MARINE PEOPLE PARTNERSHIP

STUDY PAPER

A REVIEW OF CO-OPERATIVE EDUCATION PLACEMENTS WITHIN THE MARINE INDUSTRY

Study Report prepared by the

Institute for Ocean Research Enterprise (IORE)

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The Marine People Partnership (MPP) was formed with support from Irving Shipbuilding as part of their value proposition commitment to strengthen the Canadian marine industry under the National Shipbuilding Strategy. MPP has a national mandate to explore and address workforce development issues and to help develop and establish an innovative, sustainable and globally competitive marine industry. Through myriad studies, programs and initiatives, MPP works with a wide range of partners and organizations to help ensure that their work is relevant.

Dr. Sherry Scully and Anna Naylor's research and work activities are supported by this funding program.

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TABLE OF CONTENTS

INTRODUCTION

Nova Scotia has one of the largest concentrations of marine companies in the world. With more than 300 ocean-related companies and 60 innovative high-tech ocean companies[1], there exist many opportunities for co-operative (co-op) education placements across the marine sector. In this learning framework, students combine classroom study with hands-on experience which helps enhance skill development. Ocean technology companies require a high level of technical and specific competencies due to the nature of their work. Co-ops within this industry offer relevant learning that would not otherwise be provided in the classroom. As a result, students are better prepared to enter the workforce in their chosen field of study.

Although many companies interviewed for this report agree that the co-op education is a positive program that can provide essential experience, there were factors that prevent them from hiring a co-op student. The same companies also agreed that when they are actively hiring, potential employees that have co-op experience can be advantageous over other students who do not have that same type of experience.

Universities and colleges who provide co-op programs are always seeking employers to provide workplace experience and mentorship for their students. There is an identifiable gap in the companies that are ideologically supportive of co-op and its value but, due to barriers, do not participate. The objective of this report is to highlight those gaps and suggest recommendations and solutions to address these barriers.

The results from this report can provide valuable insights on how educational institutions can increase participation of employers and thus increase workplace opportunities for students. The focus on companies within the marine industry allows the author to focus on the specific barriers this group is experiencing and outline any external factors that contribute to their inability or reluctance to participate.

RATIONALE FOR WORK-INTEGRATED LEARNING

Co-op placements provide an opportunity for students to work with a host supervisor. These supervisors can have a major influence on workplace learning by managing the allocation of appropriate tasks and responsibilities. This helps facilitate learning, role modeling, and providing direct guidance, support, and feedback to the student[2]. The workplace provides the student with a paid opportunity to experience workplace practices, and begin to learn workplace norms, professional behaviour, language and

[1] NSBI. https://www.novascotiabusiness.com/business/oceans
[2] Flemming, Jenny. 2015. Exploring stakeholders' perspectives of the influences on student learning in cooperative education

particular techniques unique to that workplace.[3] It is important for the workplace and the institution to help guide the student towards understanding the integration between cooperative education and academic classes[4]. For example, students begin to demonstrate praxis, applying a theory learned in the classroom in a real-world setting. Further, the workplace can provide an enhancement of the student's theoretical base by demonstrating new techniques or models that increase the student's foundational knowledge.

The success of cooperative education is well documented, with both students and workplaces recognizing its value. A study completed by the Canadian Association for Co-operative Education (CAFCE) showed that—from a 2012 graduating class from Maritime University—85% of co-op graduates said that their program prepared them for the workforce compared to 64% of all other graduates[5]. 85% of co-op students reported that their program provided the skills needed for a particular job compared to 68% of all other graduates.[6] Workplaces prefer to hire graduates with experience. Those graduates who have successfully completed a co-op placement are shown to have better chances of obtaining interviews than their counterparts without a co-op placement or relevant work experience.

There are, however, challenges with co-ops, especially for smaller companies. These organizations list time commitment, financial overhead and administrative resources as barriers for their participation. Although there are provincial programs that support companies to hire a co-op student with a variety of wage subsidies, they do not address the other barriers listed above.

