FINAL REPORT

ADVANCED INCUBATOR MODEL FOR AEROSPACE AND AVIATION

REAL SERVICES CANADA

Presented To Carthy Foundation

November 2023

AIM-AA

Helping Build The Future Workforce

AIR CADET LEAGUE OF CANADA
LIGUE DES CADETS DE L'AIR DU CANADA

RECOGNITION

This report was prepared by Scott Lawson, Project Manager for the full AIM-AA initiative.

Primary recognition goes to the Air Cadet League of Canada for their support of the concept, application and project implementation. Thank you to Pierre Forgues, Executive Director, the ACL staff and all members of the Board.

Recognition and appreciation goes to the members of the Board for REAL Services Canada who took on the operational management of the project part way through the period as per the application and subsequent MOU with the Air Cadet League of Canada.

Much appreciation and recognition is extended to the companies who provided direct financial sponsorship to allow the project to proceed and meet its expectations. Heartfelt ‘thank you’ is extended to the following supporters: Jazz Aviation, Intact Insurance, Economical Mutual Insurance, and Jackman Foundation.

Foremost, the author and all parties involved and noted above extend their sincere appreciation to the Carthy Foundation for their full and unequivocal support to this significant initiative, through the unprecedented challenges faced along the way. Special recognition to Neale Carbert and Karen Wilkinson for their ongoing guidance, support and valued engagement, and to Shelley Uytterhagen and the Board of Directors for supporting and funding the vision and goals of this project to assist our current and future young people and those involved in the aviation and aerospace sector in Canada.

Lastly, there are hundreds of Canadian youth, numerous aviation and aerospace companies and many individuals, entrepreneurs and service providers who were involved in the direct training, education, certification, career development and support across Canada. They participated at many levels through offering their expertise, resources, funds, support, time and passion to help each and every initiative be successful and mutually beneficial to all parties involved. Without all of them, this project would not have been possible.

CHALLENGES & IMPACTS

A review of the environmental conditions encountered

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PROJECT IMPACTS

Within the first year of operations, responses to the worldwide pandemic took control of many aspects of society and the economy. It was, clearly, an unprecedented time with unknown short and long-term impacts across all aspects of Canada and most of the world.

This situation was the single, largest impact on the project, for many reasons and in many aspects. It required an entire revisioning and readjustment to the all areas of the program – current projects and plans, budgets, future projects and future options and opportunities for AIM-AA. Importantly, the impacts were cumulative & exponential across many key situations.

The project wishes to express sincere gratitude to the funders for the flexible in supporting and empowering an almost complete modification and recalibration of the project objectives and operational capabilities while being faced with a true unknown future or clear identification of what lied ahead.

The following is meant to capture the key essence of the impacts from this event with a purpose of underscoring the reasons that the types, sizes, locations and models that were envisioned for youth and industry and education and community interactions were severely altered. Results envisioned in terms of scope and breadth of projects were no longer possible, and new streams, concepts and ideas across all fronts was required.

- ***Education System***

One of the critical elements of the project was to engage and interact with school boards and individual high schools throughout all potential provinces for purposes of providing this age group with aviation-based training, education, career development and some certification opportunities.

A key element of AIM-AA was built on the known importance of exposing young people to the range and types of occupations within the sector. This focus is also a catalyst for industry to reach further down in youth age groups to begin experiential learning that helps youth, and ultimately any given sector, to gain the awareness, interest, motivation and some direction on the future opportunities for employment. This is especially true for high school aged youth given that some aviation occupations, and access to post-secondary education within an occupation, requires some specific prerequisite courses.

The following identified the key impact issues facing AIM-AA to meet some of its key objectives:

1. Schools were essentially closed across Canada for most of 2 school years. Students were limited to online instruction through the internal systems of their particular board and the Education ministry regulations.

2. Given this, students were not engaged in regular in-class sessions, extra-curricular activities, and key engagements for most in credit and experience-based programs such as cooperative education and apprenticeships. The ‘bring your child to work’ or one-day excursion option was another example of the implications to involvement with any employer or workplace. Hence, no new ‘workplace’ activities were possible.

3. Schools adopted policies and practices that curbed external parties from engaging within most schools. Programs that would have various external parties on-site for numerous purposes including special demonstrations, displays and presentation, were also terminated. The ability for specialized training days under AIM-AA – internal to the school or through supervised visits outside of the school – were not possible.

4. Our experience showed that most school boards and schools were not adequately prepared to deal with the new and

fully comprehensive switch in programming from the entire curriculum and resources of an in-person system to a 'new' online digital learning platform that was required. Education systems scrambled to develop and prepare the mandated educational materials across all subjects and grades while simultaneously ramping up in a hugely significant manner with technology and the associated training for both faculty and students.

5. The noted technological challenges, limitations and even restrictions that disallowed third parties from engaging with students in most all capacities enhanced and increased the project challenges and impacts. With full limitations for in-person programs through the school system, the primary option became online opportunities for AIM-AA for the foreseeable future – when it occurred – and perhaps the full project. The school systems, though, for all of the mentioned issues and even more, were not able to accommodate such interactions, resulting in a stall or full stop for some of the programming being planned with and for high school aged youth across Canada.

Overall, the opportunities to utilize the education and school board structures and bodies was severely limited. For most of the time, simply providing a project 'flyer' was the limit of engagement.

Towards the end of the project the opportunity presented itself to become engaged again with some targeted options and existing connections. Due to time of year and the amount of 'lead' time that schools require to engage in new, extracurricular activities for students became the limiting factor. We were, however, able to conduct one project with schools so this was a positive for the project.

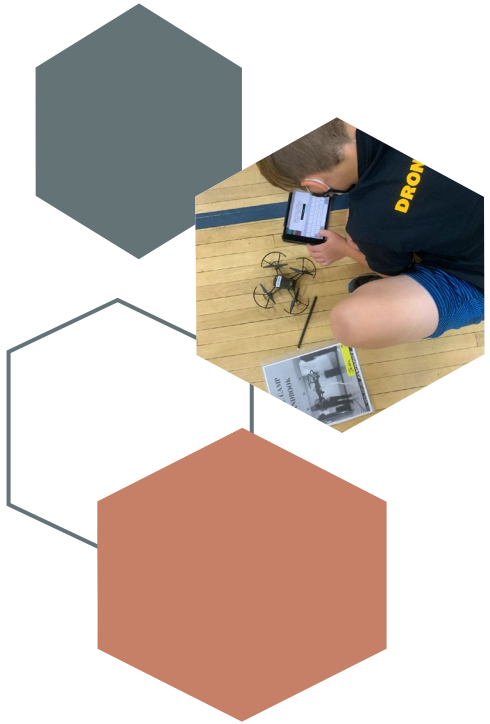
➢ ***Industry Sector***

The aviation and aerospace sector companies were the catalyst for the design and development of the AIM-AA initiative and application. Their involvement spanned several key facets of the project and involved some of the following key roles:

- leading AIM projects
- holding projects at a corporate work location
- committing resources of staff, facilities, expertise, and funds accordingly
- financial sponsorship and donations
- members of project committees
- members for AIM-AA incubator body
- participants in planning surveys and needs identification

While not every key role was fully or equally impacted by the situation, nor every employee in the same manner, it would not be an understatement that for the most part the engagement of aviation and aerospace companies in AIM-AA were unable to fulfill most roles and, where possible, were only able to participate in a limited capacity.

realized significant changes in their operational capacity,

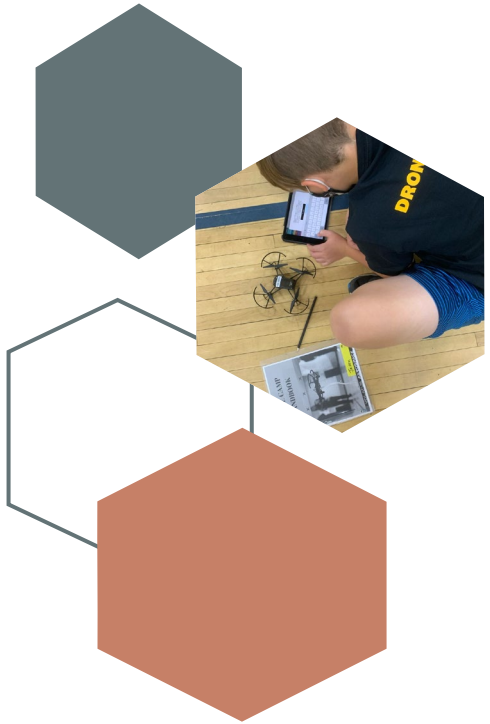


The following outlines some of the primary impacts to the project due to the pandemic situation arising as it related to the small and large companies and involved in aviation and aerospace across Canada.

1. While the overall economic impact that the pandemic had on any given company is still unknown, many of the aviation partners and contacts that were engaged by AIM-AA both in the service and product areas. All aspects of business, it seemed, were at the least on hold ‘temporarily’ as many were unsure of how the situation would impact them in the short, medium and long term. Flights weren’t occurring, manufacturing production was severely cut, services were not needed and cut, staffing loads were reduced and layoffs occurred. Changes to regulations impacted many companies, from the manner in which they could or could not operate, to new supplies, equipment or protocols that needed to be established and often at increased costs and time, further impacting conditions of revenue, servicing, production.
2. A significant impact became the restrictions and reduction of staff at the workplace. This impacted the project in many ways as there were limitations to the available human resources who could take on any special projects. Even amongst the full spectrum of staff working, there were significant changes to working conditions for those who were able to carry on duties ‘online’ as opposed to at place of work. were also impacted.

For some of the servicing, production or manufacturing companies, there was often changes to the number of employees allowed on premise at a given time, then to other aspects such as reductions in shifts and, overall, reductions in staffing as contracts and workloads

3. Financing became a significant issue for many companies due to the changing environment and, for many, reductions and cutbacks to their core business operations. This placed limitations on funds that many companies would normally apply to such projects as AIM-AA and many other workforce development, special events and/or HR recruiting type initiatives. AIM-AA certainly was not the only project of it’s type that was impacted as many others experienced significant funding reductions or complete elimination of programs. Without naming the company, we are fully aware of the complete withdrawal of hundreds of thousands of dollars it invests every year toward a range of training, recruiting, education and ‘youth’ related sponsorships for their company and the sector. This ‘across the board’ type of divestment in non-operational of business specific activities was pronounced in the early stages of the pandemic. In fact, there were some companies in the sector who dissolved their operations due to a sort of domino effect – lack of customers or students due to lack of placements and demand leading to layoffs of their instructing and teaching staff leading to limitations of revenue to cover business expenses and then to the final closing decision.

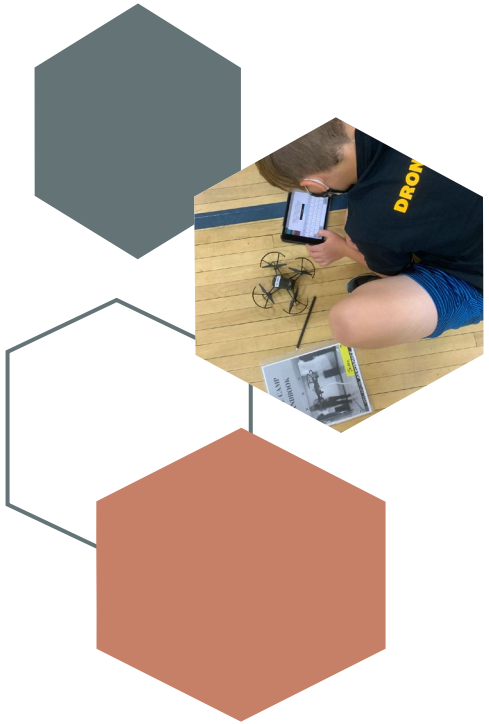


NGO's and Charity Partners

There are a number of organizations across Canada that have a focus on aviation and aerospace career and training elements that would be non profit or charity designated. Some focus on targeting demographic populations for their programs – women, indigenous groups – while others target a broad age range and a few would focus primarily on the youth age groups.

AIM-AA had established some potential pilot projects at the early development phases and, as well, focused on some agencies

1. Many of the agencies faced the same issues as everyone, particularly schools and trainers. These agencies offered classroom based training and services and also some employer-based orientation and hands-on learning. The restrictions put in place impacted the numbers of individuals they could serve and their ability to access company facilities due to the pandemic policies or regulations put in place by most industries.
2. Most all of the agencies were challenged in being able to transition their services and programs to some type of virtual environment. For many it was not possible due to the type of programs offered. For most, the cost to mount a complete conversion was beyond budget options and many sought grants to be able to put new virtual options in place. Some have been successful for parts of their operations, but the time lag was significant and was not able to be integrated to the AIM-AA timelines.
3. Due to the challenges posed to many of these organizations from a financial perspective, a number of them had to significantly reduce their staff complement or the amount of time available by staff for programs and services. Loss of revenue stemmed from drops in fee for services offered by government or social service sources, drops in grant funds due to changes to the program or inability to deliver contracted services, limited options to increase fundraising due to staff and program limits. Hence, it became a significant challenge to be able to firmly plan any AIM projects with most of the agencies in this sector as they had to basically stall any new initiatives while trying to maintain and sustain their existing ones as best as possible in a unprecedented environment.
4. Learners and students. As noted, there was impact across Canada for every environment where 'in-person' classes occurred for various purposes. The non-profits/charities in this sector were equally impacted and had to make significant adjustments, often without the resources that may have been available to school boards via provincial governments. While there was, and is, a 'plethora' of funding sources that are used by this sector for education, career development and training programs and services, given that many of them are tied to an individual, or tied to a target group to deliver a 'course', many providers in this sector were challenged to be able to maintain existing student/participant levels when in-person engagement was restricted.



Again, as noted, some were able to transition to a portion of their programs moving to virtual environment, but a secondary impact for some students was access to the technology, equipment or internet. Many of these students rely on the resources of the agencies involved to participate, and that includes computers, printers, labs, and other technical and technological amenities.

Hence, access to students and learners for AIM through these agencies was limited and challenging for most of the duration of the project.

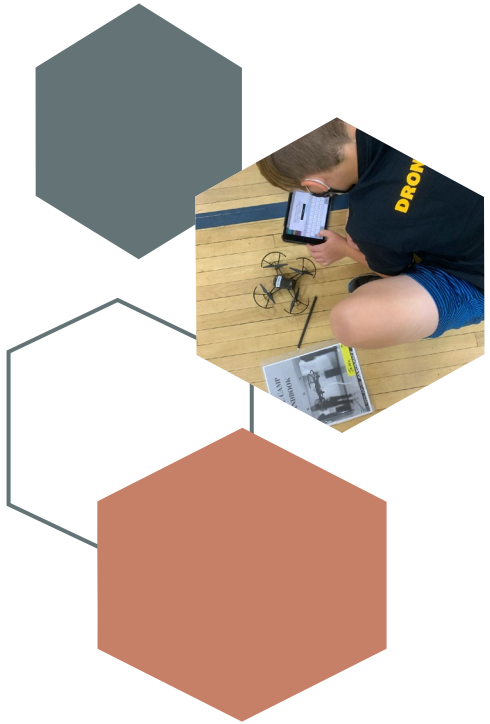
Trainers & Educators

Access and collaboration to actual education systems, boards and post-secondary institutions was a priority for AIM-AA given some of the benefits available: numerous aviation and aerospace programs in existence; access to equipment, resources, facilities and qualified educator/trainers; access to employers through numerous programs and projects (e.g. internships, apprenticeship, work-based learning); access to youth that met the age criteria and were engaged, or directly interested in, jobs and careers in the sector.

The project had 3 proposed initiatives in the planning stage that involved colleges and were focusing on both college level students in the age group as well as high school students engaging with post-secondary programs, professors, industry reps, equipment and facilities. All 3 were stopped due to the pandemic impact and when the situation returned to some level of regular activity, we were unable to renew these for various reasons: lead time, approval for special projects from faculty, access by outside students not attending the college, and a full transition of one aviation program whereby there were significant limitations to their capacity to hold an initiative.

This important support system for the sector was impacted in the same way that all others were that are involved in ‘in person’ classroom education and training. It is a critical feeder system for the sector as employers rely on trained candidates who have received the various diplomas, degrees and certificates to fill many of the professions found in aviation and aerospace. It also represents a system that many employers would like to see transition and advance in the focus, time, and level of training that is available to meet current and emerging skills and competencies for the sector. A key element of the AIM project was to be able to engage with the post-secondary system in collaboration with industry to be able to formulate some ‘new’ streams or options that could assist both individual students and, eventually, the industry needing qualified workers across occupations.

By way of example of the loss that this particular situation was for AIM, a key project was being planned that would have tested and evaluated the use of flight simulators to provide a) more training to students and b) enhanced training for those who were not meeting the criteria for passing the flight exams. This project was intended to increase the number of students who were able to secure adequate training time behind the controls of a flight simulator.



This was designed as an option due to the fact that the actual flying time in a real plane for all students to gain experience is very expensive and the access is limited – those who were not fully ready had challenges meeting the Transport Canada criteria and there were limitations as to how much flying time is available for all students.

This particular project was seen as a significant option for all parties: a) reducing the costs for college programs to train potential pilots in real time flying, b) reducing costs and time for students to secure their required licences, c) more students passing the requisites and moving forward towards their full commercial pilot license, d) more graduates with their commercial pilot licences that would be available to the Canadian aviation sector.

The impacts noted in earlier sections above are identical for this service provide area in terms being able to plan and execute some key AIM-AA projects. While AIM was able to communicate its initiatives through some of the post secondary institutions, and also attracted participants for some of them, it was not able to mount direct training & research projects using the resources and direct engagement of the colleges..

OUTCOMES

Summary of results achieved in relation to proposed

AIM-AA
Helping Build The Future Workforce

REAL Services Canada Inc, (www.realservicescanada.ca) is a not for profit, was established in October 2021 to manage AIM-AA and build a new mission.

AIM-AA Overview

There were a few high-level objectives and purpose for this multi-year project that focused on preparing youth to gain exposure, understanding, skills, training and certification for future careers in aviation or aerospace.

The following highlights the top-level objectives to be pursued and provides a summary of the outcome achieved for each one.

1. *Establish a new, non-profit corporation to act as a primary research and development body for the industry sector as it relates to incubating new training, education, and skill development models.*

Initiated under the Air Cadet League of Canada (ACLC), a stewardship plan was implemented for the project that fostered the establishment of a new, federal not-for-profit corporation: *REAL Services Canada, Inc.*

This new entity was formed in October of 2020 and for the next 6 months the two organizations established a *Memorandum of Understanding* to, essentially, hand over the operational aspects of AIM-AA from ACLC to REAL. REAL, acting then as a contractor for service, transitioned the contract of the Project Manager from ACL, while the bookkeeping and overall financial accounting was maintained by ACLC. REAL would provide monthly invoices and reports on status and submit expenses, receipts and notices of allocation lines for all expenses occurred, to be paid by ACLC.

It was identified by the Directors to have a broad enough 'purpose' statement for the corporation to allow flexibility on the mandate and focus of who to serve and how to best serve them.

The following was determined as the initiating purpose statement for REAL:

> *Provide research and development, consulting and project management services across Canada that focus on training, education, workforce and labour force development to customers and clients situated in private business, not for profit organizations, charities, education and training institutions, government and industry sector groups*

2. *To assist youth to gain employment skills while helping to build supply of qualified workers for the industry.*

One of the core issues and needs of the aviation and aerospace sector was the need to attract younger people to the sector to address, amongst other issues, a growing shortage and an aging workforce that will leave a significant challenge to productivity in the Canadian workforce and economy.

This primary focus was the impetus behind the overall project and subsequent application for funding. Years of engagement with industry through the ACLC, from hosting Career Fairs across Canada involving thousands of Cadets and other youth, to decades of industry support in the form of sponsorships, awards, bursaries and other interactions, formed the basis and understanding of the significant and expressed 'need' for initiatives and models that can attract youth to the sector and provide links to the industry employers and educators.

Leading up to the application submission, industry partners were engaged in formal discussions about the gaps, needs and potential solutions. Given the expressed desire of many industry partners that: a) flexibility was required to be able to pilot, test and implement new training and education models, and b) the current systems were not always produce the quantity of new workers, or some of the specific and targeted skillsets and occupational requirements, in demand by the industry.

YiPEE!

YIPEE (www.yippee.ca) was developed in 2021 to provide a comprehensive site for careers, training and education in aviation and aerospace.

This project was able to meet this key object and provide 297 youth with a range of opportunities geared at addressing the goals and needs of those interested in pursuing careers in the field while linking to the needs identified by employers in the sector.

3. *Establish and offer and coordinate a range of incubator services that will engage the key stakeholders concerned with a particular occupational need or training challenge.*

In the original submission for the project, we identified the unique and strategic option of establishing an 'incubator' model for overseeing industry training and, specifically, focusing on youth (*'Key Principles of AIM-AA' document included*). Our upfront research did uncover much information about incubator models which are mostly used to support and serve the startup of new businesses and companies across many areas of the economy. There are common features and functions of such incubators which are fairly consistent across different bodies and approaches, of which financial support (through various mechanisms) and access to 'subject matter experts' and services are key elements.

However, the submitted 'Key Principles' document noted identified an entirely new approach to using 'incubator' type models and services for a unique and specific purpose. Though the elements of 'incubating' had commonality, the strategic focus and purpose of AIM-AA had rarely been tried, if at all. The same need to sustain a centralized 'incubator' organization or body existed as in typical models, those mainly evolving around financial sustainability of the incubator 'organization' while offering financial subsidy and support, the capacity and capability to attract subject matter experts as needed, corporate interest and commitment to resourcing and supporting initiatives, a noted corporate/workforce demand and potential to create the 'supply' to meet it, and ability to establish targeted and successful projects that can address needs while working within a significant regulatory environment (e.g. Transport Canada certifications, college diploma courses) and paths to sustainability.

4. *Pilot and develop new models to address current and forecasted gaps and needs throughout the sector.*

The impact of the pandemic put significant handcuffs and limitations on the types of models that were envisioned by AIM-AA. Much of the premise for 'models' related to engaging youth in real, hands-on and employer/workplace involved situations that were linked to skills and competencies of industry occupations.

The strict limitations that were placed on most 'in-person' activities and initiatives hampered most of the original foundation of the AIM projects. These limitations occurred at all levels, from the employer to the school systems and to the youth themselves. An especially challenging factor was that 'new' initiatives of any kind were extremely difficult for anyone to entertain as they were mostly focused with addressing the significant, primary issues being faced by their organization – teaching students on one side to operating business during a titanic shift on the industry side.

While not at the optimum level identified and hoped for, AIM-AA was able to pivot and focus projects with many new, emerging and exciting opportunities in the sector. These were primarily through virtual training and pilot projects, though a few were also possible with in-person and following the regulations that were establish in any given province or setting to address the pandemic.

WWW.YIPEE.CA

YIPEE (Youth Industry Portal for Education and Employment) is a new portal/website that was established during the project to act as both a clearinghouse and a focal point for those looking for careers in the aviation and aerospace sector.

