

International Collaboration for a Sustainable Future

Faculty and Student Reflections from a Virtual Polytechnic Classroom

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ABSTRACT: This paper represents a concrete reflection on the first steps in a Collaborative Online International Learning journey through the Global Polytechnic Alliance participation in Map the System. The polytechnics are in Denmark (VIA), Canada (Humber College), and New Zealand (Otago Polytechnic). Students and faculty participated in the initiative to work together strategically, based on common interests, to strengthen the participating institutions academically and globally. Three international teams were developed to participate and enter into the Map the System global competition. The teams chose a social or environmental issue that mattered to them and researched connecting elements and factors to share findings in a way that people can meaningfully learn from. This competition, and the paper, is viewed as a discovery process. In this article, we describe three stages the team went through faculty team formation, teaching and learning as well as developing student research and system maps. Through this process, we discovered key insights on creating a sense of community online, systems thinking and reflective learning process. The paper concludes with our thoughts on the unintended gifts of collaborating internationally in virtual teams.

KEYWORDS: *Sustainability; Futures; Students; Systems; Online*

Global competencies are considered among essential 21st-century skills that college-level students require. Global competencies are described by Naiker et al. (2021) as "the capacity to examine local, global and intercultural issues, to understand and appreciate the perspectives and worldviews of others, to engage in open, appropriate and effective interactions with people from different cultures, and to act for collective well-being and sustainable development." (Naiker et al. 2021, OECD [2018](#)). However, some critics of global education through the international exchange have highlighted that only very privileged students have been able to make the most of international education through travel experiences (Rodriguez, 2011). In the past decade, Collaborative Online International Learning (COIL) and the use of global collaborative

virtual teams have emerged as innovations of curriculum internationalization, and COIL (O'Dowd, 2018), is part of a larger 'Internationalization at Home' movement (Beelen & Jones, 2015).

The World Economic Forum (2016) report on the Future of Jobs and UN Sustainable Development Goals (United Nations, 2015) both call for higher education that prepares students to work in globally networked ways that anticipate globally sourced work environments. Practising virtual and collaborative intercultural communication and problem-solving offers important 'career ready' preparation for all college graduates. A second point is the effort to look even beyond 2030-2050, in the UNESCO initiative Futures of Education: Learning to Become. Here we see an emphasis and promotion of a global conversation around the role of education in an increasingly complex world. (<https://en.unesco.org/futuresofeducation/>).

As such there is both a difference and an intertwined connection between career perspectives and the broader agenda in the Futures of Education perspective. The project described in this paper is part of this global conversation joined by staff and students from three Polytechnics in different countries to develop a collaborative online international learning (COIL) project in early 2021.

The Global Polytechnical Alliance

The polytechnics are located in Denmark (VIA), Canada (Humber College), and New Zealand (Otago Polytechnic) and are connected through a Global Polytechnic Alliance (GPA) signed in 2018. The aim of the GPA is fostering "a deep-rooted partnership in which the parties work together strategically, based on common interests, on strengthening the participating institutions academically, for staff and students alike" (GPA n.d.).

This paper represents one of the numerous projects that have been delivered together. Students and faculty have visited each other's campuses and engaged in various international projects since the establishment of the partnership. As a result of COVID-19, both VIA and Humber colleges have spent most of the past year delivering and learning curriculum virtually, 'at home', while Otago Polytechnic students had experienced only 8-weeks of online teaching and learning, returning to face-to-face classroom delivery by mid-2020. These conditions set the backdrop of our COIL project, where online learning had become – for two-thirds of our collaborators at least – a normal model of delivery.

This project focused on systems thinking for sustainability. This was encompassed by three key objectives: firstly, to educate students about systems thinking and the value of a systems mindset, secondly, to gain a better understanding of – and become familiar with – the 17 United Nations Sustainable Development Goals, and finally to do both within the context of virtual international collaboration.

