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Utilizing Students' Feedback to Ensure Quality in Teaching and Learning: A Lesson From COVID-19

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Abstract

In this article we investigate the impact of COVID-19 on teaching quality and student active teaching. The data used for the analysis is from more than 4,000 students at the University of Stavanger, collected for the Study Barometer, one of the most important metrics for assessing student satisfaction in higher education, in the period 2018-2020. Special attention is given to the teaching quality index and the active student participation in teaching index. Comparisons of the data from 2020 with the data given in the period 2018-2019 show few significant differences. For the Faculty of Health Sciences, however, there are strong significant differences for both the teaching quality index and the student active participation in teaching index. We reflect upon and discuss factors that may have contributed to these differences and show how a large-scale survey can identify drawbacks in teaching and learning in higher education.

INTRODUCTION

With the sudden adoption of online teaching in many parts of the globe in response to the COVID-19 pandemic, a plethora of studies has discussed the best ways to implement practices and strategies for effective learning. There has been a particular focus on teaching and learning modes and the quality of participation and engagement in teaching activities when conducted online.

The shift from the classroom to online remote learning platforms has its benefits and drawbacks. Online learning is known by educators to help with the management of class materials, possibly reduce time usage and offer greater opportunities for students to self-study. Compulsory online learning, however, may obstruct many elements conducive to engagement in learning, participation, and interaction, known collectively as quality of online learning.

The disruption has brought far-reaching effects to the life and studies of students across the globe. A qualitative study in Norway (Eika, 2021) notes some multifaceted challenges students may have while learning online, such as "lack of non-verbal cues, less concerns of online social politeness, more home distractions, conflicting personal learning style (preferring on-campus physical classes to ask/answer questions and interact), having online anxiety, preferring online anonymity, having concerns of computer security and privacy, and style of teaching presence" (p. 117). It further comments on the elements of social presence and cognitive presence being less effective during the online learning process.

It is common knowledge to educators that the inability to closely monitor student participation in the online environment is likely to compromise quality of learning. A study by Tang et al. (2020) showed that the efficiency of live online courses was found unsatisfactory among students and that live online lessons combined with flipped classroom could improve learning. Similarly, the findings from Wyatt (2021) indicate that, in a US university, migration to online learning during the COVID-19 exigency led to low levels of student participation in accessing ungraded, asynchronous course content, and that, on average, fewer than 40% of students watched on-demand course videos. However, student engagement in graded course content was shown to be consistently high throughout the online learning period. These results suggested that students were more driven to participate online to earn points, than to fully understand course material, during the COVID-19 online learning period.

To compensate for the missing elements of presence and face-to-face interaction, many studies have investigated how educators can make the most of online teaching, especially in live synchronous meetings, utilizing different tools and strategies. Efforts are made to help with the transition from face-to-face teaching to online instruction, to aid in student learning and engagement. In Beason-Abmayr et al. (2021), these efforts included using digital breakout rooms, holding examinations online and having students prerecord their project presentations. The study notes that online discussions took more time compared to the discussions carried out in face-to-face teaching, showing a positive effect of the gradual increase of student involvement towards the end of the semester.

The degree and efficiency of digital integration tend to be tied to the extent of readiness and preparedness of teachers. Teachers' online readiness was a construct under investigation in the study of Cutri et al. (2020). It suggests affective and cultural factors to be crucial indicators of teaching philosophies and practices when educators transition into online teaching. The study mentions that it was the 'forced readiness' that actually brought about optimistic sentiments enabling rapid transition to online teaching. In other words, with their students highly proficient in technology use, the teachers in the study could see themselves once again as learners of the new digital technologies.

