Learning across distances: An international collaborative learning project between Berlin and Turku

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Many geographers graduating from universities enter an international and project-based professional life, which includes working in geographically dispersed project teams. In Europe, the Bologna process aligned study programs and supported student mobility to prepare students for such a work environment. However, research on higher education has reported few examples of international courses organised between two or more universities in different countries that include collaborative learning during students' instances of both co-location and geographical dispersion. This paper reports on a pilot course that implemented international student-led research projects in two Geography Departments: the Humboldt-Universität zu Berlin and the University of Turku. We monitored the students' learning processes via a survey that was administered at the beginning, middle and end of the course, complemented by observations, informal discussions and student team reports. We analysed the survey and observations within a proximity-distance framework to identify the key challenges and good practices for supporting collaborative learning. We developed a model for organising an international course that applies both geographical distance and co-location.

Keywords: international course, collaborative learning, project-based learning, proximity-distance dynamics

Introduction

University graduates of geography enter labour markets that often require international mobility and project-based work experiences (Grabher, 2002; Watson, 2012). Projects have pre-defined goals and deadlines and tackle specific tasks by bringing together people with different cultural, organisational and educational backgrounds and skills. In international projects that combine distant organisations, the members likely work only in co-location for temporal periods and continuously work at a geographical distance.

Project teams are fruitful arenas for collaborative learning. In higher education, collaborative learning can be rehearsed by working in small groups on selected tasks to

achieve specific learning objectives. Collaboration hence requires heterarchically divided working processes that are based on mutual engagement between the students (see e.g. Panitz & Panitz, 1998; Curşeu & Pluut, 2013). However, in order to be able to learn from each other in a project-based environment, students must contribute different types of knowledge and expertise to the group (Davies, 2009). Collaborative learning can take place in both physical and virtual settings or in a combination thereof.

Although geographical proximity is important for collaborative learning, it does not guarantee it (Boschma, 2005). Various other dimensions of distances and proximities, such as cognitive and social, affect collaborative learning in international projects (Boschma, 2005). These dimensions occur simultaneously and change over time. In a given period, some dimensions may have more critical effects on collaborative learning than others. We call such fluctuation and simultaneity the proximity-distance dynamics. For example, some project members may become friends (gain social proximity), while others remain socially distant; further, some members may form shared knowledge bases (gain cognitive proximity), whereas the knowledge bases of others may deviate when working apart (growing cognitive distance). Face-to-face collaboration has been found to be beneficial for the success of projects and learning because it enables trust to be built and a shared understanding to form (Hautala, 2018; Nonaka & Takeuchi, 1995). Similarly, collaborating amidst a geographical distance has been shown to have a negative effect on professional team performance, projects and learning (Nguyen-Duc, Cruzes, & Conradi, 2015). Meanwhile, however, authors have also demonstrated the beneficial effect of relational distances on learning and knowledge dynamics (Grabher & Ibert, 2014; Hansen, 2014; Ibert & Müller, 2015). Tying in with teaching requirements, collaborative learning with proximity-distance

dynamics is expected to simulate project-based working conditions and, thus, better prepare students for their respective labour markets.

Even though collaborative learning is appreciated as an important learning tool, instead of addressing the international level, research on collaborative learning focuses on given study programs (e.g. Magin, 1982) or online environments (e.g. McConnell, 1994; Evans, Baker, & Dee, 2016). In particular, courses between two or more universities in different countries that consist of periods of both face-to-face and distance learning are rarely reported. Rather, international courses in geography represent field courses abroad without collaborative learning between students of different universities (e.g., Glass, 2014), virtual international courses without any co-location of the students (e.g., Klein & Solem, 2008) or studying abroad in a foreign university, thus allowing for international experiences without having collaborative projects as a primary aim (e.g., Mullens & Cuper, 2015).

Tackling this gap, we piloted a course between the Humboldt-Universität zu Berlin (Germany) and the University of Turku (Finland). The course addresses bachelor (Berlin) and master-level students (Turku). Though this scenario meets the requirement of different knowledge backgrounds as a prerequisite for collaborative learning, it also created a challenging setting with proximity-distance dynamics, including the different organisational and cultural backgrounds at both universities. In such an arena, we sought to identify key challenges and best practices for supporting co-located and distant learning in international student teams by asking:

1. Which distances and proximities hinder and/or benefit collaborative learning in an international course?
2. How do these distances and proximities change in relation to collaborative learning in the sub-teams?

