

# Challenges in Repurposing Single-Campus Courses to Multi-Campus Settings

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**ABSTRACT: Digital technology makes it possible to connect students and teaching staff across geographical distances and therefore is especially attractive to multi-campus universities as a means to increase the selection of courses at each campus and, possibly, to merge similar ones offered at different campuses. This paper summarises some of the experiences made at NTNU when repurposing single-campus courses to a multi-campus setting.**

**The results show that repurposing single-campus courses to a multi-campus setting has several challenges concerning technology and learning spaces, procedures, organisation and roles, and culture. The challenges are at least as significant as when developing a new, cross-campus course. The paper concludes that live lecture capturing and streaming from one campus to other campuses alone is not sufficient for achieving good conditions for learning.**

## 1 INTRODUCTION

The number of state higher education institutions in Norway was reduced from 33 to 21 in less than two years due to the Norwegian government's *consolidation for quality* initiative<sup>1</sup>. As part of this process, three former university colleges - located in Trondheim, Ålesund, and Gjøvik, respectively - merged into the Norwegian University of Science and Technology (NTNU). Within the newly merged NTNU, the same or similar study programs and courses are now offered at campuses possibly located several hundred kilometres apart. NTNU faculties and departments are starting to look into the use of digital technology for repurposing existing single-campus offerings for a multi-campus setting, hoping to achieve synergy gains.

*Excited - the Centre for Excellent IT Education*<sup>2</sup> - is a collaborative effort between NTNU and the NORD University. One of the aims of the centre is to enhance the students' learning through cross-campus collaboration. A first step for the centre has been to study the current multi-campus initiatives to understand better the challenges faced. The acquired knowledge will be used in future collaborations with scientific staff to enhance the students' multi-campus learning experiences.

The one type of such multi-campus initiatives we have studied so far has attempted to extend and repurpose existing, single-campus courses to a multi-campus setting. Our research question for this work can hence be summarised as:

*“What are the challenges faced when repurposing single-campus courses to a multi-campus setting?”*

In this paper, we will be discussing the experiences made from some of these multi-campus course offerings, and we will be comparing these experiences to research work done in other types of distance education.

## 2 METHODOLOGY

The introduction of new technologies in an organisation will often have social and organisational impact. McInerney (McInerney, 1989) employed a sociotechnical systems model to explore the social and organisational consequences when computing was introduced into schools. This paper will employ the sociotechnical systems model too to explore the consequences when repurposing single-campus courses to a multi-campus setting.

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<sup>1</sup> <https://www.regjeringen.no/en/aktuelt/fra-33-til-21-statlige-universiteter-og-hoyskoler/id2515995/>

<sup>2</sup> <https://www.ntnu.edu/excited>

The sociotechnical systems model is centred on the interplay of four components of an organisation:

- Task, i.e., the teaching and learning activities
- People and culture
- Technology
- Structure, i.e., management structure, communication structures, roles and responsibilities, etc.

### **3 RELATED WORK**

#### **3.1 Task**

Multi-campus teaching is different from single-campus teaching (see Tip 3 in Gill et al., 2015). Moore (Moore, 2013) is using the transactional distance as a term for the sociotechnical interplay in distance education. According to this research, the transactional distance increases with the rigidity of the lecture structure and barriers for teacher-student dialogues. Andrews et al. (1998) found the transactional distance to be a challenge in multi-campus video lectures and suggested a student-centred model based on group work as a better alternative.

#### **3.2 People and Culture**

There are only a few multi-campus courses at NTNU. Lecturers, therefore, are mostly unfamiliar with multi-campus teaching. Teaching staff often experience multi-campus teaching as an extra burden and stress factor (Freeman, 1998). A successful introduction of multi-campus teaching may, therefore, require management to pay attention to conditions for securing faculty endorsement (Furco et al., 2012). It may also require that staff is given the time and opportunity to familiarise themselves with the new technology. A “gestation period” (Andrews et al., 1998) may be necessary allowing the staff to develop a realistic understanding of how technology for multi-campus teaching can be used effectively.

Cultures may have been developed in different ways at a different campus. A multi-campus course may be delivered to the campus of potentially different cultures. There may, therefore, be a need for more standardisation, for instance of information sharing and logistics (Divanoglou, 2018).

#### **3.3 Technology**

Multi-campus depends on different types of technologies. Knowing how to use the equipment and how to make sure that material is delivered clearly to students at all campuses becomes important (Gill et al., 2015).

#### **3.4 Structure**

In their study of the use and integration of ICT in higher education in Norway, Stensaker et al. (2007) concluded that what was lacking was:

*“an effective link between purpose, people and pedagogy inside the institutions.”*

Research indicates that successful multi-campus teaching requires educators present in all sessions at all campuses (Divanoglou, 2018 and Halabi et al., 2002). Furthermore, research shows that there is a need for responsive and efficient technical support services (Freeman, 1998).