Three international teams were developed to participate and enter into the Map the System global competition. Initiated by the [Skoll Centre for Social Entrepreneurship](#) (Oxford University) and delivered in partnership with educational institutions around the world, Map the System was "designed to change the conversation in social impact education — moving from an overemphasis on the '[heropreneur](#)' and new 'solutions' toward a focus on a deep understanding of complex problems as the foundation for driving transformational change." (Map the System, n.d.). 'Heropreneurship' according to Daniela Papi-Thornton, (deputy director at the Skoll Centre) places too much emphasis on the founder of a startup and not enough on scale, on team approaches and on the ecosystem the problems – and potential solutions – exist within. (<https://tacklingheropreneurship.com/>)

Map the System was originally designed around the Impact Gaps Canvas, a tool released as part of the Tackling Heropreneurship report (Papi-Thornton, 2016). Participants choose a social or environmental issue that matters to them and research connecting elements and factors in order to share findings in a way that people can meaningfully learn from. It is not a solution-based 'pitch' competition but a discovery process – designed to foster a systems thinking mindset among participants. Humber College (Toronto) is a partner institution with history and experience in this competition, and all teams enter the finals for Map the System Canada.

This paper will begin by describing the ways we approached engaging with and delivering both course content and team competencies (faculty and student), and then we will then reflect and discuss our 'Findings' – identifying emerging themes through reflecting on what we learned from our experience.

Approach to Map the System GPA

At the early stages of the project, the faculty team realized that the project offered a reflective research opportunity as a way of capturing our own learning, and to create space to potentially capture learner experiences within this COIL context. We developed a research ethics application to ensure that learners were not at risk and were aware from the beginning of their involvement in the project, that faculty planned to reflect on the experiences we were embarking on, and that we planned to write this paper potentially presenting the project to a wider audience. It was made clear that this was open, participatory research, and students were encouraged to reflect on their learning and contribute to the paper but were also able to remain anonymous or withdraw from the research at any stage. We shared our initial questions, including: "How and to what extent does a project-based international collaboration experience and nurture competency in collaboration at the level of learners as well as those who seek to educate them? And more specifically, what is the value of comparative international perspectives and experience when it comes to educating on issues of sustainability and the SDGs - and how to address them?" We wondered whether a real-time experience with international collaboration would have particular advantages in promoting systems thinking competency among students and educators? i.e. How do student perceptions compare to that of educators? And whether these were also student perceptions of international collaboration when it comes to developing these competencies? As students and faculty were working on developing systems maps for the competition, would there be shared experiences in their subject choice, or would one culture become the 'site' of research? We were also curious about the role of "gamification" (i.e., Map the System (MTS), a systems thinking competition where students present their research on complex global issues and compete for awards and prizes) might play in nurturing competency in international collaboration and on learning content (systems thinking)? And lastly, we had a more general curiosity about what we could - as students and educators- learn about this pedagogical approach for the development of competencies needed to address the SDGs? "What are our overarching reflections on these competencies as they relate to the SDGs - and how to educate for sustainable change?"

The collaborating faculty and students were drawn from different disciplines, and many were new to systems thinking, and in some cases, the SDGs, meaning that faculty were often learning at the same time as students, and offering 'mentor' or 'expert learner' roles rather than 'teacher' ones. The students also had different levels of opportunity for participation, where some participated as part of their courses and others did it in their spare time. One member of faculty became (by default rather than choice) the 'lead educator' as she had

previously worked with international student teams on the competition and had expertise in both the SDGs and Systems Thinking methods (Elinor Bray-Collins, Humber College). Elinor became the main deliverer of formal content, although other faculty also delivered workshops, as well as mentored student teams.