3. How did the two settings (technology-supported communication at geographical distance and co-located face-to-face communication) influence collaborative learning?

The collaborative learning progress was monitored by three successive online surveys implemented at the beginning (in geographical dispersion), middle (in co-location) and end of the course (in geographical dispersion). The data were supplemented by observations collected in the instructors' diaries, informal discussions with the students and the outputs of the sub-team projects (research reports). As a key contribution, we present a structured model for organising an international project-based course. The model helps instructors to plan the timing and improve the quality of geographical co-location, as well as support collaborative learning via proximity-distance dynamics.

Collaborative learning processes in international university courses

The pedagogical approach we used for designing and conducting the course was research- and project-based collaborative learning (Huber, Hellmer, & Schneider, 2009; Sonntag, Ruess, Ebert, Fiederici, & Deicke, 2016). Collaborative learning starts from a social constructionist viewpoint (Berger & Luckmann, 1966) that highlights learning as a social process taking place through interaction in communities (Wenger, 1998). Hence, the course was organized to consist of student-led projects targeted at answering a self-developed research question presented in form of a joint report written by a student group within a limited time frame. The course supported collaborative learning by enabling autonomous student groups (Kezar, 2006) to engage in student-led research projects. Even though accompanied by intensive mentoring by the instructors, the students remained independent and developed individual roles in their projects, divided work, and coordinated their activities independently (Curşeu & Pluut, 2013). However, in contrast to peer learning (Topping, 2005), the course instructors set a frame for

independent collaboration and followed a curriculum with clearly defined learning goals.

International courses of geography in higher education

The research of international collaborative courses in geography in higher education concentrates on three major themes (see, for instance, two special issues in this journal: Glass, 2015a; Healey, Foote, & Hay, 2000; but also Thach & Murphy, 1994; Klein & Solem, 2008). First, the international courses most often represent field courses abroad (e.g., Fuller, 2015; Glass, 2015a; Glass, 2015b; McMorran, 2015; Nairn, Higgitt, & Vanneste, 2000; Patel, 2015; Phillips, 2015; Simm & Marvell, 2015). Here, geographical education comprises knowledge and tools to analyse geographical phenomena, both globally and in their particular socio-cultural-environmental local places. This realm includes experiencing local particularities by engaging in discussions with local people, feeling, living and working in the specific environment (Glass, 2015a).

Second, virtual international courses are considered for both complementing teaching within an institution (Privateer, 1999; Evans et al. 2016) and for international courses (e.g., Klein & Solem, 2008; Mendler, Simon, & Broome, 2002). Geographers have been designing and organising international collaborative courses since the development and dissemination of virtual education platforms in the 1990s (e.g., Hurley, Proctor & Ford, 1999; Reed and Mitchell, 2001). In some cases, individual online courses have later developed into full study programmes (Robinson, Kerski, Long, Luo, DiBiase & Lee, 2015, p. 66). Additionally, students use social media to collaborate across geographical distances (Lampe, Wohn, Vitak, Ellison, & Wash, 2011), but mainly as a tool that complements courses within one university instead of across several institutions.

Third, studying abroad in a foreign university is addressed (e.g., Lemmons, 2015; Scheyvens, Wild, & Overton, 2003) or, vice versa, incoming international students from the perspective of the home university (e.g., McPhee & Pickren, 2017). In Europe, this has been supported by the Bologna process since 1999.

While in the first and third approaches, students temporarily experience new geographical and cultural contexts in person, in the second approach, geographical distances are bridged by means of digital technologies that enable virtual collaboration. This approach also comprises distant learning (Dibiase, 2000; Mendler et al., 2002) and distant education concepts (Dibiase, 2000; Harris, 2005; Thach & Murphy, 1994) that are mainly implemented in the form of online GIS courses that students take from their own computers at home (Robinson et al., 2015, p. 66). However, studies of international courses with student-led collaboration across two universities that mix both co-located face-to-face learning situations and virtual collaboration are still rare (e.g., Klein & Solem, 2008). We argue that such courses could be a fourth option that offers critical learning experiences for geography students. International collaborative courses enable students to gain experience in internationally dispersed project work with only sporadic temporal personal meetings, as well as to learn about particular socio-cultural places abroad. Reporting these courses also supports the identification of good educational solutions to take the most advantage of shorter field trips abroad (Lemmons, 2015).

