Remote Fall Semester—Survey Results	McGill University	Approx. 9450 undergraduate and graduate students combined	June 25—July 11, 2020	x		x		x

Table 2 (continued)

Author	Survey title	Jurisdiction	Sample (n)	Dates of data collection	Mental health and wellbeing	Financial concerns and value of education	Impact on future plans	Educational experiences	Recommendations and support responses
McGill University Student Services	Checking-In Student Survey Results	McGill University	approx. 9900	October 6—October 18, 2020	x	x	x		
OCUFA	OCUFA 2020 Study: COVID-19 and the Impact on University Life and Education	Universities in Canada	502	October 16—October 23, 2020	x		x		
SFSS	The COVID-19 Pandemic & the Student Experience	Simon Fraser University	2474	April, 2020	x	x	x		x
Stats Canada	Impacts of the COVID-19 pandemic on postsecondary students	Canada	100,000+ postsecondary students	April 19—May 1, 2020	x		x		

Table 2 (continued)

Author	Survey title	Jurisdiction	Sample (n)	Dates of data collection	Mental health and wellbeing	Financial concerns and value of education	Impact on future plans	Educational experiences	Recommendations and support responses
Suart, C., Suart Nowlan, T., Graham K., & Truant, R	When the Labs Closed: Graduate students' experience and Postdoctoral fellows' experiences of disrupted research during the COVID-19 pandemic	Canada	315, graduate students and postdoctoral researchers	April 27—June 8, 2020	x		x	x	x
TSPN	The Early Impacts of COVID-19 on Graduate Students Across Canada	Canada	1431 graduate students	April 22—May 31, 2020	x	x	x	x	x
U of A	Student Needs Survey Summary Report: Fall Semester 2020	University of Alberta	669	October 16—November 11, 2020	x		x		x
Yee, G., Metha, S., Lorenz, M., Edward, H., & Andres, C	COVID-19 Survey Data	University of British Columbia	5989	July 2020	x	x	x		

Table 2 (continued)

Author	Survey title	Jurisdiction	Sample (n)	Dates of data collection	Mental health and wellbeing	Financial concerns and value of education	Impact on future plans	Educational experiences	Recommendations and support responses
U of CGSA	Graduate Students' Association Fall 2020 Survey	University of Calgary	258 graduate students	June 2020	x	x	x		
UOSU	UOSU's COVID-19 Survey: Our results	University of Ottawa	264	May 5—May 28, 2020	x	x	x		
UVic	Student and Instructor Online Experience	Learning and Teaching Support and Innovation	4744 undergraduate students; 498 graduate students	Fall 2020	x		x		x

## Educational experiences

All but one survey ( $n=20$ ) examined student educational experiences. Emergent categories included assessing perceptions related to social experience as it relates to learning, accessibility in terms of both technology and disability, and quality and value of education received, with specific attention to factors such as delivery format, content quality, availability of courses, motivation, and access to necessary resources (e.g., libraries and labs).

Accessibility to technology varied according to institution. For example, within the Greater Vancouver Region alone, nearly 70% of surveyed UBC students indicated they had the appropriate technology resources, whereas students from Simon Fraser Student Society (SFSS) reported that only 54.4% had the necessary technology. In contrast, 92% of McGill undergraduate students indicated that they had adequate technology (McGill “COVID-19 Student Impact Survey Results”). Only 47% of graduate students from the University of Calgary reported that they had access to the requisite technology, whereas 90% of McGill graduate students reported adequate access (McGill “COVID-19 Student Impact Survey Results”). Beyond the variability in access to technology, infrastructure itself is an issue with some students reporting difficulty with accessing high speed internet—at the University of Calgary, this was just over half of the surveyed grad students (55%), for example, even as elsewhere, such as at McGill, graduate students had much higher levels of access at 78% (McGill “Planning for a Remote Fall Semester—Survey Results”). This concern was also significant for international students, some of whom indicated that working remotely from their home countries meant they lacked reliable internet access, making online learning inappropriate for that context (Academica, 2020). Given the unequal distribution of broadband internet across Canada and the world (United Nations Children’s Fund and International Telecommunication Union 2020), which is made evident in the discrepancies between institutions identified above, this is a serious concern for educators and institutions should they continue relying on digital teaching tools.

Safety with respect to technology use was another concern expressed in some surveys. Nearly 13% of students in the SFSS survey for instance, noted that they felt that they had been asked by instructors to do things that made them feel “unsafe, uncomfortable or in violation of their rights as a student since moving to remote classes” (p. 4). The details of what was asked were not part of the survey, but it was noted in a comment by students in the UBC Sauder Business School survey that the use of surveillance software was not helpful as an anti-cheating tool or in terms of privacy (p. 69), which may have been part of safety and privacy concerns. Additionally, recommendations to keep cameras on during instruction (e.g., Lethbridge College) may not be well attuned to the reality of students learning in spaces that bring the private into a version of the public in ways that may not be healthy, sustainable, or welcome.

