Virtual Classroom in the Cloud—Transnational Scandinavian Teaching With Digital Technology

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In the Scandinavian countries: Sweden, Norway and Denmark, the project GNU (Grænseoverskridende Nordisk Undervisning, i.e. Transnational Nordic Teaching) is experimenting with ways of conducting teaching across the borders in the elementary schools. The cloud classes are organised with one class from each country in the subjects: language, science, math, social science/history. The teachers from the three classes work together to design teaching they conduct together with assignments the students will be able to solve only in collaboration with their fellow students in the three classes. The three year project ends in 2014 but already now there are some interesting findings on how transnational teaching collaboration works for teachers and students. This paper will focus on the different uses of web based tools of synchronous and asynchronous communication and discuss challenges and benefits in regard to learning and pedagogy with virtual classroom.

Keywords: online learning, cloud teaching, pedagogy, digital literacy, digital didactics

Introduction

How is it possible to develop teaching programs across borders and facilitate collaborative learning for the students? The answer seems to be new digital technologies—Information and Communication Technology—that makes synchronous communication with more participants feasible. Synchronous cross border teaching is a way of improving students understanding of others and a way of breaking down the classroom walls to the outside world. In that way, cross border teaching prevents teaching and learning from be too narrow in its isolated own “school”—logic; its own discourse.

This paper relates the first findings of a development program for cross border teaching.

The Transnational Nordic Teaching Program is a three year research and development program funded by the ERDF (European Regional Development Fund), through Interreg for the ÖKS-region (see Figure 1).

The aim of the project is to innovate concepts for cross-border teaching models through practice-based co-design processes between teachers and educational researchers (Interreg IVA, n.d.; Spante et al., 2012).

Basically, the project will gain knowledge from observing what is going on in “cloud based classrooms”. The “cloud based classrooms” or “virtual classrooms” are the specific “laboratory” for the study: Specifically, a series of virtual “Nordic classes”, will be established, where Swedish, Norwegian and Danish students are taught simultaneously by a common group of Nordic teachers. The project establishes a cooperation between educational institutions and students from the ÖKS-region and develops exemplary models for a practical

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cross-border study community that will support integration between the Nordic countries' school systems and inspire other educational institutions and levels to develop cross-border education, which may contribute to Nordic young people feeling that it is natural to study and work in other Nordic countries" (Interreg, IVA).

Figure 1. The ÖKS-region.

The project develops through iterations of the “virtual classrooms”. The one iteration lasts for a couple of months and after a thorough evaluation, a new iteration is executed. The number of participating classes and teachers is expanded during the project period as more experiences with the practice of classrooms in the cloud are generated and the concepts are considered robust enough for other teachers to take over.

The rationale behind the project is that there exists more communality between the classrooms and curricula in Scandinavia than differences and that learning and education will improve from the communal teaching. A side effect will be increased digital competencies. The “virtual classrooms” are dependent on the use of ICT (Information and Communication Technology) and the teachers and students alike will benefit from using ICT for learning purposes and thereby obtain a higher degree of digital literacy—or at least improve in digital skills and competencies (Belshaw, 2011a; 2011b).

Background

In the Nordic countries (Norden, literally: the North) there has been a political urge to regard “Norden” (translate: the North i.e. the Nordic countries) as a unified entity. This urge to see the Nordic countries as one, however, is opposed from two sides. On one hand, there is an idea of national specificity; and on the other hand, there is a sense of a global or European belonging and longing. The strengths of these geo-political stances have changed over time and vary from country to country and the beliefs and their political implications are at times heavily debated (Østergaard, 1997; Vammen, 1997).

One very important kind of unity between the Nordic countries stems from their common language and this is in particular true for the three Scandinavian countries: Sweden, Norway and Denmark. The national languages in Scandinavia are at least to some extent mutually intelligible. There exists some barriers between the languages and one estimate is that a Swede, for instance, understanding approximately 60% Danish (Gooskens, 2010). The inter comprehension between the Scandinavians is close enough to consider the

Scandinavia a linguistically unity.

This mutually intelligibility is a basic assumption and rationale for the Transnational Nordic Teaching Program.

Furthermore, the Scandinavian countries share cultural history and have been part of the same sovereignty in more historical periods of time. The Scandinavian countries also form a kind of regional unity in that they basically share the same model of the welfare state. The countries share a high level of income taxation and high standards of public services for all citizens.

It should, however, not be neglected that there are both very big and a lot of more subtle differences between the Scandinavian countries. There is, therefore, an ongoing political effort to make the region stronger by working out new models for closer collaboration and a partial upheaval of national differences without any intention to form a communal state. Making Scandinavia a primus motor for economically growth is high on the Scandinavian political agenda not least in the ÖSK-region.