Proximities and distances in international collaborative learning

The examples of international courses reported in research on higher education can be characterised by collaborating at a geographical distance (a virtual course), co-located collaboration in home-university student groups in a foreign place (a field course abroad), and co-located collaboration with international students in the home university or abroad. These examples include various findings that can be interpreted with the

dimensions of proximities and distances. In this article, we focus on the geographical, cognitive, cultural, social, institutional, and organisational dimensions (Boschma, 2005).

Geographical proximity is comprised of the co-location of the students and facilitates face-to-face communication, whereas geographical distance (e.g., in our pilot course) means that the Berlin and Turku students work in Berlin and Turku, respectively. Geographical distance challenges teaching and collaborative learning through the cognitive, cultural, and social dimensions of proximities.

Social proximity occurs between friends or people who know each other well, and social distance occurs between individuals who do not know (or like) each other. Geographical distance hinders the ability to gain social proximity as it questions the sense and existence of community – that is, the basis for interactive collaborative learning (Berger & Luckmann, 1966; Harris, 2005; Wenger, 1998). In our pilot course, we follow the formation of friendships and the frequency and means of communication in the sub-teams. Research has demonstrated how face-to-face teaching is more adaptive and reactive to the needs of students than teaching online. Co-presence with peers allows support, synchronous communication and empathy; it also fosters an understanding of diversity (Higgitt, Donert, Healey, Klein, Solem & Vajoczki, 2008; Klein & Solem, 2008). In other words, the students may better understand their cultural distance and gain cultural proximity.

Cultural proximity refers to key cultural features, such as cultural norms, habits or values. Regions in the European Union, for instance, share enough cultural proximity for their organisations to develop joint projects (Hofstede, 1986). In cultural distance, key features differ (e.g. between European and South American cultures) (Hofstede,

1986). In our pilot course, we monitor the familiarity with the other national culture and the cultural differences that the students detect.

Cognitive proximity means that there is a shared knowledge base of, for instance, geographers in general. If the cognitive distance (i.e. different knowledge bases of a human geographer and a nuclear physicist) is too large, then collaborative learning is hindered. Communication in co-presence supports the students' ability to build their knowledge bases and gain cognitive proximity. In our pilot course, we analyse the similarities, differences and changes on students' knowledge on the course's topic, level of mastering the learning aims and common understanding in the sub-teams.

In comparison to co-present communication, it is difficult to adapt teaching to face the problems of students in online courses because interaction is frequently asynchronous and digital devices and technologies mask non-verbal, cultural-specific and emotional contexts of communication (Klein & Solem, 2008, p. 263). Also, peer support is often asynchronous and delayed and the feeling of community is more difficult to achieve (Argles, 2017). Thus, the members of the community are not only distant in terms of their geographical space, but often also in social, cultural and temporal terms. Despite these challenges, online communication persists because it can enrich courses and foster 'new connections with real, live students' and collaborative learning through a wider array of perspectives that would otherwise not be reached (Dibiase, 2000).

The institutional and organisational dimensions of proximities have an effect on the realisation and organisation of international courses. Research on online collaborative international courses has reported challenges concerning managing and aligning the different institutional times of the participating universities (Klein & Solem, 2008). *Institutional proximity* can be identified as the macro-level norms and

values of the European universities. It is expected that these factors are rather similar and that the universities hold institutional proximity. The different semester rhythms and particular values that underlie the implementation of the pilot course are considered as institutional distance in this article. *Organisational proximity* represents the similarity of the organisation of curricula, courses, ETCS, etc. between the Humboldt-Universität zu Berlin and the University of Turku. Organisational distance would call for a very different organisation of these universities without a window for creating a joint course.

The case study: A Q-Kolleg connecting the Geography Departments in Berlin and Turku

The international student project was enabled by the Q-Programme that is coordinated by the bologna.lab at the Humboldt-Universität zu Berlin and financed by the German Federal Ministry of Education and Research. The Q-Programme aims to develop teaching methods for research-based learning. Q-Kollegs − courses for international student teams to conduct joint research projects – are one of the possible formats. Q-Kollegs are organised in collaboration between at least two universities of two countries. They include co-location in both partner locations and collaborative learning at a geographical distance. The bologna.lab supports the Q-Kollegs by providing advice and workshops to instructors and travel grants to the students of the Humboldt-Universität.