### **4 RESULTS**

In this section, we will describe the five cases in which Excited has had the opportunity to observe the repurposing of a single-campus course to multi-campus settings. All courses were initially based on the traditional lecture style teaching. The lectures were streamed unidirectionally; students at the remote campus had no means for asking questions to the lecturer in real time. The repurposing did not cause a change in teaching style for any of the courses.

#### **4.1 Course 1**

Course 1 is a master level computer science course offered at the Gløshaugen campus. A group of master students at the Gjøvik campus wished to sign up for the course as an elective course for the autumn 2017 term. In the spring of 2017, the students’ scientific advisor in Gjøvik contacted the course professor urging for a cross-campus trial. The professor agreed to this and requested a lecture hall with video recording and streaming capabilities. The professor did not receive any training or time for making

adjustments for the repurposing. No teaching assistants, nor teaching staff, was providing local support in Gjøvik.

The students acknowledged that the course was a single-campus course with minimal adjustments for cross-campus repurposing and were satisfied with the lecture streaming offering. The cultural difference was the main challenge for remote students in this case. In Gjøvik, students were used to contact lecturers directly for assistance. In Trondheim, however, lecturers usually refer students to PhD students acting as teaching assistants when they need help solving an assignment. The Gjøvik students, however, found it strange to initiate a relationship with a remote teaching assistant and therefore requested the permission to work on the assignment jointly. The lecturer did not grant them this permission, causing the students to withdraw from the course entirely.

## **4.2 Course 2**

This Gløshaugen course was offered in the same way to the same group of Gjøvik students. The only difference was that the lecturer had previous experience in recording lectures.

In general, the students were happy with this course, mostly because the professor responded positively and promptly to the Gjøvik students' concerns and requests. The lack of local teaching staff was a central challenge for the remote students, mainly because they faced problems when working on the assignments - problems that they eventually solved by working together.

## **4.3 Course 3**

This course is a master level course offered at Gjøvik, which, due to a department decision, was offered to a group of Gløshaugen students too in the spring of 2018. The single-campus version of the course was offered as an eight-hour, all day mix of lecture and student-driven work. The two professors teaching the course had previous experience with video streaming technology. There were no local teaching staff or teaching assistants at Gløshaugen.

The students were unhappy with the eight-hour mixed format, mainly because they had no means for real-time interaction with the students and professors at the Gjøvik campus. The students also complained about never meeting directly with the professors teaching the course.

## **4.4 Course 4**

This course is a bachelor level course at the Gløshaugen campus with several hundred students signed in that was extended to include a group of bachelor students in Gjøvik too in the fall of 2018. In this case, the Gløshaugen course was the major component of a larger Gjøvik course. A professor in Gjøvik was responsible for the extended part only.

The video streaming technology was troubled by rather a poor sound quality and occasional technical failures. The Gjøvik students were sometimes finding it hard to follow the presentation because the teacher used a laser pointer to highlight parts of the slides since the laser pointer was not visible on the video stream. The lecturer did not have previous cross-campus teaching experience.

The local teaching staff in Gjøvik did not participate in the lectures, but one TA (a Ph.D. student) was present in the classroom when the students watched the streamed lecture. There were two TAs in Trondheim. None of the TAs were assigned to the task of providing technical support.

The professor had no meetings with the remote students except for the mandatory reference group meetings.

## **4.5 Course 5**

This course is a Master's level course at Gløshaugen that, on the teacher's initiative, was offered to a small group of students in Gjøvik in the fall of 2018. Lecture time was shared between the main lecturer and some guest lecturers. The overall time of the lecture varied from two to three hours depending on this.

The video streaming technology was troubled by rather a poor sound quality and occasional technical failures - on one occasion, no lecture was streamed at all. No training was offered to the teaching staff (neither lecturers nor TAs).

The lecturers did not have previous experience from cross-campus teaching, but the main lecturer had some previous experience in video recording.

There were two lecturers sharing the teaching in Trondheim, but there was no local teaching staff involved at the Gjøvik campus. There was one TA in Gjøvik and one TA in Trondheim offering administrative support.

All lectures took place in Trondheim, but one of the lecturers went to Gjøvik to meet with the students during the fall, outside of the lecturing time.

## **5 DISCUSSION**

As discussed in the related work section, the task of teaching in multi-campus settings is different from single-campus teaching. The five cases observed in this study all indicate that this fact may be overlooked when single-campus courses are to be offered in multi-campus settings. As shown in case 3, careful planning may be required when mixing lectures with other classroom activities. Technical failures may, as experienced in several of the observed cases, be detrimental if backup activities are not adequately planned.