The site offers a broad range of key information for the sector related to education, training, careers and employment. It provides links and information on the various parts of the sector and offers foundational information to the many opportunities and the paths forward.

Through the project we also promoted and hosted industry leaders from many areas of the sector in webinars geared at youth. YIPEE facilitated the registration and hosting of these career and educational sessions. We were able to engage youth with leaders from numerous occupations and professions, post secondary education, and some leading aviators such as Lt Col. Maryse Carmichael, a leader for women as a pilot in the military field and private sector and now a senior VP in the private sector.

Additional information about YIPEE is included in the Appendix.

WWW.REALSERVICESCANADA.CA

Corporation #1244708-8

REAL SERVICES CANADA was formally incorporated as federal company in October of 2020. This development was identified in the application so that the project, and services provided through AIM-AA, could be expanded and hopefully sustained once it ended.

REAL took over the operational aspects in fall of 2021 following the establishment of a Memorandum of Understanding between it and the Air Cadet League of Canada, and as allowed by the Carthy Foundation.

Some of the benefits for AIM-AA to operate under REAL during the project were:

- Able to serve youth older than those in the Air Cadet program
- Able to serve youth not in the Air Cadet program
- Able to offer services not identified in the Air Cadet League purposes
- Able to operate, manage and contract for services and programs not able to be done by the ACL

REAL continues to operate and is engaged in new initiatives with leaders in the aviation and aerospace sector.

	Proposed Outcome from Application	Report on Project Outcome
1	Increased numbers of young people will participate in occupational training programs	Positive, achieved. The project had a total of 388 young people participate in customized training and development initiatives offered by AIM-AA. Details on these initiatives are provided in other sections of this report.
2	*AIM-AA* directors and staff have enhanced understanding about operating incubator projects related to training and development	Positive, partial achievement. The project provided opportunity to develop and implement various aspects of the incubator model desired. Given the implications, the project was not able to secure some key aspects such as ongoing revenue sources, investment and donor support. Project staff gained significant insight and knowledge of building, developing and sustaining a new model for incubator services focused on training and education.
3	*AIM-AA* secures involvement and support from a range of SME's covering professional fields such as research, education, risk management, industry training, policy development.	Positive, partial achievement. Each of the individual projects undertaken involved SME's from a number of positions depending on the actual project. These individuals came from large and small companies, non-profit and charitable, education systems and entrepreneurs and SME's involved in aviation, aerospace and other key areas such as technology. Due to factors that did not support the development of the incubator body long term, and the overall restrictions to work-based initiatives, the project did not access some SME's such as risk management.
4	*AIM-AA* establishes and meets risk management standards for training projects, including health and safety requirements	Neutral, limitations required. This overall objective was developed for planned activities that would have occurred, primarily, in a third-party employer or training institute facility. The project had a 'risk assessment and management' framework ready that would have been used in consult with these third party locations where youth would have been engaged, however the pandemic impacts absolved the planned, workplace or education facility based activities.

Proposed Outcome from Application		Report on Project Outcome
5	*AIM-AA* directors and staff are more aware of policy, legislation and regulatory impacts for training and put strategies in place to address key issues.	Positive, achieved. The various initiatives often required significantly new elements that needed to be understood and addressed in order for them to be put in operation. As one example, the 2 training initiatives related to Unmanned Aerial Vehicles ('drone training') had significant regulatory, policy and training criteria established by Transport Canada and industry led bodies. From the instructor qualifications to the exam requirements, and to the significant aviation regulations regarding flying of any 'drone' in public or private air space as also identified by Transport Canada, required new and comprehensive awareness and learning by project staff in order to implement such projects.
6	*AIM-AA* has standardized mechanism for assessing, evaluating and developing effective training models for youth in specific occupations	Neutral, partial achievement. The project used solid practices and standards in terms of evaluation models, tools, resources and research practices to collect the qualitative and quantitative data and input for each project. A key area the had limitations due to the impact situation involved some 'pre' and 'post' assessment of skills gained, knowledge gained and growth/change of skill or education levels. While this type of evaluation would provide significant understanding and assessment of training model impact, it involves more sophisticated methods and resources to effectively measure and track than the project was capable of implementing. The 'pre/post' assessment we did conduct on numerous initiatives was based on 'self' assessment, not the ideal level of independent, objective assessment by a third party.

Proposed Outcome from Application		Report on Project Outcome
7	12-20 youth will gain skills and experience in project steering in areas of planning, research, program development, evaluation and training models	Not achieved. Due to the impacts, the project was not able to sustain this initiative during the pandemic for numerous reasons, with lack of initiatives in place for a period of time on one end to availability for an extended period of time by youth who were approached in early project timeline.
8	New information products will be available to employers and industry on establishing and delivering effective occupational training for young people interested in aviation/aerospace careers	Positive, partial achievement. The project developed, distributed and reviewed various resources to identify, inform and link employers and youth in relation to occupations in demand and labour force opportunities. One example is through the new YIPEE (Youth Industry Partnership for Education & Employment) website where the project developed, compiled and presented a comprehensive base of information about occupations and training/education in the aviation and aerospace sector. This site and system was also used to host career consultations and presentations by industry leaders to youth across Canada who were looking for information and guidance on pursuing education and employment.
9	Increased representation of youth in the development of occupational training for the sector	Neutral, partial achievement. While the initial goal was to utilize a steering body to help facilitate this objective, this was not achievable. The project did, however, utilize the information and data gained by it's research and through the projects implemented with youth to assess and then educate employers about needs, gaps, and opportunities. A key purpose of this was to help employers gain understanding and then engagement of how they could host and support unique training initiatives through AIM for their company or specific occupations they needed filled.

Proposed Outcome from Application		Report on Project Outcome
10	Increased participation by youth in the planning and evaluation of training programs intended for their accessibility	Not Achieved. As noted, the proposed Youth Steering body would have assisted in this role, but it was not achievable. Given the restructuring of the program, the significant adjustments that all youth had to make with their schooling, the lack of access to school systems, the change in time and communication channels with all parties, and even the tabling of the Air Cadet program across Canada for nearly 2 years, made this specific initiative difficult to obtain and the project determined the primary project goals would not be compromised if this was not in place.
11	Incubator projects provide enhanced information about the needs/potential of young people involved in occupational training	Positive, partial achievement. As part of the information/education objectives of AIM when it was reaching out to stakeholders to promote potential projects, the project worked closely with CCAA to secure and present key data on labour force needs and the link with youth. CCAA is the national body that collects labour market information for aviation and aerospace sector. Together with other data related to youth training for occupations, the project was also able to compile and customize data from the Air Cadet program, and the other 2 Cadet programs, to identify the opportunities and needs for industry and labour force development. In relation to data from specific projects, while the findings and feedback were highly positive and impacted the employers and stakeholders engaged in the project, there was limited space or situations to be able to extrapolate and advance quantitative data to the overall sector.

	Proposed Outcome from Application	Report on Project Outcome
12	New research, planning and evaluation practices related to incubator services for industry training are identified and publicized for future application and awareness	Neutral, partial achievement. Throughout the project a focus was placed on identifying practices and protocol for developing the incubator 'model' while fully enacting the projects. Information about AIM-AA, the incubator concept, and then the specific and comprehensive details about implementing a pilot project through AIM (needs assessment, resources, funding support, project management, operational planning) were formally presented to all employers, trainers and partners. Once a project was executed, key elements of an incubator model were established and would include: working/steering group, critical path development, marketing and outreach, youth recruitment, training plans and outcomes, research and evaluation methodologies. The critical leadership and project management role provide by AIM and as identified as part of an independent 'incubator' model were essential to the development of all the projects. This type of role, both as a leadership, facilitator and project manager, was and would be critical to any successful incubator model as most all companies would not have the capacity, resources or expertise of mounting a broad range of projects with significant micro and macro elements to plan and implement at each one. The project has not, to date, publicized the key factors for developing incubator models with this mission and mandate, but it is a plan of REAL Services Canada to continue to seek funds that will support such models for the aviation and aerospace sector and, hopefully, the youth focus and future workforce target group.

	Proposed Outcome from Application	Report on Project Outcome
13	*AIM-AA* incubator projects are financed and piloted in different provinces and regions	Positive, achieved. The project secured funding from a range of organizations and through some grants. Significant contributions of time, resources, supplies, equipment and instructor 'expertise' were provided for various project which formed the basis for success. These investments were for the specific project undertaken but did not extend to future 'incubator' projects or in support of other youth training initiatives.
14	*AIM-AA* secures comprehensive feedback from participants on the outcomes of projects related to skill development of individuals	Positive, achieved. A key to all projects was the assessment and evaluation of numerous elements from the perspective of the participant – youth primarily. Where possible, the project conducted pre and post evaluations, primarily by online survey and sometimes by focus group. Some of the online, digital systems developed to deliver some of the projects were also able to capture objective participant data, such as: numbers completing certain sections of the material, scorings or grades from certain tasks/tests. Some systems would also be able to integrate evaluation questions along the way through the technology and not require an additional survey 'post' project.

Proposed Outcome from Application		Report on Project Outcome
15	Participating youth will secure relevant certification, education credits, apprenticeship hours, industry recognition or other allowable ‘accreditations’ and recognitions from their training.	Positive, partial achievement. The project anticipated the ability to have some of the pilot projects be conducted not just for research/testing purposes but, in conjunction, would afford youth recognition through an appropriate mechanism for what they had accomplished. The project was able to realize some credentialing for some of the activities. One example is the drone training where participants actually earned their Level 1 licencing and then were provided the training program that was based on the requirements of Transport Canada and prepared them to write their Level 2 exam. We are pleased to note that all participants who wrote the exam passed! Another example came through the online Aviation Flying project whereby all participants who participated were recipients of the regulatory foundation that would support them in writing their exam to achieve their recreational flying permit, as also administered by Transport Canada. Further, the standards used by the project and the system met the level set and required for the ICAO *(International Civil Aviation Organization*) which governs the standards for 50+ countries worldwide. A final example was the online STEM for aviation and aerospace project. While this did not automatically accredit or recognize the secondary school credits for those who participated, the material and levels were specifically aligned with Canadian (and other countries) course credit levels so that, if adopted in the future, would fulfil the requirements for obtaining some credits at different grade levels as mandated by the various Ministry of Education bodies in the provinces.

Proposed Outcome from Application		Report on Project Outcome
16	Participating youth will secure new career and employment opportunities with companies in areas of: paid internship, apprenticeship, summer and part time employment, work-based learning opportunities.	Not achieved. In terms of 'formal' arrangements that were developed and secured for youth involved in the project to be able to advance their formal engagements with the company or companies participating, the project did not have opportunity to advance this objective. We are aware that some of the 'training' initiatives and the skills or certifications gained by youth would have allowed them to become more employment 'ready' for some employment, the project did not handle any formal interactions to establish additional opportunities. One example of the youth 'readiness' was the UAV (drone) level 2 licences that our project youth acquired and which would have allowed an employer to hire them in entry level positions where such a licence is mandatory for anyone involved in operating drones in Canada.
17	Improved information is provided about the gaps, strengths, and opportunities for local/regional capacity to deliver comprehensive training for youth in the sector	Neutral, partial achievement. The project used numerous resources that emanated form initiatives to educate and inform stakeholders about the needs and opportunities. Many of these were regionally based. The project was able to use the YIPEE portal to enhance and provide specific information on a regional basis and also targeted youth across Canada to participate in the virtual sessions. However, the project did not have the capacity or time to be able to conduct regionally specific analysis and establishment of some relevant initiatives.

Proposed Outcome from Application		Report on Project Outcome
18	Youth will gain access to increased information about career opportunities and training/education streams related to aviation/aerospace occupations	Positive, achieved. Every project operated under AIM served a dual purpose: test out and evaluate new training options and resources and models while also exposing youth to new information and the opportunity to acquire skills, learning, credits and certifications. These projects proved highly beneficial for youth, as per their formal feedback, in helping them determine some specific paths to careers in the sector and which included understanding the educational requirements and streams to pursue them. For this objective, another significant achievement was realized by the project and that was the development of the new website YIPEE (Youth Industry Portal for Education and Employment). While highlighted further in this report, YIPEE provided a broad range of information about the many industry occupations and careers, the educational requirements, and the formalities and streams to determine directions towards future careers. Additionally, YIPEE hosted numerous web-based presentations and consultations from professionals and subject matter experts from various occupations and educational systems to provide detailed information to youth and be able to respond to the specific queries and questions of those youth engaged. YIPEE remains online for all youth and others to continue to gain the valuable information and knowledge about careers, training and education in the sector.

Proposed Outcome from Application		Report on Project Outcome
19	Employers/industry will build new strategies for targeting young people for training in identified occupations	Neutral, some actions. The project worked with numerous employers and training providers who were actively interested, and engaged, in efforts to attract and support youth for future jobs in the sector. While limited in scope and time to help build new strategies for the sector through AIM, we have not seen significant progress by employers to target young people as a key, or priority, source of future workers. The federal government has established some incentive programs for some of the larger companies involved in aviation/aerospace where it links with Department of Defence contracts – through the Industrial Technological Benefits program – and supports targeting of youth from indigenous communities or minority groups. However, there has been limited uptake on these for numerous reasons and has been limited to small pilot projects by an individual company verses strategic positioning for the industry as a whole and youth as a main target group.
20	Employers/industry has a greater understanding of work-based learning practices and tools for training young people	Neutral, partial achievement. The outcome identified is similar and directly linked with the 2 previous ones noted. An additional note for this outcome is that AIM was able to develop and test new training and 'learning' tools and systems that have since been further established and now can offer employers with unique solutions for generalized and specific training and development for the sector. The project was not able to track or measure the uptake moving forward so further review of these would be required to ascertain their integration and application by employers across the sector.

Proposed Outcome from Application		Report on Project Outcome
21	Employers/industry has enhanced information about youth training and establishing effective mechanisms to accommodate and support their development	Neutral, limited achievement. The project succeeded in developing and delivering new models that directly engaged youth in training, skill development and some foundational certification/recognition for aviation and aerospace careers. Employers who were engaged both benefited and recognized the value and importance of new initiatives that can fill training and education gaps while also preparing youth for specific careers or furthering their education. The industry as a whole, and employers from many areas of the sector have yet to become fully engaged in the development and implementation of protocols, policies, practices and programs that can assist and accommodate youth in direct and current training initiatives that can lead to formal job, career and employment streams.
22	Increased awareness and support amongst industry employers of incubator model services and opportunities for workforce development	Neutral, partial achievement. The main outcome of this one was limited due to the challenges forming an incubator body, however the various employers, trainers and educators involved in each project – and our core funding companies – were able to actively engage and participate in some of the main activities that an incubator service model would undertake, from identifying the customized training and education initiatives, to directing their funding and resources, and to assessing the impact on potential workforce development for their companies. Most also had the advantage of interacting with young people who were interested and focused on aviation and aerospace careers and the type and level of company interactions and services that needed to be established to work with this target audience.

Proposed Outcome from Application		Report on Project Outcome
23	New models for occupational training within the sector are endorsed	Neutral, partial achievement. Amongst the numerous projects that were developed and implemented through AIM-AA, a few will be maintained and delivered in the future. These represent new models for training and educating youth for different occupations and were supported by various employers and bodies from the sector. They both 'reflect' some of the regulatory or certification requirements and changes endorsed by a specific occupation body or Transport Canada, and also 'respond' to the recent changes by developing new options that can meet the new criteria. An example of this is the allowance by Transport Canada to approve 'training' programs, delivery and resources from the historical classroom based programs to new options that allow individuals to gain the same learning and competencies but through online systems and applications. While there is no formal method for the sector 'endorsing' such training as identified in the initial application, the practical 'acceptance' will come through the continued sponsoring or pay-for-access use of employers to the training system and providers. Already, the digital aviation pilot training program has seen employers provide recognition to the level of quality for the system and resources to the level that aviation companies are having their full time pilots use the system to gain access to certain elements that fit with their need to complete various training hours that are required for the maintenance of their licence.

Proposed Outcome from Application		Report on Project Outcome
24	Data and results from research and development methods will assist industry in developing training strategies	Neutral, partial achievement. While the projects produced good results and data, the limitation was primarily in the range of 'occupations' that were able to be covered by AIM. There remains a significant interest in the development and 'customizing' of initiatives that can be effective – more effective! – at meeting the needs of industry for qualified workers. This is especially pronounced in smaller companies and what would be referred to as 'feeder' companies. For smaller companies, they do not have the resources or scope to be able to establish new training initiatives for the most part. They can, and did, participate in amalgamated opportunities and have also invested in such initiatives with other small companies in the same sub-sector. Primarily, they are left with the strategy of being able to recruit workers or graduating students for their needs, often in competition with larger corporations. In terms of 'feeder' companies, an example is smaller regional airlines. Given that they primarily pay less in wages than the larger commercial airlines, many 'pilots' and other professionals such as mechanics, use these smaller companies as a learning and stepping stone towards a career with larger companies that usually pay more, have greater benefits, and for pilots have more flexible and broad opportunities. That said, for this objective, the project collected but also utilized existing data to focus on projects that could be used by smaller companies as they looked for new models and options of addressing their workforce needs. The CCAA, again, continues to study and collect data that confirms these issues, and the project was able to integrate and offer data that complimented their research.

Proposed Outcome from Application		Report on Project Outcome
25	Changes to regulatory and certification elements for certain occupations will be identified and endorsed	Positive, partial achievement. There were 2 examples of success realized in the AIM project for this outcome. The project was able to take advantage of 'changing' regulatory situations and build programs that fit with the proposed and future goals. One example is the delivery of new, online training for elements of the UAV certification which previously had to be delivered in person. The other is the changes being piloted by Transport Canada also in the virtual training arena and in specific for pilot and AME training. AIM established projects for pilot training that involved leading edge 'virtual' systems and content and met international standards for pilot training. The objective of having government, industry, trainers or governing bodies also endorse and accommodate changes to support new opportunities was not possible during this project.
26	Higher investments from industry in work-based learning initiatives	Positive, partial achievement. In addition to the actual revenue received from originating partners and some additional, smaller grants, there were significant investments made by various companies and organizations. One example is the high-end, digital technology being used by Delphi, Inc., to provide a comprehensive training system that is targeting youth for the aviation and aerospace sector. Literally hundreds of thousands of dollars were invested to establish some of the core digital elements that would be attractive for youth – gaming style graphics, interactive elements, AI based technology, leading content based on regulatory and certification requirements for schools and industry professions. This project interacted with many companies also contributing significant investments in their products and services – e.g. drone technology - to be able to offer current, measurable and flexible skill development and training options.

Proposed Outcome from Application		Report on Project Outcome
27	New structures and networks will be created within industry and the training community to coordinate workforce development	Positive, partial achievement. Given the pandemic impact, the Canadian Council for Aviation and Aerospace pivoted into a more engaging, central body to assist in the workforce development needs of this important sector. The CCAA has been identified as the national HR and workforce development body, funded primarily through ESDC to analyze the sector needs and establish viable, effective solutions for workers and companies. A significant part of this pivot resulted in the development and growth of new initiatives to educate, train and certify workers in demand positions. Mostly, digital training initiatives were expanded if they already existed and, importantly, new projects were funded to build new digital and online solutions for industry workers. The AIM-AA initiative has been directly linked to these new developments and was able to integrate youth into one of the online systems and testing/evaluation for two of the projects. While there is not a new incubator 'structure' created as per the proposed goal, there are numerous new models, initiatives and 'structures' being established and tested that will serve to provide future youth and industry workers across numerous occupations, and due to AIM-AA there is a highly focused interest by industry and CCAA on projects that will help to introduce and provide upfront training, certification and skill development opportunities for Canadian youth.

Proposed Outcome from Application		Report on Project Outcome
28	Industry will have improved information to advocate for changes in policy where occupational demand is priority	Neutral, partial achievement. The industry employers engaged in the various pilot projects were able to secure key and deeper information about the needs, challenges and opportunities that face youth in Canada from entering the sector. A number of them continue to reinforce to government, funders and post-secondary trainers about the need to advance and modify some of the training to support more options for youth. Additionally, due to the project providing significant input to those already involved in youth or industry training, the data and input secured from AIM-AA is proving valuable for advocating for change. Two examples: a) significant input to the new digital, online systems that AIM-AA participated in to help youth in STEM learning for the sector and to prepare for writing their aviation pilot's exam have helped advance the broad range of training material and systems effectiveness that will attract more youth (accessibility) and interest more government, trainers and companies; b) the CCAA project for AIM-AA was one of the first initiatives to actively engage young people, not in the workforce yet, to test and evaluate new material for training in the sector. For this project, we focused on Air Cadets only as a basic foundation of learning and knowledge about aviation was required. The project provided high end, significant input and data from project youth in 2 key areas that will be used by CCAA, industry reps and training consultants to help develop and implement required and effective industry training moving forward.