Universities should give students a voice, choices and control so that they can have an active and equal role in planning, learning and leading, as well as contributing to the curriculum and the teaching-learning process and policies. In Norway, Wiers-Jenssen et al. (2002) propose that student satisfaction is the indication of academic and pedagogic quality of teaching, when broken down into components. Such data can inform educators which of the components

need to be improved to enhance the educational quality. The current study hopes to illustrate that, more than ever, especially during the unusual time of the COVID-19 pandemic, student perceptions are a crucial factor that universities must look into, to ensure that their academic offers and practices contribute towards quality education. Dicker et al. (2019) posit that, to avoid mismatch between what the university offers and students´ expectations, quality in higher education must be defined in student-relevant terms. They explain that what is viewed as good quality education by the university may not satisfy students, leaving their needs unanswered. A study in India identifies vital variables attributing student's satisfaction to online learning (Gopal et al., 2021). They found that student´s expectations played a vital role in the success of the teaching process and, in turn, learning. The study highlights that the instructor needs to take into account student´s expectations and design the course accordingly, which will result in students´ better performance in examinations. Aswin and McVitty (2015) outline the pedagogical implications of investigating students´ voice in higher education, two of which are worth noting in this review of literature. The first one concerns students´ involvement, defined as engagement with partnership and engagement as leadership, whereby students´ educational experience is maximized. The second is the metacognition of engagement that forms academic communities – how students and teachers create disciplinary and professional knowledge. Everyone in the educational community who has a role in higher education – teachers, students, administrative staff, community members and policy makers – is entitled to their views and expectations.

In this study, we stress that students´ voice in the form of feedback is a valuable source of information that can be utilized to strengthen the student's educational experience during the time of a crisis such as the current global pandemic. The collection of feedback provides a key element in crucial processes of finding out how their online learning is related to the quality of instruction in higher education.

DATA COLLECTION

The data on which the study is based are from the Study Barometer in the period 2018-2020. The Study Barometer is a national survey, sent out to more than 60,000 students every autumn (Bakken et al., 2019), asking about their perceptions of quality in study programs at Norwegian colleges and universities.

As a basis for studying the impact of COVID-19 on both teaching quality and student active teaching, we focus in this study on several indices given in the Study Barometer. Attention is on the overall study quality index and on the active student participation in teaching index in the period 2018-2020. In 2020, questions specific to COVID-19 were added to the Study Barometer. These were split into the following four categories: i) Corona: teaching/classes, ii) Corona: participation in teaching activities/classes, iii) Corona: exam, and iv) Corona: psychosocial factors. In our study, we focus on categories i) and ii).

The results for the overall study quality index and for the active student participation in teaching index are presented for the University of Stavanger (UiS) and for each of the faculties at UiS,

which are the Faculty of Health Sciences (HS), the Faculty of Social Sciences (SS), the Faculty of Science and Technology (ST), the Faculty of Educational Sciences and Humanities (ESH), the Faculty of Performing Arts (PA) and the Business School (BS). In addition to these faculties is the Department for Continuing and Further Education.

The response rates for the Study Barometer at the University of Stavanger and nationally for the period 2018-2020 are given in Table 1. Although the response rate has been dropping during the three years studied, we believe that, for the issues studied here, the respondents constitute a fairly representative sample. The numbers of students who participated in the Study Barometer survey in the period 2018-2020, distributed across each faculty and at the Department of Continuing and Further Education, are given in Table 2.

Table 1

Response rates for the study barometer survey at UiS and nationally, for the period 2018-2020.

Year	Response rate (UiS)	Response rate (nationally)
2018	59% (1732 respondents)	48%
2019	47.5% (1317 respondents)	49%
2020	36% (1035 respondents)	44%

Table 2

Numbers of students at UiS who participated in the study barometer survey in the period 2018-2020, distributed across each faculty and the department of continuing and further education.