Course design and pedagogy, as well as course availability were also of concern. In some instances, this was tied to lack of access to on-campus resources such as labs and libraries (e.g., Stuart et al., 2020), which may also be complicated by physical limitations many students experienced with their at-home workspaces, such as

lack of a private space for study. University of Alberta students cited concerns with balancing home environment, caregiving responsibilities, and insufficient quiet spaces, and around 35% of surveyed Simon Fraser University students indicated that they did not have study space free of noise and distraction, which was somewhat better than McGill students, with 50% of undergraduate and 52% of graduate students indicating they did not have access to a quiet study space to learn. More concerning than a proper study space, two-fifths of graduate students surveyed at the University of Calgary were concerned about having a safe place to live. Furthermore, students' concerns with pedagogy and course design were also connected to things such as increased workload and challenges with navigating institutional learning management systems. Many surveys reported that students felt that online learning had increased their workload compared to the previous year, or was extremely heavy, especially for undergraduates (McGill, Memorial, University of Victoria, UBC Sauder School). Students from the Sauder School suggested that there were too many assignments and that given the need to navigate online environments, less work would be better. Moreover, the Canadian Alliance of Student Associations (CASA) survey revealed that 43% of students indicated that it was not easy to complete courses, and 30% that courses were not even easy to access.

Concern around motivation was also an important area in reported findings, though this aspect of the educational experience was not a universal assessment as only Lethbridge College, the University of Ottawa, and McGill reported on students' motivation. In all three surveys, students reported motivational challenges: 73% of undergraduate and 70% of graduate students at McGill indicated they wanted help with motivation, which attests to some of the difficulties with the transition from face-to-face learning to remote learning. Significantly, while motivation is impacted by factors which are under the control of students, it is also tied to external factors such as course design and pedagogy, but also to the broader environment of the ongoing pandemic and daily life within it. Connected to motivation as well, was the impact on learning experience vis-a-vis the social aspect of learning and learning communities that students were accustomed to in in-person settings: Students indicated that challenges in their learning came from limitations or dissatisfaction with connection and access to not just professors, but their peers as well.

### **Mental health and wellbeing**

Of the 21 surveys identified and analyzed, more than half ( $n=15$ ) included questions about the state of students' mental health and wellbeing. Given the context of the pandemic, and the significant changes and uncertainties flowing from it, it is unsurprising that mental health has been a top concern for institutions. In response, many students indicated that they have experienced a decline in mental health. The Canadian Association of University Teachers (CAUT) found that 61% of students were worried about the pandemic; Lethbridge College reported that students indicated they were struggling with isolation and loneliness; and the Student's Union at the University of Ottawa reported that 39% of students indicated they had high symptoms of psychological distress. Others reported that students wanted mental

health support to be more available and known (e.g., University of Alberta, Lethbridge College, SFSS). In summary, in terms of mental health and wellbeing, students in institutions across Canada struggled with anxiety about the pandemic and the future of their education, as well as their job prospects and financial status (e.g., Stuart et al., 2020; Toronto Science and Policy Network (TSPN), 2020). They also struggled with loneliness and isolation, as well as motivation and concern about engagement specific to remote online learning. Finally, some surveys reported that students sought further communication about support resources (e.g., counselling and workshops) and sources of community and connection (e.g., student groups) (e.g., McGill, 2020; UVic, 2020).

### Financial concerns

Concern about finances was significant for many students, with nine surveys addressing this topic. While in some instances such concerns were connected to the cost of university education, financial concerns were also explicitly mentioned with respect to housing affordability (e.g., as noted by University of British Columbia students in Vancouver), and increased costs related to travel. Given the rapidly increasing prices in the housing market in Canada at the time of writing, it should not be unexpected that this concern has and will be felt by students in institutions across the country.

With respect to finances, the CAUT survey reported that COVID-19 had a significant impact on 37% of students and somewhat of an impact on another 35% of students surveyed. The survey by CASA reported in detail on the financial stress experienced by students and noted that such stress was not evenly distributed across students: “[e]conomic and health concerns are higher among women than men, visible minority students, students living on their own or with roommates, and those with no personal income” (p. 3). Stats Canada surveyed approximately 100,000 Canadian students, 58% of whom indicated that “they were very or extremely concerned about losing their job in the future, and 67% were very or extremely concerned about having no job prospects in the near future” (p. 3). This same survey revealed that a quarter of students experienced the postponement or cancellation of needed courses. Notably “twice as many prospective graduates reported that they would not be able to complete their degree, diploma or certificate as planned” (p. 2).

At the intersection of finances and educational experience, many students also expressed concern about the value of their education (e.g., CASA, CAUT, University of Calgary). A number of surveys reported that students felt that their education had lost value as a result of the transition to remote learning, that the new approach was less effective, and that they also had fewer learning opportunities stemming from reduced class options, delays in completion timelines, and lack of access to necessary resources such as labs and libraries.