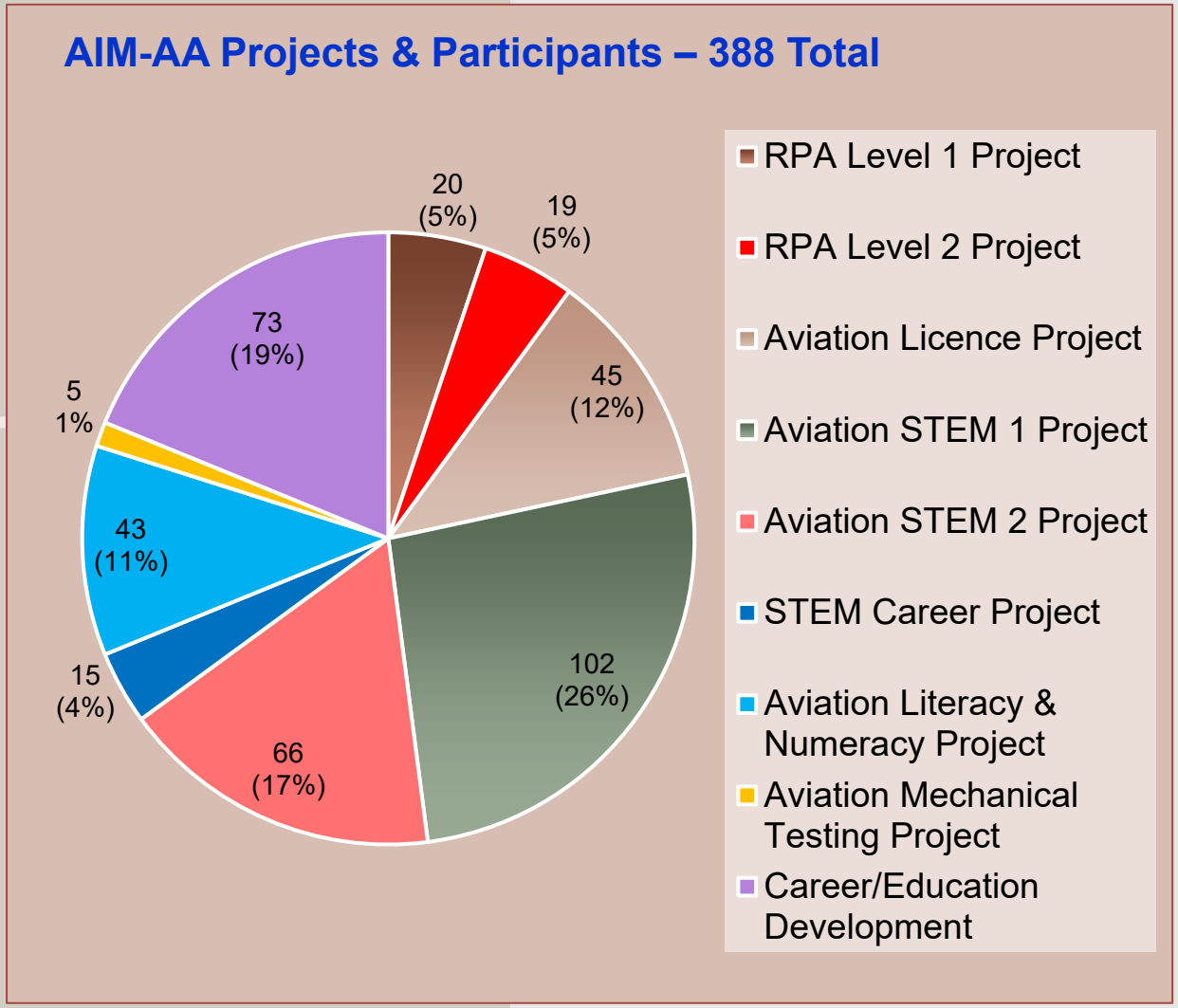
Proposed Outcome from Application		Report on Project Outcome
29	Targeted strategies and resources by funders and industry will be increased for occupations experiencing shortages	Neutral, partial achievement. In review of this project goal, it was a significant reach for AIM to be able to have policy and funding impact on the entire industry or government funding bodies, policy and regulatory areas related to occupational training. Additionally, in regards to the impact of the pandemic to the entire sector across Canada, most governing and industry bodies had to re-focus on extremely short term conditions and impacts that deeply affected most aspects of the sector and every company and trainer involved. What the project was able to take advantage of was some of the transitions that took place in a short term by numerous government and industry bodies to try and address critical, short term issues while also putting in place new options for training and workforce development. These new 'options' primarily focused on new digital, online options and opportunities. Some of the specific AIM projects were focused on the 'new' technology options that were also being developed for the first time and were being funded by government/industry. One example is the digital aviation flying and aviation STEM projects that were using leading edge technology in a new way and were building and testing new training and education systems that AIM was able to engage for youth. Another example involved the CCAA initiative, also online, that is testing out various online training and certifications for the industry and which AIM was able to engage our participants in two of them.

Proposed Outcome from Application		Report on Project Outcome
30	Increased awareness and programs by employers to integrate youth into workforce recruiting and preparation	Neutral, partial achievement. Most of the projects offered by AIM were validated and delivered by employers. There was, however, a limitation and lack of progress for development of new pathways and models for recruiting youth into the workforce. As has been advocated to many levels of government and industry through presentations and meetings held by AIM-AA staff, this issue needs to be put at the highest of priorities in order to meet medium to long term needs and gaps that are, and will, impact the sector at all levels. While many employers are 'aware' of their key workforce shortages and the state of the union in available workers, most have not looked at building solutions over time and, due to immediate needs, continue to push for short term options such as foreign-trained workers. Others have left Canada due to such issues which is a significant loss across many areas for the sector, communities and the overall economy.
31	Increased piloting of occupational training models will be undertaken in underserved areas of he country	Positive, partial achievement. Though the scope of in-person and workplace projects was impacted, the project was able to attract and engage youth in the initiatives from all areas of all provinces. Due to the use of internet-based initiatives, there were fewer limitations to all youth for participation. Additionally, projects such as some UAV training were held in rural areas of a province to offer and support youth who may not be able to gain access to some training that occurs in more urban/city centres. In the final project, youth from 6 provinces participated and of these they came from all sizes of towns and cities.

Proposed Outcome from Application		Report on Project Outcome
32	Increased number of youth are aware, engaged and interested in pursuing occupational training in aviation and aerospace	Positive, achieved. There is a very significant and high level interest by youth across Canada in the aviation and aerospace sector. Many reasons underscore this, from the 25,000 annual Air Cadets, aviation programs in some high schools, the exposure and work of people like Canadian pilot and astronaut Chris Hadfield. The AIM-AA project highlighted and tapped into this interest and identified the broad interest across Canada by our youth. All of the AIM-AA projects were filled to the specific capacity and all generated waiting lists. The latest project with CCAA filled the project in 3 days after release of information and ended up with 4 times the youth interested compared to available space. Lastly, the new YIPEE website for aviation & aerospace drew good traffic and served as a basis for exposing and engaging youth in career, education and training information and opportunities while also offering unique consultation sessions with subject matter experts and professionals across various parts of the sector.
33	Employer groups within smaller geographies and industry sub-sets will form to address and organize youth training and workforce development	Not achieved. While there were a few existing industry bodies that exist in some geographical areas as they related to aviation and aerospace, and for which the project interacted directly to communicate and coordinate with stakeholders, the project was not able to establish new workforce 'structures' specifically for youth related training and workforce development. The aforementioned bodies that exist do place a high priority on youth engagement and recruitment and invest time, resources and funding across many fronts to tap into this future workforce. One example of one such group that the project worked with is ACADA (Atlantic Canada Aerospace and Defence Association) who were engaged directly in assisting the project with marketing, communication, industry networking and engagement.

Proposed Outcome from Application		Report on Project Outcome
34	Greater career education and outreach strategies that target youth will be established	Neutral, partial achievement. Given that the project was not able to formalize a new incubator model, the challenge and opportunity for the sector is to: a) revisit and focus on the incubator model as a key option for industry, or b) identify new career, training, education and certification paths and initiatives for youth to enter various occupations in the sector. AIM-AA was able to open some doors – and minds – to a new model and coordinating body that can represent the broad and changing needs of industry for developing their workforce. It is the experience of the Project Manager and others conducting research in the field that, like many sectors in Canada, there are numerous competing interests and silo's in operation that can be a barrier to change and development. This starts as high as government regulating bodies that put restrictions on industry and training, to companies that have internal resources to influence the overall training environment, and to colleges and private trainers who limit -and are limited – in change management capacities and resources to offer flexible, customized options. The positive news from this project is that many new, customized and 'nimble' training solutions are being developed by subject matter experts across various occupational groups and which will, and have, impact the existing systems as they meet current demands and have filled voids and gaps that industry requires. Through REAL Services Canada, the new corporation formed to enact AIM-AA, we are already engaged in new, leading edge training initiatives that will be able to meet some important needs for industry in the areas of attracting, recruiting, training and certifying youth interested in various sector occupations.

PROJECTS

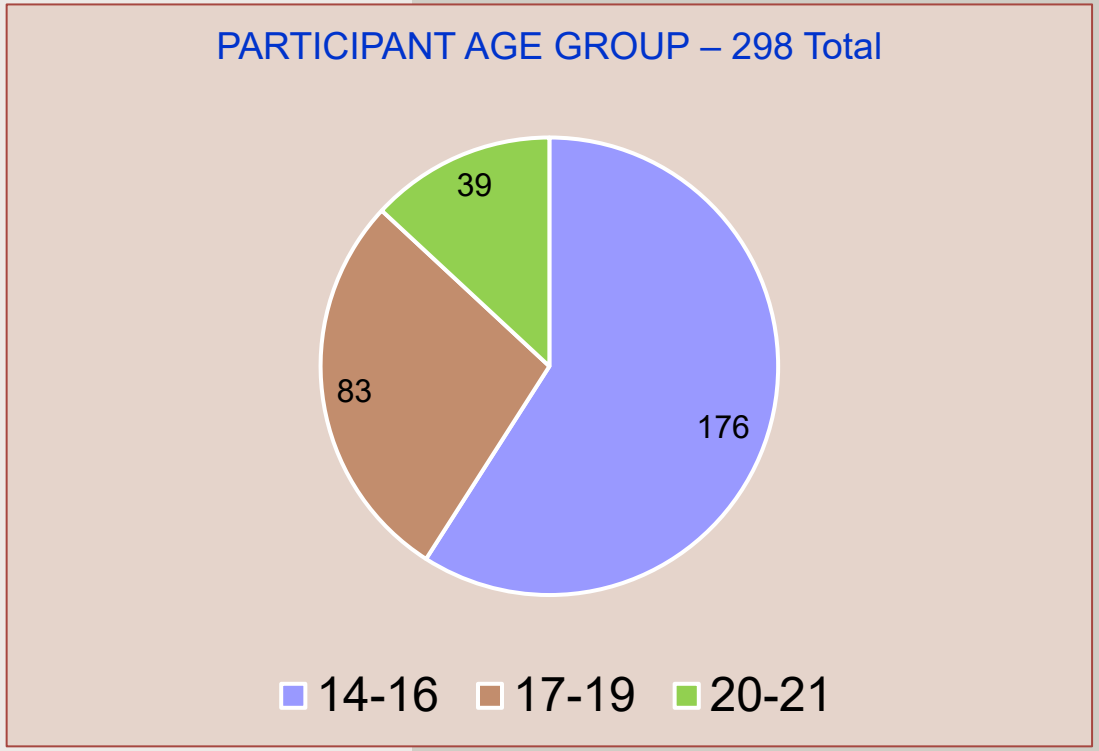


AIM-AA was able to provide opportunity for training and testing to 388 young people across numerous initiatives. In total, we offered 9 different and independent initiatives that had individual registration, approval and participation. Two of them were in the same field though offered fully unique and separate project focus and content. For example, the RPA level 1 had a unique group of youth who had no formal background or certification by Transport Canada in drone operation, whereas Level 2 participants were required to have a Level 1 certification and went through an intense initiative that allowed them to also secure their Level 2 licence through exam and practicum evaluation. The two STEM programs utilized fully unique curriculum and material that was founded on aviation and aerospace content and resources. Project 1 targeted those aged 12-15 from staggered grades and Project 2 was 16-19 year olds. A significant element for these was that the content met the curriculum criteria for Education ministries across Canada that, in the future, would allow school boards to adopt and utilize the system and material and be able to offer credits for some subjects under their STEM curriculum.

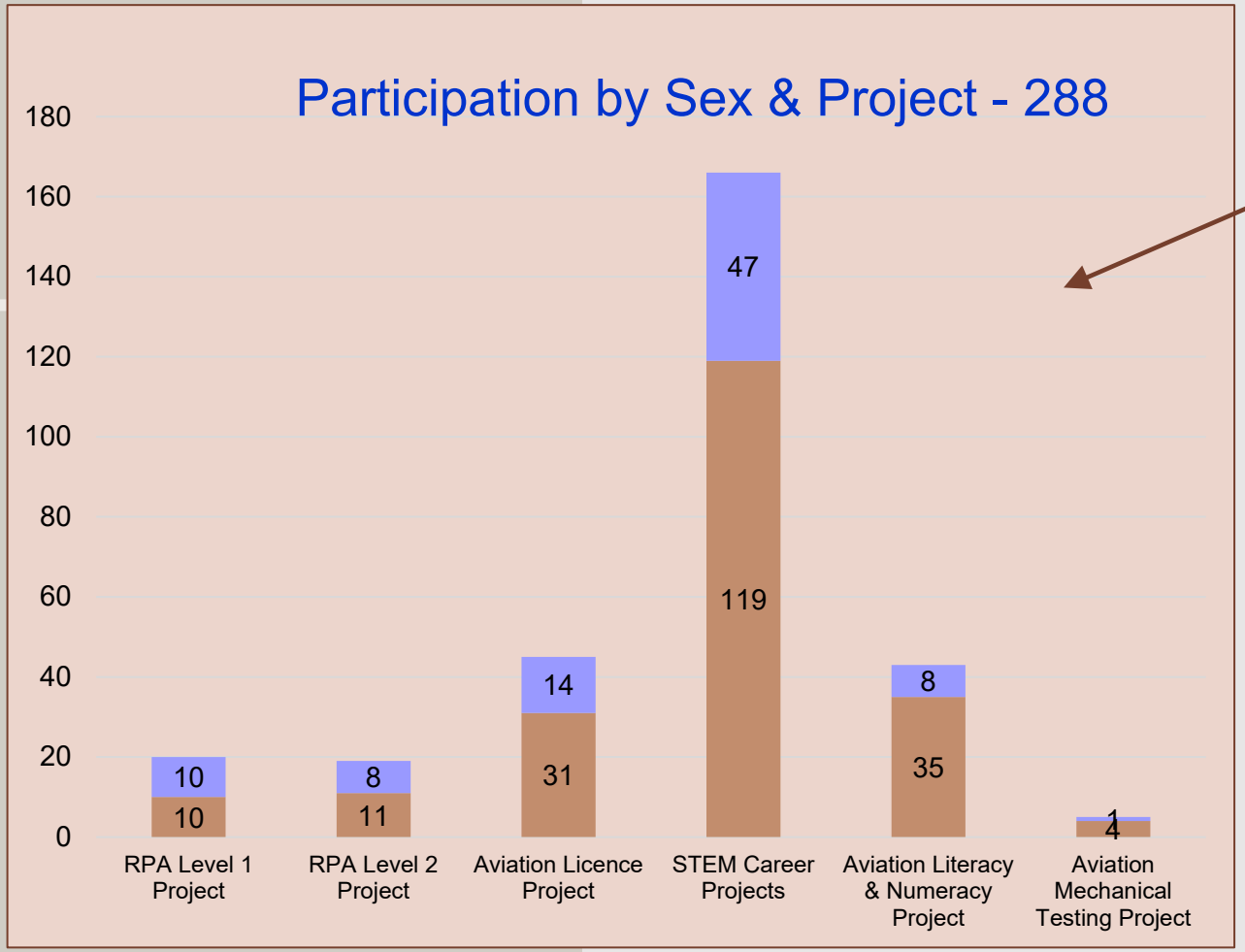
AGE GROUPS

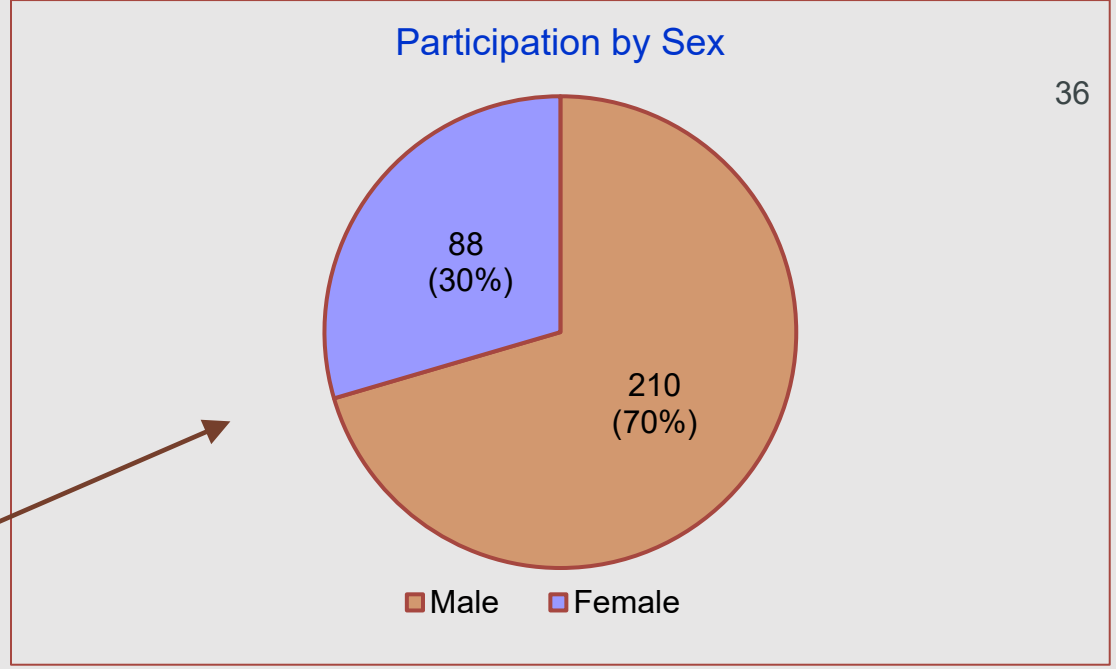
AIM-AA offered a range of initiatives that, for most, were open to individual youth between ages of 14 to 21. There were a couple of initiatives – STEM – that we isolated certain age groups given that the content and curriculum were linked to grade level and age in the education system. For the projects we were not able to capture every participant's age or birth date, hence a lower number than total participants.

Some of the initiatives – UAV – had regulations that needed to be followed and which were set by various government or regulatory bodies for minimum age levels.



DEMOGRAPHIC





The project was able to attract a good percentage of females to the various initiatives. For a couple of the projects where limited spaces were available we attempted to offer equal spaces to both and were successful in meeting the target. There is great interest in the sector to increase the number of females across various professions and the project identified that there exists a good foundation of interest across Canada. The reason that the total numbers do not match total participation is that for some projects we did not collect this data or individuals did not provide it. We did not make the forms or participation mandatory, so the project appreciated all of the voluntary information and feedback provided throughout and for individual initiatives.

RECOMMENDATIONS

Project input to industry, government, training & education, young people

AIM-AA
Helping Build The Future Workforce

Recommendations

Many aspects of workforce development for any sector need to come together in some form of coordinated planning and execution if success is to be found for companies, trainers, communities, workers and the many individuals who would like to become part of the industry. Without a better alignment and focusing of limited resources, capacity, time, expertise and funding the hoped for result in strategic training systems will be less than optimum for all concerned. While this project was not analyzing the full state of affairs related to training, education and workforce/labour force development for aviation and aerospace, it's interaction and exposure to many aspects of it – in conjunction with the ongoing analysis conducted nationally by CCAA and others – our perspective is that the numerous silo's, competing interests, regulations and fragmented systems in place will require significant review and revision to be more effective in addressing key gaps and needs for recruiting, preparing, training and retaining skilled workers in this critical Canadian sector.

Though many micro and macro elements related to overall training and education services, models and systems exist, we have chosen to highlight what we believe are some key recommendations from lessons learned, feedback secured and research enacted. We have chosen to focus primarily on the models, initiatives, and target group making up the main parameters for the project, with some expansion to the key challenges and opportunities that are directly linked and required for driving future development, change and growth.

1

INCUBATOR MODEL

The concept and ‘model’ of an incubator that focuses on investment, development, project management, research and application offer a significant opportunity for industry employers to aid in the training and development of existing, and future, workers. Utilizing some of the knowledge and practices of ‘incubating’ business and company startups and the associated incubator services that are typically provided, industry and government should focus on funding and sustaining such a model to help in filling the many gaps that exist in the sector in areas of career development, training, industry education, certification, apprenticing, mentoring and skill-based learning.

2

OPTIONS AND STREAMS FOR YOUTH

For the aviation and aerospace sector, there are some significant gaps in the opportunities and formal streams for young people to gain awareness, interest, trials, career directions, occupational knowledge and entry level skills and competencies in a particular profession. In regard to the lack of ‘streams’ for young people, some key models such as occupational apprenticeships, high school course credits, school-to-work options, do not exist. While many provinces and education systems offer some technical and apprenticeship-based curriculum such as auto-mechanics, there are limited to no such initiatives in the provinces that relate to some key occupations in the sector. There are some ‘specialized’ courses in some schools in some provinces, and there are some aviation course and credit options offered in a few places. Initiatives such as the Air Cadet program offer many youth initial exposure and some credits or certification in some professions, such as pilots, and are a good feeder for some aviation companies. The industry and government, in conjunction with provincial education ministries and boards of education, should establish more formalized programs in some key areas of aviation technician, technology and linked occupations beginning in high school and establish clear education and certification/licencing pathways to careers and employment in the sector.

3

REFOCUSING RESOURCES AND DELIVERY

There continues to be significant and projected shortages in numerous occupations across the aviation and aerospace sector, and in most geographies and sub-sectors. Current feeder programs for many positions with various industry credentials, certifications, licences and educational requirements are limited and not able to fulfill the industry demand. Enhanced and refocused funding, changes to regulations, changes to approved training delivery systems, and a focus on skills and competencies of specific high demand skills and qualifications for various occupations needs to occur to begin to address core sector gaps and projected workforce needs.

4

INDUSTRY LEADERSHIP AND INVESTMENT

There is a range of training, education and development providers within the sector and which provide some feeder programs for various occupations. There are, however, significant need for targeted and unique programs to address key professions and occupations that are indispensable for the sector and yet face a void of foundational or actual occupational training and education. Larger companies have a distinct advantage through resources and staffing capacity to be able to implement a higher level and quantity of training – ongoing – for most of their key occupations, though they rely on workers coming to them primarily with the proper foundational certificates or licences as required. Smaller and medium operations primarily rely on the ‘system’ to recruit, train and upgrade worker skills and competencies. Significantly, the challenge for the industry in the area of feeder programs for youth is the overall time and cost for many of the occupations. The industry as a whole, large and small, need to pool resources to be able to mount any new, revised, enhanced or alternative training for many professions in order to begin to increase the supply of feeder programs for youth. For many occupations, this focus can be successful through industry-led training initiatives, requiring though a change from some existing barriers and silo’s

YOUTH, FOREIGN WORKERS

5

This project, and the accumulated research and awareness about the sector as it relates to the labour market and workforce, understands and realizes the need for employers to secure qualified workers in a range of professions. As many employers require such a workforce in a short period of time, either to address shortages or retirements or even growth due to new contracts, the longer training and education cycle to get a given worker to the level required is often not an option. Industry is requiring more immediate skilled workers and have, in many instances, turned to the main option of 'poaching' workers from other companies or seeking professionals from other countries who may only need shorter time and support to secure the necessary certification or licence in Canada. This approach may work for some employers in the short term of the industry, but the longer-term capacity to supply a sufficient pool of qualified workers across numerous professions remains the ultimate strategy for industry growth and development. It is recommended that all industry partners and stakeholders, regulatory bodies and government bodies at federal and provincial establish a comprehensive labour force development plan that prioritizes Canadian youth from the period of early exposure and experience to education and apprenticeship options and with greater industry led and workplace learning models in order to increase the critical supply for the sector in the years to come.

STEM for Aviation and Aerospace

6

While the past years have highlighted the necessity for many professions and occupations to be grounded in the core skills of STEM, the aviation and aerospace sector would be one of the primary industries for which many critical jobs will require a range or focused education in STEM skills and education. The project was able to provide exposure and testing on some STEM initiatives, products and curriculum that exposed and educated youth in many STEM elements and did so in a virtual environment. Given this technology and the ability to expose many, many young people to STEM through virtual training opportunities in a fully accessible manner – individually and to educators and classes – the sector as a whole should place the highest priority on STEM and do so with direct exposure, content, curriculum and application to the skills, careers and jobs required and available in the sector.

