

TEACHING DESIGN IN A VIRTUAL CLASSROOM – A NEW NORMALITY INITIATED BY THE PANDEMIC CONTEXT

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ABSTRACT

After the Covid-19 pandemic emerged and developed into a global health crisis, we experienced that all sectors of society became affected. Within academia, we as educators in higher design education in Norway experienced how intrusive infection control restrictions from 12th March 2020 forced us to alter our teaching methods. Physical presence at campus was suddenly terminated, and online teaching was established through a virtual classroom where students had to attend digital lectures from home.

After running this regime, we wanted to investigate the consequences and effects of this pedagogic transition. How has our remote teaching practice influenced the students' learning experiences? As we wanted to investigate our students' new learning situation from their own point of view, we developed a questionnaire where we asked our design students how they have experienced their study situation during the pandemic. To adapt our teaching strategies to the new context, we also asked for new and radical ideas to reduce the negative impact from the pandemic, aiming at damage reduction - or improvements - of our teaching and tutoring. We believe that this survey has gained us positively, as it has produced new knowledge and proved fruitful to enable us to reorganize and adapt to a new normal.

Keywords: Covid-19, design education, virtual classroom, teaching methods, new normal

1 INTRODUCTION

Directly after the Covid-19 pandemic evolved from its origin in Asia towards Europe in early March 2020, Norwegian health authorities issued infection restrictions in all sectors of society. Our academic institution experienced a sudden shut-down, forcing staff to move from physical lectures and tutoring in class to a new teaching regime, utilizing digital teaching platforms and new learning tools which had to be implemented into our daily routines. When reviewing the impact of the pandemic on our institution in 2020, we had only very few cases of infection, counting three employees and two students. It is therefore not the cases of the disease, but the comprehensive infection control measures that have affected our institution the most. Retrospectively, we acknowledge that the shift in our learning methods has influenced how the students learn. But, to know exactly how this manifests itself is yet to be evidenced, as we assume that the effects take time to be fully understood, and it is also likely to assume that the magnitude of these effects depend on the timespan of the pandemic, making them hard to predict.

1.1 Research in the field

Despite the relatively recent outburst of the pandemic, there are several studies focusing on the pandemic's implications on teaching in higher education in general. Regarding the challenges of predicting the effects of Covid-19, Burki, T., *The Lancet* (2020) [1], states that online learning could make education more accessible for some students, while disadvantaging others if an equitable approach that takes a system-wide view is not implemented. This resonates with our own view, as we acknowledge the vulnerability that many students might experience under lockdown conditions, if adequate efforts in engaging, inspiring, and motivating these students are not successful.

The impact of the pandemic on students in higher education has been thoroughly investigated in a broad psycho-social perspective by Romero, M., Montserrat, Y-B., Miguel, A., and Maria, J. in their research paper *Impact of the COVID-19 Pandemic on Higher Education*, *Frontiers in Psychology* (2021) [2]. By taking a quite holistic view, this comprehensive study clearly confirms the overall negative impact - discomfort, irritability, and impatience- on students while being in remote studying mode.

To establish a backdrop for our case study, and to fully understand the magnitude of the pandemic and its implications in academia, we found it relevant to take a holistic perspective by comparing student satisfaction before and during the pandemic, and by that providing insight from both situations. Table 1 displays national statistics from 2019. The ‘Studiebarometeret’ [3] is a national survey monitoring students’ perception of quality. Given the time of capture, these data reflect a pre-Covid-19 situation, and these questions are general, as they are given to all institutions within the visual arts and crafts sector. The total percentage of respondents is 36,4. The score 1 = not satisfied, while 5 = very satisfied.

Table 1. Institutional score, pre-covid response (2019)

Main area	Description	Institutional score	General score, visual arts and crafts in Norway
Teaching	Dissemination and teaching	4,4	3,8
Feedback	Feedback and guidance from professional staff	4,4	3,8
Expectations	Academic staff’s expectations of students	4,5	3,7
Learning environment	Social and professional environment, facilities, and equipment	3,8	3,6
Organization	Information, administration, and professional context	3,5	3,0
Inspiration	Whether the study produce challenges and engagement	4,4	3,7
Overall assessment	Overall satisfaction with the study program	4,3	3,9

Firstly, by taking a historical view of student satisfaction in our own institution, Table 2 displays the historical average student score based on the learning environment in our own institution. The score 1 = not satisfied, while 5 = very satisfied.

Table 2. Student score, covid response – learning environment (2018 – 2021)

Learning environment	Average	21	20	19	18
The social environment among the students in the study program	4,1	4,1	4,0	4,1	4,0
The academic environment among the students on the study program	4,2	4,2	4,0	4,3	4,1
The environment between the students and the academic staff on the study program	4,1	4,1	4,1	4,5	4,2

To compare these insights with the latest response on student satisfaction in our own institution, Tables 3-5 compile the results from the Studiebarometeret in 2021 [4] which is the most recent questionnaire available from Norwegian higher education providing statistics from our institution. The total percentage of respondents is 39,5. The score 1 = totally disagree, while 5 = totally agree.