The Transnational Nordic Teaching Program is to be seen as part of this urge to make the region a leading force in economically growth by investing in education.

Challenges With “Cloud Based Classroom”

Half way through the project, it is now possible to consider some of the findings and share some of the experiences from the project. The author has himself been part of the research team that supports the teachers in innovating new ways of teaching “virtual classrooms”. There are six research teams. One for each of the subjects taught in the virtual Nordic classrooms: national language, science, math and history/social science; Then there is a cross-subject research team dealing with pedagogical issues specifically related to the use of digital technologies for educational purposes; and finally, there is a group connected to the level of school principals; school management. The author is part of the national language research team and the cross-subject team.

In this paper the author will try to convey some preliminary findings drawing on experiences from across the subjects taught. The author will focus on issues connected with the use of ICT for teaching in “cloud based classrooms”. My perspective is basically in line with that of the teachers and in a lesser degree the author takes in the perspective of students and management.

In an earlier published study from the Transnational Nordic Teaching Program, “Nordic Innovation Networks in Education: Dealing with Educational Challenges with Cross Border Collaboration and User Driven Design”, Maria Spante and her colleagues focus on the general challenges for the participants in the project. The study find three major areas of challenges that potential are jeopardizing the programs overall objectives:

We have identified three major thresholds to overcome. The first is related to technical difficulties in schools when diverse IT systems are to be synchronized. The second threshold concerns scheduling coordination difficulties in order to allow synchronous cross border collaboration. The third threshold concerns linguistic and communication difficulties rooted in participants communicating in their respective Nordic language. (Spante et al., 2012, p. 553)

The author finds the highlighted issues to the point. But the author’s focus will be somewhat different in that he will concentrate on what learning can be extracted from the teachers’ struggle with the issues mentioned. To succeed teaching a virtual classroom preparation and planning are keys. Teaching cloud based differs in so many respects from ordinary classroom teaching in that there are a lot of new dependencies: schedules across institutions situated in different countries, technologies, and communication difficulties.

The rest of this paper will bring forward the key findings for what the teachers have to take into account and what they have to pay a special attention to make the cross border teaching work.

Findings

As described above the basic model for development of innovative teaching concepts for Transnational Nordic Teaching is cloud based collaboration between classes (teachers and students) from the three countries. Swedish, Norwegian and Danish students are simultaneously taught by an inter-Scandinavian group of teachers. It is an underlying assumption that this way of teaching adds a Nordic surplus value to the teaching when it comes to learning outcome, inter comprehension and forming a communal Nordic understanding and identity.

This way of organizing teaching is build upon a fundamental believe that there exists a common Nordic pedagogy; a pedagogical thinking inherent in the teaching and teaching methods used in the Scandinavian countries. After all, the differences there exist between the students and teachers in the countries are treated as strengths that increase problem solving skills through dialog and negotiation between different perspectives (which in itself often is highlighted as a “Nordic teaching tradition”). Secondly, the differences are not regarded as grounded in the different nations or cultures but as nuances and variations within a particular Nordic tradition with communal roots.

The project has now been through 3-4 iteration and a picture has crystallized suggesting certain returning challenges in the planning, in the execution and in the evaluation of “virtual classrooms”.

We have seen some successes and some challenges in the “virtual classrooms” and in the collaboration between teachers. In this paper, however, the author will only describe the teachers’ experiences insofar as they are connected with the concrete planning, execution and evaluation of teaching. The author will not go into a discussion of challenges that comes from the organizing of the project as such, although there is a lot of learning from that perspective as well.

This paper will try to pave a common ground for understanding some specific concerns that should be dealt with when engaging in transnational teaching in “cloud based classrooms”. The discussion will fall into the pedagogical categories: before, during, and after the class based teaching activities: (1) Teacher collaboration—planning and preparation (before); (2) Teaching activities (during); (3) student products and assessment (after).

Teacher Collaboration—Planning and Preparation

It is crucial that the Planning of Transnational Teaching in virtual classroom begins long time ahead of the actual teaching activities with students. It simply takes longer to plan and prepare transnational teaching than traditional teaching. This may sound very banal and commonsensical, but it has been a surprise for a lot of the participating teachers how much longer preparation takes for transnational teaching.

First of all, it is important that the involved teachers establish a common ground for their mutual teaching. There is a lot of negotiation and discussion on how to understand the common subject and how actually conduct the teaching the best way. Finding appropriate teaching resources that the teachers can agree on will often take longer because the teachers can take nothing for granted in that they have another teacher from a neighboring country to collaborate with. Although teachers have a firm belief in material they are use to choose for an activity, this belief might very well be debated by another teacher—not least when that teacher has another national teaching background.