At both universities, the Q-Kolleg ‘Science and Technology Parks: Comparing Turku and Berlin Innovation Hubs’ was an example for training economic geography addressing science and technology sites as locations that foster knowledge-intensive businesses. From a conceptual point of view, such science and technology parks are examples for entities in regional innovation systems. At the Humboldt-Universität, the

course was integrated into the geography curriculum in the form of a bachelor-level student project. These endeavours usually meet the research interests of the instructor. Further, as both instructors have researched science and technology parks and both universities are located in one, this shared interest determines the course's theme. In Turku, the Q-Kolleg had to become an optional course that was added ad hoc to the obligatory curriculum. The target level group for courses held in English were the master's degree students.

The course was organised between October 2017 and February 2018 and was taken by nine students (six females and three males): six in Berlin and three in Turku (of whom one student was an Erasmus student from abroad). In Berlin, the course extended to 10 ETCS and in Turku to 5 ETCS (see explanation in the next section).

The course included three working phases:

(1) Starting at a geographical distance: two groups in Turku and Berlin (one month, October-November 2017)

This phase had two aims: First, creating a feeling of the course and a group shared by participants in Turku and Berlin and second, creating a shared "knowledge base" in terms of the course's topic for the two student groups. We started with two introductory meetings organized as video conferences that bridged the geographical, social and organizational distances between the two student groups. Afterwards, the students read and discussed the same literature in local seminar sessions in Turku and Berlin. The reading list was comprised of eleven articles about the wider innovation systems (in particular, Finnish and German examples), and science and technology parks (in particular, examples including Berlin and Turku), thus primarily stemming from economic geographical and research-based literature.

Intense geographical proximity: co-location in the workshop in Turku (five days, November 2017)

In this phase, all students and instructors gathered in Turku for joint classes, met local experts, and visited the Turku Science Park. The first two days were dedicated to visiting the Turku Science Park and participating in three expert lectures. During the remaining three days, the students formed their sub-research teams and formulated their research questions and research plans. Each sub-team was assigned an instructor to help guide the research plan and prepare the empirical work.

(2) Collaboration at a geographical distance in the sub-teams (three months, December 2017 - February 2018)

The sub-teams conducted empirical research based on a document analysis of reports, a survey, and social media analysis; formulated research reports; submitted a first report version; reviewed the draft reports of their co-teams and revised their own reports based on reviews from the instructors and students. The period ended with a workshop in Berlin. For this purpose, a Finnish student and instructor travelled to Berlin for a study visit to the Science and Technology Park Adlershof, expert lectures and the sub-teams' final presentation of their research results. The final revised reports were submitted. The reports were guided to include 6000−8000 words and particular sections (introduction, theory, materials & methods, empirical results, conclusions, references). Within these guidelines, the evaluation focused on, firstly, an empirical comparison of the science parks of Turku and Berlin, and secondly, the coherence of the report. Both instructors separately evaluated the reports based on the two key aspects from 1 to 5 (highest) and formed the final numbers based on discussion.

Methods

To monitor the courses' progress, multiple methods of assessing the collaborative learning process were already planned in the design stage of the course. The central instrument was a survey that was conducted three times: first, succeeding the introductory meeting at geographical distance (N=6 out of 9); second, at the end of the intense geographical proximity in Turku (N=8 out of 9) and third, after the students submitted their draft reports at a geographical distance (N=7 out of 9). The repeated survey allowed the learning progress (students' self-evaluation) to be monitored throughout the course (Creswell, 2003) while accounting for proximity-distance dynamics. For example, the question "Assess your current state of learning in comparison to the learning outcomes of this course (1=I have not learnt this at all … 3=I have learnt the basics of this … 5=I have learnt this well)" was asked in all three surveys. The surveys included structured and unstructured questions under the topics 'key information', 'international collaboration' and 'learning'.

The proximities, distances and their changes were assessed by general and specific key questions (Appendix 1). The general questions were answered with the participants' own words. Thus, any dimension of proximity (e.g., expressed as 'similarity' and 'learning to know') and distance (e.g., expressed as 'difference') identified from the answers were applied to construct the results. The specific questions concerning each dimension of proximity or distance were either unstructured or structured (e.g., a Likert scale of 1−5). Concerning the structured questions, proximity and distance was assessed within the context of the question. For example, in the sub-teams, the similarity of the answers indicated proximity (e.g., the members strongly agree with the statement "I am familiar with the Turku Science Park"), and difference

indicated distance (e.g., some members strongly agree and some others strongly disagree with the same statement).