PURPOSE STATEMENT

The purpose of this report is to review co-op programs within the marine industry. Where many co-op programs are well established within the institutions that provide them, a key to its success is their partnerships with employers. Nova Scotia has a proportionally high concentration of marine related companies, the majority of which are small to medium enterprises (SMEs). The Marine People Partnership, through this study, endeavours to explore whether the current co-op model is the most effective for the marine industry. This report summarizes a series of one-on-one interviews where the author explored the gaps and challenges that co-op employers currently experience and seeks to discover and unveil potential opportunities. To determine how the organization's size impacts the success of co-op placements, the author obtained feedback from subjects from organizations of varying sizes. Finally, the author provides recommendations for moving forward and suggestions for changes that would ensure that the marine industry is the most involved that it can be.

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[3] Eames and Cates. 2011. Theories of learning in cooperative and work-integrated education. In R. K. Coll & K. E. Zegwaard (Eds.), International handbook for cooperative and work-integrated education: International perspectives of theory, research and practice

[4] Zegwaard, Karsten E., Coll, Richard K. 2011. Using cooperative education and work-integrated education to provide career clarification

[5. 5] MPHEC 2014 survey of Class of 2012 Maritime University Graduates. The survey was conducted in fall of 2014, two years after completion of the first degree.

For this study, the author adopted the definition co-op as defined by the Canadian Association for Cooperative Education. A co-op is a program which alternates periods of academic study with periods of work experience in appropriate fields of business industry, government social services and the professions in accordance with various criteria. Co-ops differ from work placements as they are a requirement for a student to graduate and must be comprised of at least 30% of a total education program.[7]

METHODOLOGY

An interview protocol was developed in October 2017 that outlines a key set of questions and lines of inquiry and requests for interviews were sent out through marine contacts, and members of the Ocean Technology Council of Nova Scotia (an industry association). Interviews were designed to be conducted in a 30-minute time period. All individuals who were interviewed understood how their information would be protected and kept anonymous.

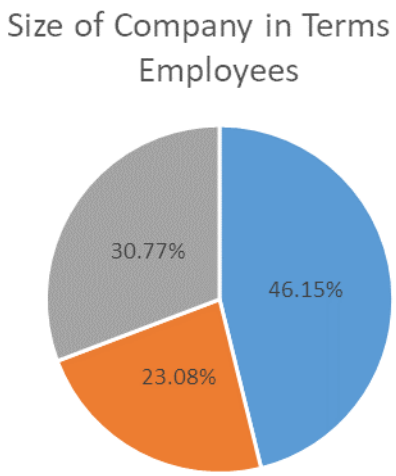
Interviews were conducted with any organization who self-identified as marine-related. This includes any organization:

- working in the marine industry
- working for the marine industry
- providing materials to the marine industry
- consults within the marine industry

A wide range of organizations within the private sector were interviewed, including consulting companies, service providers and ocean technology organizations. All interviews and answers were secured and only available to the principal investigator. All working data was stored on secure laptops, and no data was saved on any online storage platform. The responses were coded, and keywords highlighted. The data for each question was compared and reviewed. Key results are shown in a graph below with a summary provided for each.

[7] Co-Operative Education and Work-Integrated Learning Canada. 2018. Co-operative Education Definition. https://www.cewilcanada.ca/coop-defined.html

DATA ANALYSIS AND DISCUSSION



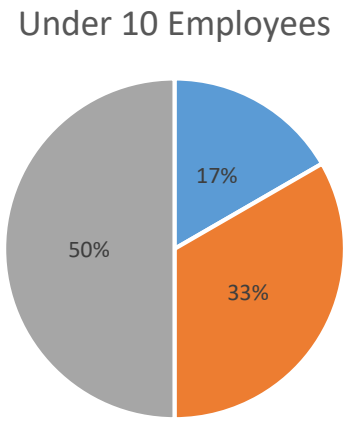
Graph 1: Breakdown of represented companies

All companies interviewed were categorized and divided into three different categories: Under 10 employees, 15-30 employees and 50+ employees. The breakdown is represented in Graph 1.