As discussed in the related work section, research shows that multi-campus teaching is an extra burden for the lecturers. Still, none of the lecturers involved in the five cases were offered hands-on training in using the new tools and technologies. None were introduced to the challenges of designing successful multi-campus learning activities either.

Related work also shows that standardisation across campuses is one way to handle cultural and structural differences between the campuses. Case 1 in this study illustrates how differences among campuses may cause problems that could have been resolved quickly if the involved parties were aware of the potential differences. The students might have been introduced to the multi-campus setting and to potential challenges at the very beginning of the course. This could have contributed to raising the awareness of cultural and structural differences. None of the cases in this study included such introductory sessions.

The related work section emphasised the importance of choosing the proper technology and of making proper use of the chosen technology. Four of the five cases in this study used the near real-time streaming platform installed in several NTNU classrooms. As described before, remote students did not have a way to interact directly with the lecturers during a lecture in these cases. A deliberate end-to-end testing session was not, except for one case, performed before the course started - potentially resulting in reduced experience quality for remote students.

Lecturers are, in general, expected to be skilled and knowledgeable in designing single-campus learning activities. One, however, cannot expect that lecturers have much experience in designing multi-campus learning activities. As discussed in related work (Stensaker et al. 2007), there is a need for more interaction within the educational institutions to achieve efficient use and integration of ICT. In the cases of this study, the lecturers were left alone to handle the challenges of repurposing their single-campus course. There was no collaboration with technical staff or the pedagogical support staff during the planning. Related work also emphasises the importance of having continuous technical support during multi-campus teaching in case of technical failure. None of the cases in this study was offered such support. In short, the structural challenges of repurposing single-campus teaching was not addressed properly in the aforementioned cases, resulting in student frustration and dissatisfaction.

## **6 CONCLUSION AND FUTURE WORK**

Repurposing a single-campus course for multi-campus setting may seem as a small change to a course. The research literature clearly shows that high quality and successful cross-campus teaching is quite different from single-campus teaching. The five cases discussed in this paper also clearly show that just adding video streaming technology to distribute single-campus lecture to other campuses is not sufficient for providing good conditions for learning. From observing these five cases, it actually seems to be harder to repurpose an existing single-campus course for multi-campus settings than to create an all-new course because the task, the people, and the structure have all been adjusted to the single-campus technology and therefore likely need to be redesigned when the course is repurposed for multi-campus settings.

Our experiences, combined with the lessons learned from distance education/cross-campus teaching, suggest these considerations when planning to repurpose existing courses for multi-campus teaching:

- Task:
  - The deliberate design of local student learning activities at all sites seems to be crucial for maintaining and/or improving learning quality. The social and academic learning environment for students at remote campuses may suffer otherwise. Efforts should be made to avoid a large transactional distance.
  - Technology may occasionally fail. The teaching staff, therefore, needs to plan for back-up activities in case of technical failures during online sessions.
- People and culture:
  - Teaching in multi-campus settings is different and more challenging for the teaching staff. Multi-campus teaching usually also includes technologies and utilities that are not needed or used in single-campus teaching. Training should, therefore, be offered to teaching staff - lecturers as well as teaching assistants. The training should ideally be offered well in advance of the teaching allowing the teaching staff to make use of the newly acquired knowledge and skills when planning for the multi-campus setting.
  - Being a student in a multi-campus setting is also different from being a student in a regular, single-campus course. The teaching staff should, therefore, prepare the students - both on local and on remote campuses - before the course starts. It may also be necessary to plan for specific meetings with students at remote campuses during the course to get accurate feedback on their learning experience.
- Technology:
  - There exist many alternative technical solutions for cross-campus communication and collaboration. Universities aiming at multi-campus teaching should offer a variety of technical solutions and should develop expertise in choosing and adapting the technical solutions to the needs of the teaching staff. It is especially important to offer solutions that support student interaction - at all campuses.
  - Testing is essential - for all stakeholders (teaching staff, technical staff, teaching assistants - all at the various campuses). Testing may help identify and eliminate potential problems and may help everyone to prepare for the actual delivery of the course. Testing should ensure that the end-to-end quality is assessed at all campuses.
- Structure:
  - Multi-campus teaching tends to be more complex than single-campus teaching. It would, therefore, be beneficial that stakeholders from all sites are involved in planning, testing, and delivery of the course and not just called in action when something fails.
  - Multi-campus teaching is often dependent on different types of technical solutions that may fail during actual use. As for all other types of distance education, it is therefore essential to have a good technical support structure.

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