Stage 1: faculty team formation

Throughout January, faculty from the three Polytechnics met regularly (2-3 times per week), to learn about the competition, and to identify and share previously useful strategies to help students to connect. We formed clear systems and relationships, spending time outlining how online classes would be structured and feeling prepared. As much as possible, the faculty team sought equitable relationships, and only after several meetings did we identify team roles. The key organizing member (Sara Hassan, Humber) who helped establish all our online systems left the team for parental leave towards the end of this faculty preparation time and left us feeling like we were 'steering this ship' now. Her preparation, however, was rigorous and useful and established a sense of team safety, and 'we are in this together'. Elinor Bray-Collins emerged as educational lead, due to her experience with the competition and teaching international students in numerous settings. Building on her experience the team 'kicked off' the educational approach and direction. In this sense, the time we spent 'working together' established a strong sense of community - genuine investment and commitment. A sense of common and shared purpose was established before we met our students. Drawing upon a systems thinking metaphor, our first emergent 'system' was developed online through these tasks and navigating and establishing a shared understanding of the project and our roles. One highlight we recognized at the project progressed is the 'reflective process' or approach the team took to planning, conceptualizing, executing workshops and most important real-time reflections or debriefs, i.e. meeting before (for planning purposes), and immediately after group workshops allowed for insightful exchange, group reflection and produced collective work. The team reflected together on what we saw, heard and experienced; this brought awareness to group dynamics and the learning process; identified what went well and what strategies to employ for improving any challenges. These sessions made explicit the thinking, values and experiences behind the decisions the faculty team were making.

As faculty came from different backgrounds and experiences, we acknowledged that many were learners. Our agreed approach was to work with students on equal terms, collaborating with students as much as possible. We identified that students and faculty were co-investigators in the research process and co-learners in the educational initiative. Time zone difficulties (New Zealand and Denmark were 12 hours apart for most of the project) and changing time zones due to daylight saving in different countries proved challenging. The fact that most faculty were parents of young children – several juggling children learning online at home during a pandemic – added a lively element to many meetings and required quick work arounds. And our institutions differing term dates and national holidays also created obstacles during our collaboration. But as one person had to duck out, arrive late or leave early, another would stand in so that at least three people were holding the conversation. This required a large degree of empathy, kindness and understanding in the group, as one participant might be burned out after a long day, while another had to be an early bird, participating while getting one's children to school. This perhaps also fostered a more informal and compassionate environment in an otherwise more distant screen presence.

Stage 2: teaching and learning

Educators from different countries brought with them different norms, expectations, and exercises. Our first session began by opening with a slide of a sun rising from the sea, and a karakia (a short invocation drawn from New Zealand's Maori culture), urging us to respect the sacred space of learning together we were entering.

Just as the faculty team had spent time first getting to know one another, a number of short exercises were used in our first meetings with students to ensure students' collaboration was based on a good understanding of each other's values and attributes, and teams were not randomly allocated. We introduced ourselves through our favourite places, where we felt most at home. Our collective locations varied from an active volcano in Japan to riversides and seashores and an airport for one transient student who felt most at home while anticipating travel.

The first activity asked students to identify varying degrees of strength within four competencies related to teamwork. Following this, students and faculty were asked to create a short video about themselves and upload it onto Youtube. Everyone was asked to introduce themselves, identify their competencies and best role in teams, and what kind of team members they work best with. These unlisted videos allowed us to remind us of our new teammates outside of meetings, checking in on the competencies of each other, and matching the faces of those who were talking, as internet bandwidth did not always allow us to use all our cameras at once.

At our second workshop, Jonas Hoffmann, a student from VIA gave a presentation about the UN Sustainable Development Goals. He drew upon his understanding of the SDGs through his role as an ambassador for the goals, a focus at VIA. An online poll was taken to identify the sectors or areas of concern for students, and it was these polls that were used to allocate teams around interest areas, as well as drawing upon the team competencies identified in the videos. We also sought to establish teams with representatives of each of the three countries, and three teams with 3-5 students were formed.