In some instances, results were broken by categories to emphasize the varied answers and to be better able to compare and contrast the results.

How many Co-ops do you usually have each year?

For this question, results were broken out into two distinct categories (as referenced in Graph 2 and 3) as there were significant differences in the results. The first graph reports the question results from organizations who identified as having less than 10 employees. The second graph reports the combined question results from organizations who identified as having 15-20 employees and organizations with 50+ employees.

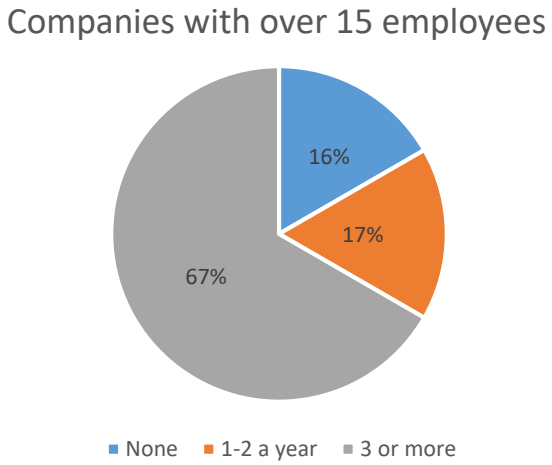


Graph 2: Frequency of Co-ops for Companies who identify as less than 10 employees

Most of the companies interviewed with less than 10 employees stated that they have had either only one co-op and did not repeat, have never had a co-op, or have only used international students. Only one organization stated that they participate within the co-op program on a regular basis. The barriers of these smaller companies not participating within the co-op program is multi-faceted and discussed below graph 3.

Companies with over 15 employees: Except for one organization who stated that they do not participate in the co-op program, all the other organization participate on a regular basis, with multiple a year, and in some cases, multiple students during one term.

Unlike the smaller companies who stated that funding plays a key role in determining participation within the co-op program, the majority of the larger companies stated that although they apply for funding each term, it does not determine if they hire a co-op or not.



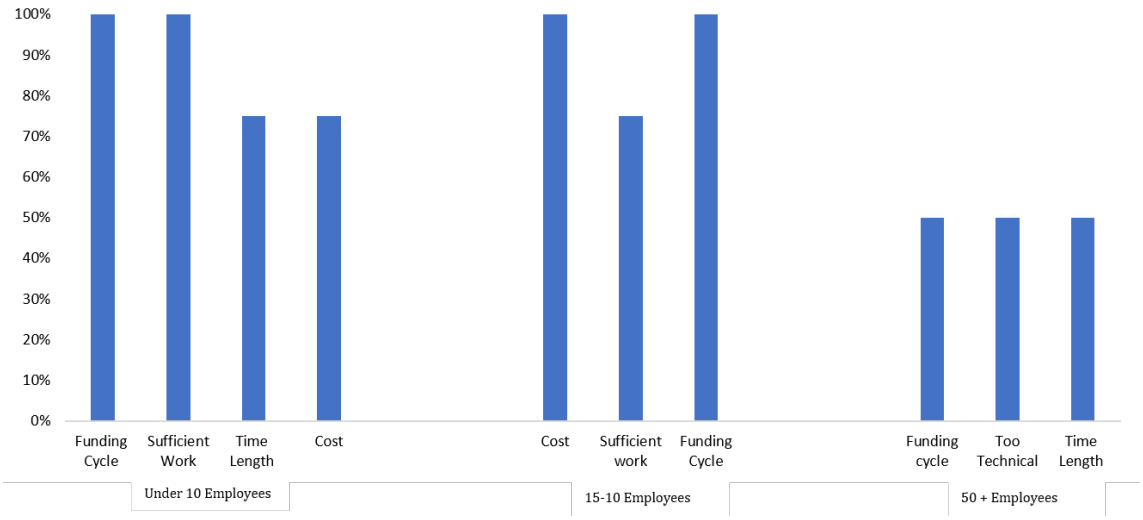
Graph 3: Frequency of Co-ops for companies who identify with 15-20 employees or 50+ employees