The teachers have to familiarize themselves with the tools, they have to use for the transnational

collaboration both in the planning phase and later in the planned activities where the students will be using cross border collaboration tools.

And the planning itself has to take place using the ICT tools as Skype, Google Hangout, Adobe Connect or similar services that also will be used for teaching and the students' work. Planning at a distance is different from meeting face-to-face with colleagues that have known each other for years as colleagues at the same school. Some of the challenges, the teachers will meet are connected to the ICT involved. Teachers have to be focused on their own digital competencies and for a great number of teachers they have to improve on their digital competencies to make transnational planning work. There is a clear difference between knowing a tool on the one side and on the other using a tool to solve the tasks involved with teaching planning, executing, and assessing.

Scheduling also becomes much more tiresome. Involved are two different schools with different traditions and the planning has to take these differences into considerations. Seasonal holidays are not coordinated between the countries and this might cause some difficulties planning communal teaching. To change schedules is no longer possible on the fly which might be for collaboration on the same school being in the same buildings.

Some of the very practical elements in planning come as a surprise for teachers involved in transnational teaching planning for the first time. In Scandinavia, teachers are used to be self-managed, and it is normally easy for them to reschedule on their own. But in transnational collaboration the school as an administrative system becomes evident and scheduling becomes a bigger challenge than normal.

It will be helpful in the planning and preparation phase if the teachers in the involved Scandinavian countries have more meetings to get acquainted and that they also focus on the similarities and not least the differences in curricula in the respective countries. This is important in that the teaching has to be planned so it meets the different national standards and additional also meet the objective of the surplus value coming from the cross-border collaboration between students. There has to be particular attention to secure both of these goals in the planning phase.

In the planning phase, there are both technical issues and issues that have to do with the content of teaching—and not least the connection between the two. In the preparation, it is the teachers' obligation to find the way best to secure the national and transnational learning objectives are met.

Some of the teachers have taken in the longer timeframe in scheduling, preparation, and keep in touch regularly, also between the actual experiments with the virtual classroom. We, however, still see experiments that do not work out well partly due to too little focus on timely thorough planning. An explanation for the failing could be that the long standing tradition for teachers to be very autonomous and self reliant. This interpretation is not substantiated in the material and is here only mentioned as a hypothesis.

Teaching Activities

The cross-border activities will fall within different categories as: synchronous communication (between teachers, between students, between teacher(s) and student(s)), asynchronous communication, instruction, collaboration, discussion, assessment etc.. Whatever the activities there has to be a certain attention to the tools used for the activities. How well do the tools fit the activity? How well do the students, teachers or other people involved master the tools—are the students, for instance, able to actually do what they want to do or are they only doing what the tool (or the student's understanding of the tool) let them do? How do teachers or other support the activities?

The teachers of course have to be able to help students achieving what the teachers have planned. And in order to supply the assistance needed teachers have to have skills on a certain level—they have to be competent users of the tools themselves for a basic level of the activities. Sometimes, students will find other ways—other tools—in order to solve the tasks. Teachers should be very supportive of that and point students in directions for obtain what they want to obtain in their urge to find solutions within the framework of the teaching.

The chances for success increases if the teachers thoroughly have tried out the tools themselves and that they challenge the tools and what one is capable of with the tools. The challenging of the tools will often give a deeper understanding of the different tools. Teaching activities can benefit from learning activities that sometimes let the students play with the tools.

It should not be a preconception of the teachers that students per se are competent users of digital tools. First of all, there are many differences within the group of students in their skills and competencies when it comes to usage of digital technologies. The students are not digital natives (Thomas, 2011; White & Alison, 2011; Perensky, 2001). Secondly, it is important to notice that the purpose of technology use is part of the skill and competence. To use digital tools for learning purposes within a given framework and with specific learning objectives differs in great deal from spare time and interest driven activities.

In transnational teaching there has to be a particular attention to communication on all levels. There will be linguistically as well as, cultural differences, which makes communication more difficult and thereby affects the teaching and the teaching outcome. Although the participants in Transnational Scandinavian Teaching are using their mother tongue the understanding of each other lack a great deal. This lacking of understanding is furthermore increased by the dependence on digital communication tools which reduce bandwidth considerably.

To succeed in transnational teaching there has to be focus on these communication challenges and it is recommendable to make the challenges themselves a topic in the teaching. In that way, the teaching will take advantage of the necessity and by integrating a meta-communication level also enrich the teaching making higher order thinking part of basic teaching.