Moreover, the monitoring materials include collecting the instructors' observations in research diaries (Engin, 2011), informal discussions with students and the quality of the key output − the research reports (one per sub-team). Therefore, the assessment of proximities and distances not only rely on the survey questions, but are informed by the careful observations and discussions of the instructors. The instructors had different roles: The German instructor initiated the course, designed the course content with the Finnish instructor and was responsible for organising the course in the Humboldt-Universität zu Berlin. The Finnish instructor was responsible for organising the course at the University of Turku and was supported by a second Finnish instructor. Each international student sub-team was assigned its 'own' instructor who provided continuous feedback and advice in developing research plans during the students' empirical phase and in preparation of the reports. The instructors' diaries were repeatedly compared and discussed in order to identify necessary course adjustments, ensure collaborative learning and reflect on the learning process. Several group reflections that were guided by instructors' open questions were integrated into the course. The topics included, for example, expectations of learning and concerns about international group work. The answers were collected with anonymised notes.

The survey was analysed with basic descriptions and comparisons of the variables within the whole group of students and between the sub-teams. For the final results, the survey was interpreted in light of the observations, discussions and sub-team reports via the proximity-distance framework. The students were informed by the instructors about the monitoring process and the piloting nature of the course, thus

communicating uncertainties and risks early on. The authors ensured anonymity to the students in this paper.

Results: Dynamic proximities and distances in international student-led research projects

Starting at a distance: two universities and two groups

The planning phase of the course was confronted by three key forms of organisational and institutional distances between the two universities. First, the annual sequences of teaching periods differ: The Humboldt-Universität's annual rhythm includes two terms, winter and summer separated by a break. In contrast, at the University of Turku, classes are only taught between September and May. These nine months include five eight-week periods, which is the length of the majority of courses. Such different annual rhythms denote institutional distance as they are rooted in the macro-scale values and norms. The course followed the teaching schedule of the Humboldt-Universität because of the bologna.lab's support and an expected higher participation rate from geography students there. Consequently, it could only be placed in Berlin's winter semester. However, for the Finnish students, this created sincere friction: the course started and ended in the middle of two separated periods and, in total, extended over three periods, thus challenging the Finnish students' timetables.

Second, the two universities demonstrate organisational distance because of the different curricula in which the course could be accommodated. In Berlin, the course could be integrated into the bachelor curriculum for 10 ETCS, while in Turku it could be opened to master's students for 5 ETCS only.

Third, in Germany, the students are expected (and agree) to invest financially in their studies with limited sums. In general, in Finland, students are not accustomed to

co-funding travel. Hence, the German students expected to co-fund the Q-Kolleg support, whereas for the Finnish students financial support was not secured in the beginning. Therefore, the visit to Berlin was optional for the Turku students.

The organisational and institutional distances between the two universities created a narrow window for conducting the course, even before it started (Boschma, 2005; Hansen, 2014). This resulted in difficulties with finding students for the course in Turku. However, these distances were reduced by cognitive and social proximity between the two instructors in Berlin and Turku that was established during the Finnish instructor's research stay in Germany. They 'juggled' the distances to form a shared platform for the two universities (Hansen, 2014).

The first survey revealed distances between the two student groups in Berlin and Turku. The students were not familiar with each other's cultures as they had not visited each other's countries. Thus, they could not know if a cultural distance actually existed or how it might affect their collaboration. As expected, we also recognised a cognitive distance between the more advanced (master-level) students in Turku with their wider know-how in doing research and the bachelor-level students in Berlin who were about to start their first research projects. However, locally, proximities occurred: social proximity within groups (the Germans knew each other well, and two Finnish group members knew each other well) and cognitive proximity in terms of shared study backgrounds and familiarity with the local science parks. Except for the Erasmus student in Finland, both local student groups had followed the same curricula. The Berlin and Turku students expected distances, but they were motivated to turn them into proximities. This is indicated by the following survey quotes about students' expectations regarding the collaboration:

* gaining social and cognitive proximities: “work(ing) all together in mixed teams so we can know each other and exchange about our different knowledges and country” (student 1)
* gaining cognitive proximities, understanding cultural proximities and distances: “constructive knowledge and culture exchange. That all students gain new knowledge and moreover enjoy the collaboration” (student 3)
* utilising cognitive distances: “bring(ing) different ideas to the project […] very interesting, but also very new and at times not always easy” (student 4)
* understanding cultural proximities and distances: “interesting ideas and inspiration […] getting insights of Finnish culture” (student 5)
* tackling cultural, social, and geographical distances: “small language barrier, you have to get to know each other, a lot of work to manage everything over a big distance” (student 6)