## Impact on future plans

Nine surveys investigated students' sense of how their plans for later semesters might change including whether they might live in the city of the university's physical location (e.g., Memorial, McGill), as well as how the change to remote learning would impact the future prospects in terms of degree-completion timelines and possible jobs or internships. As noted above, tied to financial concerns, the report from Stats Canada indicated that students had significant disruption to plans for jobs, courses, and program timelines. The disruption to future plans was also felt heavily by graduate students, especially those working in the field, in archives, or using labs. The report on graduate students in Canada by the TSPN noted that 78% of research trips were cancelled, for example. Stuart et al. (2020) reported that many graduate and postdoctoral fellows were also concerned about the impact on their careers as labs and research spaces were closed, and contextualized this within the increasingly dire career prospects in higher education in Canada, especially as concerns about the financial impact of the pandemic play out in future institutional hiring practices. The plans of international students were also impacted in a variety of ways, although many students indicated that they would continue their study where possible; two-thirds of prospective international students indicated they would continue with online programming, with those intending to go to university (68%) being more likely than those going to college (56%) to continue as planned (Academica, 2020).

The CAUT survey looked specifically at expectations around the pandemic's future impact, with 36% of respondents indicating that at the time of collection they felt that the worst was still to come, while 4% were uncertain (p. 6). Notably, only 4–6% of students indicated they'd be likely to defer their fall studies (p. 25); however, some students (56%) indicated they were at higher risk of deferral even if that wasn't their actual plan, while others planned to switch to more affordable programs (26%) or to schools closer to home (23%) (p. 28). The CASA survey similarly asked about future enrollment plans and found that "41% of students have considered or already delayed/deferred their fall semester" (p. 7), and across regions, gender, age, international student status, and visible minority status, students were significantly "much more" worried about their futures (between 23–48%). In summary, with respect to future plans and expectations, students were concerned about everything from if and where they will study, and what kinds of impact the pandemic will have on both their immediate academic careers as well as their long-term career prospects.

## Recommendations

Some surveys ( $n=7$ ) offered recommendations for navigating the pandemic's effects on education and student life, as well as reporting on respective institutional responses to students' input. These recommendations were included in surveys run by student organizations, like student unions, as well as by institutions (e.g., University of Alberta, Lethbridge College, McGill University). An oft-repeated pattern in student-led surveys was recommendation for financial relief (e.g., see SFSS and

TSPN surveys). The request for continued or improved flexible accommodations in cases of disability were also noted, which included emphasis on asynchronous delivery (SFSS), extending pass/fail grading (SFSS), more content online (Ontario Confederation of University Faculty Associations (OCUFA)), as well as attention to difference in time zones (UBC).

Some surveys were reported in a summary format and included material on steps being taken by institutions, and basic guidelines for negotiating online learning. Lethbridge College, for example, provided a toolkit for academic success, which included content refreshers, content on navigating distance learning, new student and family orientation, as well as a college student preparation inventory. At the University of Alberta, students' recommendations were tied to improved communication in the form of better promotion and information about workshops, learning sessions, student groups and clubs, and a call for encouragement to engage with departments. They also requested training on how best to set up home learning spaces, a practical tool which may be overlooked by some institutions. Recommendations were also made specific to graduate students and post-doctoral graduates, with emphasis on the complex and precarious environment many members of this cohort face as researchers with time-sensitive funding agreements (Suart et al., TSPN). The TSPN report made extensive recommendations which included everything from improved communication between supervisors, students, and institutions, to clarity around teaching expectations for graduate students, to strategies for professional development to continue in spite of COVID-19 restrictions, for example. Suart et al. (2020) emphasized contingency plans for future shut-down possibilities and that institutions need to have clear policies in place to facilitate smooth adjustment to future disruptions for lab researchers.