Table 3. Student score, covid response – digital tools (2021)

Digital tools	Average	1	2	3	4	5
Digital tools are used in such a way that I become actively involved in the teaching	3,6	7	14	21	29	29
The professional staff has the necessary competence to use digital tools in teaching	4,1	4	11	7	32	46
The use of digital learning platform works well on my study program	2,5	43	18	11	7	21
I receive training in using digital tools / programs that are relevant to the subject area	4,1	-	11	7	39	43

The most noticeable observation from Table 3 is the low score reflecting how the use of digital learning platform works, expressing a clearly negative student experience with a score of only 2,5, as 43 percent of the respondents expressed that they quite strongly disagree with the statement.

Table 4. Student score, covid response – learning environment (2021)

Corona: social and physical learning environment	Average	1	2	3	4	5
I have had a suitable place to work on my studies (at home, at university / college, or elsewhere)	4,0	4	8	12	35	42
I have become well integrated in a social student environment	4,0	-	12	23	23	42
I have had good access to a reading room, library (etc.) at the university / college	3,6	8	8	19	38	19

In Table 4, the relatively low score from the last statement on access to reading rooms, library etc. at campus seems to relate to the fact that the campus has both been closed and opened during different periods of the pandemic, so this response seems to cover experiences from both these situations.

Table 5. Student score, covid response – online teaching (2021)

Corona: online teaching during the corona pandemic	Average	1	2	3	4	5
The teachers are good at engaging students in online discussions	2,4	18	45	9	9	9
The technical solutions for online teaching work well	3,4	5	5	41	45	5
The teachers provide good arrangements for online teaching	3,4	5	18	32	27	18
I believe the quality of education is as good as it would be if we had had more physical teaching	2,0	45	23	9	5	9

The most startling observation in Table 5 is the dominantly negative response given to the last statement concerning the quality of education, if this was based on more physical teaching, having a score of only 2.0. Summed up, we believe that these quantitative and qualitative statistics build relevant and useful insight and backdrop for understanding and contextualizing the challenges of teaching in a virtual classroom or studio.

We have experienced how ‘zoom fatigue’ has evolved during lockdown, but what are the mechanisms behind this phenomenon? In her research paper *Connecting Through Technology During the Coronavirus Disease 2019 Pandemic: Avoiding “Zoom fatigue”*, Researchgate (2020) [5], Wiederhold, B. discusses the reasons for this phenomenon. Scientists acknowledge the phenomenon ‘synchrony’ as humans’ precisely timed vocalizations, gestures, and movements relying on precise responses from others to determine if they are being understood. Even if a millisecond’s delay is introduced into this system, subconsciously our brain will register the issue and work harder to try to overcome it and restore synchrony. By systemically deconstructing zoom fatigue from a psychological perspective, Jeremy Bailenson, founding director of the Stanford Virtual Human Interaction Lab (VHIL), suggests in his research paper *Nonverbal Overload: A Theoretical Argument for the Causes of Zoom Fatigue* Technology, Mind and Behaviour (2021) [6], the following four reasons:

- Excessive amounts of close-up eye contact are highly intense
- Seeing yourself during video chats constantly in real-time is fatiguing
- Video chats dramatically reduce our usual mobility
- The cognitive load is much higher in video chats

1.2 Context

These observations resonate largely with our own experiences from teaching, but as they are quite general, they must be contextualized into our specific teaching model to relate to design teaching in a design studio environment. Here, teaching and instruction depends on a physical, direct face-to-face communication between tutor and student or student group, while being surrounded by a rich design space. As design is very much experiential learning, this creative environment plays a fundamental role as catalyst for exploration, testing, validation, and presentation of design proposals. Having the physical workshop facilities inaccessible -especially for industrial design students- disable them to accomplish their design tasks according to expected learning goals.

Table 6. Challenges while in hybrid and online teaching modes

Hybrid mode	Lectures	- Physical: Teacher 1: Big lecture screen set-up for present students / groups - Online: Teacher 2: Enable required quality of communication through camera and microphone(s). Time spent on obtaining clear sound and image - Chat: Respond in chat with online students in parallel with physical lecture - Encourage active video feeds amongst students
	Instruction	- Physical: Teacher 1: Face-to-face instruction for present students /groups - Online: Teacher 2: Establish breakout rooms for students or groups - Time spent on obtaining clear sound and image
Online mode	Lectures	- Enable online lectures setup of video camera and microphone(s). Time spent on obtaining clear sound and image - Chat: (Alternatively teacher 2): Respond in chat with online students - Encourage active video feeds amongst students
	Instruction	- Establish breakout rooms for individual students or smaller groups

Based on our own experiences while teaching in zoom mode, we have observed practical challenges that over time have led to frustration, both amongst teachers and students. Table 6 compiles the challenges being experienced while in hybrid mode and online mode. Hybrid teaching is the most resource demanding teaching mode as it is multi-modal, requiring at least two teachers taking care of respectively physical and online communication. While in hybrid mode, we have experienced that the most frequent challenge is to avoid neglecting either student group. To exemplify a typical design project while practicing hybrid teaching mode, Figure 1 displays a structure of the activities involved, where G1+G2 are present groups, and B1+B2 are breakout room groups.