In our third workshop, a team-building exercise – in online breakout rooms – asked students to consider the 17 SDGs and were asked to reduce the number to 16, removing one and creating an argument justifying this. Rather than a critique of the SDGs this was a way for students to navigate and become familiar with all 17 that required active participation and debate, towards forming consensus. The workshop required debate and identifying successful attributes of effective teamwork. We discussed the importance of 'Trust' - and that in good teams we feel safe and are respected; 'Dependability' that we can count on each other in teams and that we were able to hold each other accountable; 'Structure & Clarity' was introduced, and how it was important for teams to share a structure so that we each know what to do and when; and that our work was 'Meaningful' to each of us. Student teams developed roles and contracts.

Two more formal workshops followed, outlining the key ways that Systems Thinking as a method could be employed for the project. These workshops were a mix of information, questions and small assignments performed primarily by Elinor Bray-Collins. Throughout our online workshops, a range of techniques were employed to garner responses and contributions from students. These ranged from regular emotional check-ins (using emojis in the chat box), to more active activities using the online whiteboard. Faculty often started and ended sessions with simple yoga exercises, or synchronous breathing, reminding each other of our material located bodies, as we embarked on our collaborative online communication work. Two more mentors joined at this stage, and one student left the project due to work commitments.

By the time our Map the System teams were established, students had encountered each other in numerous ways and had developed confidence in our online forum. We knew some of each other's backgrounds and had debated ideas. Although not everyone had reliable internet, we encouraged the use of video connection when we were speaking, and for greetings and farewells. Before and after each student workshop the faculty members met to reflect and plan.

Stage 3: developing student research and system maps

Over one month, students met regularly and invited mentors to meet with them less regularly. At first, the focus was on deep-dive research, and narrowing their – often broad – topics to develop a narrower scope. This often required a shift of focus and more immediate locations. Ideas of where problems were located changed, and through students sharing their local knowledge on a topic, many connections were made.

The mentors experienced students being very open minded and really interested in each other's contributions. Mentorship and learning were active processes, leading to students sometimes having to change their focus quite a bit, add new tasks to their to-do list or change their layout, in response to feedback. The students were very accountable to each other and were careful to live up to their own responsibilities. They also had a good understanding of each other's workloads, responding and sharing work when one had too much to do, or was not able to turn on the camera, being tired etc., and this understanding was extended to include mentors and their workload; cancellation of meetings due to teaching or vacation.

The meetings with students and mentors had a pleasant, informal tone and approach to problem-solving, getting ideas and sharing each other's network. This made the sessions seem more like a group brainstorming than a formal meeting. Despite timetable clashes, busy-ness, IT problems, time differences and language barriers, all would agree that it was the great team spirit that enabled the success of the project.

In early April, the project ended, and student teams submitted their research and systems maps, along with a 2-minute video to MTS Canada. Faculty developed a short online survey, allowing students to voice their feelings outside of their teams and reflect on their experiences, both challenging and rewarding.

We held a final closure meeting, talking with students about ways that they could contribute to this paper and conference presentation and thinking about the best ways for us to stay in touch after the completion of the project. Each group member reflected on their experiences, and we ended with a closing karakia (another short invocation drawn from New Zealand's Māori culture), completing the space of learning we had held together.

Returning now to Naiker et al., who considered global competencies such as "the capacity to examine local, global and intercultural issues", our project brought together this opportunity over the few months we worked together. The faculty noted the benefits of interdisciplinarity and how this project, across different languages and cultural perspectives, were held together in ways that are difficult to achieve in a classroom-based project. The systems-based and tripartite approach to the project gave different perspectives and local knowledge value, and students and faculty continually recognized this. This was not always an easy negotiation. At times one faculty member noted that students had started by identifying problems "out there", as beginning in economically developing countries, but realized through a systems thinking approach that the solutions could be found in their own countries' consumer behaviors. And students reflected on their own cultural perspectives in the mix, including several international students whose home countries were not one of the GPA institutions' ones.