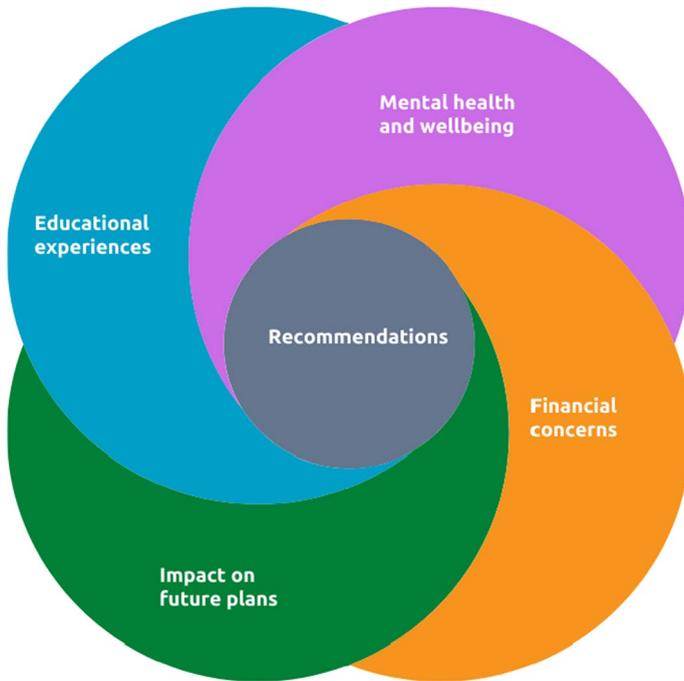
Both the University of Victoria and the University of British Columbia made recommendations to faculty and instructors, which while not targeted towards students, are worth noting given the impact on their students and the difference in these recommendations. For example, the University of British Columbia's focus was on flexibility under compelling or compassionate grounds for domestic and international students. The softening of harsh deadlines or policies related to students' work in classroom settings was encouraged, but also noted that loss of quality in instruction should not be tolerated. This survey also recommended the provision of step-by-step tech tutorials, but it was unclear if this was meant for faculty to provide or as an institutional response. Flexibility was also centred in the recommendations offered by the University of Victoria survey. However, such flexibility was more expansive in definition and included everything from course design to an emphasis on accessibility in the form of concise and structured interactions (e.g., weekly communications, easily navigated web interfaces, streamlining of content and clarity of expectations, and universal design). While only one section of the recommendations spoke specifically to flexibility as such, many of the overall recommendations work in support of making education flexible beyond simply attention to space and time through supportive engagement, but through attention to students as individuals living in unique circumstances, while simultaneously encouraging pedagogy that accounts for differences in how online learning is organized and enacted compared to in-person learning. For example, a uniform template for course structure

and organization was suggested, space for regular student feedback was encouraged, and sensitivity to mental and physical wellbeing was also underscored through support, communication, and acknowledgement of challenges. Workload expectations were also recommended to be flexible (i.e., not excessive), a point also raised in the OCUFA survey which indicated a desire by some students for adjustment of workload and exams.

## Discussion

While the surveys identified and synthesized centered on the aforementioned five themes, what becomes clear is that each institution or organization developed a survey instrument that has had a slightly different focus than the rest, offering slightly different results. Graduate students and undergraduate students, for example, while sharing some of the same concerns, also have different issues to consider. In some cases, student-led organizations are asking slightly different questions than institutions, and often offer recommendations in response to the pandemic's impact on both undergraduate and graduate students (e.g., SFSS, Stuart et al., TSPN). Some institutions are doing follow-up surveys or reports and providing communication on how they are responding to initial rounds of surveys (e.g., McGill, Memorial, Lethbridge College). Taken all together, what is suggested by these findings is that the ways in which institutions are gathering data about this complex problem is multi-faceted, driven by varied needs and goals, and responsive to students of many different backgrounds. In other words, while generalities exist, we see many context-specific approaches. What would be extremely helpful both for institutions in Canada, as well as higher education institutions around the world, is if the varied instruments used in these surveys were made publicly available alongside the survey report. Such an action would enable researchers to gain a further understanding of institutional efforts and would also enable other institutions to use and adapt them, enabling better comparisons between institutions and potentially enabling opportunities for some degree of benchmarking, and potential cooperation.

What helps to make sense of context-specific responses within the larger context of higher education in Canada is to approach reports with a relational or ecological mindset, meaning to see each report as relationally bound to its own niche, while also being a part of a larger whole in which all parts to some degree can relate to all other parts (Fig. 1). This is true of the surveys themselves and is also true of the core themes that have emerged from the surveys. Financial insecurity, for example, cannot be divorced from the mental health and anxiety of students, so too job and education prospects and plans. Even though for the sake of analysis dividing the findings into themes can be helpful, the danger is that the relationship between the themes is obfuscated, and solutions to whatever concerns students might have are approached in a compartmentalized fashion. The worry a student experiences over the value of their education experience for example, may potentially be as much about expenses as it is about learning outcomes, and what kind of future can be made possible with those learning outcomes.



**Fig. 1** Themes set in an ecological context, rather than independent and monolithic

This relational way of understanding helps make sense of some of the gaps in these surveys as well. First, a handful of surveys highlighted the differences for students of different backgrounds and ethnicities (e.g., CASA); however, this was not the focus of the majority of surveys. Given the disproportionate effects of the pandemic on individuals who are Indigenous, Black, and people of color in Canada (Cheung, 2020; Government of Manitoba, 2021), attention to these differences is essential for effective response to many of the themes examined above, yet many of the themes identified are difficult to disaggregate in order to identify which subpopulations of students were impacted the most or in which ways they were impacted. Moreover, while the focus of these surveys has been on the impact of the pandemic, 2020 was a year of great social unrest beyond the pandemic, such as the protests that followed the murders of George Floyd, Breonna Taylor, and many other Black and racialized people in the U.S. by predominantly white police officers. Such context needs to be accounted for as students are not living in a world strictly impacted by their education. Relatedly, the pandemic has been experienced quite differently across genders (Fisher & Ryan, 2021), and this may be particularly true for older students (James & Thériault, 2020) and students in caregiving roles. Holding space for students in these positions is important both in terms of gender equity but also in economic terms as women in particular have faced far more job losses as a result of the pandemic than men (Fisher & Ryan, 2021), thereby reinforcing gendered precarity and inequality. None of the surveys

identified and examined here specifically investigated caregiving status and its impacts on student life, although gender is noted in some (e.g., Stuart et al.).