7

VIRTUAL TRAINING

While the pandemic may have unexpectedly established a stronger mandate for all stakeholders to look seriously at the foundation of virtual training, there were already several leading entrepreneurs and companies who were already in the conception, development or pilot phase of important virtual training systems for the sector. The gap in high level, comprehensive and accessible virtual training and education platforms and programs has been identified by many players across the sector. The entire sector, and most importantly the government and relevant industries, need to ensure that the resources and 'regulatory' environment are provided to advance some of the current technological solutions that are being created while also allowing for research, testing and start-up funding to create some of the critical content, systems and platforms need by the sector to advance access and opportunity to 'new' works and to support 'existing' workers. Example relates to Transport Canada revisiting and revising regulatory elements that have mandated training for mechanical occupations to be allowed ONLY in a classroom setting, whereas much of the training content for existing and new workers can occur a) virtually, and b) virtually in a work setting. Virtual solutions should, and must, extend to introductory elements where youth and others interested in various professions and occupations can access certified, approved training and education with limited expenses to them – or the system – that is required when individuals need to travel to the training centres and the extensive costs associated with that for them and, concurrently, the costs for maintaining full services and resources at a fixed facility. Further, the trainers and educator involved in the sector also need to advance the course availability and instruction to better support virtual training for existing students and those already in the field who require mandated 'update' training and certification.

8

Apprenticeships, Internships & Mentoring

There are no dedicated Apprentice systems for aviation sector. This puts the sector at a disadvantage in offering industry specific streams and opportunities for new individuals to pursue various occupations. In a highly competitive economy and labour market that it is, this sector is reliant on individuals gaining foundational experience in various occupation areas (e.g. mechanics) but not ones that are integrated with aviation or aerospace. In the case of youth who may be taking some type of courses in a trade related profession, there are few to no linkages for placements and coop education in aviation.

Additionally, the sector needs to broaden and enhance a range of opportunities for young people, and interested individuals, to be able to gain core foundational experience and real time exposure to work-based learning and skill development. Proven and necessary models such as paid internships and coop education are some key initiatives that should be established across the country and sector. Examples such as the Ontario Youth Apprenticeship Program need to be explored and implemented whereby youth are gaining school credits and, where there is an apprenticeship system, hours towards their certification and eventual licencing. Another key model is mentorship for those who may already have initial movement into the sector, possibly in a private or public training institute. Mentoring would allow both youth and a particular company to build a relationship, advance the skills and competencies of an individual, assist in monitoring and evaluating progress, and as a clear and positive option for recruiting individuals into a company workforce.

Cadet Programs For Youth

A foundation of this project was the ability to communicate and involve Air Cadets across Canada in many of the training initiatives that were implemented. Under the REAL banner, it became a simpler operational task given that the corporation was not part of the Air Cadet League which has 'limitations' put on it by the CAF in regard to delivering 'training' services to youth.

One of the most important opportunities that industry has is to identify methods and models that will fully link and take advantage of the thousands of young people involved in Cadets who are already being exposed to the industry and many of the skills and competencies. While training 'pilots' at a foundational level is a key basis for the Cadet program, and a main source of future pilots for the labour force, there are many other streams and options that should be established and formalized across other occupations. And the appetite and interest amongst young people for careers in this sector is very significant. There was not one AIM-AA project that was not 'over-subscribed' by youth when spaces were limited. One project was able to fill upward of 50 spaces in a few days from Cadets across Canada and still acquired a large waiting list. There is a huge, untapped workforce just amongst the Cadet population that the industry ignores to their own peril.

APPENDICES

Samples and resources from the project

AIM-AA
Helping Build The Future Workforce

APPENDIX - A

The following is the final financial report for the project

AIM-AA
Helping Build The Future Workforce

AIM-AA Project

Budget to Actual Comparisons

	Year 1 - Actual Sep 1, 2019 - Aug 31, 2020	Year 2 - Actual Sep 1, 2020 - Aug 31, 2021	Year 3 - Actual Sep 1, 2021 - Aug 31, 2022	Year 4 - Actual Sep 1, 2022 - Aug 31, 2023	Sep 1 to Oct 31, 2023	Total Actual	Total project budget	Total actual vs. Budget - %
Revenues								
Industry funding, fees, and sponsorships	18,000.00	5,000.00	15,000.00	1,000.00		39,000.00	55,000.00	71%
Air Cadet League and donors	10,000.00	10,000.00	10,000.00	-		30,000.00	30,000.00	100%
Carthy Foundation	165,000.00	65,000.00	-	60,000.00	10,000.00	300,000.00	290,000.00	103%
Interest	539.42	256.29	325.01	1,295.55		2,416.27	-	
Total Revenues	**$ 193,539.42**	**$ 80,256.29**	**$ 25,325.01**	**$ 62,295.55**	**$ 10,000.00**	**$ 371,416.27**	**$ 375,000.00**	**99%**
Expenses								
Personnel								
Marketing/Communications Assistant	10,549.98	1,870.92	7,275.80	11,433.40	1,039.40	32,169.50	35,500.00	91%
Project administrator/bookkeeper	-	-	-	-		-	17,930.00	0%
Employment benefits	-	-	-	-		-	2,310.00	0%
Total Personnel	$ 10,549.98	$ 1,870.92	$ 7,275.80	$ 11,433.40	$ 1,039.40	$ 32,169.50	$ 55,740.00	58%
Contracts								
Project manager	69,949.83	70,106.55	74,836.78	76,832.45	12,083.03	303,808.64	285,752.00	106%
Legal services	1,936.04	-	-	-		1,936.04	6,250.00	31%
Technology company	5,197.00	10,705.82	-	-		15,902.82	17,500.00	91%
Total Contracts	$ 77,082.87	$ 80,812.37	$ 74,836.78	$ 76,832.45	$ 12,083.03	$ 321,647.50	$ 309,502.00	104%
Direct Project Expenses								
E-services	-	-	-	562.77	360.15	922.92	3,700.00	25%
Materials	-	-	-	461.04		461.04	3,750.00	12%
Insurance for youth participants	-	-	-	-		-	8,000.00	0%
Marketing	-	1,072.41	461.25	1,000.00		2,533.66	7,022.00	36%
Support to youth participants	-	2,078.80	849.55	1,000.00		3,928.35	14,500.00	27%
SWOT sessions/focus groups	-	1,559.10	820.00	-		2,379.10	9,000.00	26%
Risk reviews/site visits (industry rep stipend)	-	-	-	-		-	3,450.00	0%
Meetings - Steering Committee	-	-	-	-		-	1,800.00	0%
AIM-AA Insurance (D&O, general)	-	540.00	621.00	674.65		1,835.65	2,500.00	73%
Youth advisory panel	-	-	-	-		-	2,000.00	0%
Office supplies	211.29	334.41	1,162.06	227.86		1,935.62	1,493.00	130%
Computer equipment	1,143.32	276.45	-	58.63		1,478.40	2,600.00	57%
Total Direct Project Expenses	$ 1,354.61	$ 5,861.17	$ 3,913.86	$ 3,984.95	$ 360.15	$ 15,474.74	$ 59,815.00	26%
Travel								
Airfare for project manager	-	-	-	-		-	3,000.00	0%
Mileage	749.52	68.99	-	-		818.51	2,000.00	41%
Accommodation	-	-	-	-		-	1,900.00	0%
Meals	-	43.34	-	-		43.34	600.00	7%
Total Travel	$ 749.52	$ 112.33	$ -	$ -	$ -	$ 861.85	$ 7,500.00	11%
Dissemination								
Special presentations/trade shows	-	-	-	-		-	1,650.00	0%
Printing/publishing	-	-	-	-		-	2,450.00	0%
Total Dissemination	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,100.00	0%

Evaluation									
Contracts	-	-	-	-		-	4,000.00	0%	
Travel for SMEs and focus group facilitators	-	-	-	-		-	2,700.00	0%	
Total Evaluation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,700.00	0%
Indirect Office/Project Expenses									
Security of information	-	-	-	-		-	1,000.00	0%	
Office supplies	-	-	-	348.69		348.69	1,770.00	20%	
Professional development	-	-	142.93	-		142.93	-		
Total Indirect Office/Project Expenses	$ -	$ -	$ 142.93	$ 348.69	$ -	$ 491.62	$ 2,770.00	18%	
Total Expenses	**$ 89,736.98**	**$ 88,656.79**	**$ 86,169.37**	**$ 92,599.49**	**$ 13,482.58**	**$ 370,645.22**	**$ 446,127.00**	**83%**	
Net income / (loss)	**$ 103,802.44**	**$ (8,400.50)**	**$ (60,844.36)**	**$ (30,303.94)**	**$ (3,482.58)**	**$ 771.05**	**$ (71,127.00)**		
Retained earnings	$ -	$ 103,802.44	$ 95,401.94	$ 34,557.58	$ 4,253.64				
Total net project income / (loss) to date	$ 103,802.44	$ 95,401.94	$ 34,557.58	$ 4,253.64	$ 771.05	$ 771.05			

APPENDIX - B

The following contains samples from the project of the survey and evaluation elements and information used and produced.

AIM-AA
Helping Build The Future Workforce

Data and Report on Aviation Literacy & Numeracy and AME Micro-credential Pilot Project

TABLE OF CONTENTS

ACTIVITY REPORT: September 2023

This report describes the activities of *Skills Evolution* up until September 1, 2023, as part of the Numeracy micro-credential pilot run by the Canadian Council for Aviation and Aerospace (CCAA). Led by the Excellence in Manufacturing Consortium (EMC), *Skills Evolution* explores the feasibility of an industry-led model of skills upgrading, aiming to provide employers and industry stakeholders with timely solutions to address skills gaps, labour shortages, and key workforce development needs. *Skills Evolution* brings together multiple sectors – i.e., manufacturing, aviation and aerospace, bioeconomy and biotechnology, agriculture, tourism, and information and communications technology – to both foster an environment of cross- sectoral collaboration and build the critical mass of sectoral stakeholders to be the champions and driving force behind this skills development approach.

Skills Evolution involves the design, pilot-testing, and evaluation of micro-credentials tailored to the currently pressing skills needs of each of the participating sectors. Representing aviation and aerospace, CCAA has designed and delivered a Numeracy micro-credential to flight cadets as part of this multi-sector initiative. This activity report presents the progress and early findings from this pilot.

SUMMARY OF PROGRESS

By August 1, 2023, a total of 43 participants completed the baseline survey, and 26 completed the follow-up for a 60 percent response rate. The Numeracy Training is self-directed, and on-going completions or further participant recruitment may provide an improved completion rate and more reliable post-survey assessment results. SRDC can also follow-up directly or provide CCAA with a list of participants to increase the completion rates of the second survey.

Participant population

This section highlights key baseline characteristics of the participants, including their demographics, education, and employment journeys.

Demographics

As shown in Table 1, participants were predominantly male (78 percent), with a majority under the age of 18, or within the 18-24 age group (51 percent and 36 percent, respectively).

Table 1 Participant baseline demographics

Characteristic	#	%
Gender (*n* = 42)		
Female	7	16%
Male	35	78%
Age group (*n* = 43)		
Under 18 years old	23	51%
18 to 24	16	36%
25 to 29	*	*
30 to 34	*	*

Source: Baseline survey.

Note: * Data not shown due to small numbers of participants in the respective categories.

Table 2 shows participants' varying linguistic and immigration backgrounds. Most reported English as their primary language (84 percent) with a smaller proportion reporting comfort in French or both official languages. The majority were born in Canada (64 percent).

Table 2 Participant linguistic, ethnocultural and immigration indicators

Characteristic	#	%
Language (*n* = 43)		
English	38	84%
French	*	*
I am equally comfortable in both official languages	*	*
Born in Canada (*n* = 43)		
No	14	31%
Yes	29	64%

Source: Baseline survey.

Note: * Data not shown due to small numbers of participants in the respective categories.

Education

Due to the younger overall age of participants, many were currently in high school (38 percent), forty percent had completed high school, and several other participants were pursuing post-secondary education (11 percent). Over three quarters (84 percent) of participants reported that

they plan to take further training in the future, with the vast majority planning for post-secondary education, though many also report their interest in further short, targeted training.

Table 3 Participant educational experience

Characteristic	#	%
Educational attainment (*n* = 42)		
Did not complete any certificate, diploma, or degree	17	38%
High school diploma or equivalent (e.g., GED)	18	40%
Apprenticeship or trades/vocational diploma or certificate	*	*
College, CEGEP or other non-university certificate or diploma	*	*
Some university courses or diploma (below the bachelor level)	*	*
Bachelor's degree	*	*
What type of training would you like to take? (*n* = 42)		
Formal education that leads to a degree, diploma, or certificate (e.g., from a college or university)	37	86%
General short, targeted courses (e.g., on LinkedIn Learning, Coursera)	5	12%
Short, targeted courses in manufacturing (e.g., from CCAA)	*	*
Other	*	*

Source: Baseline survey.

Note: * Data not shown due to small numbers of participants in the respective categories.

Employment

About half of participants were not employed at the time of the training. Of those who were employed (44 percent of the total sample), most were working part-time or on a seasonal basis. Overall, participant employment characteristics align with young adults early in their transition to the labour market (Arnett, 2000; Schoon, 2014).

Table 4 Participant baseline employment status

Characteristic	#	%
Employed (*n* = 42)		
Yes	20	44%
No	22	49%
Employment details (*n* = 21)		

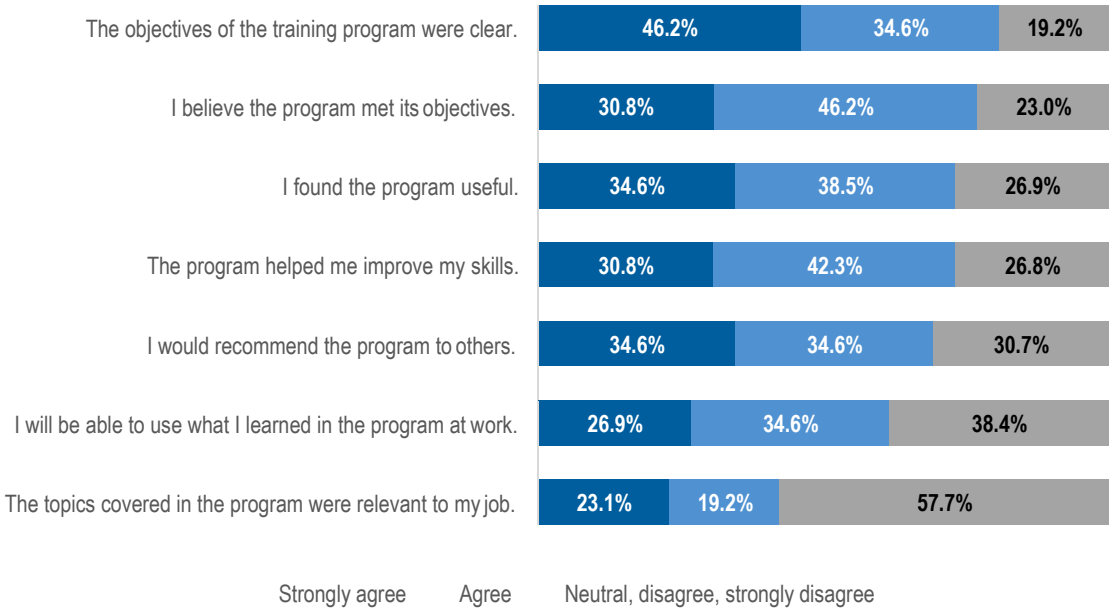
Employed full-time (30+ hours a week)	*	*
Employed part-time (less than 30 hours per week)	10	22%
Employed temporarily (e.g., seasonal work)	*	*
Contract worker	*	*
Self-employed	*	*
Other, please specify:	*	*

EARLY FEEDBACK ON THE TRAINING

Early feedback on the training was positive (see Figure 1). Participants agreed or strongly agreed that the Numeracy micro-credential was useful and that they would recommend it to others. They majority also shared that they could use what they learned at work. They also felt the training helped improve skills, had clear objectives, and met its objectives. Interestingly, over a third (38.5 percent) responded neutrally to the statement "the training covering topics relevant to my job", however, more information would be required to learn why participants responded this way (e.g., many were still in high school, and/or not yet in the aerospace industry).

We also asked the participants to provide open-ended comments on the micro-credential. Comments were generally positive as well. Some respondents included constructive suggestions, recommending adding more interactive components to the learning (e.g., diagrams where the learners could fill in the blanks), adding a function that allows students to take notes, etc. A few noted minor glitches and typographical errors in the materials.

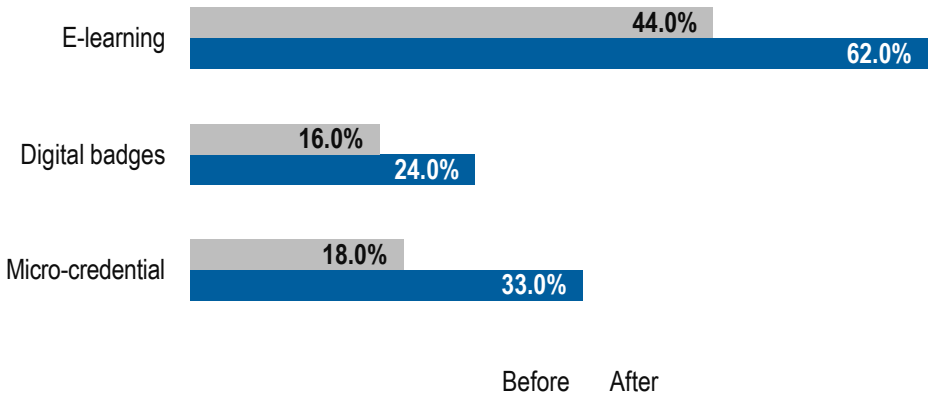
Figure 1 Participant training feedback overview



AWARENESS OF MICRO-CREDENTIAL

We asked the participants about their awareness of micro-credentials, digital badges, and e-learning in general before and after the program. Overall, awareness of these learning formats increased. As shown in Figure 2, 33 percent of participants reported that after the training they were at least moderately aware of micro-credentials, an increase from 18 percent prior to the training. Awareness of digital badges also increased, from 16 percent to 24 percent. Awareness of e-learning started at 44 percent before the training and increased to 62 percent after the training.

Figure 2 Awareness of different types of learning before and after the training



EARLY SKILLS OUTCOMES

In this section, we discuss the preliminary outcomes of the training on Numeracy and Problem Solving measured through self-reported methods.[1] We compare how well the participants see themselves performing various tasks related to these skills before the training (at baseline survey) with how well they see themselves performing these same tasks after the training (at follow-up survey).

[1] CCAA's Numeracy curriculum focuses on basic accounting, numerical estimation, and a variety of calculations (e.g., imperial measurement, decimal and fractional conversions, calculating area and volumes, ratios and proportions, as well as reading a standard micrometer, and angular or geometric measurements). These numeracy skills were measured by a variety of questions drawn from the research literature and created by SRDC to align with CCAA's curriculum. Using a 5-point Likert scale (ranging from "not at all well" to "extremely well") questions asked how well participants perceived their ability to complete various tasks within these skills.

Preliminary findings demonstrated a significant increase in self-reported skills related to basic math, estimation, measurement, calculation, and identifying problems. Figure 3 depicts the statistically significant results in the form of average scores for baseline and follow-up surveys. Improvements in measurement included simple measurements, measuring curved or irregular lengths, and reading trigonometric functions. Calculating areas and volumes of common and irregular shapes also showed improvements.

Although mean differences provide a robust test for pre- and post-training survey results, it is also helpful to review these indicators in terms of the percentage of change in participants responses. For example, Figure 4 provides the percentage change between pre- and post-training surveys for the proportion of respondents that said they could perform a task "very well" or "extremely well". Viewed from this lens, the proportion of participants who reported the very/extremely well skill to measure curved and irregular lengths improved from 37 to 70 percent (an improvement of 33 percentage points). Participants also reported large percentage changes in the skills to calculate areas and volumes of irregular shapes, calculate the area of common shapes (for example square, triangle, circle), and to perform measurement conversions (for example inches to centimetres, millilitres to litres).

While these results are based on early analysis, with a relatively small sample size, they suggest the micro-credential is making a positive outcome on participants' skills. Numeracy, the key learning objective of the program, is the skill area that shows the most gains. These trends are encouraging and are worth further exploration with more data.