Key insights and lessons learned

Creating a sense of community - genuine investment and commitment

Naiker et al. suggest that global competencies help us "to understand and appreciate the perspectives and worldviews of others, to engage in open, appropriate and effective interactions with people from different cultures, and to act for collective well-being and sustainable development." (Naiker et al. 2021, OECD [2018](#)). One of the highlights of working together was undoubtedly the genuine feelings of connection expressed by both students and faculty. While we felt that it was important to spend time getting to know each other both socially and through openly sharing our personal values early on in this project, we agreed that successful learning and teaching is more about trust and engaging relationships than about the final product or competition. High levels of trust rather than high levels of information were responsible for the friendships that emerged from this project. We observed that in this project, we were all actively managing and performing partnerships (one of SDGs) - across borders and disciplines.

One point to highlight is the importance of creating trust and building a sense of community. In any educational experience, this is important, but even more so when we work virtually and have never met in person. It can be challenging to achieve a genuine sense of community in an environment, so doing it requires ongoing attention, care and regular work in the virtual classroom right from the beginning. We did this in various asynchronous and synchronous ways throughout the 12 weeks. For example, we asked everyone to post introductory videos about themselves to get to know each other before we embarked on learning. We opened every session with our pictures so that even when bandwidth was too low for many cameras to be on, we could see each other's faces. In a few of our sessions, we also engaged in a breathing exercise and imagined all of us, spread across the planet, breathing in unison. We shared photos of our lives, families, and environments, and had check-ins every session to share our feelings and states of mind so we could understand what we were each dealing with in our respective lives. We also spent dedicated time team-building by putting students through challenging group simulations and then using the basis of that experience to facilitate the establishment of shared values, visions and norms for working together.

These are a few of the techniques that we used to help to foster a sense of trust and community among us. However, as Parker Palmer argues, "good teaching cannot be reduced to mere technique; good teaching also comes from the integrity of the educator." (Palmer, 2007)

In that spirit, it is important to emphasize we did not ask anything of the students that we did not also ask of ourselves as a faculty group. From the beginning of the experience, we also worked together in a way that respected our differences and genuinely listened to each other. We showed up, worked hard, collaborated generously, and stayed open to learning from all aspects of the experience - including the uncomfortable ones - along the way. Maxine Greene, an educational philosopher, says that "education can only occur when we become friends of each other's minds." (Kohli, 1995). We believe this group has become friends of each other's minds, and also just friends.

Sustainable Development Goals and Systems Thinking

The UN 2030 agenda of Sustainable Development Goals (SDGs) is "a universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere" (UN, 2015). Education on the SDGs, often referred to as "education for the goals" is understood to be an essential part of implementing Agenda 2030 and bringing about a better future.

Education, therefore, is both a means as well as an end in Agenda 2030 and is thus the "lynchpin of a sustainable development agenda whose success relies on individuals, throughout their lifetime, acquiring relevant knowledge and developing positive attitudes to address global challenges" (UNESCO 2018, 1). To this end, UNESCO has identified 8 "competencies for sustainability" that we need to nurture in ourselves and students if we have any hope of achieving the SDGs as a collective human society (see UNESCO, 2017; de Haan, 2010; Rieckmann, 2012; Wiek et al., 2011). Two of these are systems thinking and (global) collaboration.

Through the student research and faculty mentorship, we all undoubtedly learned more about the SDGs and how – together with the use of systems thinking as a method – collaborative research could take on insights as a goal. Map the System as a competition identifies that "mapping and describing the system to present a holistic view of the complex challenge... includes identifying interconnections, interrelationships, patterns, events and behaviour that produce the challenge." The emphasis on research that helps to identify "potential leverage points from which to shift the systems" rather than propose a solution, was a refreshing challenge for students as they searched for both a big picture understanding of their identified and known problem, and collectively sought ideas for what might be missing that could positively impact change. What faculty found surprising, however, was that for the students, it became clear that the competition was neither here nor there. The students cared much less about the competition and much more about their relationships with each other. In this sense, collaboration was the winner and was used both as a tool to create and map their research, but also to create meaningful and lasting connections with each other. Students were more concerned about how they could maintain their friendships beyond the project than any consideration of becoming finalists in the competition. This was echoed through faculty and their continued interest in working together and recreating a similar project together in the future. Even despite the major difficulties of overcoming time zones from three parts of the world.

