
RESEARCH ARTICLE

Collaborative Multinational Military Education: Arctic Simulation

David Last¹, Carsten F. Roennfeldt² and Brytan Mendes³

¹ Royal Military College of Canada, CA

² Norwegian Defence University College/Norwegian Military Academy, NO

³ McGill University, CA

Corresponding author: David Last (lastdav@gmail.com)

This article presents an on-line simulation exercise for cadets at military colleges in Canada, Norway, and the United States in 2019. The pilot project aspired to learn whether it is possible within a normal professional military educational program to gain cross-cultural and international relations competence by creating peer-to-peer contact between cadets on digital platforms. Working across language and cultural barriers in an international environment is a valuable professional skill, but military academies face constraints of regulation, cost, scheduling, and organizational culture which can preclude multinational simulations, however valuable these might be. This article describes the background research and preparations, method of execution, constraints on the conduct of the pilot project, considerations for future events, and advantages or learning opportunities identified in running the pilot. It concludes with suggestions for future military peer-to-peer simulations.

Keywords: Professional military education; experiential learning; problem-based learning; simulation; cross-cultural communication; international relations

Introduction

It is widely accepted that young adults benefit from international exposure, and many universities have international programs. Moreover, military leaders from many countries are likely to conduct their most challenging professional work in multinational environments.

However, military training schedules and budget restrictions combine to limit opportunities for cadets to have international exposure early in their careers. This was true even before the 2020 pandemic crisis.

To solve this dilemma, in 2019 military colleges in Canada, Norway, and the United States organized an on-line simulation exercise for their cadets. It aimed to answer the question, is it possible within a normal professional military educational program to gain cross-cultural and international relations competence by creating peer-to-peer contact between cadets on digital platforms? The teaching experiment was held as a low-key event involving cadet volunteers with a limited commitment of time, no cost, no travel, and no marks or performance review assigned to the activity. Nineteen cadets from Canada, Norway, and the United States participated in an online seminar-style simulation of international cooperation within the framework of the Arctic Council. Both faculty and cadets indicated that it was worthwhile and should be repeated, although areas for improvement were identified. The exercise was repeated in February 2020 under Professor Ian Parenteau of the Royal Military College, Saint-Jean.

This article describes the background research and preparations, method of execution, constraints on the conduct of the pilot project, considerations for future events, and advantages or learning opportunities identified in running the pilot. It concludes with suggestions for future military peer-to-peer simulations.

Background Research Prior to the Simulation

The gestation of the Arctic Simulation involved exploration of simulations and games, experiential learning, cross-cultural communication, pre-commissioning cadet exchange opportunities, practitioner research, and

the actual subject of the simulation—arctic cooperation. Space precludes a complete report, but some key references are included on each.

The Arctic Simulation may be compared to military simulations but there are important differences. In the armed forces, simulations are often framed as wargames. In his seminal work Peter Perla traces their origins back to Asian board games of 3000 BCE and describes their variants including sand tables, Kriegsspiel and computer-supported games (Perla 1990: 16, 31, 177; United Kingdom Ministry of Defence 2017). The Arctic Simulation adopted a form that may be compared to role-play simulation where teams of players are assigned the role of respective actors, often governments, interacting with other teams 'to maximize their goals and minimize their losses' (Perla 1990: 110). A major difference between the Arctic Simulation and such traditional military simulations is that the former seeks to engage theoretical knowledge from international relations courses to solve practical problems whereas the latter often draws on doctrines and personal experiences to test plans or gain warfighting competence in a safe-to-fail environment. In addition, the Arctic Simulation differed from more common computer-driven simulations. Cadets used free and open internet platforms to allow peer-to-peer communication across continents. The simulation could have been conducted without such platforms if time and financial resources had allowed players to be brought together in one location.

We should understand how the Arctic Simulation may develop more competent junior officers in order to justify even minimal time and resources expended. Experiential learning—understood as learning by reflecting on experiences—can help young officers to learn cross-cultural communication skills and to understand international relations. Military training is experience-based, and science and engineering programs include lab-based courses, but social sciences and humanities courses often fall back on traditional lectures and seminars with written evaluations, because these learning strategies require relatively few resources and give a sense of control over education and socialization. Yet, civilian universities supplement traditional didactic methods with simulations, understanding that students learn in different ways (Kolb 1985). Simulations can narrow the gap between education and work by spurring students to use academic competence to solve real-world problems. Simulations in seminar groups stimulate collaborative problem-solving and peer learning (Ruben 1999). In a study of experiential learning Kolb (1984) found that such interpersonal experiences are the major source of socially useful learning and development. In the more specific field of education about international relations, which the Arctic Simulation is designed to promote, studies conclude that simulations are superior to traditional lectures for students to understand, remember and apply theories and concepts (Newmann & Twigg 2000: 835; Simpson & Kausler 2009: 427). Approaches to experiential learning have evolved (Lewis & Williams 1994) and technology has taken experiential learning into the virtual world (Jarmon et al. 2009). NATO's Centre for Excellence on simulation has developed technology to use avatars in structured learning of soft skills, and this area is advancing rapidly (Trochowska 2018).