The instructors used two approaches to create cognitive and social proximities between the two distant groups. First, two video conferences were organised for the students to get a visual impression of their counterparts within the other group and to speak with each other. Second, between these video sessions, both groups were asked to read the same academic literature to develop a shared knowledge base. However, the implementation of the video sessions also created uncertainties. From the German group’s perspective, the Finnish group remained socially distant because not all who registered for the course appeared in the first video session. Attempting to cope with this uncertainty, we organised a second video conference, more actively involving all students by assigning a task to them (taking and explaining a personal picture from “their” science park). This session worked better and all students participated. In terms of reading, the bachelor-level students in Berlin completed an extra lesson on

methodological approaches to better prepare for the field work and gain cognitive proximity with the students in Turku.

Intense proximities in Turku: Crossing and preparing distances

The course included a five-day study visit to the University of Turku and the Turku Science Park, where we created the sub-teams and formulated the research plans. As instructors, we wanted to create a learning community that would build upon sufficient (and growing) social and cognitive proximity. Therefore, the first sessions of the study visit included formats such as academic speed dating (getting to know each other via one-on-one meetings), relaxed discussions (about the actual topic, but also expectations and challenges during the course), engaging in expert lectures, visiting and experiencing the Turku Science Park and receiving presentations by the Berlin students of the Adlershof Science Park. Still, the first two days were challenging because spontaneous gatherings were realised between only some students. Here, organisational and institutional distances between the two academic departments persisted. Some Turku students juggled various courses and skipped meetings unexpectedly, thus creating further uncertainty: The German students and instructors could not be sure if these students planned to continue to participate in the collaborative research projects. Despite these uncertainties, "being there" (Gertler, 2003) at the Turku Science Park was considered crucial for learning by the students (figure 1). The value of "being in the field" is also supported by reports on international courses (e.g., Glass, 2015a; Nairn et al., 2000). Eight students described how the workshop in Turku advanced their learning. In all answers, two key aspects of geographical proximity are repeated: the meaning of "being there" in the study location (N=5) and the benefit of face-to-face communication with the course's students, instructors and expert lecturers (N=5). "Seeing everything we hear about in 'real life'" was "much better than from academic texts" (student 2).

Thus, the contextual differences of the science park in a small Finnish city, when compared with the science park in a global centre of Berlin, were really grasped only in Turku although they had already been discussed in the introduction lecture of the course (mentioned by seven students in the survey II). This observation was crucial for comparing the Turku and Berlin Science Parks in the sub-teams' research projects. Moreover, it reflects the entanglement of the dimensions of proximities: cognitive proximities are gained via geographical proximity.

Figure 1. How well did the following aspects of the workshop in Turku advance your learning in this course (1=not at all ... 5= very much)? (Survey II)

Despite the challenging start and after some private conversations with the Finnish students on the importance of their participation for a successful project implementation, uncertainty transformed into tentative trust in the course structure during the remaining three days. This was a crucial turning point. After the Turku Science Park visits and expert lectures, the students could advance a suggested research project topic or invent their own. Three international sub-teams were formed, each with two students from Berlin and one from Turku. The sub-teams worked intensively for 1.5 days. During that time, they created their research plans, including research questions, key theoretical concepts, materials and methods, timelines, divisions of work amongst the team members, and a communication plan. The plans were crucial tools for gaining enough social and cognitive proximities (i.e. shared understanding and clear tasks and timelines of their projects). The plans became very good: each student knew what to do when the group dispersed, and how to combine their work into a coherent report.

The students realised their distances, specifically the cognitive, in Turku. In survey II, we asked if the students detected any surprising differences between Turku

and Berlin and, if the answer was yes, what those differences were (table 1). Four students noticed the cognitive distance between the master (Turku) and bachelor programme (Berlin) student groups. Although some German students reflected that it was good for their learning, the Finnish student articulated some frustration with "being the teacher". Another realised distance was framed as a cultural one between the students – German students being more active in discussions and the Finnish students being "more quiet, hard to interact with" (student 4).

Table 1: Surprising differences between Turku and Berlin as detected by the students in Turku.