Reflective Learning Process and Authentic Engagement

One of the highlights of working together was the genuine feelings of connection expressed by both students and faculty. Relationships were central to shaping this connection, generating engagement, and allowing genuine collaboration to unfold. We began with a common purpose and understanding of collaboration as a shared process and actively worked to nurture our relationships through frequent communication, real-time exchanges, collective reflection, debriefing and a commitment and investment from all members. Reflection was a particularly important part of our process prior to and after each of our workshops; We reflected together on what we saw, heard, and experienced. This brought awareness of group dynamics to the learning process; identified what went well and led to collective strategies for addressing any perceived challenges or gaps that may have been observed.

Once established, relationships were a means of ensuring trust, vulnerability, and a readiness to allow authentic voices and engagement to come forward. Relationships meant that even when we experienced discomfort, we could still rely on and trust our team members to work through our discomfort. This relational aspect of collaboration was important in igniting motivation, meaning and purpose within us as individuals. Most importantly, this extends beyond us as individuals or a specific project to a greater sense of shared meaning and purpose. Also important, our engagements were light and lively and included a sense of fun and laughter, and this too is essential for building relationships.

And secondly, this project also brought to the forefront the fact that we need to always remember our human selves - we are connected to nature; even though we are virtual and using all sorts of technology, we are still embodied. We are living, breathing and flawed beings.

We have limitations, we need sleep, we feel stress. From here, we learn to respond with empathy, compassion, and respect. We learn together what we share in common and how we can support each other's differences.

Closing thoughts on unintended gifts

If we were to use the Map the System's evaluation framework and consider our GPA collaborative project, we conclude by considering "the identification of potential leverage points from which to shift the systems and ideas for what might be missing that could positively impact change". In this pandemic year, there were numerous moments when students and faculty felt the human bond of friendship as motivating above all other criteria. We identified cultural differences and challenges, and genuine boundaries for how we could work together. For example, one student noted that she refused to start a meeting earlier than 5 am, others refused to continue meeting beyond 9.30 pm and how these boundaries were debated reflected both our realities at home and our ability to communicate these via culturally appropriate communication. However, compassion for each other was one of those potential leverage points that helped keep this project on track. A second opportunity we noted was the development of online tools and communication techniques that have been necessary over the past year for successful online teaching. This was particularly visible to the New Zealand faculty, who had been able to rely on face-to-face teaching, due to the 2020 elimination of COVID-19 in their community early on. They noted the many tricks and tips practiced by faculty from North America and Europe and the comfort of students with online learning. These increased literacies can only enhance current efforts to collaborate and reflect some excellent practices that can be used beyond classroom situations. Related to these two, our third observation is related to our collective understanding that we are still embodied humans - and have a very different experience of – in this case, collaborative learning – depending on where we are on the planet. Our human limits relate to our bodies, our families, and our communities' needs and are real and affect our ability to work together. When understood through a systems thinking framework, we can consider ourselves and team members with empathy and respect.

In conclusion, while we all headed into this project with quite formal ideas of developing specific understandings of frameworks and competencies in learners and educators through the lens of polytechnics – institutions that are preparing students for entry into the world of work – it was through some of our informal relationships that we found the most valuable learning. Trust, kindness, and respect founded through actively nurturing our relationships online through this COIL project will potentially be our most valuable and long-lasting recollections. In this sense, our experiences are related to *learning to become* global learners, shaping our practices as we went along and experiencing compassion across vast geographical distances. While the generous and open-minded methods provided by the SDGs and Systems Thinking set the scene for our research and mapping together, we feel the friendships we forged (as four separate teams) made the most difference to the group work as a whole. Underlining the importance of remembering the interconnectedness of heads, hearts and hands when shaping the futures of education.

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