Designing the Arctic Simulation drew on the literature about use of simulations in teaching international relations. It was understood from the outset that professional development of junior officers in national military academies or defense universities will be different from general education for civilian students. Most of the scholarly literature on using simulations emerges from British and US civilian universities, and these don't necessarily accommodate the needs of pre-commission military leaders-in-training, especially schedule constraints. The Arctic Simulation drew on Model UN and Model NATO practices widely used in civilian and military universities (McIntosh 2001; Obendorf & Randerson 2013). It tasked cadets to role-play representatives of different governments but rather than playing with civilians from their own country, cadets interacted with peers of other nationalities, stimulating cross-cultural learning. The Arctic Simulation adapted the Model UN idea of dealing with real-world security problems at a political level, focusing more on how military and other national assets could cooperate in practice to achieve political ends.

Any new educational project is an invitation to practitioner research, but research in military academies raises operational and security concerns in addition to the usual questions about teaching and learning environments and impact on students (Campbell & Groundwater-Smith 2007; Anderson, Heer & Nihlen 1994/2007). The conduct and utility of the pilot simulation and its successors are the subject of ongoing research in Canada and Norway.

Research agendas

Research about education in a university falls in a grey zone, between research on the teaching techniques, and research on the students' learning; research on students is subject to more restrictions. Canadian Forces training development procedures (Canadian Forces Individual Training and Education System, CFITES) allow for standardized course evaluations and student feedback to support programme evaluation (J. Kam, personal communication, June 19, 2018) but these seldom reveal anything useful about actual learning

processes. To understand why and how students learn requires making student learning the subject of the research. The main concern of the Research Ethics Board (REB) was to avoid linking data, or quotes, to the names of individual participants:

'we do not believe that a formal REB application and review is necessary for the activity currently being proposed, BUT you should (1) avoid linking participant names and specific content in any presentation or summary report produced after the simulation exercise, (2) remove allusions to the REB in the letter of information because of the impression such a statement would leave with participants (i.e., that this is a research activity rather than a pedagogical development activity), and (3) please note that any future efforts that extend beyond refining the tool would likely be subject to REB review and the "data" derived from the current effort should not be considered research data for publication or presentation outside of the stated intention to improve the simulation tool (by you – your collaborators may seek REB approval from their home institutions if they have other intentions, such as the exploration of group dynamics suggested in a statement in your clarification email).' (S. Hill, personal communication, March 27, 2019)¹

Discussion amongst collaborators at Royal Military College (RMC) in Canada and other institutions raised questions about evaluation. Disconnecting names from output impedes evaluation. Should marks be assigned? Would students be evaluated only on quantity or also quality of participation? How would quality of participation be assessed? In the pilot study, no marks were assigned to any students. Quality and quantity of participation is a perennial question for any seminar's evaluation. In future iterations, we expect that some participating institutions might assign marks and others would not, depending on how the simulation fits in the curriculum.

Future simulations may involve a competitive element, e.g. meeting specific objectives for each team, either through cooperation, or possibly with manipulation, deception, or simulated use of coercion. This clearly takes the simulation into bilateral and multilateral relations outside the framework of the Arctic Council. We know that cadets are motivated by competition, but the way in which different forms of competition and 'competitive cooperation' contribute to experiential learning are not well understood. This knowledge is relevant for future military behavior in operations, but it would constitute research on student values, attitudes, and behavior as well as on pedagogy, and would therefore require ethics approval. Defence Research and Development agencies might use inter-institutional simulations to explore the dynamics of peer-to-peer conflict, competition, and cooperation across national boundaries, and the effectiveness of such simulations in preparing officers for future operations (A. Sokri, personal communication, March 12, 2019). This research agenda might be more usefully pursued through simulations involving mid-career staff college exercises rather than entry-level cadets.

Preparations for the simulation

Preparations for the simulation began with consultation through the Council members of ISMS and contacts at national military academies. Finding instructors and courses was the critical step. For future iterations, scheduling around activities that occur in different institutions at irregular intervals during the academic year will be the major challenge.

Consultation with educators in other military academies highlighted five characteristics that would help to make the simulation sustainable: it should be free, functional, flexible, fact-based, and fun. It must be free in order to have any chance of continuing over several years in perennially constrained environments. It must be functional—demonstrably related to the professional and academic learning objectives of cadets. It must be flexible in terms of scheduling and commitment. Some institutions have small classes or rely on a few cadet volunteers. Others want to involve larger classes. It should be fact-based to allow participants to simulate real-world information-gathering and learning about national institutions.

Traditional model NATO or model UN simulations are short-term and imagination-based; participants pretend to represent countries, which they study briefly for the simulation. A fact-based simulation allows students or cadets to represent organizations in their own country, to seek relevant information from real experts and to learn about organizations that they will actually encounter in their execution of tasks as commanders, staff officers, or administrators. Fact-based simulations can be closer to reality if they allow

¹ Correspondence from Professor Sarah Hill, 27 March 2019. Jonathan Doherty of McGill University and Abderrahmane Sokri of DRDC have broached the possibility of researching group dynamics and operational problem-solving through repeated simulations.

time for participants to gather information from their real-world environment. This also helps to establish professional contacts and develop essential staff skills early in a career. Finally, the simulation must be fun to attract cadet volunteers when classes cannot be assigned.

It was clear at the outset that although the Arctic Council nations and observers have comparable institutions for educating security professionals, they also vary in ways that must be accommodated if the simulation is to expand. Of the eight Arctic Council member states, five (* in **Table 1**) have military academies or national defence universities already linked through ISMS. Canada, Denmark, Finland, Norway, and Sweden were approached for the pilot.