Distant collaboration in the sub-teams

The intensive collaboration in Turku and a clear research plan was crucial for the teams to successfully continue their projects at a geographical distance. The students quite positively described their experiences with distant collaboration in their teams (survey III). Two key themes emerged: First, geographical distance can be beneficial, if it is well prepared through a clear research plan, as the following quote indicates: "The geographical distance between us didn't prevent us from communicating. On the contrary, our meetings were effective because we all stuck to the schedule" (student 1). Second, geographical distance is challenging, but can be overcome by technologically mediated communication and a good research plan that fosters the development of social and cognitive proximities: "collaborating across a distance was not always easy, but worked out quite well in the end. […] everyone knew what to do and we wrote some e-mails to keep each other updated." (student 4). Communication is the key to turn distances into assets.

The dynamics of proximities and distances within the sub-teams seemed almost path dependent: the communication formed in Turku was sustained and reflected in the

quality of their outcomes (reports). Moreover, while observing the collaboration of all teams from an instructors' perspective, geographical distance unfolded with a double-sided effect. Some students invested more effort into their work than others and felt responsible for the whole team. Others, in comparison, seemed to use the distance to hide and focus only on a minimum of negotiated tasks in the research design. The discussions with team members were reduced to a minimum.

The sub-teams applied different communication practices. All of the groups used e-mails and a platform to write in real time into a shared file. *Team I* was the most communicative (table 2), as measured in diversity and the numbers of technical and virtual tools used. The team met more than three times via Skype, also inviting their instructor to participate. For them, trust was very easy to form and sustain during distant collaboration. Social proximity was achieved between one student from Turku and one from Berlin. The difficulties in Team I concerned the technical issue of comparing the research results. Two of the team members actually felt that the distance enhanced their project, and no one considered the distance to hinder it. Thus, the benefit of geographical distance was connected to the clear research plan which had been formed in geographical co-presence.

Table 2: Key elements of collaborating at a distance in the sub-teams.

Team II also communicated via a rather wide selection of digital applications. However, some of its members mentioned that communication was difficult, alongside time management and theoretical framing. In Teams II and III, social distance did not change – at least based on the surveys, instructors' observations and the feedback session at the end of the class. *Team III* communicated only via text and did not use Skype meetings for more personal interaction or discussion. In this team, the difficulties that arose were

related to communication, time management and adhering to the research plan – challenges in teams working across a geographical distance that have also been identified in previous research (Hinds & Mortensen, 2005; Staples & Webster, 2008). However, for this team, theoretical framing, dividing work and coordinating data collection was very easy. The team asked for a separate evaluation, a choice that they were given prior to teamwork. It turned out that the students in Berlin were uncertain about the empirical material the student in Turku had collected and analysed.

At the end of this period of work, the sub-teams submitted their interim report and peer reviewed the other team's work. They pointed out weaknesses in the reviewed draft, highlighted strengths and summarised the major revisions on which a report should be focussed. Overall, the reviews were good: the students could clearly address the requirements and evaluation foci of the reports that eventually helped them to improve their own reports. Afterwards, the final meeting was organised in Berlin, in which only one Finnish student participated due to unclear financial support, lingering social distance and diminished commitment to the team. Therefore, a final video session was organised to enable team presentations.

Summary

This article analysed collaborative international student-led research in a pilot course organised by Finnish and German geography departments. Dimensions of proximities and distances (Boschma 2005) were applied to analyse the collaborative learning process. They offer tools to understand and cultivate international and communicative learning that necessarily includes combinations of distances not involved in the basic courses of geography. Despite any team-based collaborative learning includes distances and diversities (e.g., McEwen, Monk, Hay, Kneale & King, 2008), in our pilot course the distances are organised around stages of being together and working at a

geographical distance in two international universities. The course was organised in three stages that each revealed important lessons for organising similar courses (table 3).

Table 3: Key distances and their effects along the course.

Our results suggest that enabling gaining cognitive and social proximities is crucial for collaborative learning. Achieving such proximities is challenging − even in a classroom setting at universities − which is why establishing the students' trust towards the course's structure and instructors is central. The students needed to be assured that despite the fact that the foreign group would remain socially distant, they could attain the course's aims (and credit points).

Trust in the course structure and the instructors can be constructed by a reliable time plan and funding, achievable interim results, multiple feedback loops and options to adjust the structure if necessary.