This difference in experience may also hold true for international students, whether studying in Canada or in their country of origin. Countries across the globe are in different stages of the pandemic and making assumptions about these differences is fraught. While the international student data collected above focuses on things such as time zones and cost of travel, a deeper understanding of the number of students connected to people and places in differing degrees of crisis would be helpful in creating and offering appropriate support. Finally, while mental health was broadly addressed in terms of decline and especially anxiety, as the pandemic continues, a deeper understanding of mental health and wellbeing concerns will be helpful. For example, many students (and staff, faculty, instructors, and administrators as well) may be experiencing grief or added anxiety centered around unfolding plans about the ongoing pandemic and rapid lifting of protective measures at the time of revising this paper in March 2022. Their anxiety may be contributing to difficulties with learning and motivation. Where appropriate, developing tools and programs to enable students to navigate the specific emotional challenges brought about by the pandemic experience would be a worthwhile gap to address.

We next offer a number of recommendations for faculty, instructors, and administrators, with specific attention to the relational ways these themes operate. These recommendations are drawn from some of the more innovative responses institutions have outlined. Overall, we suggest that based on the interconnected nature of these themes, that a strong relational approach to responding to crises is centred in all institutional plans. This means beginning from the recognition that all of these themes impact each other (see Fig. 1) and that students themselves are relational subjects, embedded in communities both within and without the university that are impacted by the pandemic. As such, flexibility, for instance, is not just a quality that can be embodied or practiced by institutions and instructors, but is a value necessary to effectively support the learning of students. As a value, flexibility is grounded in trust and compassion rather than disciplinary regimes of surveillance and control, and emphasizes accountability as a collaborative process between learner, instructor, and institution, rather than something imposed punitively top-down on learners (Veletsianos, 2020; Veletsianos & Houlden, 2020). It is the difference, for example, between demanding narrowly circumscribed evidence of illness or impact, and trusting a learner to be able to determine their own needs, capacities or limits in a given situation, or the difference between the application of surveillance technology in learners' private spaces and measuring education outcomes in non-invasive ways.

Adequate and effective communication were noted as key concerns for students. Having clear communication plans based on students' needs and preferences (e.g., using email as opposed to social media channels) with regular updates to key changes is necessary. A challenge here is to craft such a communication strategy that is not only clear and regular, but simultaneously avoids communication fatigue. Additionally, it's not enough to solely collect data; transparency is key and students benefit from knowing what institutions are doing in response to their input. Thus, reports for instance, might follow in waves, similar to the ones that Lethbridge

College released, with the first to indicate findings and the second to indicate what is being done in response to the findings.

Access to technology, including high speed internet, and training on learning management systems and teleconferencing platforms is also important, with students specifically looking for such training (e.g., Lethbridge College). Given the need to address the experience of overwork many students are having as a result of going online, it is likely unsustainable to make such training available in addition to coursework. Instead, it could be incorporated into courses through active learning and skills development. Moreover, digital wellbeing and digital safety and rights are key areas that students need guidance on. The SFSS survey, for example, noted student experiences with online learning that made them feel unsafe. There are serious concerns with privacy and security while online, and the use of proctoring and surveillance technologies by institutions is one area where students' rights need to be well established, which in part comes through informing them of and upholding their rights.

Given the significant upheaval to social and educational contexts, as well as the need to design for future in-person offerings to account for potential disruptions<sup>1</sup>, it is important for researchers to identify, examine, and report on cases in which faculty, students, and institutions successfully navigated disruptions. Questions of broader interest may include: What kinds of technology-enhanced pedagogical approaches were most amenable to responding to ongoing disruptions? What systemic structures were in place to support instructors, students, and institutions in rapid transitions? What kinds of individual skills and competencies supported such transitions, and what are some possible ways to foster those? Why did some courses successfully transition to remote approaches to learning while others failed? How may institutions support all instructors and students in developing learning environments that are resilient in the face of the COVID-19 crisis, but also in the face of future crises, such as climate catastrophes? Examining such questions requires investigations that focus on both pedagogy *and* technology, and consider individual factors *as well as* systemic factors, in an ecological manner.