Iceland, Russia and the US were also approached. Iceland does not have a military force or defence university, but there was some interest from the international office the University of Reykjavik. Iceland has taken over the Chairmanship of the Arctic Council for 2019–2020 and we are optimistic that Icelandic students will participate in October 2020. The oldest private military academy in the US, Norwich University, participated with army, navy, air force and marine cadets. Norwich is easier to engage than the larger service academies (West Point, US Air Force Academy, and Annapolis). It includes cadets of all uniformed services and the supporting Peace and War Centre. No response was received from the Military University of the Ministry of Defense in the Russian Federation. We thought this would be the most comparable to the other defence universities participating, but we would consider participation by other educational institutions. Informal contacts were opened with instructors of the Dalian Naval Academy of the Chinese People's Liberation Army (PLA) Navy.

Scale is an important dimension of the simulation and is reflected in the pilot. Larger countries like the US and Russia may have less opportunity for direct communication between students and national-level expert staff and may have more barriers to participation than smaller countries. Smaller countries also have more incentive to seek cooperative solutions because they are acutely aware of resource constraints. Involving large countries like Russia, the US, and China in a fact-based professional military simulation between educational institutions might have potentially useful track-two confidence building dimensions, but might also introduce more oversight, tension, competition, and possibly intelligence gathering into the simulation. An officer of the PLA's Naval Academy was involved in early discussions about the simulation, and it was clear that informal exploratory contacts would not produce a Chinese naval academy team, but that formal approaches would be too time-consuming to be productive. The costs and benefits of major-power participation will have to be carefully weighed in the future. A network of small countries and institutions will probably be easier to sustain.

In consultation, potential participants asked about the scripting of scenarios. A tightly scripted exercise would have established not only a list of incidents, but explicit expectations about responses and timelines, and prompts to elicit participant actions. Tightly scripted scenarios are appropriate when there are specific, common, learning objectives and the characteristics of the participants and the simulated situations are well-known (Shaw & Switky 2018). This was not the case, so loose scripting was appropriate. This meant that the scenarios were sketched in broad outlines, and responses were not prescribed or predicted. Scenarios are described below.

Table 1: Pool of Potential Participants for Arctic Council Scenarios.

8 Arctic Council Member states	Observer states	Indigenous Permanent Participant Organizations
<ul style="list-style-type: none"> • * Canada • * Kingdom of Denmark • * Finland • Iceland • * Norway • Russian Federation • * Sweden • United States of America 	<ul style="list-style-type: none"> • France • Germany • Italian Republic • Japan • Netherlands • People's Republic of China • Poland • Republic of India • Republic of Korea • Republic of Singapore • Spain • Switzerland • United Kingdom 	<ul style="list-style-type: none"> • Aleut International Association • Arctic Athabaskan Council • Gwich'in Council International • Inuit Circumpolar Council • Russian Association of Indigenous Peoples of the North • Saami Council

* Military academies already linked through ISMS.

Timing and duration were also important. Traditional Model NATO or Model UN simulations are limited to a few days to fit into schedules. An online multinational simulation can be conducted over a longer period to allow participants to collect information from real sources (e.g. national staff or subject experts) and respond in real time, simulating staff action. Sometimes they get to a situation quickly, and sometimes they don't because of other activities. Sometimes they get a response and sometimes they have to wait. Planning around other activities and understanding the rhythm of foreign staff action are important staff skills.

The platform for the simulation had to permit easy international communication. Many defence universities and military academies have firewalls and limited outside access, but most cadets are connected to civilian internet services. Social media like Facebook have advantages (Shaw 2016), but are increasingly commercialized, and some cadets are warned away from them for security reasons. Free web-based email (Gmail, Hotmail, Yahoo) avoids most firewall problems, and permits new accounts to be set up enable group access. One disadvantage of email-based simulation is that an extended asynchronous simulation may be harder for participants to compartmentalize. They can lose track of threads or miss emails in the press of other events in a busy cadet schedule. The pilot simulation used the team-based platform Slack (www.slack.com) with separate channels for each national team, the organizers, and social activities.

Faculty roles and scenarios were discussed well in advance (summer 2018 for a March 2019 simulation). A simulation can have different functions, with different emphasis, in each participating institution. Where it must fit specific learning objectives, such as in connection with an introductory international relations course, faculty advisors may take a strong directing role, integrating student activity into classroom objectives, perhaps in a specific week of classes. Faculty might discuss individual scenarios and national responses in class and link them to theories like Realism or Institutionalism. Where the simulation serves more general objectives for upper year students, the faculty advisor may be in the background, letting student leaders organize the online activities. In the first case, students might be evaluated on participation, while in the second case, they might complete written deliverables that mimic policy briefs, situation analysis, or press announcements. A third possibility is extra-curricular cadet participation. Not all institutions or programs include courses that accommodate an international simulation, but cadets in science or engineering programs of study might wish to participate in simulations that allow them (virtually) to escape the classroom and learn about the real world. In this situation, faculty advisors have important leadership, motivational, and guiding roles, particularly in explaining the potential and limitations of contact with real-world experts in the military and civilian worlds outside the academy. The current edition of the faculty guide is available from the authors.²