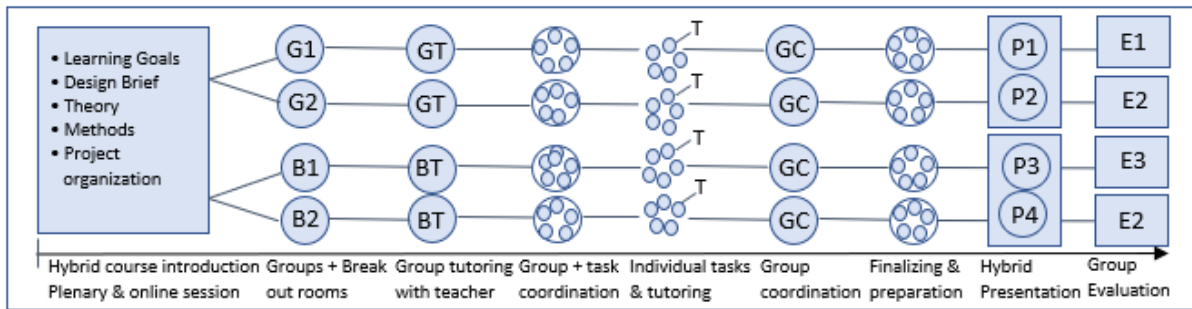


Figure 1. Structure of hybrid teaching mode

1.3 Scope

Currently, our design institute doubles the number of design students from 30 to 60, 30 each year in our Master’s programme. At time of capture, the questionnaire was presented to all 230 design students. As personal feedback from a pandemic is likely to be of a sensitive character, the data collection aimed at preventing any personal identification. In accordance with current GDPR legislation, the questionnaire was based on full anonymity. We reported in advance to The Norwegian Centre for Research Data - NSD- [7] and awaited their approval before launch.

2 THE QUESTIONNAIRE

To obtain best possible qualitative feedback from the students, we chose to divide our questionnaire (Table 7) into two different sections. The first section (Q1-6) asked for student experiences. To capture different nuances of opinions, question 3 invited additional free-text answers. The second section (Q7) invited new ideas for future change and improvement.

Table 7. Questionnaire

1. Do you feel that Covid-19 has led to reduced contact with teachers?

Answers	Number of respondents	Percentage
To a large degree	5	9,8 %
To some degree	24	47,1 %
To a small degree	15	29,4 %
Not at all	9	17,6 %

2. Have you experienced that reduced contact with fellow students has been a problem?

Answers	Number of respondents	Percentage
To a large degree	14	27,5 %
To some degree	18	35,3 %
To a small degree	11	21,6 %
Not at all	9	17,6 %

3. Have parallel lectures (physically on the big screen + digitally on Zoom) worked well?

Answers	Number of respondents	Percentage
To a large degree	7	13,7 %
To some degree	30	58,8 %
To a small degree	11	21,6 %
Not at all	5	9,8 %
Not relevant, not been done*	2	3,9 %

* If it did not work well, please specify why.

4. Do you find that your home / dormitory / apartment works well for long-term self-study?

Answers	Number of respondents	Percentage
To a large degree	9	17,6 %
To some degree	13	25,5 %
To a small degree	21	41,2 %
Not at all	8	15,7 %

5. Suggestions for improvement.

You are hereby challenged -as a designer- to suggest improvements that can make your own everyday study during covid-19 better or more efficient. Think outside the box. As a designer, we seek opportunities! Feel free to think radically and untraditionally, innovative and visionary!

3 FINDINGS

Firstly, the gender distribution of respondents in our questionnaire comprises 83 male and 147 female students giving a female overweight of respondents. Secondly, 51 of 206 students responded and answered the questionnaire, constituting a 25% participation rate. Discussions with students reveal a certain general ‘questionnaire fatigue’ due to the covid situation, explaining the quiet low response rate.