	Number of students		
	Year		
	2018	2019	2020
Faculty of Health Sciences (HS)	280	223	191
Faculty of Social Sciences (SS)	426	381	193
Faculty of Science and Technology (ST)	405	243	282
Faculty of Educational Sciences and Humanities (ESH)	356	273	188
Faculty of Performing Arts (PA)	27	42	26
Business School at UiS (BS)	232	155	156
Department of Continuing and Further Education	6	0	0
University of Stavanger	1732	1317	1036

EMPIRICAL APPROACH

As a basis for investigating the impact of COVID-19 on teaching quality and student active teaching, we present the data, with tables and figures that show the empirical distribution of scores given by students for the overall study quality index and on the active student participation in teaching index. We compare the data from 2020 with the data given in the period 2018-2019. Chi-square tests are used to formally test for differences between 2020 and the two previous years. Tests with a p-value < 0.05 are considered statistically significant. The statistical analyses are performed in IBM SPSS 26 and R version 4.0.5.

For the Corona-specific questions, we focus on all the indices given for the categories “Corona:

Teaching/classes" and "Corona: Participation in teaching activities/classes". The distribution of the scores given by the students for each index is given for UiS and for all the faculties at UiS. Here we use chi-square tests to test for difference between faculties.

EMPIRICAL RESULTS AND ANALYSES

In the following, we have structured the information from the Study Barometer. In this section we focus on the overall teaching quality (Section 4.1) and on the active student participation in teaching (Section 4.2). In the Study Barometer survey from 2020, there are also some Corona-specific questions related to teaching/classes and participation in teaching activities/ classes. The analysis of the data for those categories is presented below.

The impact of COVID-19 on students´ perceptions of teaching quality

As a basis for studying the possible impact of COVID-19 on teaching quality, we first present a table showing the results of the student survey. Attention is placed on the difference between 2020 (COVID-19) and the time period 2018-2019. The score given for the teaching quality is based on the results of four different questions within the category of teaching quality.

To easily visualize the results in a stacked bar chart, we have divided them into the following four categories: [1-2], [3], [4] and [5]. See Figure 1 and Table 3. The results in Table 3 are shown for the University of Stavanger and for each of the faculties at the university. The results from the Department of Continuing and Further Education are not included in the tables, due to few respondents.

Table 3

Score distribution for the teaching quality index. The results are given in %, while the numbers in brackets refer to the number of students reporting a score within each of the categories.

		[1-2]	[3]	[4]	[5]	p-value
UiS	2018 and 2019	4.8% (145)	22.5% (686)	49.8% (1515)	22.9% (697)	P < 0.0001
	2020	8.5% (88)	24.6% (255)	43.4% (449)	23.5% (243)	
HS	2018 and 2019	9.5% (48)	30.2% (152)	43.5% (219)	16.7% (84)	P = 0.0004
	2020	21.4% (41)	27.7% (53)	35.1% (67)	15.7% (30)	
SS	2018 and 2019	3.8% (30)	21.0% (169)	54.4% (438)	20.9% (168)	P = 0.30
	2020	6.7% (13)	19.7% (38)	51.8% (100)	21.8% (42)	
ST	2018 and 2019	3.7% (24)	17.9% (116)	49.3% (319)	29.1% (188)	P = 0.59
	2020	5.0% (14)	18.1% (51)	45.2% (127)	31.7% (89)	
ESH	2018 and 2019	4.0% (25)	22.3% (140)	49.7% (312)	24.0% (151)	P = 0.15
	2020	4.2% (8)	30.3% (57)	43.6% (82)	21.8% (41)	
BS	2018 and 2019	3.9% (15)	25.7% (99)	53.0% (204)	17.4% (67)	P = 0.013
	2020	7.7% (12)	34.6% (54)	39.1% (61)	18.6% (29)	

From the calculated p-values, shown on the right-hand side of Table 3, when comparing the data from 2020 with the data from 2018-2019, we see that the students at the Faculty of Health Sciences (HS) and at the Business School at UiS (BS) report significantly poorer teaching quality, as the calculated p-value for these faculties is less than 0.05 and the proportion of students in the lower categories has increased. Note that, in particular, the score distribution for the Faculty of Health Sciences (HS) is very different from that of all the other faculties; we see a larger shift towards low scores in 2020 at this faculty than at the others.