Scenarios were discussed as early as November 2017. The Arctic Council was chosen as a framework because it avoids military issues and focuses on cooperation to reach common objectives, which often involve military capabilities (for example, coast guard, search and rescue, and cooperation on pollution response). This theoretically permits track-two confidence-building between cadets and students of countries which might otherwise have reservations about common programs. Arctic Council members have agreed to several major policy documents, with implications for military planning and operations. The three themes selected as a starting point were intended to engage cadets outside their comfort zone and present opportunities for civil-military coordination, contemplation of national policies, interpretation of international policy documents, and response to both long-term and quick response issues. Each rested on a major policy paper or international agreement which required cadets or students to read and understand such texts. The scenarios included were:

- A call for national position papers and development of a common international position on meaningful engagement of indigenous peoples in the Arctic, based on reports from Arctic Council Secretariat (Arctic Council 2017).
- A reaction to an oil spill in arctic waters, based on the Pollution Response Agreement published by Arctic Council Secretariat (Agreement on Cooperation on Marine Oil Pollution Prevention 2013).
- A response to a downed aircraft, based on the Arctic Council Secretariat's Search and Rescue Agreement (Agreement on Cooperation on Aeronautical and Maritime search and Rescue in the Arctic 2011).

² http://www.davidmlast.net/Arctic_Exercise/Concept.html Links at the bottom of the page give access to supporting documentation.

Considered, but not included in the pilot project, were nuclear accidents (military submarines or civilian icebreakers), cruise ship accidents requiring management of large numbers of civilians,³ and explicit reference to boundary and territorial disputes. The last-mentioned is a subtext for coordinated international responses, in which one nation may lack the resources for a response which is demanded by sovereign responsibilities.

Cadet and student participants were recruited both through faculty advisors and directly. Most institutional teaching loads are determined in the spring for the following fall, but faculty can't commit to participation in a new activity until they can see how it will fit with their teaching objectives. This presented a challenge for a pilot project. The faculty guide and the scenario list were negotiated with class and institutional needs in mind, and the timing of the simulation was set to accommodate the winter term (January to April) class schedules of the participating institutions. One class dropped out, to be replaced by cadet volunteers, who were in turn replaced by another group of volunteers when the first group's workload made continued participation impossible. There were several efforts to specify the amount of time that participants would have to commit. This was variously described as 'up to 10 hours over ten days', (early in the planning process) to 'as little as three hours per student over a week'.

Conducting the Simulation

By November 2018 the scenario list and faculty guide were ready to distribute and were refined in cooperation with the faculty advisors at the three committed institutions: RMC Kingston, NDUC Oslo, and Norwich University, Vermont. At the same time the simulation details and supporting documentation were published online, and a final round of emails and phone-calls went to potential participants in Sweden, Denmark, Finland, Iceland, China and Russia.

Without eliciting new responses. The Slack platform #general and #arctic-simulation channels were established by 11 January 2019. Team channels were established after the individual participants on each national team had been identified, by 12 and 19 March.

As described in the final 'getting started' document sent to late-joining cadets, the simulation was conducted in four phases:

Phase 1 (Prepare): 6–13 March, cadets read into the background documentation and prepared their presentation explaining national policies, structures, and interpretation of the agreements. Preparation also involved seeking out additional sources of expertise to handle the scenarios. RMC participants consulted Canadian Ranger Group and a Search and Rescue expert at the Canadian Forces College.

Phase 2 (Present): 13–18 March/20 March, the briefs were posted by 19 March, and online channels were open for questions from other teams.

Phase 3 (Respond): Cadets had free play on the scenarios from 20–29 March, accommodating individual and institutional schedules:

- 19 March, scenario 1 (indigenous engagement) launched
- 23 March, scenario 2 (marine pollution response) launched
- 25 March, scenario 3 (arctic SAR) launched
- 29 March, wrap-up statements from teams.

Phase 4 (Reflect): 29 March–10 April, the wrap-up statements are 'in character' but the reflection phase steps back from the role-playing and asks, 'what did we learn about the real world, and how can we improve the experience for next time?'

The channels that were visible to all were: #arctic-simulation, #general, and #random. Restricted channels were set up for each team: #americanteam, #canadianteam, #norwegian team, and #supportteam. Overall, there were roughly twice as many inputs as student responses, but the student outputs included briefing decks and discussion notes. Total student engagement time, including reading and preparation time is estimated at slightly over three hours per student on average. Larger teams might not have altered this. It is difficult to tell whether those not active on Slack nevertheless contributed to collective effort. Activity on Slack (**Table 2**) clusters around the deliverables for each phase. The #random channel could be developed for more informal interaction, designed to enhance cross-cultural communication. This depends on cadet leadership but could be encouraged by faculty advisors.

³ During the simulation, the Norwegian cadets reported a real incident: Norwegian SAR assets scrambled to rescue 1300 passengers and crew from cruise ship Viking Sky off the coast of Norway <https://edition.cnn.com/2019/03/23/europe/norway-cruise-ship-evacuation/index.html?no-st=1557936115>.

Table 2: Use of Slack channels during simulation.