Figure 3 Pre- and post-training survey results (averages)

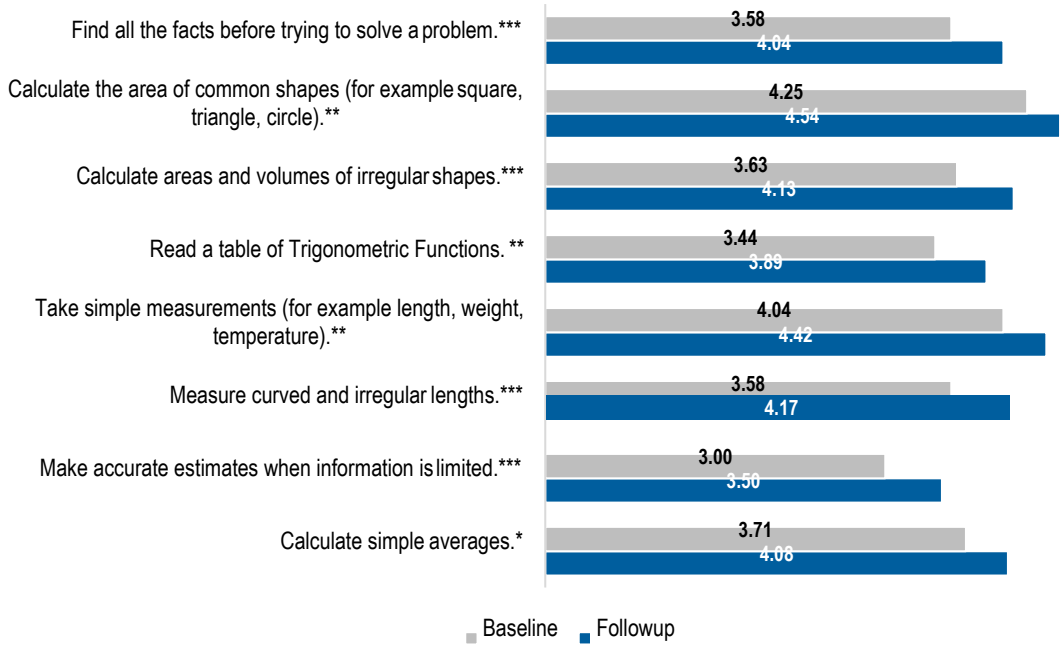
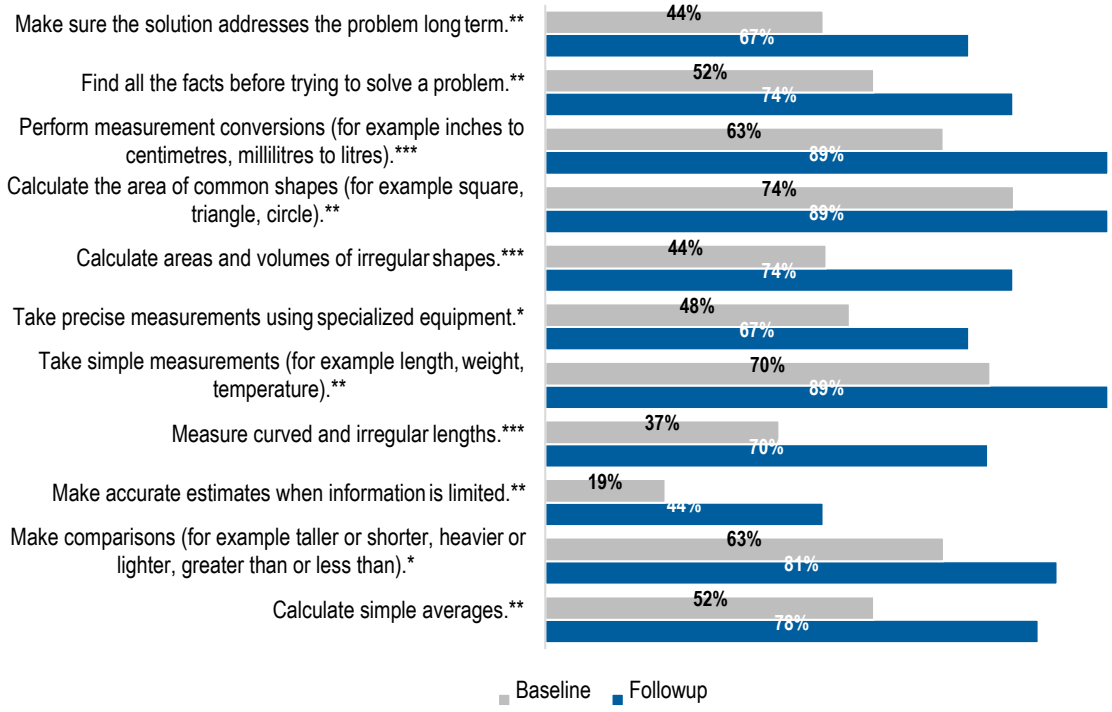


Figure 4 Pre- and post-training survey results (percentage for very/extremely well)



Introduction

Purpose of this report

The report will present feedback given to us from the participants who participated in AIM-AA project for Aviation STEM Modules. Each question contained up to 3 sections, the positive feedback, the negative feedback, and any **action items** we must take to improve STEM Modules for the coming years based upon the negative feedback.

Ranked Questions

Ranked questions will have the average score in addition to the number of responses. Values in ranked questions are always ordered from 1 to 5 when read from left to right.

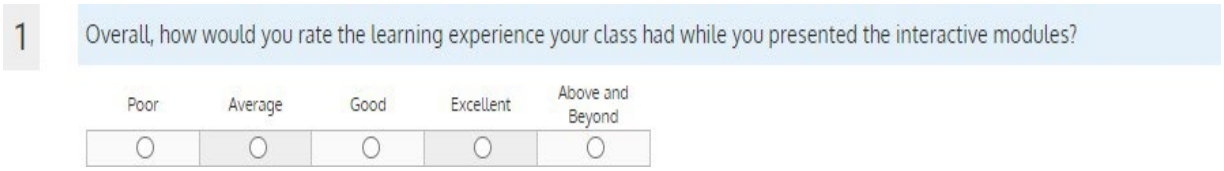
Questionnaire Breakdown

The STEM Modules questionnaire is broken down into 3 sections

1. Module feedback
2. Activity feedback
3. General feedback

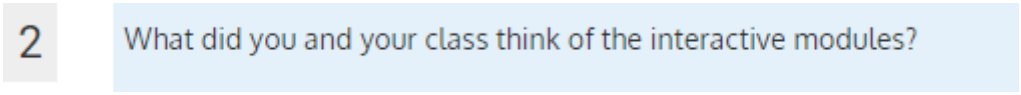
Module Feedback

Question 1



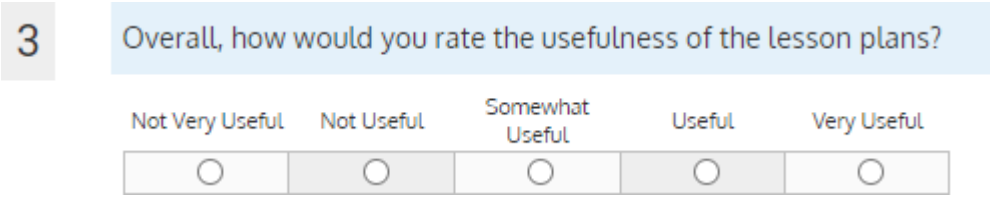
Number of responses: 66 | Average Score: 3.67

Question 2



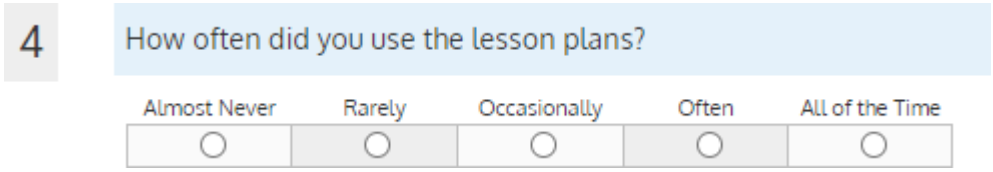
- Number of responses: 66
- Pros
  - Participants found the platform cool for learning.
  - Interactive elements added to the learning experience.
  - Quizzes at the end of topics were fun and promoted class participation.
  - **"We all thought it was a very, very cool platform for learning and we learnt so much about airplanes while making it fun!"**
  - **"Everything was well make and the animations were amazing!"**
- Cons
  - Some participants suggest the idea that giving each student complete the modules individually would have been nice.
  - There was mention of the ManeuvAIR plugins being less successful, which I will address later in this report.
  - There was one mention of wanting more time.
- **Action Items**
  - **Think and if necessary make different versions of the modules which are suitable for individual students to read and learn from (as opposed to what we had for STEM Modules, which where designed for teachers to present).**

Question 3



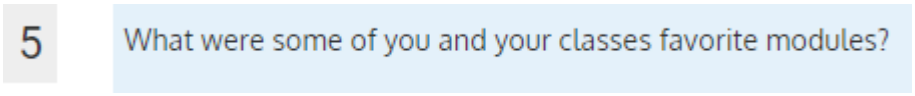
Number of responses: 6 6| Average Score: 4.17

Question 21

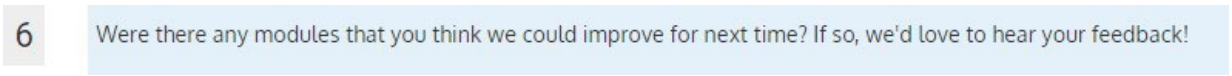


Number of responses: 6 6| Average Score:
3.67

Question 5



- Number of responses: 66
- Pros
    - Radio Communication (2 mentions)
    - Navigation (2 mentions)
    - Theory of Flight (2 mention)
    - Space Exploration (1 mention)
    - Emergency Stories (1 mention)
    - **"We enjoyed the radio communication because we got to learn the different words that were used and make connections to things we have seen before in shows and movies."**
    - **"I liked them all. I especially appreciated the communication one, as well as the one that explained direction. It was so well done, I would love to use it again when I'm explaining longitude and latitude."**



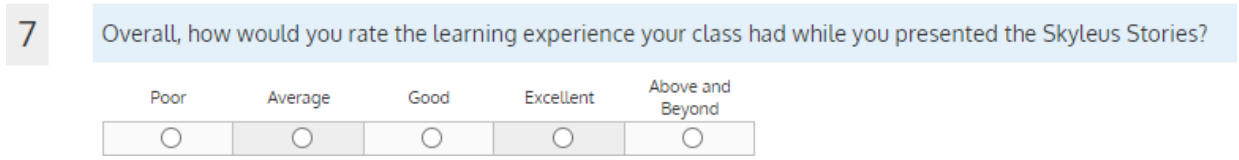
- Number of responses: 65
- Cons
    - Flight Instruments. There was a lot of new language that needed to be known in advanced which lead to students having a hard time understanding the core concepts. Examples include "altitude, pressure, and barometer". A suggestion was made to split modules like this into 2, one where the terms are introduced and explained, and then the regular module.
    - Space Exploration. Module was pretty reading heavy, and was less interactive relative to the others. Like with flight instruments, there was terms and language that the class was not familiar with.
    - One classroom had suggested more quizzes.
- **Action Items**
    - **Revisit not only flight instruments, but all the modules, and determine if any terms should be explained in advanced, possibly in a separate section of the module.**

Question 21

- **Review each module to make sure they each meet some minimum requirement for interactions. If any such modules does not meet the minion requirements, then we need to revamp such modules.**
- **Generate more quiz trivia questions to either make the trivia quizzes longer, or so we can generate more than one.**

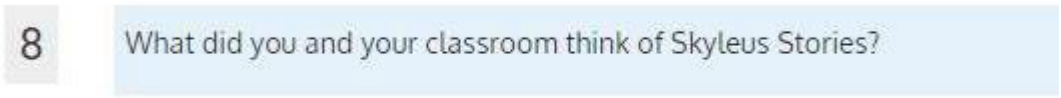
Activity Feedback

Question 7



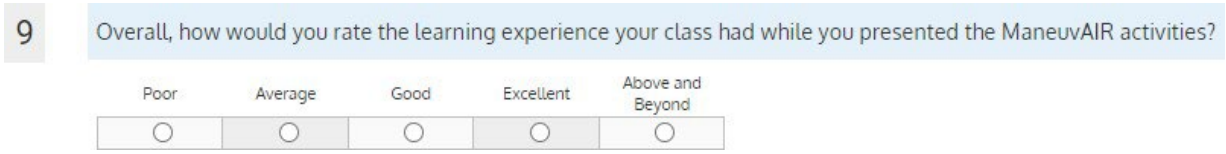
Number of responses: 66 | Average Score: 3.67

Question 8



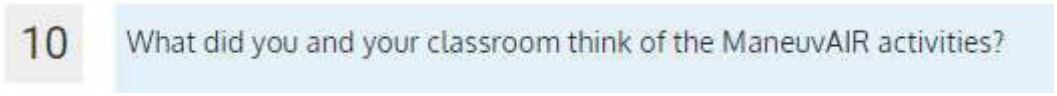
- Number of responses: 65
- Pros
  - Participants loved Skylues stories.
  - The design of the stories lead the entire class to participate and be involved in the discussion on what choices to make.
  - Being able to redo the stories and choose different paths was really fun.
  - **"Participants loved this... Everyone contributed to the discussions... I sat there as everyone debated what to do. It was very interactive."**
  - **"They really enjoyed the "choose your own adventure" style of this activity. They were overall very engaged and all wanted to share their thoughts on what the answer should be."**
- Cons
  - There was one mention that the voices were too robotic.
  - There was one mention that having pictures to show what is actually happening in the story would have helped a lot.
- **Action Items**
  - **Review the DeepZen audio and take note of any and all oddities. We can try to find ways to fix such oddities, or present them to DeepZen.**
  - **Consider adding media to go along with the text and DeepZen speech.**

Question 21

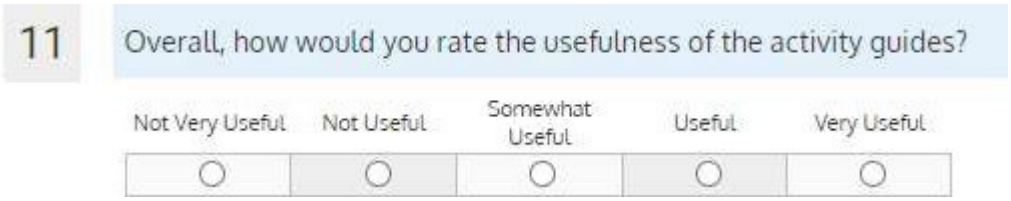


Number of responses: 55 | Average Score: 3.4

Question 10

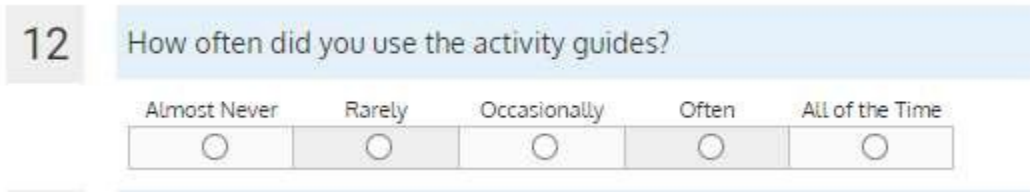


- Number of responses: 55
- Pros
  - Fun to watch
  - Very engaging and interactive for students
  - **"It was was interesting and engaging. It was nice to be able to see inside different airplanes, especially when this isn't an option right now."**
- Cons
  - One mention of students wanting to take control.
  - Screen sizes within VR City had caused the text boxes to become to large and cover up most of the screen. In addition, the screens were too small to fully view the activities.
  - There was one mention of the coordinates (I assume navigation plugin) where by the participant was only allowed to spin the plane in circles.
    - "They were fun to watch, but the coordinates one only allowed us to spin in circles."
- **Action Items**
  - **We already know that we cannot make the screen bigger in VR City. So either we need to:**
    - **Find a way to make all content we display on the screens (both modules, skylues stories, and manuervAIR plugins) more readable.**
    - **Launch all activities for which we cannot make readable into the users external browser.**
  - **Investigate the "airplane spinning in circles issue" and either:**
    - **Fix it, if it is a bug.**
    - **Confirm it was just a user input error.**



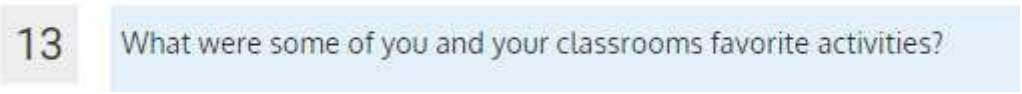
Number of responses: 65 | Average Score: 4

Question 21
Question 12

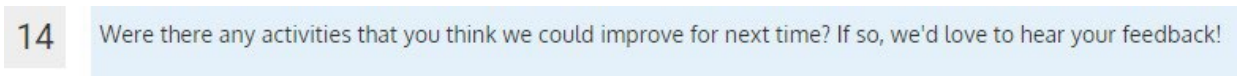


Number of responses: 65 | Average Score: 3.2

Question 13



- Number of responses: 65
- Pros
    - DYI Paper Air Plane Builder (2 mentions)
    - Aircraft Design Principles (1 Mention)
    - Navigation (1 Mention)
    - Skylues stories (2 Mention)
    - Flying in bad weather (1 Mention)
    - **"Seeing all of the different planes, especially the one designed in Canada, but never used. Flying in bad weather was good because you really got to experience what it is like for pilots to fly in these situations.Navigation in ManeuvAir was interesting when we could navigate to other locations."**

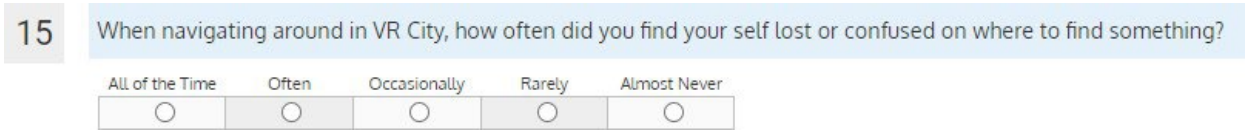


- Number of responses: 63
- Cons
    - There was mention of not being enough details in the landscape of the simulator.
    - There was mention that it would have been nice to have been able to see the full inside of the space shuttle.
    - In the navigation plugin, it was cool to see night vs day, but when it was night, you could not see anything. A suggestion to toggle daytime and night time was made.
    - It was mentioned that the activity guides contained too much text too read
- **Action Items**
    - **Verify that all the scenery is loading properly in the navigation plugin. It if it, we might want to consider showing areas that contain more unique landscapes.**
    - **I'm almost certain that they could view the full insides of the space shuttle. Verify that the controls work for the space shuttle plugin. If they do, we might need to make it more clear on how to navigate the space shuttle.**
    - **Add a daytime/nighttime toggle button in the navigation plugin.**
    - **Add a general tutorial to all STEM Modules plugins (and any other event plugins).**

Question 21

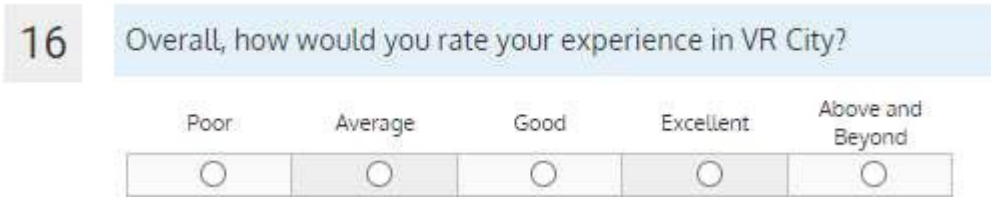
General Feedback

Question 15



Number of responses: 65 | Average Score: 3.8

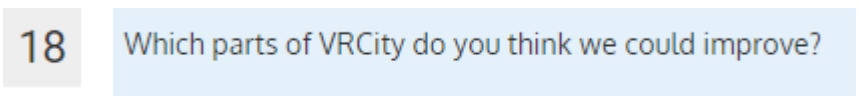
Question 16



Number of responses: 64 | Average Score: 4.2

Question 17

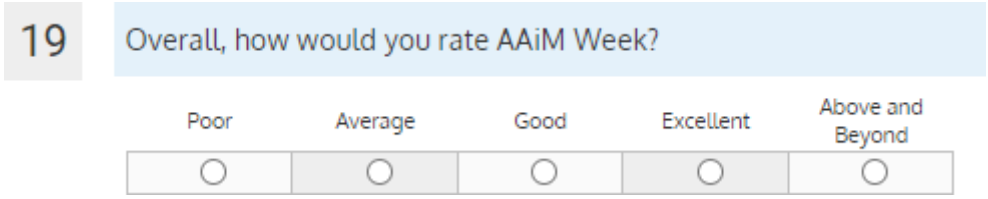
- Number of responses: 64
- Pros
    - The soccer competition (4 mentions)
    - Boat Races (3 mentions)
    - Being able to talk to people (which I presume they mean us, the employees). (4 mentions)
    - **"Everything... but I have to mention that those that were on site, helping us were incredible! Everyone was so helpful, so kind.. and didn't make me feel silly... because I had some difficulty to adjusting to a virtual platform... something as a 52 year old woman, I haven't experienced before. They didn't take it forgranted that I knew even how to walk. Everything was so clear.I also liked how, when I gave suggestions, or shared some glitch, they were right away on it.The service was really good."**
    - **"It was nice that there was always someone around in case we needed help figuring something out.The kids thought the ability to kick around the soccer ball/ go in the boat was pretty funny."**



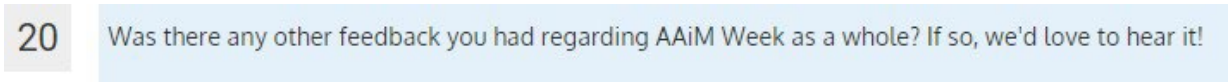
Question 21

- Number of responses: 62
- Pros
- Cons
    - It was mentioned that participants wished they could zoom into screens more.
    - It was suggested that we could show/honor the different contributors (of aviation) around the world, rather than just Canada/
- Action Items
    - The zooming in on screen issue has an action item listed above.
    - Maybe consider showing global contributors (although, I think STEM Modules was meant for MB specifically)

Question 19



Number of responses: 5 | Average Score: 3.8



- Number of responses: 62
- Pros
- Cons
    - The two main points regarding STEM Modules feedback was:
        - Having a longer orientation would be preferred. Keep the first day as it was, and have a second day where we walk the participants though everything (each room, each lesson, each activity, etc...). Documents were nice, but also huge, and since participants have limited time, they simply cannot read though everything in advanced to learn.
        - More time needed to fully dive into all of the content. Time estimates were often underestimated because participants also need to ask question, and get answers.

- **Action Items**
    - **Re work the orientation/on-boarding process to match the description suggested above.**
    - **Re work the planned schedule to account for adding more time (2 weeks min, maybe even more).**

Question 21

21 If given the chance, would you refer this platform to others?

○ Yes ○ No ◉ No answer

Number of responses: 54 | {Yes: 54, No: 0, No answer: 0}

PROJECT 1

REMOTELY PILOTED AIRCRAFT (RPA) TRAINING

RPA PROJECT OVERVIEW

PROJECT OVERVIEW

RPA technology is expanding exponentially and offers previously unavailable options for secure and long lasting careers in many different sectors. Use of drones for multi-faceted operations is becoming a common theme in such sectors as forestry, agriculture, urban planning, environmental, medical and commercial delivery, and in the military to name some. The profession of RPA piloting offers unlimited potential and a blend of skills, career education and practical field study that are in demand across Canada and internationally.

Leading universities such as MIT, and researchers from various international bodies involved in RPA, note that “drones are revolutionizing the way scientists observe, measure and monitor the natural environment.” A 2016 report to the federal government of Canada by industry noted “the list of potential purposes in the private sector is seemingly expanding at the same rate as the accessibility of the tool.” Addressing challenges of companies and sectors finding skilled employees. A fast-growing occupation in demand and projected to grow exponentially is a certified Remote Aircraft Pilots (RAP). In fact, RAP pilots are already in demand across some sectors and centres of the Canadian economy.

Discussions with numerous employers related to aviation who utilize RPA’s confirmed the growing demand and, in some cases, a concern related to the training and availability of sufficient pilots in the near future. Given the unique blend of STEM skills and education within an aviation regulatory body that is required to be successful in this emerging employment stream, AIM-AA identified the opportunity to test and evaluate a new training approach for this profession.

RPA PROJECT OVERVIEW

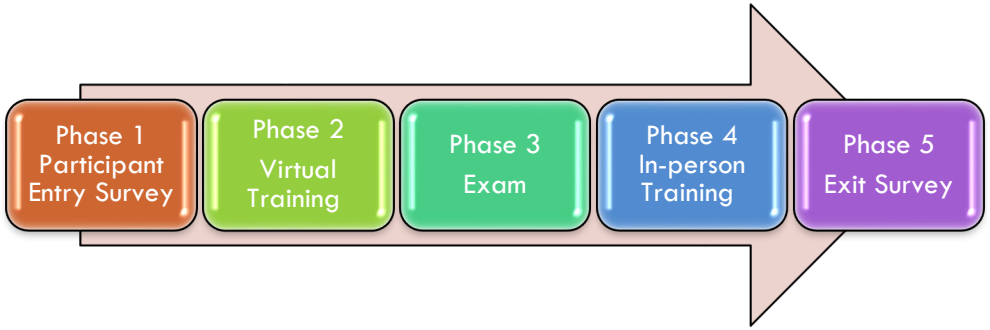
A core purpose of this project was to develop and test a new training and learning model that would provide youth with a foundation of skills, knowledge, interest about RPA careers while offering the opportunity to gain certification for a Basic Transport Canada Licence as an RPA pilot.