Mental health and wellbeing are of major concern for many students. The specific and lasting effects of the pandemic on mental health, including the very real possibility of post-traumatic stress related to living through the pandemic (Bridgland et al., 2021) need more careful attention not just in terms of making support resources available for students, but through cultures of care, compassion and trauma-informed pedagogies within institutions and classrooms. The issue of wellbeing needs to be carefully examined with respect to phenomena such as Zoom fatigue and excessive screen time. While there are benefits to be had by engaging online learning, learners aren't solely engaged in learning online, but are living through a pandemic with all of its impacts, implications, and constraints. In other words, online learning does not necessitate being solely in front of a screen. A balance could be struck for instance,

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<sup>1</sup> For example, in the province of Ontario, the government instructed institutions to develop plans for Fall 2021, in part detailing how they will ensure instructional continuity in the event of health disruptions.

between time dedicated to screens and time for alternative forms of engagement. Not all lectures need to be visual, and the use of audio in the form of podcasts, for example, can enable students to learn while being mobile and outdoors.

Finally, students are not learning in nearly as controlled environments as they were prior to the pandemic. Many have indicated that they do not have adequate (e.g., private or quiet) workspaces or resources. As part of a relational approach to addressing the concerns of students, where possible, there should be orientation for not just new and returning students, but for their families as well. This may especially be true for new students as they transition to higher education in an environment that is likely outside the normative perceptions of what higher education looks like in practice.

The recommendations, while drawn from a specifically Canadian context, can potentially be applied to international contexts as well, especially given the ecological approach we suggest. By emphasizing an ecological perspective, we suggest that each institution and its various member groups (e.g., undergraduate and graduate students, faculty, instructors etc.) will require their own specific approaches tailored to their needs, but that the core themes are likely to be relevant to many students and institutions around the world given that things such as emotional wellbeing and consideration for the future are not exclusively Canadian, or even Western concerns. This is evidenced already in a number of studies from outside of Canada examining related issues, such as for example recent work on the wellbeing of students in Australia (Dodd et al., 2021) and the United States (Clabaugh et al., 2021) during the pandemic, on the effective use of technology for emergency remote education in the Philippines (Toquero, 2020), on flexibility for students in Chile (Bahamondes Rivera & Abarca Millán, 2021), and on the uneven impacts of the pandemic on students around the world being shaped by inequality and digital divides (Bozkurt et al., 2020).

## Conclusion

Canadian institutions are on the cusp of returning to in-person learning in the Fall of 2022. As made clear in government communications (e.g., BC Ministry of Advanced Education & Skills Training, 2021) such a return is predicated on resilient forms of flexible education, that is education that is responsive to a sometimes unpredictable public health environment. Such flexible and resilient education is going to be necessary for the foreseeable future, particularly as the people and institutions of the world grapple with the outcomes of unequal access to vaccines and the uncertainties that emerge alongside new variants of the disease. Taking stock of students' experiences with emergency remote learning is one important way of continuing the development of this form of education, and developing contingency plans based on that information is one way to help ensure that such resiliency centres learners.