Channel	Status	To*	From	Comments
#general	open	19	14	This was intended to be the administration channel, but quickly became the main channel for conduct of the simulation as teams reported on it in character.
#arctic-simulation	open	22	5	This was intended to be the simulation channel, but became secondary when reports were posted on #general
#random	open	6	7	This is an automatic feature of Slack, "A place for non-work-related flimflam, faffing, hodge-podge or jibber-jabber you'd prefer to keep out of more focused work-related channels." (Slack)
#supportteam	limited	8	1	This provided scope for advisors to discuss the simulation in progress, without visibility to the players
#USteam	limited	11	1	The US team was least active, but scenarios were not ideal for their engagement, and the students used their own channels to coordinate
#canadianteam	limited	16	6	The Canadian team, with no on-site faculty advisor, was surprisingly active, meeting deadlines and contributing good quality materials.
#norwegianteam	limited	6	12	The Norwegian team was most active on its own channel, using it to communicate both internally, and with sim coordinators. Products were professional and thoughtful.

* Inputs or events from simulation organizers.

The timing and pacing of events were manageable given the schedule constraints of the participants. Late March is towards the end of the academic year for RMC and Norwich University, and cadets have essays and assignments due. Norwegian cadets were involved in a tactical phase, which forced them to act between scheduled events. An argument can be made for a longer timeline (three weeks rather than ten days, perhaps), to allow more time between each injection, and more variation in response times from each participating institution. This would have to be negotiated with participants before the beginning of Phase 1.

Constraints and Opportunities on the Pilot Project

Constraints included resources, external support, participating institutions, and rules. Anything that is worth doing costs money and takes time. Learning opportunities involving travel and blocks of dedicated time are expensive, and prone to budget cuts. The need for out-of-class experiential engagement, however, seems to be widely recognized amongst pre-commission military academies. The first constraint, then was to design the simulation to be free, while at the same time being fact-based, professionally relevant, fun, and flexible enough for multiple institutions to fit it into their program. Letting individual institutions shape their participation according to local circumstances and relying on the local knowledge of participants to set the conditions of the simulation permitted organizers to stay within these constraints.

External support takes time to accumulate but is necessary if the simulation is to be fact-based and relevant, simulating real events. Cadets had to seek expertise in the military and civilian community that would respond to real events. Organizers provided limited contact lists, with the caveat that outside experts might not respond. Despite the long gestation, cadet participants were involved part time for less than a month, and most had little opportunity to find and exploit outside informants, or even contact those whose information was provided.

This might change in future years, if faculty advisors in each country build up their own roster of friendly external experts. The opportunity would then arise for each country's participants to learn vicariously from experts abroad. This is attractive, but also has to fit within the learning objectives of assigned classes, or the time constraints of volunteer participants. Some countries might also have to manage security concerns about sharing information.

Arctic Council staff were contacted, and provided a disclaimer written into the simulation documents:

'Disclaimer: This simulation occurs within the framework of the Arctic Council and Arctic Council member states' policies, and draws on documentation made available to the public by the Arctic Council. The Arctic Council is not involved in any military activities or national security issues in the

Arctic. No aspect of the simulation, its scenarios, or the pedagogical activities in the participating institutions should be construed as representing the Arctic Council or its member states.'

Arctic Council staff were unable to participate or support the simulation because it occurred in the run-up to a change of Chairmanship between Finland and Iceland. This had the greatest impact on the first scenario—the effort to develop a common statement related to meaningful engagement of indigenous people—because the idea was to get feedback from Arctic Council experts.

Engagement of indigenous permanent participants was also limited. The Canadian Armed Forces has a connection through the Canadian Ranger program, and cadets were able to engage directly with a Ranger Group commanding officer, but connections between military academies and indigenous groups are not well developed.

Growth of the simulation, which should improve the learning experience, would eventually have to go beyond military academies. The pilot was limited to volunteer cadets in three countries. Expanding the number of participating institutions could increase learning opportunities, but might also increase perceived risk. The Arctic Council framework and the scenarios presented were explicitly cooperative, but even between close allies like Canada, the US, and Norway there is the potential for a sub-text of questioned sovereignty and competing interests. How would this play out with the addition of cadets from Russian and Chinese military academies? Would cadets from those institutions be able to operate as university students in uniform, or would the institutions take a more directive approach? Might North American and Scandinavian institutions respond pre-emptively by tightening supervision of the simulation? On the other hand, interacting with peers in the 'other camp' might be a particularly valuable learning opportunity, even if it fell short of being a confidence-building measure. It might be naïve to assume that cadets from Russia and China could interact freely with cadets from the West, but it might also be hubris to think that anyone would care! Each participating institution must navigate its own security concerns; some operate as universities with degrees of academic freedom, and some are more like military training units with chains of command and security restrictions. Often, these relationships are contested, and what works one year might be proscribed in a subsequent year.

Real-world players representing Indigenous Permanent Participating Organizations (**Table 1**) could support important learning about indigenous interests and values, but have been difficult to engage. Persistence and trust-building with individuals may pay off over time. Engaging faculty and students in civilian universities to represent other government agencies might also improve access to specialized knowledge.

Rules of play should be re-examined. The platform was set up with a common channel and individual national channels. The Slack platform permits person-to-person messages. In theory individuals or teams could pursue side-deals or attempt to play one group off against another. Devious competition routinely happens in model UN or model NATO simulations, but didn't happen in the pilot. This might have been influenced by the instructions to find cooperative solutions, but was probably constrained by having only three teams. Future simulations might allow more scope for competitive activity, and establishing rules for healthy competition might provide a better learning experience. Stating incompatible objectives for national teams should be considered for future scenarios.