The difference in the students´ perspectives of teaching quality for the University of Stavanger as a whole is also statistically significant if we compare the data from 2020 with the data from 2018-2019. But we see that the difference in score distribution is not large, and it is important to be aware that, when focusing on all the data from the University of Stavanger, we have much data. Then, even small differences will become statistically significant.

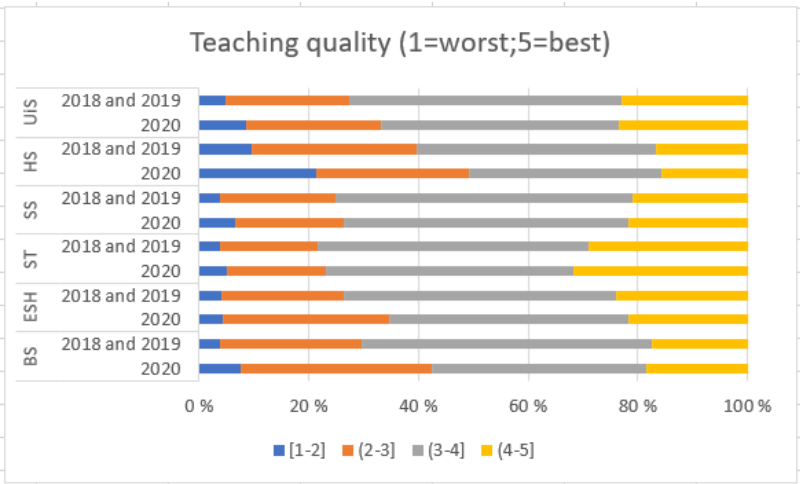

Figure 1 Stacked bar chart showing the distribution of teaching quality for UiS and for each faculty at UiS.

The impact of COVID-19 on active student participation in teaching

As a basis for studying the possible impact of COVID-19 on active student participation in teaching, we first present a table showing the results of "Teaching is organized to facilitate active student participation". A score equal to 1 refers to "not agree", while a score equal to 5 signifies "completely agree". The "Teaching is organized so as to facilitate active student participation" is one of four questions within the category referred to as "Teaching" in the Study Barometer. The results are given in %, while the numbers in brackets refer to the number of students. The results for the University of Stavanger and for each of the faculties at UiS are given in Table 4.

The results are visualized in a stacked bar chart, as shown in Figure 2.

Table 4

The teaching is organized so as to facilitate active student participation (1 = not agree; 5 = completely agree). The results are presented for the University of Stavanger and for each faculty at UiS. The number of respondents is given in brackets.

		1	2	3	4	5	p-value
UiS	2018 and 2019	5.7% (173)	15.3% (462)	30.0% (906)	29.4% (889)	19.5% (589)	P = 0.0026
	2020	8.8% (91)	16.5% (170)	28.4% (292)	25.9% (267)	20.3% (209)	
HS	2018 and 2019	8.9% (44)	17.7% (88)	31.4% (156)	28.6% (142)	13.5% (67)	P = 0.0028
	2020	16.4% (31)	22.2% (42)	25.4% (48)	19.0% (36)	16.9% (32)	
SS	2018 and 2019	3.9% (31)	14.8% (119)	29.3% (235)	31.1% (250)	20.9% (168)	P = 0.045
	2020	8.3% (16)	14.0% (27)	33.2% (64)	24.4% (47)	20.2% (39)	
ST	2018 and 2019	6.4% (41)	13.2% (84)	28.9% (184)	32.5% (207)	19.0% (121)	P = 0.34
	2020	6.1% (17)	12.6% (35)	28.4% (79)	28.1% (78)	24.8% (69)	
ESH	2018 and 2019	4.0% (25)	14.4% (90)	30.9% (193)	28.2% (176)	22.4% (140)	P = 0.62
	2020	5.3% (10)	15.5% (29)	30.5% (57)	31.0% (58)	17.6% (33)	
BS	2018 and 2019	8.1% (31)	20.1% (77)	33.7% (129)	25.1% (96)	13.1% (50)	P = 0.31
	2020	10.9% (17)	23.1% (36)	25.0% (39)	25.0% (39)	16.0% (25)	