3.1 Observations from the questionnaire

Due to the quiet low response rate, we must assess the answers through an indicative view, while also relying on additional response from the 2020 and 2021 questionnaires by Studiebarometeret as described in Chapter 1.1 to see the full picture. This response supports by making the pandemic’s effect on students’ situation more comprehensible. The most noticeable responses are compiled as follows:

3.1.1 Multiple choice section

- In Q1, a group of 56.9% reply that Covid-19 to a large or to some degree has led to reduced contact with teachers, resonating with our own concerns.
- In Q3, a group of 58.8% reply that parallel lectures (physically on big screen and digitally on zoom) to some degree has worked well. This has been one of our practical concerns.
- In Q4, a group of 56.9% reply that their home / dormitory / apartment works to a small degree or not at all for long-term self-study, indicating that student housing is less appropriate and does not fulfil students’ needs in a pandemic situation. At first glance, this question might seem irrelevant, but the reality is that the students’ home suddenly became part of the virtual studio, and therefore we found it interesting to receive feedback from how this affected the remote teaching situation.

3.1.2 Free-text section

- Responding to Q3, the students specify the following problems:
 - Inadequate technical expertise amongst the teachers for facilitating clear sound and image.
 - Teachers’ lack of using appropriate microphones and cameras in the right manner.
 - Poor quality of dialogue while using zoom, often caused by technical / audio-visual delays.
 - Neglect of those students being at home, as they may feel not included in the conversations.
 - Teachers tend to forget to follow up questions in the zoom chat.
 - Hard to concentrate during lectures on zoom, due to poor working conditions at home.
- Responding to Q5: Freedom and flexibility, less monotony, better sleep, awareness on personal hygiene, learning digital communication tools, and seeing things from a new perspective.

3.2 Ideas for improvement

Apart from most ordinary ideas -like cleaning routines- the students suggest these ideas:

- Wearable Tech: A measuring device that alarms when people get too close to each other.
- VR-tech building holograms in meeting rooms making absent students ‘appear’ in the room.
- Infection tracking system using student’s admittance card to track movements in campus.
- Compulsory zoom-courses to all teachers to make them more skilled zoom users.
- Establish trans-course colloquium groups enabling more discussion and social contact.
- Providing a starter-kit to those working at home, covering needs and comfort.
- Compulsory walks outdoors for more fresh air and general restitution.

4 CONCLUSIONS

As seen through an educator’s eyes, our questionnaire provides useful insight for investigating our students’ new learning situation from their own point of view, and the personal feedback from the students is highly valuable in our effort of adapting to a new ‘normal’ teaching situation. When viewing the general feedback from the questionnaire and comparing this with the statistics of student satisfaction under normal pre-covid-19 conditions, our findings -not surprisingly- resonate with current research suggesting that Covid-19 pandemic in general has produced a negative impact on student’s situation. Although we consider some of the suggested ideas less radical than expected, we find student’s feedback fruitful and inspiring, and valuable for considering when discussing how to optimize our future practice.

5 DISCUSSIONS AND FUTURE INITIATIVES

The pandemic situation raised many questions. Directly after the lockdown, our ordinary classrooms were instantly given the role as audio-visual studios, without really being designed for that purpose.

Set in an old, industrial building not initially designed for teaching, our campus facilities should be rearranged to enable hybrid and online teaching. Appropriate and manageable audio-visual equipment should be installed in all studios to facilitate efficient and flexible communication especially in hybrid teaching mode. However, high-tech itself will not solve our teaching challenges. While design teaching builds so much on stimulus of the sensory apparatus, and cognition based on visual and tactile experiences, physicality, and materiality, it is obvious that design teaching easily suffers while relying on solely digital communication tools. Due to the nature of teaching design, our Master's courses requiring direct one-to-one individual communication are extraordinarily vulnerable in a remote teaching situation. Furthermore, a large group of students struggle with their home as workplace, indicating that we should facilitate presence at campus as much as possible. To encourage and stimulate isolated students, a personalized 'Covid-kit' delivered on their doorstep could do the trick. It could be in the form of a physical collection of items covering physical needs and comfort, which also could strengthen the feeling of connection to their campus. As the pandemic has triggered an increased feeling of isolation which causes mental health concerns, we see that reduced social interaction should be met with increased contact both with teachers and fellow students. The biggest challenge related to remote teaching is to strengthen student morale and to create a sense of community within the student body, while being physically apart. Maybe Istituto Marangoni Mumbai should be a source of inspiration. They started an online campaign to boost student morale, while also acknowledging the limitations of remote teaching. As Director of Education at the same institute, Diana Marian Murek [8], states; 'Design is experiential learning, so there is only so much that can be done online.'

It seems that in those design schools having limited expertise and resources for establishing appropriate audio-visual facilities for remote teaching, it is likely that many teachers spend a substantial number of lecturing hours trying to become audio-visually capable, rather than spending their time teaching their profession. However, in our institution, a recent initiative from teachers to share practical experiences regularly from teaching with digital tools has raised optimism for future practices and improvements. These are amongst the topics that would be interesting to discuss at the approaching E&PDE conference.

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