Marketing and outreach was conducted through various medium and methods, and interested applicants who met the criteria were asked to complete an initial registration form (see Appendix). From there, candidates were screened in or out based on the criteria established (age, grade, location, availability). The next phase of the process was specific questions to each potential candidate to ascertain their availability and commitment to various requirements of the project:

- commitment of approximate dates
- commitment of time/hours and duration
- commitment of schedule
- commitment to completion of research elements/surveys
- approval of their parent/guardian
- commitment to in-person training for flight testing (this was a particularly important element given the existing COVID restrictions and guidelines)

A final parameter that was implemented for determining the project participants was a goal of having an equal number of participants for the grade levels, and an equal number of male/female participants. Both of these parameters were met.

The following diagram identifies the primary course elements and process flow chart for the full project, each of which fit into the overall research methodology that was being implemented. One condition in relation to Phase 3 – Exam, was that participants were required to pass the Transport Canada (TC) online exam in order to proceed to the following phases, given that a Basic licence was required to be able to fly the RPA's in next phase. AIM-AA covered the TC exam cost for up to 2 attempts by each participant.

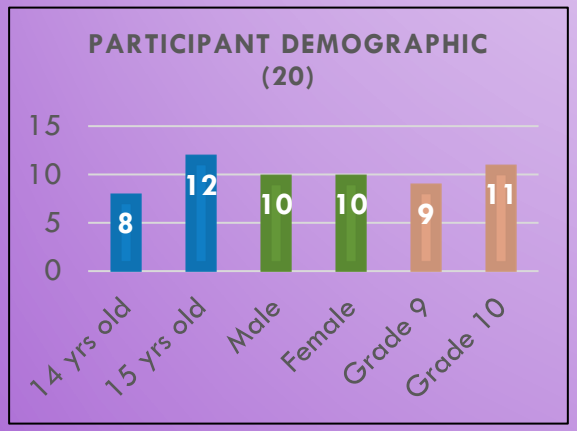


TESTING & EVALUATION

MAIN TESTING AND EVALUATION ELEMENTS

1. For first phase, all participants were provided with a preliminary questionnaire that focused on data related to their current status, knowledge, interests and goals as it relates to RPA. This questionnaire was meant to establish a baseline of information by which to measure, in a qualitative manner, the resulting impact of the training and the change factor – positive or negative – for each individual who engaged and completed the session and, thereby, the full group as a composite. Through the course delivery, a number of testing markers occurred that helped identify if the material presented was effective at providing individuals with the knowledge and skills required to gain their Basic RPA licence. These were:
2. *Transport Canada Exam*. Each participant was required to complete the standardized, online RPA basic exam, as is the case for everyone in Canada. This requires, and measures, knowledge of key elements of Canadian regulations and practices pertaining to the use of a drone in public airspace, amongst other required elements. This exam was undertaken by each individual following the main online course and instruction provided for the project. The resulting 'passing' of all individuals in the project provided a positive identification that the project material and curriculum delivered, and the online instruction and support from a certified RPA instructor, was successful in achieving this key milestone.
3. *In-person Flight training and Testing*. This element required each participant to prepare for and complete a flight test that was evaluated by another certified RPA instructor. Individuals were provided with preparation material and pre-planning exercise related to flight path and rules for physically flying an RPA, and then were provided with individualized instruction in a outside environment. Following this portion, they were all required to conduct a directed and coordinated flight within the scope of an instructor selected flight plan. The resulting 'passing' of all participants provided a second validation that the material and instruction method for the project was successful in providing each individual with the required skills to be able to pass the flying test, especially given that most participants had not previously flown a 'drone'.
4. Lastly, a post-course survey was implemented with all participants who completed the full course. This survey was an important component to measure, as best as possible, the impact and any change factors that had been experienced, or materialized, for each individual from start to completion of the project.

PRE-COURSE SURVEY RESULTS

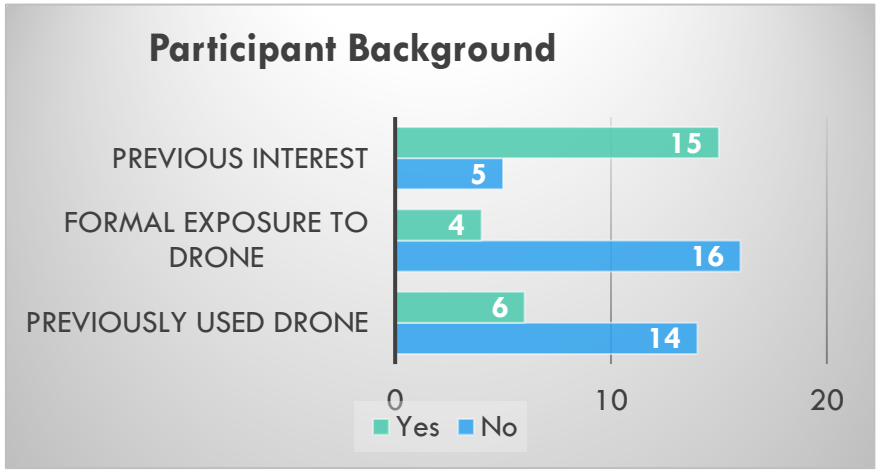


For a qualitative research method, such questionnaires engage the individual as the source and provider of information and perspective, as opposed to an external observer or evaluation model, which was not an option for this type of project. The 'exam' and the 'in person flight test' provided a greater 'objective' indication and evaluation of impact against a specific learning requirement and fixed, set framework of measurements, whereas the pre/post survey method captured more of the experiential component. Together, they validate a fair and comprehensive assessment.

PRE-COURSE SURVEY

For first phase, all participants were provided with a preliminary questionnaire that focused on data related to their current status, knowledge, interests and goals as it relates to RPA. This questionnaire was meant to establish a baseline of information by which to measure, in a qualitative manner, the potential impact of the training and the change factor – positive or negative – for each individual who engaged and completed the session.

As captured, most of the participants did not have any formal, or actual, engagement or exposure to RPA/drone activity, though there overall interest was high, likely given that the public awareness and commercial availability of 'drones' for amateur and professional alike has grown exponentially over the recent years. From a research basis, the limited experience of the participants with drones actually provided a favourable foundation from which to measure the effectiveness of the project in helping individuals move from limited knowledge and experience with RPA to succeeding in obtaining a Transport Canada basic licence.

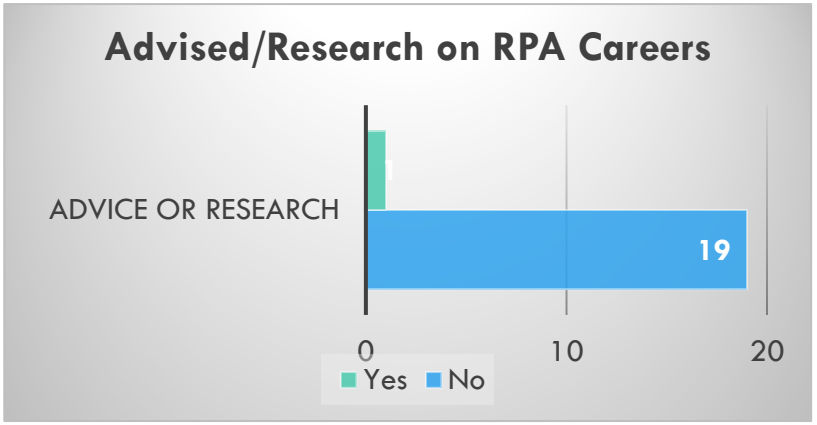


PRE-COURSE SURVEY RESULTS

An element of the survey was to identify if participants had previously conducted their own research about RPA Careers, or if they had received any external guidance or advice from others about this occupation and field. Only one participant had received any information on this career, the remaining were experiencing and exploring this option for the first time. This is of particular interest for the sector for numerous reasons, a key being that it will be important to ensure that youth receive some exposure to the professional and field at an earlier age that at present in order to start gaining some knowledge and interest that may offer a catalyst to more formal engagement in their future.

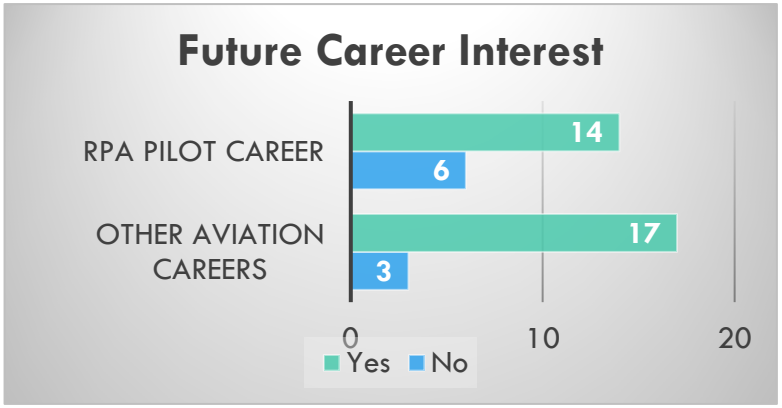
From a ‘corollary’ perspective, not exposing youth to such options and opportunities will reduce the potential, larger ‘mass’ of future workers that the sector will need to reach in order to be on their radar for pursuing some of the education, training, development and opportunities (e.g. PT, summer, internship employment) that successful professions and sectors utilize to foster awareness, aid recruiting and provide engagement in career choice.

Given that this sector and occupation are fairly new as career and employment options, and growing, building the initiatives that can target and interest youth will be critical as the sector and employees compete with all other possible career streams available to young workers.



PRE-COURSE SURVEY RESULTS

Participants were asked if, at this point, if being an RPA pilot was a potential career opportunity that they were open to considering. The positive result was that 14 identified that it was an option, which is a high percentage given that most had no previous experience, as noted. This would underline a positive response for the sector and employers in respect of the importance of exposing youth to the career option at an early phase in their education and 'career thinking' phase. Even when youth have limited, or no, exposure to a career, sectors and professions can make significant inroads to informing them about the possibilities which can turn, in time, into pursuing additional motivation to gain more understanding. However, as most educational institutions provide limited and/or focused information and exposure to various career and professional employment options to youth/students, the focus for sector employees and the field will need to be on determining methods to provide that occupational 'profile' to the systems and, as importantly, to offer education and career information outside of the system and at a community level where youth can gain opportunities to learn, try, and gain skills and interest about RPA piloting.

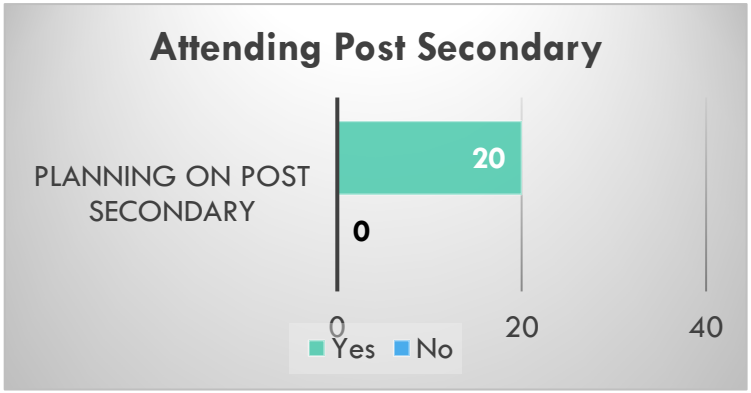


Participants were also asked about pursuing other aviation career opportunities, separate from RPA. For this, 17 participants identified that they were, and the top occupations noted were: commercial or military pilot; aircraft engineer, aircraft maintenance, flight attendant, aviation lawyer. These responses also link to the next question that focused on how many were considering post-secondary education as their future direction.

PRE-COURSE SURVEY RESULTS

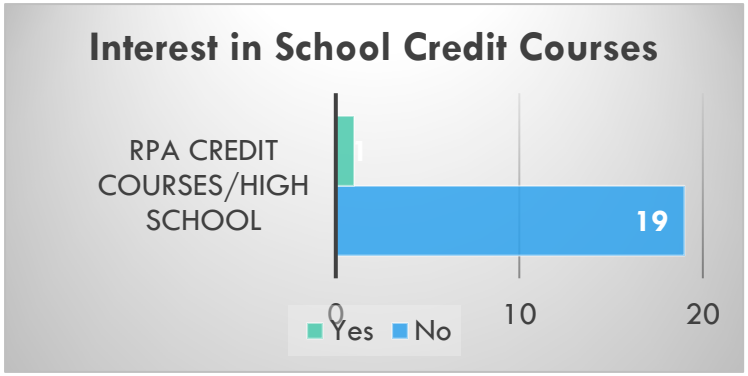
The responses were quite interesting given that all participants had plans to attend post-secondary education, and as previously identified, most were focused on the aviation field. For the sector and the profession, this has good and not so good implications. First, the field of RPA employs many more people than simply pilots. From technologists to engineers who design and develop both the RPA and the numerous applications, equipment and platforms that RPAs utilize, the requirements for post-secondary credentials will be required, an engineer or computer programmer being examples. Second, the operational aspects of RPAs, from mechanical and electronic technicians to servicing/building/repairing various systems, will require some advanced educational requirements than found at secondary education levels.

For the third point, the 'not so good' is that there is significant room for training and learning initiatives to be created that provide the education needed but in a framework that does not require access to the 'formal' post secondary system. They could be initiated using an apprenticeship concept, some entry level positions based on work-based learning and training, customized industry certifications, or other training and education models such as internships. It would be forward thinking for the sector to determine various levels, initiatives and mechanisms for delivering the training and 'credentialing' required for various skills and occupational training needed in the sector,. These models will open more windows for more youth to access and pursue RPA opportunities in actual, industry and employer recognized initiatives and to fill the numerous occupational requirements throughout the sector that don't require traditional post-secondary systems but have proven equally successful in many occupations.



PRE-COURSE SURVEY RESULTS

A further question sought input from participants regarding their interest in participating in RPA related courses that could provide credits which may be applied to their overall secondary school credit requirements. For the sector, such options can be offered through two main methods: via courses that are offered in an existing, linked course that has been approved (e.g. some high schools offer aviation courses with credit capability); via external courses that meet the school boards educational and credit requirements within a specific category, such as math or science. An example of this is the Air Cadet program whereby in some provinces, the content and curriculum of the program is recognized for credits within subject areas, again areas such as math, science and in some cases just additional credits that are not 'mandatory' for completing their secondary school requirements. In some provinces, these credits are automatic as the curriculum and course has been pre-approved as meeting the requirements and just requires a declaration from the instructor on completion. In others, credit can be gained by submitting details, writing a separate test or challenge exam, or submission plus interview of Cadet/student submitting.



Lastly, participants were asked to identify what they would most like to learn through the project and training experience, the main response areas were:

- how to fly the drones; the licence required to fly large drones
- how the controller communicates with the drone
- what the future of drones in the aviation industry is like; oppurtunities I have in the future;skills that I can use in my future.
- I would like to learn more about how this drone all works, how to fly it well, and all the opportunities this will open for me for the future.
- Job opportunities for drone pilots and what sectors

COURSE CONTENT

OVERVIEW OF ONLINE TRAINING AND IN-PERSON FLIGHT TRAINING COURSE

The course content was developed and designed through AIM-AA with certified RPA Trainers and Instructors to ensure it met the core learning requirements associated with the Transport Canada Exam and overall regulations required for RPA pilots. Online sessions were held over a few weeks, each a few hours at a time, and the schedules were determined with each of the participants to ensure availability. The curriculum was extensive and focused on significant areas of aviation, regulations and laws, and operations. Participants were also able to communicate with the instructor at any time to review material presented if they required additional guidance and support for their learning.

TIME	TOPIC
30 Mins	Introduction on RPA and Transport Canada Regulations
90 Mins	Air Law, Air Traffic Rules and Procedures
60 Mins	Radiotelephony
90 Mins	Theory of Flight
60 Mins	Flight Operations
60 Mins	Navigation
60 Mins	Meteorology
60 Mins	RPAS Airframes, Power Plants
60 Mins	Propulsion & Systems
90 Mins	Operational Equipment, Sensors, Camera Operations
60 Mins	Ground School Rules and Procedures
6 Hours	RAP Flying training and instruction
3 hours	Practice Tests for Flying
Write Transport Canada Advanced Exam	
Transport Canada Flight Test	

For the pre-flight preparation, participants were provided with course material and a specific website that contained documents to assist them with their upcoming flight test. One important document and exercise was to review the flight plan which was established and which met Transport Canada requirements for advance filing and regulations for Basic flight testing.

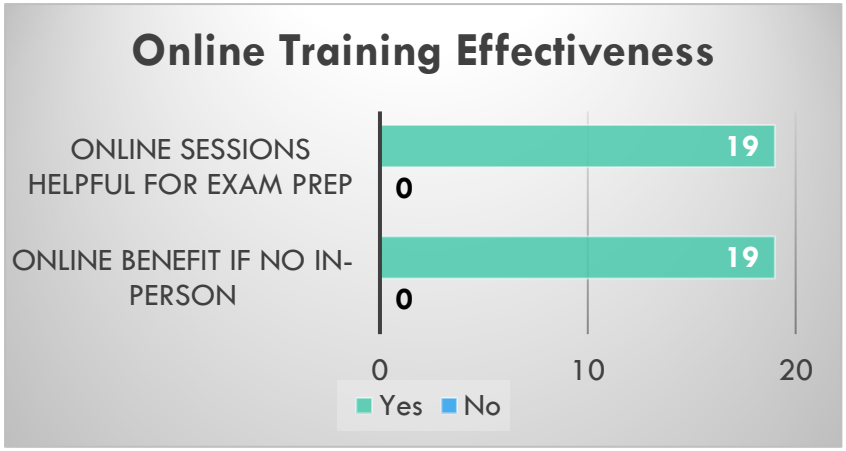
Various checklists and procedures were provided and the exercises needed were self-directed and had to be completed prior to flying an RPA. Participants were able to communicate with the instructor in advance of the in-person flight training and testing to review any questions they may have about the materials.

POST-COURSE SURVEY

POST-COURSE SURVEY

The following charts and review related to the post-course survey that was conducted with all participants. For a note, there was one participant who had to drop out of the project mid way due to scheduling and time conflicts.

The questions and focus for this survey provided important assessment by individuals about the full project and training elements. It was designed with a goal of eliciting information that would help identify key results and findings from the participants in order to assess the effectiveness of the project along with some details as to any potential changes or improvements to consider.



Participants were asked to comment on weather the training and instruction provided was sufficient in preparing them to write the Transport Canada Basic exam part way through the project. This was a critical element of the training delivered, and would be for any training, as it provides the core learning needed to understand a range of information needed to understand RPA and the overall environment that they are flown in. It also provided us with an independent confirmation of effectiveness, in terms of providing a curriculum and instructional delivery for participants to achieve independent success by the 'third party' exam system.

All participants identified that the online training was able to provide them with the information needed to pass the exam. Further, all were asked if an online course was a good option and alternative to in-person instruction should that no be a possibility. This, too, was affirmed by all participants. Importantly, the project was built around the online delivery element as a 'new' mechanism for training given the challenges faced by COVID. Based on this feedback, the sector should continue to develop and utilize effective online training mechanisms where possible or necessary as an important option for youth in gaining RPA knowledge and their Basic licence.

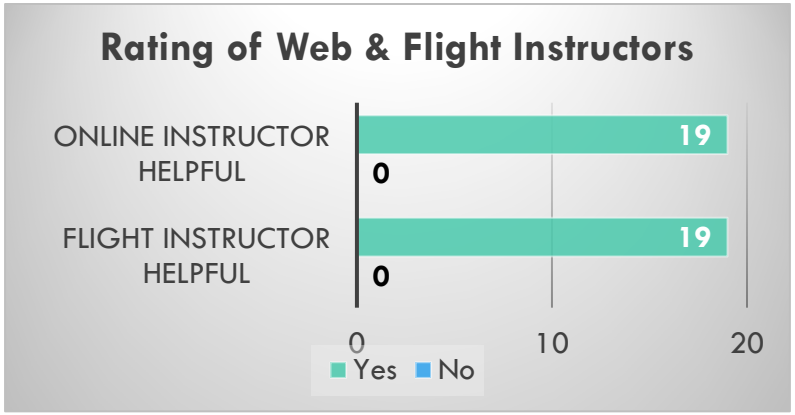
POST-COURSE SURVEY

Linked to these survey questions, participants were invited to provide input on the elements of the training that were most helpful for their progression, and any areas of improvement. No 'improvement' items were noted, but the following input was provided to indicate what they felt was most helpful:

- Laws concerning RPAS
- Review of material and instruction were the most helpful to see what you needed to improve on.
- Safety regulations and requirements
- Flight plans

***NOTE**: It is important to note here that the method for handling surveys and ensuring privacy and confidentiality was critical so that all participants could respond without feeling any concerns, duress or uncomfortable about their responses being known by anyone. Only the Project Manager had access to all surveys and individual responses. Surveys were handled electronically and remained fully confidential and not able to be identified or linked to any participant. A 'double-key' system was used which was implemented by: a) each survey having an individual # identified on the document; b) this # was documented in a separate file that was coded to the initials of each participant, no names; c) both of these documents and the original list of names were maintained as separate files only accessible by one person and were stored 'offline' on an external hard drive.*

The next areas for response dealt with an assessment of the actual instructors who offered the course. The positive news was that all participants rated as 'YES' on the effectiveness of the online and flight instructor in helping them learn, and providing the information required at each project phase.



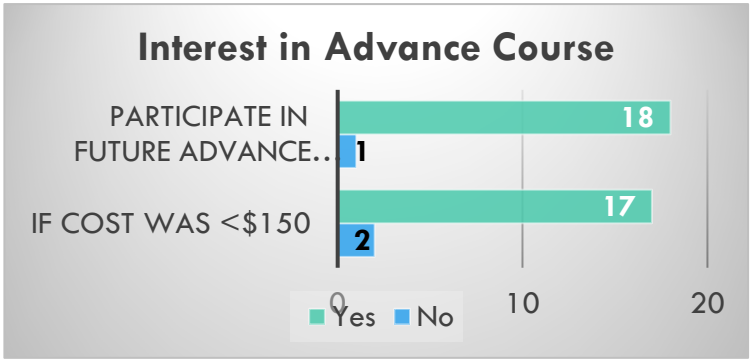
POST-COURSE SURVEY

A main takeaway for the sector to garner from this project is that instructors providing online training should have a good understanding of how to impart information, communicate effectively, and interact with individuals in a very different environment than in-person. Presenting material, supporting individualized learning, implementing 'hands-on' lesson plans, and individual and group reflection and review exercises – to name some issues – are important teaching and instructing awareness that comes in to play differently in a web setting than is possible in person. Instructors need to be well versed in handling a range of topics and varying the delivery methods and learning exercises in unique and beneficial ways when covering broad subject matter with a variety of students who do not know one another, or can interact in the same manner as a classroom.