From the response distribution and the calculated p-values, when comparing the data from 2020 with those of 2018-2019, we see that the students at the Faculty of Health Sciences (HS) and at the Faculty of Social Sciences (SS) report significantly less student active participation in teaching. The effect is largest at the Faculty of Health Science, where we see, for instance, an increase from a total of 26.6% to 38.6% in the two lowest score categories. Note that the p-value at the Faculty of Social Sciences is just below 0.05 and the differences are much smaller. When focusing on all the data from the University of Stavanger, we have much data and thus even the small differences we see here become statistically significant.

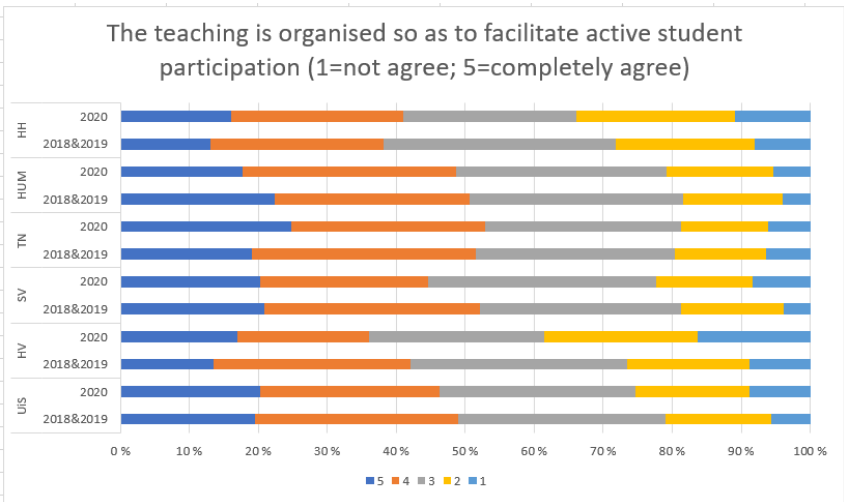

Figure 2 Stacked bar chart showing the distribution of students' reported scores for UiS and for each of the faculties at UiS on the question regarding whether
"The teaching is organized so as to facilitate active student participation".

DISCUSSIONS

Despite the flexibility and convenience online learning can offer, not all disciplines can be arranged to meet students´ needs while learning remotely. Students´ satisfaction may be determined by how and how much the technology is used to deliver the course, how authentic the learning is, how technologically competent the teacher is, how inviting the learning environment is and how intuitive the rules of engagement are.

The fact that we found no significant difference between pre- and during-COVID online learning experiences may stem from students not necessarily expecting as much as before COVID: an aspect that may lead to high scores, even if the quality and student active participation are not as high as before.

Perhaps the notion of `forced readiness´ from Cutri et al. (2020) can shed light on why the overall scores of teaching quality and student participation for the years 2018, 2019 and 2020 were not significantly different at most of the faculties. It is possible that neither the teaching staff nor the students were quite ready for what COVID-19 would bring and were forced to look for new ways to carry on with their teaching and learning and, ultimately, to compromise. The awareness that the new normal is not quite normal, leaving teachers and students vulnerable in physical isolation, may create the thoughtfulness between teachers and students that led to such reported high quality of teaching and active participation.