Planning the simulation identified some 'monsters under the bed' or things that contributors thought could damage or derail the simulation. The militarized nuclear accident scenario can't be discussed within the Arctic Council framework, but could be introduced for side-play between several participating countries. Deciding who to tell and who to engage for help would be a useful exercise. The perceived risk of real-world foreign intelligence gathering, hostile recruitment, and hacking might shut the whole simulation down, or it could be introduced as a learning point and engage learners in other parts of the government or military establishment: cyber-security and counter-intelligence, for example. Introducing these elements is a balancing exercise between exposing the vulnerable and gullible, and hardening future operators. The interface between military and civilian, domestic and foreign institutions and individuals, would take some negotiation. The attempt itself could be a learning opportunity for young officers likely to be engaged in international cooperation and competition within a few years of graduating.

What We Learned from Conducting the Simulation

Two surveys of student learning experience followed the simulation—an anonymous one on SurveyMonkey open to all participants, and a separate one administered to the Norwegian participants by their instructor. Most cadets appear to have completed at least one of the anonymous surveys. Their results are combined here.

The majority of participants found the simulation more interesting or more motivating than a regular class. Overall, most found it worth the effort they put into it, and would like more opportunities to participate in similar events. The simulation resources provided (documents, links, online explanations) were generally adequate. Cadets agreed that they learned about national policies and the policies of other countries, national and international agreements, interpretation of official documents, and something about the Arctic and arctic problems.

Areas that could be improved included: clarity of expectations; opportunities to communicate verbally, and in writing; opportunities to interact with cadets in other countries. These deserve further explanation. Open-ended comments also provided useful feedback, putting these observations in context.

The loose structure was frustrating for some cadets. 'There should be a more organised introduction to the simulation to increase understanding for the individual participants'. 'More scenarios and a much stricter attitude on deadlines'. A clearer introduction is possible now that we have seen how the simulation works. One suggestion is to designate the national teams as a staff-level organization, rather than allowing them to identify themselves as heads of state and ministers. This would add to the realism of the simulation. Cadets would not have to pretend to be senior officials whose responsibilities and pressures they don't really understand; they could simulate real staff jobs in which they might find themselves soon, and ask advice from real officers or other government officials currently engaged in comparable work. An introduction might take the form of an edited video from the organizers, or a video-conference between the teams. The latter might spin off into a social exchange online.

Most of the interaction was in the form of short communiqués and slide presentations, and the total number of transmissions by cadets was modest (**Table 2**). It should be possible to organize more opportunities for verbal and written communication by changing the structure of the teams to include more functional and less hierarchical divisions. For example, a ten-person team might include two coordinators and four pairs of staff-function cells. It's important for each national team to organize itself, because figuring out how other countries operate is an important learning objective. The closer to reality, the better. An 'icebreaker' on the #random channel might encourage more willingness to communicate directly with cadets on other teams, using Skype or other free voice-over-internet services in order to clarify or resolve issues.

The quality of the cadet presentations and communiqués was good, but feedback could be improved by having experts as well as other teams respond to the presentations with questions. Future simulations should also include triggers for each team to search the work of other teams for deductions, and internal reports. These internal reports could be part of the after-simulation learning: what was really going on in each country as a result of the international interaction? This would add another layer to the phase 4, reflection dimension of the learning.

Potential for Future Simulations

Model UN, Model NATO, and crisis simulations are well established, and are opportunities regularly presented to cadets. They constitute good learning through imaginative role play, but do not typically engage cadets with foreign military professionals. The role-play aspects help distance cadets from potentially embarrassing situations; no-one expects that cadets playing North Korea (or most countries) in a Model UN are really thinking or communicating as officials of that country would. Despite fact-based research prior to a UN simulation, there is limited opportunity for real-world consultation, and little opportunity for real-world communication across language and cultural barriers.

Peer-to-peer online military academy simulations present opportunities that traditional simulations do not. Cadets in each country can reach out to their own national staffs and colleagues, rely on national position papers and unpublished literature in their own languages, and can struggle to communicate online with people in different countries, who have different understandings of the real world. Because the simulations are reality-based, there is an expectation that Norwegians are acting as Norwegians, Canadians as Canadians, and so on. Real connections and confidence building may be possible, and real risks may be explored in what should be a minimum-risk environment. Expanding the range of peer-to-peer simulations might reveal some of the 'monsters under the bed' to be real.

Future Arctic Simulation could benefit from increasing the scope to explore common policies and perceptions of specific issues like indigenous populations, climate change, and territorial sovereignty. In important ways, the Arctic Council nations constitute a security community (Buzan & Waever 2003) and the potential to improve mutual understanding and establish contacts early in the careers of military professionals might have broader benefits. This possibility suggests other simulations which might have both pedagogical and policy relevance.

Thinking broadly, we might imagine small states of the Mediterranean littoral cooperating on a simulation of maritime management issues, search and rescue, survival migration, pollution monitoring, smuggling, and other areas where coast guard and national defence intersect. The Hellenic Naval Academy, with a history of hosting international cadet conferences, or the Italian Naval Academy at Livorno might lead in coordinating such a simulation. Moving it outside a military venue, perhaps to an institution like the Mediterranean Institute at the University of Malta, or the University of Cyprus, might provide neutral ground for military participation by countries nominally not on good terms.