The following input was provided in response to the parts of the flight training element that were felt to be most helpful in their preparation, learning and knowledge gained:

- The hands-on was most helpful in solidifying my online learning
- The maneuvering and walkthrough of the flight plan
- Learning which maps to look at and which app to use for checklists and local flight notices.
- Explanation and review of the topics before and during training
- Flying different drones
- Specific regulations I need to know to fly an RPA

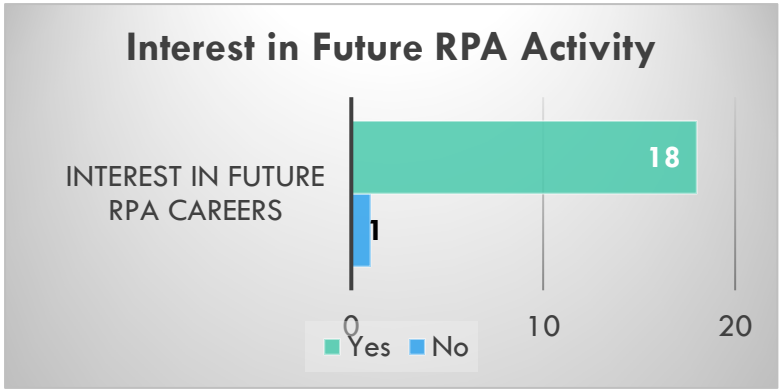
The participants were then engaged in questions focusing on their potential interest in the future in different RPA activities. This focus is beneficial in gauging the experience that they have taken part in and as a potential catalyst to interest and motivation for continuing to be involved in learning more or pursuing additional knowledge and skills



POST-COURSE SURVEY

Participants were clearly interested in opportunities to pursue their Advanced Transport Canada licence. Trainers in this sector offer various courses for this licencing, a challenge for some is the geographic locations and accessibility to courses within a reasonable distance. While the project did not research options for conducting some elements of the Advanced licence training via a web-based course, this option would be a serious one for those in the sector to consider where possible. All participants but one identified their interest in the next level of training and licencing. Similarly, all but one expressed interest in considering future RPA careers, another positive outcome that affirms the benefit of exposing individuals to occupations and fields in a positive manner and at an age and grade level where career and education futures are becoming part of their framework. Sectors that can

This project was established to provide funding support to the youth involved to ensure that there were no financial barriers to any individuals participation. There was no cost for the overall course and the online and in-person elements, and the exam cost was also covered. The only actual expense for participants would be transportation to the in-person training day, for which we offered coverage should they not be able to secure a ride. Participants travelled up to 1 hour maximum for the in-person location.



The last question was open-ended about any suggestions that would be helpful for this RPA initiative, there were only a few comments, a main theme being that any information on future courses in their region would be appreciated, with the others citing the positive experience they had.

SUMMARY OF OUTCOMES

SUMMARY OF PROJECT OUTCOMES

Based on assessments from participants through survey methodology, and review with course instructors and one RPA employer, the following outcomes were identified for this pilot project:

- The course curriculum developed and implemented was successful in engaging, informing and educating participants in a sufficient manner for all of them to pass their Basic RPA Exam with Transport Canada, and to pass their flight training and flight test.
- Online, web-based instruction was successful and considered an effective and viable alternative for participant instruction and learning when compared to in-person classroom instruction. This underscores an opportunity to reach greater numbers of youth when in-person and classroom-based engagement is not available. It offers a training avenue for those in rural or remote areas who may not be accessible to in-person, classroom-based training programs in a viable, weekly or bi-weekly manner.
- There were significant gains realized for participants through the project in the areas of interest, knowledge and their potential future involvement in RPA careers and training for participants.
- Nearly all individuals were interested in securing the higher-level RPA licence – *Advanced* – and most were also agreeable to such a course if there was also a cost attached of a reasonable amount (<$150 identified).
- The awareness and interest factor for youth in this age group (14-16) and grade level (9-10) in furthering their engagement or potential careers in an RPA environment was high. This indicates a significant opportunity for advancing similar courses for this age group in order to build a larger body of potential candidates for the future workforce.
- Participants were also focused on post-secondary education as their career and educational route. This identified that there is interest in individuals pursuing higher skill development and certification in various occupations. Charting career paths in various RPA, and RPA related occupations, should be a high priority and focus for any sector requiring qualified RPA workers, which includes the manufacturing, programming, servicing, and flying as key occupational options.

Questionnaire #2 for Participants in RPA Training Initiative, Calgary, AB

Please complete and send to Scott Lawson at: executivedirector@realservicescanada.ca

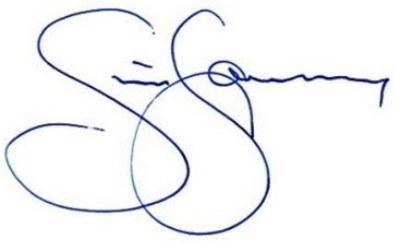
#	QUESTION	RESPONSE	
1.	Current Age		
2.	Grade (list the grad you are going into in September)		
3.	Did the online training sessions help you understand requirements for writing your RPA exam?	YES	NO
4.	List any parts of the sessions that you feel were most helpful, if any?		
5.	List any parts of the sessions that you feel could be improved, if any?		
6.	Do you feel that using online sessions is a good way to learn RPA information if training *cannot* be done in person ?	YES	NO
7.	Was your online instructor helpful in providing you with the necessary information and support to write your exam?	YES	NO
8.	Please list any suggestions or improvements you would suggest for holding online training sessions for RPA?		
9.	For your in-person fight training and practice on June 19, was the session beneficial in helping you learn to fly a drone?	YES	NO
10.	List any parts of the in-person training session that you feel were most helpful, if any?		
11.	List any parts of the in-person training session that you feel could be improved, if any?		
12.	Was your trainer for the in-person session able to provide you with information and assistance to help you fly a drone?	YES	NO
13.	Are there any areas of improvement you would suggest for the in-person training session?		

#	QUESTION	RESPONSE	
14.	Given your experience and ability to secure your Basic licence, are you interested in securing your Advanced RPA licence in the future?	YES	NO
15.	If **NO**, what is the main reasons you are not interested in an Advanced licence?		
16.	Has this experience made you more interested in finding out about potential careers and jobs as RPA pilots?	YES	NO
17. 1	If a training course was provided in your area to help you secure your Advanced licence, are you interested in participating?	YES	NO
18.	If **YES**, would you still be interested if there was a fee for the course that was under $150?	YES	NO
19.	Please add any additional comment that you feel would be helpful about any aspect of this RPA initiative.		

Thank you for being part of this training initiative. We appreciate the extra time and personal commitment you have made towards this activity and we hope it was beneficial for you.

All the best in you for an enjoyable summer and in your education and personal activities.

Scott Lawson



APPENDIX - C

The following represents samples of various resources developed and used during the project.

AIM-AA
Helping Build The Future Workforce

		AIM-AA Lead	Details	Aug	Sep	Oct	Nov	Dec	STATUS
Steering Committee									
1	Finalize ToR, roles/responsibility document	Steering Committee	Review with NEC		x				Completed
	Establish meeting schedules and communication protocols	Steering & Scott	Review with Maryse		x				In process - next meeting at SAM and Maryse can make every 2 month with advance notice
2	Orientation and reviewprocess for members	Scott & Steering	Develop for Maryse/new members			x			Initial review with members, but will meet separately with Maryse (goal is SAM if possible)
3	Finalize communication/decision making matrix for project	Steering	Internal to project			x			For further discussion re: reports to and from Steering, Executive, Board and E.D.
4	Develop reporting mechanisms and documents for project - progress/status, operations, financial	Steering and Scott	Finalize report forms, timelines for key elements				x	x	Steering Committee and Scott still need to coordinate financial reports; written reports from Scott to be 1 per month with any issues arising handled separately
5	Establish meeting protocols and content (agenda,minutes,$budget, reports, projects)	Steering & Scott	Review reports 'in and out' required (e.g. Finance from office)					x	To be reviewed at SAM
Administration									
1	Establish bookkeeping accounts	Scott	Finalize with Pete	x	x				Completed
2	Identify/confirm payment authorization/invoice system	Scott	Review with Steering & Pete		x				Initial process between Scott and Office for expense allocation handled; will review further re: financial reports
3	Establish tracking system for all AP/AR, projects	Scott	Review with Steering		x				Scott tracking and will compare to financials prepared by office
4	coordinate marketing & associated material for ACL website - initial and ongoing	Scott	Finalize with Pete			x			In process - website being updated; AIM marketing material being prepared
Operations									
1	Job Description for Project Mgr	Steering & Scott	Steering to approve		x				Completed
	Job Descriptions for AIM positions	Scott	Review with Steering to approve						Completed
2	Interview/hiring and contract review - existing individuals identified; if not, will look at next steps/posting options	Scott/Steering	Finalize contract through Pete		x	x			Completed; Scott to review with Steering Committee at SAM
3	Establish employment Contracts	Scott	Review with Steering; finalize contract through Pete		x	x			Changed to Insight as management of Project Asst. = completed
5	Develop Risk Assessment form/tool	Scott	Review with Steering & Pete			x			In process

6	Develop Evaluation Systems, tools and forms for project types	Scott	Review with Steering					x	In process
7	Develop spreadsheet for tracking all projects: key progress areas, timelines, progress, reports (non Carthy reports)	Scott	Review with Steering			x	x		In process, most items prepared
8	Establish navigation blueprint for YIPEE website	Scott	Review with Steering					x	Will change timeline to early 2020
9	Develop budget template for each pilot project	Scott	Review with Steering					x	Will establish first budgets in 2020 once projects finalized
Communication/Marketing									
1	Prepare/customize presentation packages for Corporate	Scott	Review with Steering		x				Completed and utilized; approved by Steering Committee
2	Target presentations for ITB companies	Scott	Web & In-person where relevant		x	x			Numerous presentations to date; with CAF developments will now re-group with ITB content
3	Establish Webinars with key partners	Scott	Review webex options		x	x		x	Completed and ongoing
4	Info/promo for PC's and Squadrons	Scott	Review with Steering & Pete					x	In process
5	Presentation for DND/RCSU's as determined	Scott	Review with Steering & Pete						To Be Determined; delivered overview in September
6	Project details on ACL website	Scott	Review with Pete & Anthony					x	To be completed when website ready
Legal/Insurance									
1	Review project details with insurance to ensure coverage for all potential projects and participants	Scott & Steering	Review with legal counsel		x				Awaiting responses from Aon
2	Waiver/approval forms: review needs with legal counsel for youth participants	Scott & Steering	Review with legal counsel			x			In process once input from insurance received
3	Agreement template for corporations involved in project	Scott & Steergin	Review with legal counsel					x	In process
4	Agreements for: risk assessment, Evaluation, SWOT services	Scott	Review with Steering						Will be completed in early 2020
5	Review insurance options from participating companies for each project	Scott	Review with Insurer & Company reps						To be completed with pertinent project
Governance									
1	Prepare draft documents for NFP formation	Steering	Review with NEC & Legal counsel						To be determined
2	Establish NFP Corporate Docs & Name	Steering	Review with NEC & legal counsel						To be determined
3	Finalize incorporation documents with legal counsel	Steering	Reviw with legal counsel						To be determined
4	Identify/confirm Directors/Officers	Steering	Reviw with NEC						To be determined

AIM AA

INVEST NOW

TO SECURE YOUR FUTURE WORKFORCE

AIM **is your strategic partner to help you establish new career paths to *Aviation* and *Aerospace* occupations for young people across Canada!**

We engage corporations, professionals and educators in creating new ways to train the skilled workers you will need to succeed. *Todays youth are your future workforce.*

CREATE **a comprehensive approach – and solutions - to help train and recruit your future employees!** ***New models and concepts are needed to address shortages!***

ENGAGE **young people who have the interest and passion to become the AME's, pilots, flight instructors of tomorrow. We recruit, screen, and link youth for AIM projects across Canada.**

TARGET **some time, resources and expertise on establishing new streams to employment. Build, test and implement solutions to help you and Canadas youth!**

Our Focus.
Your Opportunity.

AIM is your partner for creating, testing and implementing new models to grow the workforce & support Canadian companies.

We bridge the industry to youth aged 16-21 across Canada who are interested in careers in the sector!

Ask about special projects for *Industrial Technological Benefits* (ITB)

READY → SET → *AIM!*

It's as easy as…

1. Contact AIM to discuss your needs.
2. Consult with AIM on goals, objectives.
3. Create a project and move forward!

AIM AA

AIMproject@aircadetleague.com

Scott Lawson

647-884-2183 (Ontario)

1-877-422-6359 (toll free Ottawa)

AIM-AA is a corporate initiative under the Air Cadet League of Canada, supported by a private foundation and industry companies.

AIM-AA

Helping Build The Future Workforce

Helping DESIGN and BUILD
The Future Workforce!

Prepared for

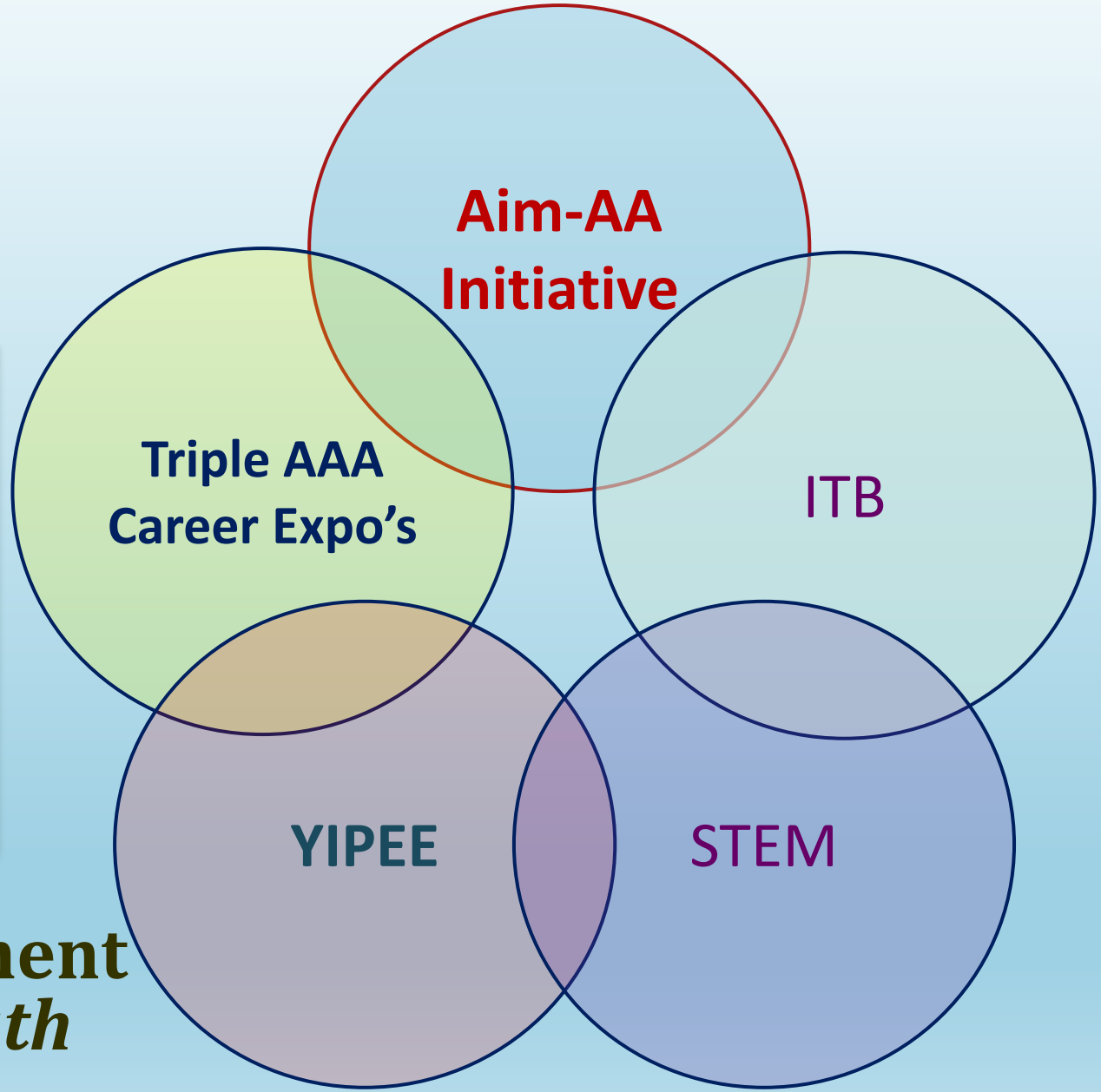
ATLANTIC CANADA
AEROSPACE & DEFENCE

AIM-AA

Helping Build The Future Workforce

Presentation Agenda

1. Triple AAA Career Expos
2. YIPEE – *Youth Industry Portal for Education & Employment*
3. STEM
4. AIM-AA – *Advanced Incubator Model for Aviation and Aerospace*
5. ITB - Industrial & Technological Benefits
6. Customizing & Moving Forward



National Workforce Development *for Sector, Companies and Youth*

AIM-AA

Helping Build The Future Workforce

A League program to build *New* Partnerships and Collaborating on Key Workforce Development Solutions.

Comprehensive approach to building solutions for short- and long-term success.

National Workforce Development *in partnership with Sector, Companies and Youth*

AIM-AA

Helping Build The Future Workforce

- Air Cadets & youth engaging with Industry leaders and companies
- Learn about career opportunities and jobs
- Identify a path to education and future employment
- 90+ Sponsors & Exhibitors participated
- 2000+ Cadets participated to date + public and Job Seekers
- BC Career Expo – *October 26 Abbotsford held!*
- Fall 2020 – reviewing locations for next 3 Expos
  - *Looking for host Corporation*

Triple *AAA* Career Expos

Aviation, Aerospace & Air Cadets!

Triple AAA Career Expos

AIM-AA

Helping Build The Future Workforce

YIPEE

Youth Industry Portal for Education and Employment

- A new portal and mobile application
- Provides linkages for Air Cadets and youth to Industry and Educators
- Webinars, job postings, occupational information, bursary/scholarships, post-secondary courses
- *Initial development to start in 2020!*

YIPEE – *the 24/7 Virtual Career Fair!*

AIM-AA

Helping Build The Future Workforce

Website & Mobile Systems

FREE Membership for All Cadets & Youth - *Nationally*

Post Secondary Education

Apprenticeship

Industry Training

Employment

YIPEE

AIM-AA

Helping Build The Future Workforce

STEM

Science, Technology, Engineering & Math

- Coordinating STEM workshops across Canada
- Collaborating with Civil Air Patrol in USA to access and utilize their curriculum and ‘kits’
- Focus is on aviation and aerospace related topics and subject
- Can utilize as part of AIM-AA initiative

AIM-AA

Helping Build The Future Workforce

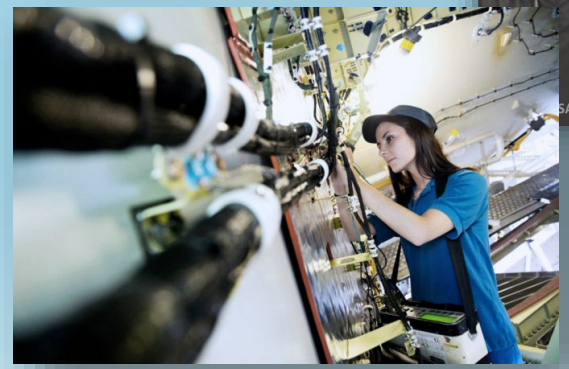
Helping to design and build industry workforce systems.

Advanced Incubator Model for Aviation and Aerospace

AIM-AA – initial 3-year project funded by a private foundation!

Work with industry employers to ***design, pilot and evaluate*** new models for providing youth with knowledge, skills, training, learning or certification *in aviation and aerospace occupations*

NEW
3-year initiative launching in September!



- A nation-wide project bringing together employers, Air Cadets and youth at **local/regional levels** to participate in skill development.

Open slate on the occupational focus, skill development areas, training models and methods, evaluation methods

Target Group

- Will invite Air Cadets from local Squadrons (28,000 across Canada, 450 Squadrons); 31% identify as female (= approx. 8700 young women)
- Will invite youth from communities, not in AC program;
- Will invite Army/Navy Cadets (22,000 across Canada)
- Target group is 14-21, flexibility based on project; priority 16-21
- Can be involved at high school or post secondary level; will engage with educators

Incubator Model

AIM-AA and Industry Steering Committee

- Rep's from Company or companies
- Educators linked as required

- Air Cadets and local youth engaged
- Demographics and experience determined with industry

NEW CONCEPT

- Determine Occupational Focus
- Determine scope & # of youth
- Design skill development, training initiatives
- Determine duration and methods
- Design & Implement model/concept
- Evaluate and analyze outcomes
- Recommended course of actions

Future Goals From Project

- **Policy and Funding Recommendations**
- **Roll-out to other regions**
- **Maintain project**
- **Re-test model with other occupations**
- **Integrate youth into company programs**

Project Framework

Targeted Outcomes & Benefits

- Increase # of youth exposed, engaged, motivated, trained, certified or experienced in various occupations
- Increased # of youth pursue training, education, post-secondary, apprenticeship, certifications and employment in sector
- Industry engages youth directly: internships, pre-apprenticeship, PT, seasonal, industry sponsored training, entry level work
- New, effective models to inform and advocate to policy makers, government, funders, trainers and educators, industry sector
- Increase awareness and direction into range of occupations, career choices and training paths

Purpose

Concept *to Action*

- *Corporate Sponsors* and regional employers to assist in designing and determining scope and focus of each project

Aircraft Maintenance Engineer

- Provide pre-apprenticeship sessions and some certifications to high school students
- Develop work-based training sessions to expose youth to real equipment, aircraft, tools, resources of an entry level AME

Generating new models and initiatives to meet workforce needs!

STEM

- Deliver STEM courses and sessions focusing on aviation/aerospace field that also qualify for high school credits
- Introduce 13-15 year olds to specific STEM subjects through training sessions and friendly competitions delivered by industry professionals

Pilots

- Provide recognized orientation and skill development to youth through flight simulator and flying school hours
- Link post-secondary credits and potential bursaries to training offered by company

Corporate Sponsors and regional employers to design and determine scope and focus of each project

AIM-AA
Helping Build The Future Workforce

AIM-AA Role and Support

	Activities & Roles	AIM-AA $funding
1	Project management, marketing and administration	
2	Recruit, screen and select youth with employers	
3	Support for Air Cadets and youth – tools/equipment, transportation, supplies, tests/certifications, insurance	
4	Pay for risk management review and employer evaluations	
5	Pay for SWOT Analysis with employers and participants	
6	Pay for Focus Groups with employers, trainers and youth	
7	AIM-AA website , reports and post-project webinars	

AIM-AA

Helping Build The Future Workforce

Moving Forward

Options and opportunities to support industry and youth initiatives.