The data from this question demonstrates that the smaller marine companies in Nova Scotia(NS) are not currently supporting co-ops students to the same rate as larger companies. This finding is consistent with other reports from different provinces such as British Colombia. A 2016 TechTalent BC report noted that small tech companies hire students for co-ops less frequently than large companies, in part due to the time and resources required to train a co-op participant for what is perceives as only a short duration."[8]

NS companies with less than 10 employees said that their two biggest barriers to hire co-op students are 1) Funding and 2) providing sufficient work. Other reasons include that the work required is too technical for a university level student, or that there is no mentor within their organization for the area of work needed (such as marketing, public relations, etc). These challenges are discussed further in the next section.

[8] 2016 TechTalentBC Report

From an employer perspective, what do you find the most challenging component(s) of a co-op to be? Why do you think is it so challenging?



Graph 4: Top answers for types of Challenges for the three categories of companies

The smaller (less than 10 employees) companies state that funding performs a fundamental role in determining if their organization will hire a co-op student. The largest issue is that funding cycles are often out of alignment with hiring cycles. Many co-op programs for universities have at least two rounds of hiring and many of the smaller organizations completely miss out on the first round of hires, as they have not yet received notice of funding of approval (even when they have submitted well before the deadline). The second run of hiring is a bit later, but even then, sometimes companies are waiting to the very last possible day to notify universities of their choices because they are waiting to receive funding approval. This delay commonly results in the loss of their preferred candidate as they have accepted positions with other organizations. In other cases, smaller companies have not received funding confirmation and therefore cannot afford the risk to hire. Sometimes, they find out they have funding once it is too late to find an appropriate and competent student, and report that this is particularly frustrating.

This is in contrast with the larger organizations, who all but 1, stated that—while they apply for funding each term—they are not dependant on funding to hire a co-op student. Most of these larger organizations have multiple co-op students each year and will host multiple students in each term (4 months). Larger organizations are able to absorb the financial risk and increased administrative burden. Most comment that the co-op program also provides them an opportunity for a low-risk way to trial potential employees.

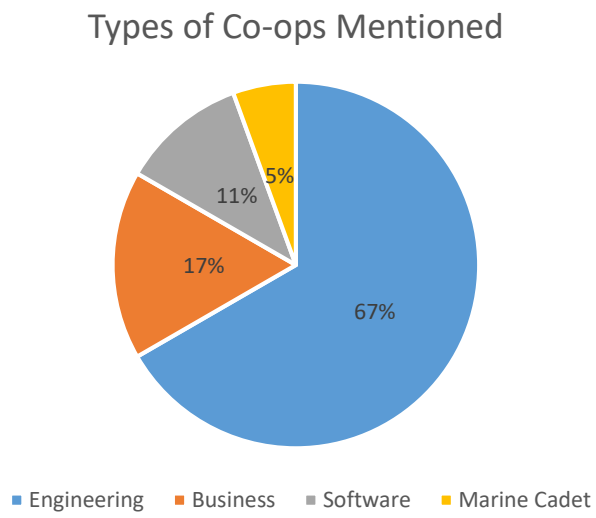
The 2nd major factor serving as a barrier to smaller organizations participating in the co-op program was their concern of being able to plan far enough in advance to provide enough work for the 4 months. Currently, co-op student interviews take place in the term before the co-op placement begins, and

posting the job requires a job description. It can be difficult to know the specific activities or projects that the student would be working on that far in advance.

Smaller organizations sometimes operate on billable hours; and as such, can't afford the loss of billable time that is required to provide mentoring, training, and administrative requirements related to co-op. All of the organizations interviewed stated that while there may be one identified supervisor, students are usually mentored by multiple people, depending on the project and who is currently available. As the co-op placement is designed for the student to gain work experience in their chosen area of study, organizations are concerned with providing that for the duration of the placement. Larger organizations are more often capable of running multiple small projects and thus are better able to meet this requirement.