The Japanese National Defence Academy in Yokosuka hosts an International Symposium on Military Strategies annually in July, typically with participation of 15 to 20 military academies of Pacific Rim nations, but often extending beyond them to India, Pakistan, and Mongolia. In the past, the Symposium has addressed teaching strategy (2004), military technology (2007), crisis management (2008), operations other than war (2009), and strategic thinking (2010). Some of these topics have been floated for prior discussion at the ASEAN Regional Forum, and in some years there is consultation with other military academies prior to the topic being announced in the invitation. The long-standing and well-connected International Military Symposium situates Japan's National Defence Academy to coordinate a regional cadet simulation on issues of regional cooperation in the Pacific.

Other arenas in which the next generation of military leaders will need to understand each other better include central Asia, the Caucasus, and littoral states of the Indian Ocean. The common theme here is China's One Belt (land) and One Road (sea) initiative. Military academies in Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Iran, Iraq, and Turkey are making impressive advances, but inter-institutional cooperation may be a step too far. For these countries, workshops for faculty development in the use of simulations might be a first step to prepare the ground for useful simulations. The same might be true for countries on the maritime One Road route. Countries like Malaysia, Indonesia, Australia, India, and Kenya have the sophisticated military institutions for higher education that would allow them to develop and coordinate such a simulation.

In Africa, the regional peace and security architecture of the African Union could provide a framework for regional simulations with conflict management scenarios. There are several capacity-building organizations and networks that might contribute to enabling the simulations, and there are clear leaders within each region which might host or coordinate the collaboration (Last, Emelifeonwu & Osemwegie 2015).

A general theme runs through all these potential simulations. Enhancing the educational experience of individuals and cohorts of young officers can also help to identify tensions and may even be used to mitigate potential hostility, while exploring a repertoire of cooperative responses. There is no guarantee that this will happen, or that simulations will not be used to deceive and manipulate, but those possibilities also have their educational potential.

Research for Future Simulations

It remains to learn more about the nature and effects of collaborative simulations. Are we playing with fire? Research on teaching simulations in general is not controversial. Defence scientists can explore the flow of information during the game, the composition and activity of each team, the roles, descriptions and actions of players. More controversially, we can explore actions and strategies that are used or not used, and qualitative assessments of the results of each 'turn' in a seminar simulation. This will help us to explore the potential for introducing matrix or gaming elements to the simulation, and perhaps to explore the results and recommendations of the end of a game, although these approaches are more commonly applied to games and simulations with expert participants (A. Sokri, personal communication, March 12, 2019).

Research about specific learning objectives – patterns of international relations, understanding of theories and concepts – could plausibly be worked into the post-simulation evaluation, to improve the quality of materials and scenarios available to cadets.

Research on broader questions of social learning, or on the perceptions of conflict, competition, are more controversial. Based on the reactions of research ethics boards, it is possible that research on participant perceptions would not be approved if students were participating as part of a mandatory course. Getting permission from multiple countries' military academies with each exercising a veto is implausible. In the end, many questions may have to be addressed through speculation and continued experimentation, without hard-edged research to support the underlying assumptions or beliefs of the organizers, which might be dramatically different in different countries.

Conclusions

Our small-scale Arctic Simulation experiment in 2019 was a modest success, repeated in 2020. It might be mixed with a lot of imagination, hope, and wishful thinking to conceive a global network of peer-to-peer collaborative military education in which the next generation of military leaders could engage with emerging challenges to mitigate frictions and develop collaborative solutions, as nascent managers of violence.

Online multinational simulations for undergraduate military students can be free, fun, fact-based, and functionally relevant to future employment. Cadets can simulate staff teams drawing on access to real national resources. They can work with international counterparts on loosely scripted problem sets, over a period of several weeks or a semester either as part of a course or an extracurricular activity. Repeating events annually helps to build up awareness in outside collaborators. Stakeholders should receive reports of the learning involved and be offered the opportunity to shape the simulation in future years. Over time, practitioner research can improve the quality of the learning from simulations.

Smaller states have a greater the incentive to collaborate. The corollary, supported by the experience of many international conferences, is that the larger the state, and the more salient its global influence, the greater the likelihood of a realpolitik national interest approach to gaming and simulation. It is therefore probably to the developed middle-class states that we should look for leadership in collaborative multinational military education. This is a large pool of potential collaborators, military academies, and staff colleges. Organizations like the International Association of Military Academies (IAMA), ISMS, the ASEAN Regional Forum, and events like annual conferences of commandants in each region, the annual International Symposium of Military Strategies (Japan), and the biennial International Symposium on Military Academies (ISOMA) provide venues for developing cooperation on collaborative multinational military education.

As long as it doesn't cost any money, we have a lot of work to do!

Acknowledgements

Thanks are due to Fulbright Canada for a research term in 2016 at which this activity was first planned, the cooperation of the Norwich University Peace and War Centre, Rex Brynen at McGill University for his advice and hosting of the Connections North symposium on serious gaming, Whitney Lackenbauer for advising on the content and policy responses, and cadet and student volunteers. Naval Sub-Lieutenant Severn Moser, RCN, developed the first iteration of scenarios and background information for the simulations. Officer Cadet Hannah Hollander, President of the RMC International Affairs Association supported recruitment of participants and provided valuable comments. LtCol Benoit Mainville and LtCol Leighton James provided expert answers to the Canadian team. Jonathan Doherty, University de Montreal, suggested ideas for future research opportunities.