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## Declarations

**Conflict of interest** The authors declare that they have no competing interests.

## References

- Academica with Maple Assist. (2020). Delayed, Deferred, Determined: International Prospective Students discuss Fall 2020. <https://forum.academica.ca/forum/an-education-at-a-global-distance-international-prospects-discuss-covid-19>.
- Bahamondes Rivera, R., & Abarca Millán, E. (2021). First-year students' experience in higher education in Chile in times of COVID-19. *Planning and Changing*, 50(3–4), 209–235.
- BC Ministry of Advanced Education and Skills Training. (2021) COVID-19 Return-to-campus guidelines. <https://www2.gov.bc.ca/assets/gov/education/post-secondary-education/institution-resources-administration/covid19-return-to-campus-guidelines-web.pdf>. Accessed July 19, 2021.
- Belluz, J. (2021). Poorer countries might not get vaccinated until 2023. <https://www.vox.com/2021/4/28/22405279/covid-19-vaccine-india-covax>. Accessed 12 Apr 2021.
- Berliner, D. C. (2002). Comment: Educational research: The hardest science of all. *Educational Researcher*, 31(8), 18–20. <https://doi.org/10.3102/0013189X031008018>
- Biber, F., Wiradhany, W., Oude Egbrink, M., Hospers, H., Wasenitz, S., Jansen, W., & de Bruin, A. (2021). Changes and adaptations: How university students self-regulate their online learning during the COVID-19 pandemic. *Frontiers in Psychology*, 12, 871.
- Bozkurt, A., Jung, I., Xiao, J., Vladimirci, V., Shuwer, R., Egorov, G., Lambert, S. R., Al-Freih, M., Pete, J., Olcott, D., et al. (2020). A global outlook to the interruption of education due to COVID-19 Pandemic: Navigating in a time of uncertainty and crisis. *Asian Journal of Distance Education*, 15(1), 1–126.
- Bridgland, V. M. E., Moeck, E. M., Green, D. M., Swain, T. L., Nayda, D. M., Matson, L. A., Hutchison, N. P., & Takrangi, M. K. T. (2021). Why the COVID-19 pandemic is a traumatic stressor. *PLoS One*, 16(1), e0240146. <https://doi.org/10.1371/journal.pone.0240146>
- Canadian Alliance of Student Associations. (2020). Students are Still Worried: COVID-19 and Post Secondary Education. [https://www.casa-acae.com/students\\_are\\_still\\_worried\\_covid19](https://www.casa-acae.com/students_are_still_worried_covid19).
- Canadian Association of University Teachers. (2020). How has the pandemic impacts students and what does it mean for faculty and instructors? <https://www.caut.ca/latest/2020/05/survey-post-secondary-students-reconsidering-fall-semester-plans-wake-covid-19>.
- Centre for innovation in teaching and learning at Memorial University. (2020a). Student remote experience survey, winter 2021. Memorial University. <https://citl.mun.ca/studentsurveyresults.php>.
- Centre for innovation in teaching and learning at Memorial University. (2020b). Student technology survey, fall 2020b. Memorial University. <https://citl.mun.ca/studenttechnologysurvey.php>.
- Cheung, C. (2020). How the pandemic is affecting BIPOC Canadians, by various measures. *The Tyeec*. <https://thetyee.ca/Analysis/2020/07/22/Pandemic-Affecting-BIPOC-Canadians/>. Accessed July 19, 2021.
- Clabaugh, A., Duque, J. F., & Fields, L. J. (2021). Academic stress and emotional well-being in United States college students following onset of the COVID-19 pandemic. *Frontiers in Psychology*, 12, 628787. <https://doi.org/10.3389/fpsyg.2021.628787>
- Dahl, D., & Foley, R. (2020). *Winter is coming - A review of our online teaching efforts*. University of British Columbia.
- Dodd, R. H., Dadaczynski, K., Okan, O., McCaffery, K. J., & Pickles, K. (2021). Psychological well-being and academic experience of university students in Australia during COVID-19. *International Journal of Environmental Research in Public Health*, 18(3), 866.
- Finfeld, D. (2003). Metasynthesis: The state of the art – so far. *Qualitative Health Research*, 13(7), 893–904.

- Fisher, A. N., & Ryan, M. K. (2021). Gender inequalities during COVID-19. *Group Processes & Intergroup Relations*, 24(2), 237–245.
- Gaeta, M. L., Gaeta, L., & Rodriguez, M. D. S. (2021). The impact of COVID-19 home confinement on Mexican university students: Emotions, coping strategies, and self-regulated learning. *Frontiers in Psychology*, 12, 1323.
- Gillis, A., & Krull, L. M. (2020). COVID-19 remote learning transition in spring 2020: Class structures, student perceptions, and inequality in college courses. *Teaching Sociology*, 48(4), 283–299.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory*. Aldine Publishing.
- Government of Manitoba. (March 1, 2021). COVID-19 infection in Manitoba: Race, ethnicity, and Indigeneity. [https://www.gov.mb.ca/health/publichealth/surveillance/docs/rei\\_external.pdf](https://www.gov.mb.ca/health/publichealth/surveillance/docs/rei_external.pdf). Accessed 19, July 2021.
- Guest, E., McGinnis, S., Cao, X., Lee-krueger, R., Mahjoub, G., Mckie, K., & Varghese, D. (2021). Being a PhD student in the age of COVID-19: Reflections from the 2019 faculty of education Cohort of the University of Ottawa. *Canadian Journal for New Scholars in Education*, 12(1), 30–38.
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>. Accessed 1 May, 2021.
- Islam, M. S., Sujan, M. S. H., Tasnim, R., Sikder, M. T., Potenza, M. N., & van Os, J. (2020). Psychological responses during the COVID-19 outbreak among university students in Bangladesh. *PLoS One*, 15(12), e0245083. <https://doi.org/10.1371/journal.pone.0245083>.
- James, N., & Thériault, V. (2020). Adult education in times of the COVID-19 pandemic: Inequalities, changes, and resilience. *Studies in the Education of Adults*, 52(2), 129–133. <https://doi.org/10.1080/02660830.2020.1811474>
- Jeffrey, K. A., & Bauer, C. F. (2020). Students' responses to emergency remote online teaching reveal critical factors for all teaching. *Journal of Chemical Education*, 97(9), 2472–2485.
- Lethbridge College. (2020a). COVID-19 student survey. <https://lethbridgecollege.ca/document-centre/forms/covid-19-information/covid-19-student-survey>.
- Learning and Teaching Support and Innovation. (2020). Student and instructor online experience. University of Victoria.
- Lethbridge College. (2020b). COVID-19 student survey - Fall 2020b. <https://lethbridgecollege.ca/document-centre/forms/covid-19-information/covid-19-student-survey-fall-2020-0>.
- Literat, I. (2021). “Teachers act like we’re robots”: TikTok as a window into youth experiences of online learning during COVID-19. *AERA Open*, 7, 2332858421995537.
- McGill University Services. (2020a). Checking-in student survey results. <https://www.mcgill.ca/student-services/about-us/covid-19-student-survey-results/checking-student-survey-results>.
- McGill University Services. (2020b). Planning for a remote fall semester - survey results. <https://www.mcgill.ca/student-services/about-us/covid-19-student-survey-results/planning-remote-fall-semester-survey-results>
- McGill University Services. (2020c). Remote instruction student survey results summary. <https://www.mcgill.ca/student-services/about-us/covid-19-student-survey-results/covid-19-student-impact-survey-results>
- Nguyen, T., Netto, C. L. M., Wilkins, J. F., Bröker, P., Vargas, E. E., Sealfon, C. D., Puthipiroj, P., Li, K. S., Bowler, J. E., Hinson, H. R., Pujar, M., & Stene, G. M. (2021). Insights into students' experiences and perceptions of remote learning methods: From the COVID-19 pandemic to best practice for the future. *Frontiers in Education*, 6, 647986. <https://doi.org/10.3389/educ.2021.647986>
- Ontario Confederation of University Faculty Associations. (2020). OCUFA 2020 study: COVID-19 and the impact on university life and education. <https://ocufa.on.ca/assets/OCUFA-2020-Faculty-Student-Survey-opt.pdf>.
- Sandelowski, M., & Barroso, J. (2007). *Handbook for synthesizing qualitative research*. Springer.
- Simon Fraser Student Society. (2020). The COVID-19 Pandemic & the Student Experience. <https://sfss.ca/wp-content/uploads/2020/05/COVID-19-Survey-Report-4-1.pdf>.
- Shin, M., & Hickey, K. (2020). Needs a little TLC: examining college students' emergency remote teaching and learning experiences during COVID-19. *Journal of Further and Higher Education*, 58, 1–14.
- Shim, T. E., & Lee, S. Y. (2020). College students' experience of emergency remote teaching due to COVID-19. *Children and Youth Services Review*, 119, 105578.