There has been a special attention on how the different means of communication used affect the communication. When students traditionally use communication technology to communicate, they communicate with people they know in advance or they establish contact with people on a different level than themselves (call authority person or someone in a different position as they are themselves).

The situation is different in a transnational teaching setting. There are particular challenges with communication between students who have not voluntarily chosen to communicate with students from another country. The students are “equals” and yet strangers which is a particular communication situation within traditional teaching. Not surprisingly the students need time to get to know each other and to build trust in each other. The communication situation is a special one and it differs from communication situations the students are familiar with.

Therefore, it is recommended that the students gradually try out forms of collaboration switching between synchronous and asynchronous activities—and from simple forms of expression (i.e., text and image as a presentation of a student) to more complicated forms of communication or collaboration (i.e., synchronous writing on a cartoon explaining electricity and the smart grid).

It has been a communal experience that multimodal communication is better suited in cross-border collaboration. One of the benefits with multimodal communication is that communication is working on more

levels simultaneously: textual, sound, and visual. The redundancy of the message is probably the explanation for why multimodal communication is working better in cross-border communication. Remember that the students are communicating in their mother tongue and that even if the languages involved are mutually intelligible they differ to a not small degree (maybe up to 40% of words are not immediately understood by the students from the neighboring country).

There should be special attention to what synchronous communication demands of the participating students since it has been experienced to be a particularly challenging form of collaboration. Synchronous communication involves both general communication barriers as well as technical challenges due to the tools maturity.

Student Products and Assessment

The results of the teaching benefit have to be documented in some kind of tangible student product. To make the teaching activities in a way that forces the students to create a collaborative product is essential to improve on the cloud based teaching. The collaboratively produced student products are the best documents to establish what has worked with what result in the experiment. The surplus value—the Nordic component—is only ‘readable’ in student products. The students might use blog tools, wikis or other digital tools documenting at least the product of their communal work. From a researcher’s point of view it is preferable with student products that also make the collaborative processes visible. In Google Docs, for instance, you can go back in versions and see when who made which changes, which give an insight in how students negotiate meaning.

The teaching planning, execution and evaluation must be evaluated in its own right. Didactic reflexion (or pedagogical reflexion) should be part of every teacher’s normal practice (Laurillard, 2012, pp. 215-217). In particular when one is trying out new methods and introducing new ways of doing things it becomes absolutely indispensable to reflect the bits and pieces of the whole process. The teaching team should do this immediately after the teaching and they should do it in a form which is communicable and, hence, sharable with others. In that way, the teaching team contribute to a larger collectively shared pole of experience with transnational-cross border-teaching; they become connected teachers (Nussbaum-Beach & Ritter Hall, 2011).

The process evaluation should also take the students’ experience into consideration. It would be very informative if the students could evaluate the process both in the national and in the transnational classroom. The students’ voices need to be heard in order to improve on the teaching practices.

It is crucial that the evaluations are focused on the particular aims of the transnational Scandinavian teaching.

Conclusions

The experiences working with “cloud based classrooms” show that there are huge potentials for this kind of organizing teaching. The students are forced in a direction of more authentic collaborative problem solving tasks. They have to work in ways that are more inquiry based, more investigative, more network dependent. Knowledge is seen as something that results from working together (Nowotny, Scott & Gibbons, 2001; Siemens, 2005; Downes, 2007; Christensen, 2012).

In the author’s mind there is no doubt that the kind of teaching as is experimented with in the Transnational Scandinavian Classroom and similarly the Global Classroom (Retrieved from <http://www.global-classroom.org/>) will grow in the future. The collaborative network based model of teaching is one way to tackle the educational challenges of the 21st century.

At the same time working with these kinds of teaching approaches also show that there is some way to go.

The mindset of teachers and teaching institutions are grounded in the upcoming of common education which is part of the industrial revolution. It may be a banality that schools resembles the assembly line - and there will be lot of evidence that a lot have changed since the 19th century. But the thinking that teaching takes place as instruction of truth and skills have not changed that much.

Along with the challenge of mindsets in which education founded there are other challenges to be overcome as the understanding of the teaching profession: what is the objective of teaching. Going into that discussion is another paper.

Finally, the author will mention the challenges with the tools. ICT is a big challenge for cloud based classroom teaching. And ICT is a challenge on three different levels. The technical part: is the tools suited the tasks? The political part: is the administration of school policy ready to break down the walls that keep schools as islands isolated from the rest of the world? And finally the competency part: are teachers ready to embrace the digital tools so they can use the tools for teaching and not just teach what tools (or lack of tools) allow for?

A lot of teachers and schools have gone a long way—and experimenting with “Virtual Classroom in the Cloud—Transnational Scandinavian Teaching with ICT” is one step in that direction.

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