Competing Interests

The authors have no competing interests to declare.

References

- Agreement on Cooperation on Aeronautical and Maritime search and Rescue in the Arctic.** *Date of signing* May 12, 2011. Retrieved from June 17th, 2019, from <https://oaarchive.arctic-council.org/handle/11374/531>
- Agreement on Cooperation on Marine Oil Pollution Prevention.** *Date of signing* May 15, 2013. Retrieved from June 17th, 2019, from <https://oaarchive.arctic-council.org/handle/11374/529>
- Anderson, G. L., Heer, K. G., & Nihlen, A. S.** (1994/2007). *Studying your own school: An educator's guide to qualitative practitioner research*. Thousand Oaks, CA: Corwin Press. DOI: <https://doi.org/10.4135/9781483329574>
- Arctic Council.** (2017). *Meaningful engagement of indigenous peoples and communities in marine activities (MEMA)*. Part I report. Retrieved from June 17th, 2019, from <https://oaarchive.arctic-council.org/handle/11374/1930>
- Buzan, B., & Waever, O.** (2003). *Regions and power: The structure of international security*. Cambridge: Cambridge University Press. DOI: <https://doi.org/10.1017/CBO9780511491252>
- Campbell, A., & Groundwater-Smith, S.** (Eds.). (2007). *An ethical approach to practitioner research: Dealing with issues and dilemmas in action research*. London: Routledge. DOI: <https://doi.org/10.4324/9780203939277>

- Jarmon, L., Traphagan, T., Mayrath, M., & Trivedi, A.** (2009). Virtual world teaching, experiential learning, and assessment: An interdisciplinary communication course in Second Life. *Computers & Education*, 53(1), 169–182. DOI: <https://doi.org/10.1016/j.compedu.2009.01.010>
- Kolb, D. A.** (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice-Hall.
- Kolb, D. A.** (1985). *Learning style inventory: Self-scoring inventory and interpretation booklet*. Boston: McBer.
- Last, D., Emelifeonwu, D., & Osemwegie, L.** (2015). Security Education in Africa: Patterns and Prospects. *Scientia Militaria: South African Journal of Military Studies*, 43(1), 17–44. DOI: <https://doi.org/10.5787/43-1-1108>
- Lewis, L. H., & Williams, C. J.** (1994). Experiential learning: Past and present. *New Directions for Adult and Continuing Education*, 1994(62), 5–16. DOI: <https://doi.org/10.1002/ace.36719946203>
- McIntosh, D.** (2001). The uses and limits of model United Nations in international relations classroom. *International Studies Perspective*, 2(3), 269–280. DOI: <https://doi.org/10.1111/1528-3577.00057>
- Newmann, W. W., & Twigg, J. L.** (2000). Active engagement of the intro IR student: A simulation approach. *Political Science and Politics*, 33(4), 835–842. DOI: <https://doi.org/10.2307/420926>
- Obendorf, S., & Randerson, C.** (2013). Evaluating the model United Nations: Diplomatic simulation as assessed undergraduate coursework. *European Political Science*, 12(3), 350–364. DOI: <https://doi.org/10.1057/eps.2013.13>
- Perla, P. P.** (1990). *The art of wargaming: A guide for professionals and hobbyists*. Annapolis, Maryland: Naval Institute Press.
- Ruben, B. D.** (1999). Simulations, games, and experienced-based learning: The quest for a new paradigm for teaching and learning. *Simulation & Gaming*, 30(4), 498–505. DOI: <https://doi.org/10.1177/104687819903000409>
- Shaw, C. M.** (2016). Connecting students cross-nationally through Facebook. *Journal of Political Science Education*, 12(3), 353–368. DOI: <https://doi.org/10.1080/15512169.2015.1115741>
- Shaw, C. M., & Switky, B.** (2018). Designing and Using Simulations in the International Relations Classroom. *Journal of Political Science Education*, 14(4), 523–534. DOI: <https://doi.org/10.1080/15512169.2018.1433543>
- Simpson, A. W., & Kaussler, B.** (2009). IR teaching reloaded: Using films and simulation in the teaching of international relations. *International Studies Perspective*, 10(4), 413–427. DOI: <https://doi.org/10.1111/j.1528-3585.2009.00386.x>
- Trochowska, K.** (2018, October). Soft skills for security and defence: Cross-cultural competence and beyond. Paper presented at the *International Society of Military Sciences 10th Anniversary Conference*, Warsaw, Poland. Retrieved June 17th, 2019, from <https://www.isofms.org/resource/dm/164249440721411040.pdf?n=Trochowska%2CKamila.pdf&inline=yes>
- United Kingdom Ministry of Defence.** (2017). *Wargaming handbook*. Retrieved from June 17th, 2019, from <https://www.gov.uk/government/publications/defence-wargaming-handbook>

How to cite this article: Last, D., Roennfeldt, C. F., & Mendes, B. (2021). Collaborative Multinational Military Education: Arctic Simulation. *Scandinavian Journal of Military Studies*, 4(1), pp. 1–12. DOI: <https://doi.org/10.31374/sjms.41>

Submitted: 24 July 2019 **Accepted:** 05 May 2020 **Published:** 04 January 2021

Copyright: © 2021 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. See <http://creativecommons.org/licenses/by/4.0/>.