What Programs are your co-op students coming from?

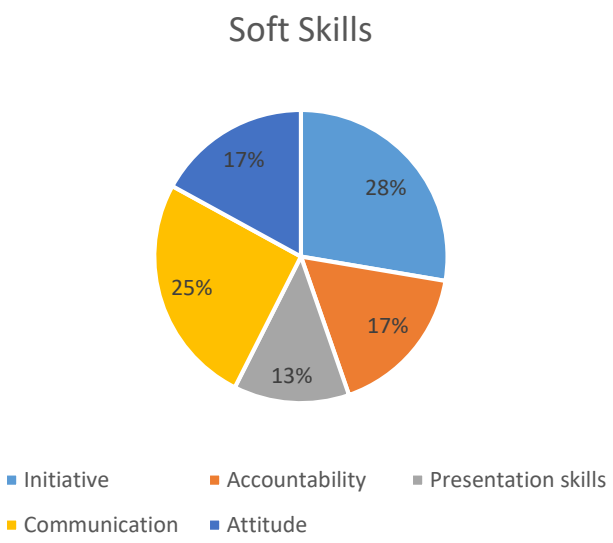
The majority of the co-op students were in engineering. Others were in computer science and business. This mainly reflects that some of the major funding for co-op students are for STEM related careers, and also due to the fact that many of the organizations are ocean tech, and thus highly technical. The technical element to these organizations is an important factor and can even present as a barrier. The organizations suggested that students with more experience were more favourable. Whereas a mechanical, electrical or software engineering background is helpful, the upfront training is quite extensive, and the materials that students are working with is relatively expensive. This poses an increased risk for companies when hiring co-op students in terms of assets, but as well as the time required for training before a supervisor is confident that the student can work independently.



Graph 5: Programs that the Co-op students are originating from

It was noted that most of these companies would be open to other types of students, such as marketing, public relations, business admin, and business development. However, they generally did not choose those programs as they felt they could not properly mentor a student in these areas as they may not have anyone in house with that background. As well, students coming from these programs may not all have a co-op requirement and thus may not even be aware of informal work integrated learning opportunities and would also not be eligible for funding.

Are there particular skills (hard or soft) that you would say are beneficial for students to have before they commence a co-op placement with your company?



Graph 6: Soft Skills that were mentioned between all three company categories

Soft skills that students develop in university are equally important as technical skills and experience. The interviewer asked questions about the role of soft skills in hiring students. It was noted that for most companies, good marks and appropriate experience are key to getting the interview, but soft skills and what the student demonstrates in the interviews are just as important. 100 per cent of employers listed communication, leadership, accountability and attitude as highly important. Employers want to ensure that the co-op student is a good cultural fit within the organization. This is especially important in smaller companies, where the student would be working more directly with the other employees. It was referenced that employers evaluate soft skills during interviews to determine a student's propensity for training, acquiring new skills, and overall learning. Employers value an individual who is willing to learn, to make mistakes, and receive constructive criticism. Co-op exposes these students to life situations that are much more complex than could ever be covered in a classroom[9].

The larger companies noted that if these individuals work well, and the opportunity arises, they are usually open to hiring their co-op students once they finish school. Some of these companies have even offered positions to students before their school year is complete. For many of the smaller companies however, there is simply not a need to expand their teams quickly enough to absorb even the most successful co-op student. There is anecdotal evidence that some companies will steer away from providing co-ops because they perceive it as an implied promise of eventual employment that they know they would be unlikely to be able to offer.

Employers interviewed understood that they would also be providing the opportunity for students to enhance and acquire new practical skill in their field. These include: working within teams, handling multiple demands, taking direction from multiple leaders, accountability for their work, and deadlines.