Trust in the course structure and the instructors can be constructed by a reliable time plan and funding, achievable interim results, multiple feedback loops and options to adjust the structure if necessary. Additionally, trust was established by openly addressing possible uncertainties and unforeseen measures to cope with them. Although the survey indicated that social proximity (and distance) remained fairly static, we achieved social familiarity. Such familiarity means forming a learning community that shares a common goal and interest. This process started with the two video conferences that benefited from the students' active participation and was continued in co-location in Turku with the first interactive sessions. The initial cognitive proximity was established by joint reading and local study groups. However, growing cognitive proximity was gained by the study visits and the possibility to experience the actual research objective. 'Being there' (Gertler, 2003) in Turku was an eye-opener that

affected the German students more than their Finnish colleagues. We realised (and received respective feedback, too) that it might have been more effective to organise the study visit in Berlin shortly afterwards to enable a similar experience for the Finnish students. Our experience also suggests that regular and good communication was related to reaching social and cognitive proximities in the sub-teams, as well as enhancing collaborative learning and the quality of the outcomes (research reports). Such good communication was achieved via a combination of Skype (i.e. video calls) and co-writing documents that are shared in real time.

Conclusions: Organising proximities and distances for collaborative student-led research across two universities in two countries

As a conclusion, we developed a model for international collaborative student-led research. Establishing trust in the course structure and the instructors, as well as creating cognitive and social proximity and building the content and timing of geographical co-presence, therefore, forms the backbone of our course model. The structure includes three stages (starting at geographical distance, in geographical co-presence, and continuing at a geographical distance) with their particular challenges, in terms of distances, and good practices for forming enough proximities and supporting learning despite the distances (or that can benefit from the distances).

Figure 2: Suggested structure for an international course of collaborative learning in geographical co-presence and at a geographical distance.

Ensuring good communication and trust between the instructors supports the management of organisational and institutional distances by organising the course and justifies a course kick-off to overcome the geographical distance. Even though it is mainly the instructors who experience these distances, such a factor may present

challenges for the sub-teams at a later point. This is why good and realistic design of the topic, timing and the presence of a target student group and funding is important. When the course starts, the suggested aim is to enable social and cognitive proximities to take place later in the course. For this, we suggest starting with an interactive video meeting (in contrast to online teaching) and developing local study groups to build shared knowledge (cognitive) base of the topic.

Second, the period of co-presence, *being there* with other students, is crucial for reaching cognitive proximity on a team-specific topic through a shared research plan and social proximity in sub-teams. These cognitive and social proximities sustain collaboration at a distance. Co-presence differs from mere co-location (see also Hautala, 2018), because actively *being there*, being able to "look and feel" (Helbrecht 2004), actually supports students in recognising topics for their student-led projects. In addition, we found it very supportive that – despite the local expert status – both, home and guest students, jointly explored new sites, locations or programs thus creating shared moments of learning. Therefore, if student-led collaboration includes comparative studies, then having a period of co-presence supports a shared cognitive space of the international student group.

Third, continuing joint research in sub-teams at a geographical distance builds on (previously established) cognitive and social proximity, but also a reliable course structure with interim results (e.g. draft reports and peer reviews), mentorship and communication that is mediated by diverse forms of technologies (Skype/video conferences or co-writing in online documents). These measures visualise the projects' process and teams' experience at distance to convey that members are working together and reaching new milestones, even though they do not meet in person. In this structure,

the end of a course is a video meeting that may include, for instance, presentations of the sub-teams' research.

Finally, it needs to be pointed out that the instructors should not aim to eliminate distances and turn them into proximities. There are dimensions of distances to juggle, others that benefit learning, and some do turn into proximities. Distances and proximities are not a binary typology of dimensions that is considered separately, but they intertwine and form dynamic processes where some dimensions (e.g. organisational and institutional in our course) will provide an influence throughout the collaborative learning process, even though it is visible mainly for some participants.

Distances between two student groups in two countries empower local students to act as local experts in their collaboration. On the one hand, local expertise accelerated the learning process, but on the other hand, it easily resulted in localised learning processes where the students learned the most about their local context (Minniberger et al., 2012). Foreignness by leaving the home context was only experienced by the German students, and not the Finnish ones. Exploring a foreign context together might even enhance the establishment of a learning community. Moreover, in some sub-teams, realising the distances made the research process focused and efficient because the students had to stick to their responsibilities and communicate. However, the benefit of some dimensions of distances is realised only when the crucial communicative and cognitive proximities are at a place. Thus, distances and proximities offer useful conceptual and structural tools for organising, understanding and experiencing an international course in geography.

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