For the Faculty of Science and Technology, we see that the scores for student active participation were found to be similar in the years 2018, 2019 and 2020. This contradicted our initial thoughts. Kyrkjebø (2020) proposes that active participation in the field of engineering, with its specific problem-solving nature, involves appropriate cooperative activities that promote both scientific and social skills beyond purely lecturing on theoretical and abstract concepts. It is also possible that the students have been forced to adapt themselves to be more independent learners, despite the absence of social interaction and physical inquiry processes, as suggested in Eika (2021).

Learning outcomes and competencies specified by varying disciplines are responsible for learning approaches and perhaps learners´ needs. This can be supported by Dendir (2019), who found that online learning favors exam performance over knowledge proficiency, whereas face-to-face learning benefits higher-level problem-solving skills, compared to when the students had to study online. From the findings, when comparing the data from 2020 with the data during the years 2018-2019, we can see that students from the Faculty of Health Sciences reported differently from the other faculties on teaching quality index and the student participation index. It is apparent that COVID-19 potentially affected students in health sciences during their learning process more than ever. This can be supported by a large-scale national survey of medical students in the Philippines, which showed that most students experienced difficulties adjusting themselves to learning online, performing hospital tasks at home, and poorly communicating with their teachers (Baticulon et al., 2021). Numerous factors might be responsible for the students´ lower satisfaction during the pandemic, ranging from timely responses to students´ queries, social engagement and interaction, and assessment tools

appropriate for online learning. We can also refer to a similar study in Saudi Arabia (Ansari et al., 2021) that investigated perceptions of students in health sciences during the COVID pandemic. Negative responses included, for example, inappropriate design, stressful assessment, delayed feedback, and lack of interaction between classmates.

Surprisingly, with regard to performance art, where we found students´ satisfaction to be substantial, digital technologies could offer learning possibilities to the students fairly well and make students more motivated. We may say that online learning allows for a more flexible way to learn in the comfort of their home so that the discipline could flourish on various platforms and accelerated their development to maintain economic and social relevance (Nolan, 2021), regardless of the absence of physical connectivity between them and the teacher and their peers.

CONCLUSION

The Student Barometer is a useful instrument, used globally to measure quality of teaching and learning (University of Cambridge, 2021), that can be further utilized in meaningful ways. In this study, we have examined the responses of students from different faculties in UiS from the years 2018, 2019 and 2020, to compare their perspectives on the quality of education provided by the university.

Our findings show that the perceptions of the students from most faculties regarding teaching quality and student participation in the years 2018, 2019 and 2020 did not differ significantly. Only the health sciences students reported substantially lower satisfaction with the quality of teaching and learning. It would be myopic to jump to the conclusion that course management of health sciences when COVID-19 suddenly struck failed to meet the basic needs of online learning, since there must be multiple factors responsible for students´ expectations and satisfaction. However, educators at all levels are well aware that the quality of the learning and well-being of their students has been greatly impacted, whether their situation involved partial or full lockdowns.

From this study, we can see that students' feedback, once utilized systematically, can play an important role in improving strategies and education programs. Universities should not only act to ensure students' employability but also take measures to see that their expectations are met, better addressed and aligned with the overall policies. Especially, during unusual times, such as the 2019-2021 pandemic, large-scale data can be a convenient tool for tackling the issues at hand. We put forward that using a large dataset can help identify tendencies of students´ expectations and satisfaction regarding the quality of online learning. However, students should be encouraged to provide constructive feedback and know how their feedback is helpful information that will be utilized meaningfully. We propose that students´ feedback can allow for more in-depth investigations into the pedagogical issues of instructional tools employed for remote learning, teaching methods that promote engagement, and the technical skills of instructors.