[9] Cedercreutz Kettil, Cates, Cheryl. 2010. Cooperative Education at the University of Cincinnati: A Strategic Asset in Evolution

They also noted the students' improving life skills such as managing personal finances, adapting to new situations, working with different personalities, anticipating needs, and networking. For a student to be globally competitive, possessing strong soft skills will be key, and co-op placements offer a place for maximum industry to student engagement. New management techniques are emerging which depend, particularly, on a graduate workforce having strong skills and personal qualities to work in environments that are constantly changing.[10]

RECOMMENDATIONS

1. Address Funding Cycle Barriers for Small and Medium Organizations

This study highlighted specific barriers for companies to participate in the co-op program, the most prominent being the funding cycle, especially for smaller companies. Co-op funding is primarily provided by the Nova Scotia Department of Labour and Advance Education (LAE) therefore the first recommendation is to provide this feedback in hopes of consideration. For small and medium marine organizations, funding dates need to better align with the hiring dates of co-op students within the universities. If organizations knew about their funding approvals in advance (or even for multiple funding periods in advance) they would be better able to prepare for co-op students and start the hiring process earlier. Having funding in place for students would help mitigate the risk for smaller companies, and thus it is expected that they would be more likely to hire.

2. Structure work placements differently

a. **Create a part-time co-op option over a longer term**
   Many organizations stated their concerns about providing enough substantial work over a full time four-month period. Smaller employers especially struggle with finding appropriate work that benefits both the student, but also themselves. When potential solutions were discussed with the organizations interviewed, there were a couple that received positive feedback. Currently the co-op model is structured over four or eight months full-time. Many organizations, particularly the smaller in size, agreed that they would be open a longer term (8 -12 month) part-time term. This means that their financial commitment would be the same, but the time that the student is with the organization is longer and their time on projects maximized. It would also lengthen the problematic funding cycle timelines, inserting more predictability and planning into the process. A student could then be part of a project for a longer term and further be able to build experience while integrating the workplace with their class-room learning.

b. **Larger organization have a cohort of students that are contracted to small organizations on a by project basis**
   A larger organization with the ability to absorb the administrative costs of having multiple students would hire a cohort of students with various backgrounds. The cohort would be provided with base training around workplace practices and then they would be deployed to

[10] McGinn. John. 1999. Cooperative Education the University of Limerick Perspective

smaller companies who only had a short term need for a student. In this way, the smaller organizations could have multiple students within four months and could also have students with a variety of diverse backgrounds that they would not normally be able to hire (such as marketing, business management, business development, public relations, etc). These students could also be deployed as interdisciplinary collaborative teams who tackle broad but short-term challenges or projects within participating companies. The mentorship for those positions could come from the larger organization who oversees the entire cohort of co-op students.

There are challenges around these two potential solutions mentioned above such as funding requirements with the provincial government and the current program schedule for students at universities. The most popular funding program that is used in Nova Scotia would currently not support this type of program as currently designed. There are other funding opportunities, such as the federal Student Work Integrated Learning program that could be applied to this type of model, however, students will still need to be able to work part-time for 8-12 months while also successfully completing their classes. This presents a scheduling challenge to post secondary institutions that is daunting but not inconceivable.

CONCLUSION

As the current model affects the smaller companies most, and as most of the marine business in Nova Scotia are SMEs, there needs to be innovative ways to be able address their needs and increase student engagement. There needs to be a focus on elevating the visibility of the marine industry and associated lesser known sectors and working with co-op offices to ensure that the benefits of working for smaller companies or start-ups are emphasized with students for the entrepreneurial learning that they will gain. This is starting to be addressed with organizations like The Halifax Partnership who have already begun new ways of connecting students with organizations outside of the traditional co-op model.

Overall, there is a consensus that co-ops are beneficial for students and can be an integral part in the students learning pathway. The continuous enhancement of soft skills is important, and students have the opportunity to improve and acquire new skills throughout their co-op term. The largest challenge mentioned by companies was the mis alignment of the funding cycle with the hiring cycle. If fixed, this will increase participation of the smaller companies in the marine industry, there by raising the visibility of the sector and creating more opportunities for students.