- Statistics Canada. (2020). Impacts of the COVID-19 pandemic on postsecondary students. <https://www150.statcan.gc.ca/n1/daily-quotidien/200512/dq200512a-eng.htm>.
- Suart, C., Suart Nowlan, T., Graham, K., & Truant, R. (2020). When the labs closed: Graduate students' and postdoctoral fellows' experiences of disrupted research during the COVID-19 pandemic. *Research Square*. <https://doi.org/10.21203/rs.3.rs-59050/v1>
- Toquero, C. M. (2021). Emergency remote education experiment amid COVID-19 pandemic. *International Journal of Educational Research and Innovation*, 15, 162–176.
- Toronto Science Policy Network. (2020). The early impacts of COVID-19 on graduate students across Canada. Retrieved from <https://tspn.ca/covid19-report/>.
- United Nations Children's Fund and International Telecommunication Union. (2020). "How many children and young people have internet access at home? Estimating digital connectivity during the COVID-19 pandemic." UNICEF, New York, 2020. Accessed 5 May, 2021.
- University of Alberta. (2020). Student needs survey summary report. University of Alberta. [https://www.ualberta.ca/dean-of-students/media-library/documents/dos\\_student-needs-survey\\_fall2020.pdf](https://www.ualberta.ca/dean-of-students/media-library/documents/dos_student-needs-survey_fall2020.pdf).
- University of Calgary Graduate Students Association. (2020). Fall 2020 survey. [https://gsa.ucalgary.ca/wp-content/uploads/2016/07/GSA-Fall-2020-Survey-Results\\_Final.pdf](https://gsa.ucalgary.ca/wp-content/uploads/2016/07/GSA-Fall-2020-Survey-Results_Final.pdf).
- University of Ottawa Students' Union. (2020). UOSU's COVID-19 survey: Our results. University of Ottawa. <https://www.seuo-uosu.com/wp-content/uploads/2020/06/COVID-19-Survey-Summary-EN.pdf>.
- Usher, A., & Sullivan, M. (2020). Examining learning experiences during COVID. Higher Education Strategy Associates. <https://higheredstrategy.com/examining-learning-experiences-during-covid/>.
- Veletsianos, G. (2020). *Learning online: The student Experience*. Johns Hopkins University Press.
- Veletsianos, G., & Houlden, S. (2020). Radical flexibility and relationality as responses to education in times of crisis. *Postdigital Science and Education*, 2, 849–862.
- Yee, G., Mehta, S., Lorenz, M., Edward, H., & Andres, C. (2020). COVID-19 survey data: preliminary findings. Alma Mater Society of the University of British Columbia. <https://www.ams.ubc.ca/wp-content/uploads/2020/07/COVID-19-Presentation-Slides.pdf>

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