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REFERENCES

Ashwin, P., & McVitty, D. (2015). The meanings of student engagement: Implications for policies and practices. In A. Curay et al. (Eds.), *The European higher education area*. https://doi.org/10.1007/978-3-319-20877-0_23

Ansari, K. A., Farooqi, F., Khan, S., Alhareky, M., Trinidad, M. A., Abidi, T., & Muzaheed, M. (2021). Perception on online teaching and learning among health sciences students in higher education institutions during the COVID-19 lockdown – Ways to improve teaching and learning in Saudi colleges and universities. *F1000Research 2021, 10*(177). https://f1000research.com/articles/10-177/v1

Bakken, P., Pedersen, L., Wiggen, K., & Øygarden, K. (2019). *Studiebarometeret 2018: Hovedtendenser* (NOKUT Report No. 1-2009). Retrieved March 20, 2021. https://www.nokut.no/globalassets/studiebarometeret/2019/studiebarometeret-2018_hovedtendenser_1-2009.pdf.

Baticulon, R., Sy, J., Alberto, N., Baron, M., Mabulay, R., Rizada, L, Tiu, C., Clarion, C., & Reyes, J. (2021). Barriers to online learning in the time of COVID-19: A national survey of medical students in the Philippines. *Medical Science Educator, 31*, 615-626. https://doi.org/10.1007/s40670-021-01231-z

Beason-Abmayr, B., Caprette, D. R., & Gopalan, C. (2021). Flipped teaching eased the transition from face-to-face teaching to online instruction during the COVID-19 pandemic. *Advances in Physiology Education, 45*, 384-389. https://doi.org/10.1152/advan.00248.2020

Cutri, R. M., Mena, J., & Whiting, E. F. (2020). Faculty readiness for online crisis teaching: Transitioning to online teaching during the COVID-19 pandemic. *European Journal of Teacher Education, 43*(4), 523-541. https://doi.org/10.1080/02619768.2020.1815702

Dendir, S. (2019). Performance differences between face-to-face and online students in economics. *Journal of Education for Business, 94*(3), 175-184. https://doi.org/10.1080/08832323.2018.1503586

Dicker, R., Garcia, M., Kelly, A., & Mulrooney, H. (2019). What does 'quality' in higher education mean? Perceptions of staff, students and employers. *Studies in Higher Education, 44*(8), 1425-1441. https://doi.org/10.1080/03075079.2018.1445987

Eika, E. (2021). Learning in higher education under the Covid-19 pandemic: Were students more engaged or less? *International Journal of English Linguistics, 11*(3), 96-120.

Gopal, R., Singh, V., & Aggarwal, A. (2021). Impact of online classes on the satisfaction and performance of students during the pandemic period of COVID 19. *Education and Information Technologies, 26*, 6923–6947. https://link.springer.com/article/10.1007/s10639-021-10523-1

Kyrkjebø, E. (2020). A guide to student-active online learning in engineering. *Modeling, Identification and Control (MIC), 41*(2), 91-107. https://www.mic-journal.no/ABS/MIC-2020-2-5.asp/

Nolan, K. (2021). Fear of missing out: Performance art through the lens of participatory culture. *International Journal of Performance Arts and Digital Media, 17*(2). 234-252. https://doi.org/10.1080/14794713.2021.1929771

Tang, T., Abuhmaid, A. M., Olaimat, M., Oudat, D. N., Aldhaeebi, M., & Bamanger, E. (2020). Efficiency of flipped classroom with online-based teaching under COVID-19. *Interactive Learning Environments*. https://doi.org/10.1080/10494820.2020.1817761

University of Cambridge (2021). *Student Barometer Survey*. https://www.educationalpolicy.admin.cam.ac.uk/ensuring-quality/quality-processes/surveys

Wiers-Jenssen, J., Stensaker, B., & Grøgaard, J. (2002). Student satisfaction: Towards an empirical deconstruction of the concept. *Quality in Higher Education, 8*(2). 183-195.

Wyatt, B. (2021). Insights into student participation in a soil physics course during COVID-19 emergency online learning. *Natural Sciences Education Special Section: Natural Sciences Education in a Covid-19 World, 50*(1). https://doi.org/10.1002/nse2.20036