Discussion

1. Shared approach to working with young people, initial focus on AIM-AA projects
   a) Utilize existing initiatives that we can turn into evaluation projects.
   b) Identify new options and opportunities related to a specific occupation or skill development.
   c) Identify new geographies for AIM-AA
   d) Shared approaches to marketing, engaging corporations and educators (where needed)
   e) Using professionals and expertise through Elevation for instructor, facilitator roles
2. Future options and opportunities regarding youth training and specific initiatives that can be mutually beneficial – Career Expos, STEM, YIPEE, joint grant applications.

Moving Forward Options

Premier National Sponsor Package

$25,000 over 3 years (*$8300 annually*)

AIM-AA	Triple AAA Career Expos	YIPEE
2-3 unique AIM-AA initiatives in different regions	2-3 Triple AAA Career Expos (or Host option) and/or STEM workshops	Founding Corporation Branding and Design Input – 2 Year Program
Determination of occupations, target group and training model	Premium Value Sponsor Package for Expos	Premier Advertising & Promotional Features & space
Project steering committee lead	Input on locations and formats	Premier Webinar program (4 per year)
Independent or collaborate with other companies		Job posting, corporate career info, links
$20-25,000 VALUE	**$7,000 Value**	**$10,000 Value**

Flexibility to adjust amongst 3 main initiatives

***Option*: If Shared with 1 other corporation = $12,500 each over 3 years or $4,200 annually!**

AIM-AA
Helping Build The Future Workforce

Additional Packages Available

	AIM-AA Projects	Career Expo/STEM	YIPEE	Option	Package Price
National Sponsor (only 4 available)	**2** projects over 3 years	2	Gold package for 2 years	Can be a shared package with 1 other company	$18,000 or $9,000 for 2 partners
Provincial or Project Sponsor (5 available)	**1-2** over 3 years	1	Gold Sponsor package for 2 years	Can be a shared package with 1 other company	$12,000 or $6000 for 2 partners
Event Sponsor	**1** project over 3 years	1	Gold Sponsor package for 1 year		$8,000

Individualized Activities Still Available. Separate ITB Initiatives Considered.

Discussion or Questions!

AIM-AA
Helping Build The Future Workforce

CADET CORNER

HELPING TO 'DESIGN AND BUILD' WORKFORCE SOLUTIONS!

by the Air Cadet League of Canada

PART 2 ON the ACES program (Air Cadet Employment Stream) of the Air Cadet League of Canada.

The Air Cadet League is pleased to announce the ***AIM-AA*** project (*Advance Incubator Model for Aviation and Aerospace*), a new 3-year initiative to assist the sector to design and test new ways to prepare the future workforce. In response to the current and forecast gaps in numerous sector occupations, ***AIM-AA*** is a leading opportunity to develop new ways to get young people ready, motivated and trained for exciting professions.

Officially launched in September, the ***AIM-AA*** is a unique project – funded through a private foundation – that will bring industry employers together for purposes of 'designing, testing, evaluating and launching' new training and skill development models that target youth aged 14-21 who are looking for careers in the sector.

A key goal is to help youth be more prepared, skilled and focused on education and employment directions for specific occupations in aviation and aerospace. The foundation of ***AIM-AA*** is to customize new models and concepts that will help to improve, build or create initiatives that support skill development and education across any selected occupation.

The project is pan-Canadian and the Air Cadet League has already started to work with interested employers, educators and associations to scope out priority training and skill development initiatives. In addition to inviting the participation of 28,000 Air Cadets across Canada, each project can also involve any youth from the community who are interested in considering careers in aviation and aerospace. Further, the initiative will support youth from ages 14-21, with the goal of influencing and supporting ways to help them gain access to the many careers and future employment.

ABOVE RIGHT: Air Cadets attending the Triple AAA Career Expo.
(PHOTO BY GUSAIR AVIATION PHOTOGRAPHY)

"In our consultations with industry partners leading up to this application, a priority goal was to try out some new concepts, or build on existing models, that could engage and motivate more young people to choose careers in the sector," noted Scott Lawson who will be the project manager for this League initiative. "***AIM-AA*** is meant to incubate new ideas, concepts and training models at different academic and skill development levels so that companies can tap ways of reaching their future employees."

Importantly, for companies that work within the *Industrial and Technological Benefits (ITB)* program, through the ***AIM-AA*** initiative there will be opportunity to collaborate on some 5x multiplier initiatives. Through partnerships with post secondary institutions and the ***AIM-AA*** project, ITB companies can work towards the development of research and development projects under ITB sections 7.5 and 7.6 which cover skill development initiatives. There is also an opportunity to work with ***AIM-AA*** and indigenous groups and education facilities on projects that will also qualify for 5x multipliers.

An industry steering committee will be established to help guide the specific projects and assist in the evaluation and piloting of new approaches to training, skill development and employment preparation for young people. Through funding

*"In response to the current and forecast gaps in numerous sector occupations, **AIM-AA** is a leading opportunity to develop new ways to get young people ready, motivated and trained for exciting professions."*

(PHOTO CAF)

received by the grant and industry contributions, the League will be able to support each initiative in developing, implementing and evaluating each initiative as well as supporting the youth involved for needs such as equipment, supplies, transportation, testing/certification and insurance.

"We are grateful to our funding foundation for their support to this exciting Canadian initiative to help our youth and this critical sector", noted Lawson. "Through support from some of our corporate partners for the project such as Jazz Aviation, CAE, CCAA and Seneca College, we are starting exciting and innovative projects that will directly address the workforce needs of the industry".

"This is a significant opportunity to help design the type of training and workforce development programs and models that will directly benefit companies as they look a bit down the road to preparing and engaging young people for employment", stated Lawson. "It's certainly one of the best investments the sector can make – helping to build and grow the future employees who will lead their companies and the sector in the future".

If your company may be interested in discussing or building or participating in an ***AIM-AA*** project, full details can be obtained by contacting Scott Lawson (**specialprojects@aircadetleague.com**) or at 647-884-2183.

(The Air Cadet League is an independent, charitable corporation and supports the Air Cadet program operated by the Canadian Armed Forces).

Copy from Aviation News Journal – May 2021

Helping to 'design and build' workforce solutions for Aviation and Aerospace!

A new corporation has been created to focus on supporting the aviation and aerospace industry to prepare the future workforce. ***R.E.A.L. Services Canada*** is a federal, not-for-profit corporation that emanated out of the Air Cadet League of Canada last fall to build and expand on programs and services both for youth and others looking to join the many occupations and professions across Canada.

"***REAL*** was developed to become a support system to employers and future employees so that this sector can continue to be a leading part of our Canadian economy", noted Lawson who has taken the reigns at REAL as it transitioned programs and services through a collaboration agreement with the Air Cadet League.

"**REAL** allows us to operate training and employment-based services that were not eligible under the ACL charitable designation and also expands our reach to focus on any youth in Canada, even those who are older than Cadets who age out at 19 years", Lawson confirmed. "While an important priority of our services and programs is to invite and engage Cadets to participate, we also know that the industry will need a larger pool of future workers to fill the many needs in different regions, different parts of the sector and across a broad range of occupations."

A number of previous initiatives are now under the direction of ***REAL*** and some exciting new initiatives are underway and in the planning phase. They continue to work with employers and associations to try to bridge, create and support initiatives that will link youth and those not in the workforce to future career streams in aviation and aerospace.

"We know that workforce development – preparing the future workers for your sector – is a significant and large undertaking that most employers cannot spend the time and resources to oversee by themselves. Especially smaller organization and especially during these challenging times when resources and focus on operations is tight" explained Lawson who has worked with the sector for the past 11 years. "**REAL's** mission is to be the conduit, catalyst or broker to facilitate some of the workforce planning and development needed to build new options and opportunities for young people."

Lawson noted that they are continually looking at challenges and opportunities identified by the sector and to engage with employers and associations in order to collaborate on designing and building the correct solutions. A key mission is to build streams that will get qualified workers into the sector in the most effective and direct way.

With a mission to be a catalyst to help drive new initiatives and spearhead new projects that can address the workforce needs, ***REAL*** is underway with some current projects and is interested in working directly with employers and sector bodies to establish new directions that will support all parties.

Some of the current initiatives and development underway through ***REAL*** include the following:

- ***AIM-AA*** project (*Advance Incubator Model for Aviation and Aerospace*), is a new initiative to assist the sector to design, build and test new concepts and models to prepare the future workforce. Funded through a private foundation, and supported by some corporations such as JAZZ Aviation and CAE, *AIM-AA* is a leading opportunity to create new pathways to get young people ready, motivated and trained for exciting professions.

  AIM-AA brings industry employers together for purposes of 'designing, testing, evaluating and launching' new training and skill development models that target youth aged 14-21 who are looking for careers in the sector.

  A key goal is to help youth be more prepared, skilled and focused on education and employment directions for specific occupations in aviation and aerospace. The foundation of *AIM-AA* is to customize new models and concepts that will help to improve, build or create initiatives that support skill development and education across any selected occupation.

  The project is pan-Canadian and the REAL has launched new models working with interested employers, educators and associations to implement training and skill development initiatives. "In our consultations with industry partners leading up to this application, a priority goal was to try out some new concepts, or build on existing models, that could engage and motivate more young people to choose careers in the sector," noted Lawson. "*AIM-AA* was created to incubate new ideas, concepts and training models at different academic and skill development levels so that companies can tap into new ways of reaching their future employees."

  Despite some adjustments needed due to COVID, *AIM-AA* has already produced some exciting opportunities for employers and youth in such areas as pilot training, RPA training, STEM training for aviation and aerospace. REAL is interested in building on the successes to date end encourage all employers and associations to get engaged.

  "This is a significant opportunity to help design the type of training and workforce development programs and models that will directly benefit companies as they look a bit down the road to preparing and engaging young people for employment", stated Lawson. "It's certainly one of the best investments the sector can make – helping to build and grow the future employees who will lead their companies and the sector in the future".

- *YIPEE* (www.yipee.ca) is a new website and mobile portal that focuses on careers, education and employment in aviation and aerospace. Filled with information about different occupations in the sector, links to employers and educators across Canada, career articles and specialized webinars, YIPEE is free to all visitor and users. Aviation companies and associations can be members through one of the packages available. Amongst other webinars recently held, LCol Maryse Carmichael (ret'd) was a guest presenter who offered advice and guidance to youth and others on building a career in the sector as she spoke to a large audience of keen viewers.

- *Virtual Pilot Training,* a new, virtual training initiative offered in alliance with Delphi Technologies Corporation out of Winnipeg, is in testing phase at present with the future looking very promising. The leading-edge virtual

training platform offers a new opportunity for individuals to gain the skills needed to write their recreational pilots exam. Designed as a virtual training campus, and built on 'gaming' interactivity, the system known as VR City combines Virtual, Augmented and Mixed Reality programming with 3D and Ai capabilities to offer a one-of-a-kind training experience for aspiring aviators. Once current, live testing is complete, a major goal is to offer this leading training solution to educators, employers, flight schools and high schools as a main way to training and prepare future pilots for Canada…and beyond.

For more information about these initiatives, or to engage with ***REAL Services Canada*** to discuss your workforce development needs and opportunities, Scott can be reached through the following:

Scott Lawson, Executive Director
executivedirector@realservicescanada.ca
www.realservicescanada.ca
647-884-2183

January 22, 2020

From: Scott Lawson, *Air Cadet League of Canada* **(ACL)**

To: Alexander Duketow, Lisa Cole, Chris Paige, Todd Crossley - **PVNCCDSB**

Lynne McMullen - **SENECA College**

Re: *AIM-AA Projects with Air Cadet League of Canada (1 of 2 documents)*

This will provide an initial draft for discussion on one of the proposed projects (*STEM Workshop Sessions*) that was discussed at our recent meeting and which will fit the requirements of our AIM-AA initiative. ***I will provide a second document*** that will focus on the other AIM-AA options discussed and to be further reviewed.

The following highlights key information and I look forward to your input and further discussions to ensure we have covered off all necessary aspects. I anticipate that logistical meetings will need occur in the coming weeks to plan and affirm logistics to be planned and implemented and which we can handle via web conferencing.

Project #1 – STEM Workshop Sessions for Grades 9/10 and 7/8	
Overview	Provide STEM sessions to students in noted grades as delivered by qualified instructors from industry/education and utilizing selected STEM Kits and Instructor materials provided through Air Cadet League from the Civil Air Patrol. Expose students to particular topics and areas of STEM that are linked to interests, education and skills for future high school courses and career opportunities in aviation and aerospace. The main interest for ACL is for the grades 9/10 workshops, but it is understood that the structure is in place to hold initial workshops with Grades 7/8 in current school year and that the following school year may be more applicable to 9/10 students and linkage to Aviation Course.
Evaluation Goal	1. Capture and identify knowledge, awareness, interest and future potential of participants in aviation and aerospace fields and professions. 2. Identify pre- and post- session perspectives of participants in their awareness and interest in STEM related topics and skills. 3. Identify learning outcomes from session that are linked or applicable to interest in considering future courses related to aviation and aerospace at high school level. 4. A goal is to measure any change, impact and development that the workshops provide in relation to knowledge and interest in STEM and aviation/aerospace.
Framework	In conjunction with existing/established 'development' days for students that are currently scheduled by PVNCCDSB in the current school year, to offer 2 STEM workshop sessions. The STEM workshops would be marketed to interested students and sign-up implemented via school board method.
Workshop Details	Each of the 2 sessions would allow up to 16 participants, totalling 32. The sessions would be scheduled on different days due to instructor availability, unless other logistics are arranged. A mix of gender and age levels would be best. Participants would be involved for the full day and at an external location, potentially Seneca College centre. Each session will utilize 2 STEM kits and will likely be split into 2 groups depending on registration/attendance. Lunch will be provided.

Project #1 – STEM Workshop Sessions for Grades 7/8 and 9/10	
ACL Requirements	1. Would require basic participant tombstone data for evaluation purposes (no names required or will be used in any evaluation report); age, gender, grade. 2. Would require that participants complete a short survey prior to workshop. Can be developed as online and/or hard copy. 3. Would require that participants complete a short survey after the workshop, same logistics for providing survey format as initial one. 4. Would require a short survey with the instructors to identify the strengths, challenges and future development of similar workshops.
Proposed PVNCCDSB Tasks/Role	1. Promotion of sessions and registration of students for all workshops. 2. Provision of student demographics and distribution of 'pre-workshop survey' to participants. 3. Coverage of transportation to the workshop venue (if not possible, ACL to review coverage) 4. Provision of required supervisory teachers/adults as per policy. 5. Collect and provide any information on food/allergy/dietary needs of participants. 6. Any additional support not noted and to be discussed.
Proposed SENECA Role	1. Access and use of classroom for workshops, if possible. 2. Review of potential SENECA and/or industry instructors for the workshops. 3. Any additional support not noted and to be discussed.
ACL Support	1. Provide any required promo/information material to assist school board in promotion. 2. Supply the STEM kits for the workshops. 3. Secure STEM kit guides and resources in advance and provide to instructors for review and prep of each session. 4. Provide pre- and post- surveys in agreed format. 5. Provide lunches to participants, instructors and supervisors. 6. Provide certificate of recognition/completion of workshop to all participants.
Current/Main Action Items	1. Confirm and secure dates for sessions. 2. Identify and confirm potential instructors. 3. Prepare material and promote sessions to students via PVNCCDSB channels. 4. Select STEM Kits to be used; ACL to order and provide kits at earliest. 5. Identify and confirm location of sessions. 6. Identify transportation for participant if 'off site' location used. 7. Finalize survey format and questions for review with PVNCCDSB.
Next Planning Meetings	1. Establish meeting dates and participants required to complete required planning and delivery of workshops.

Youth Industry Portal for Education & Employment (YIPEE)

The 24-hour Virtual Career Fair!

Key Features & Content

Youth

Employer job postings and links to submit applications; and links to their firms	Live, online conferences and presentations by employers & business leaders to all interested youth	Educator posting about courses and programs and links to their institutions
Video library of presentations & other videos from professionals about occupations & careers	Information and access by youth to scholarships, bursaries and ability to apply	Career Library containing resources and guides to jobs across industries and occupatons
Searchable site through database to find employers and educators by province, sector and occupation	Tiered 'packages' for employers and educators to determine the services wanted to reach out to youth	Mobile-friendly capability to help youth access and use YIPPEE from anywhere via their phone
Career and Job Search guides and information to help youth select and pursue their goals	Occupational profiles and presentations by leading Canadians from various professions telling their stories	Youth Agencies able to join and post details about all of their services to youth, by province and type

Employers

Educators

YiPEE!

Member Packages Available

Annual Member Benefits	PREMIER	GOLD	BASIC	OTHER
National Webinar Presentations	8 Webinars per year	4 Webinars per year	2 Webinars per year	**Individual webinar sessions available for $200**
Corporate Blog Section	8 Corporate Articles	4 Corporate Articles	2 Corporate Articles	
Banner Ad placement	Select site locations	Select site locations	Select site locations	
Website links and logo display	Choice of main links and logo display	Choice of main links and logo display	Choice of main links and logo display	**Non-profits and small business under 10 employees = 30% off price!**
Prime placement in all search results	Lead display in search results	Lead display in search results		
Corporate and contact information section	Choice of direct linkage for communication			
Job posting links	Link to key company postings			
	$1500	**$900**	**$600**	

YIPEE

Youth-Industry Portal for Education and Employment

Blueprint and Feature Sheet for YIPEE - *the 24-hour virtual Career Fair!*

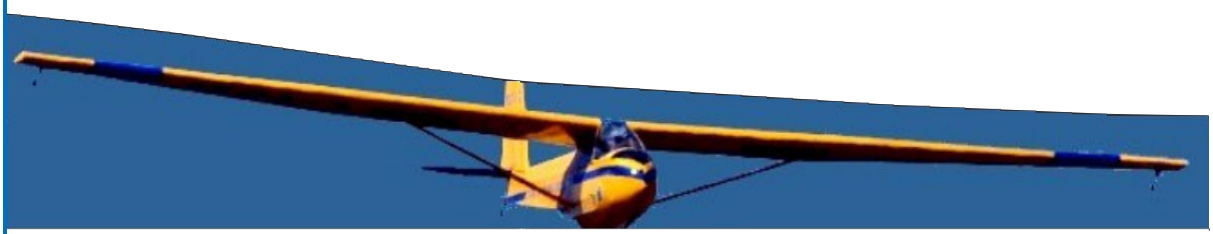
This will outline the broader details and features for creating and using innovative technology to address important issues. The main thrust is to reach Canadian youth to be able to market and promote careers and employment in aviation an aerospace. As important, it will provide a comprehensive tool to assist industry employers and educators to communicate, educate, motivate and attract youth to the broad range of professions in the sector.

YIPEE is envisioned as a comprehensive web-based system with an associated mobile application that will provide a range of options to link youth and employers for end purposes of training, career development, education and employment. The 'cause' is both to help youth access a broad range of information and support while also helping employers gain access to young people to help them build and develop their workforce for the future.

High Level Features

The following are the key features that will be incorporated, with a goal of using current and innovative technology where relevant to make the system user-friendly, interactive and accessible.

- Web-based system, navigated via a registered membership protocol for youth and employers through password/secure protocol
- The active elements of the system will be:
  - Ability to host online presentations by employers, live broadcasts that can incorporate a large number of youth participants, similar to GoToMeeting capabilities with some interaction between presenter and audience
  - Posting and storage of digital products/videos by employers and industry reps about their jobs, companies and opportunities
  - Posting of various types of products, information and opportunities by company - these would include range of job postings (basic info with links); bursaries and scholarships; ability for youth to then connect directly to employer for purposes of application to various postings
  - Database element to store basic user details for 'registration' and 'membership' purposes, including annual member element and different 'levels' of authority and privileges for employers based on their 'package' selection
  - A front-end marketing element that brands and informs public about the system and details the benefits and methods for joining as both a 'youth', youth group, or employer/industry
  - A library of career and educational material for a broad number of occupations and job profiles sorted by sector and title



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YIPEE

Youth-Industry Portal for Education and Employment

Blueprint and Feature Sheet for YIPEE

- A payment system to electronically integrate employers who pay for various levels of their program, based on site features they want to utilize; online sign-up, registration and payment capability
- Payment can utilize existing services such as Paypal, e-transfer, credit card

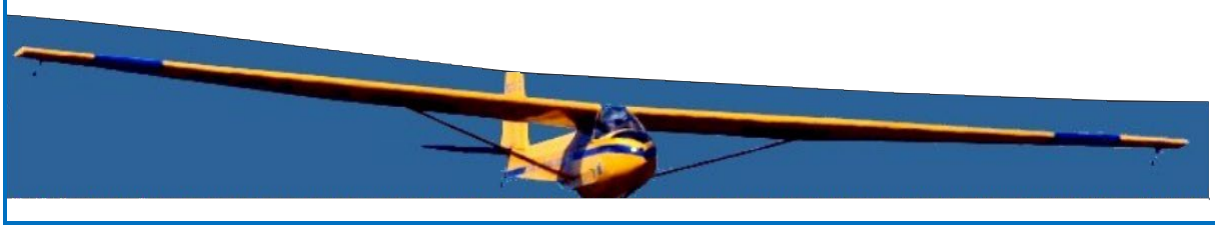
Mobile Application

- A goal is to also build full mobile capacity so that youth who are members can access the main features of the site via hand-held devices.; employers will also be able to access key parts of the site related to their package

Main System & Site Administration Options

The system will have the following main aspects and capabilities:

- Employers will be able to schedule their online presentations and marketing/registration will go out to all registered users via email
- Youth will be able to register for any presentations and be able to feed questions in advance and via text method during
- System will be able to offer a live, one-to-one interview between an employer and youth; this is for purposes of interviewing candidates for jobs, scholarships/bursaries, career/training options
- Employer packages will have options that include: posting #X of jobs/opportunities, delivering online presentations, posting video's in library, posting scholarships/bursary information, a template section that details their company and it's service/products and occupations; standard links to websites and contact persons
- Youth involved as Cadets will be able to register and join for free, while other youth may pay a nomina annual fee or have a 'staggered' package option with free/minor cost accessibility.
- Youth organizations will be able to register and join for an annual fee that allows full access to #XX of youth under their membership/services
- Site will allow for third party advertisements at front and back office
- Post secondary education institutions will also be eligible to register and post information about the relevant courses; they will have a separate 'package' option to be able to market and post information
- The administer will manage all elements of the site and have controls and capability to change core content on front and back ends, registration and payment controls, adding/approving new members, setting 'privilege' levels, managing advertising programs





Would you like to become a certified drone pilot?

FREE! For youth aged 16-21 living near Waterloo, ON

Only 10 spaces available – *Register Early*!

A Special Initiative for Youth Aged 16-21 to gain skills and *Transport Canada* certification.

AIM-AA
Helping Build The Future Workforce

Be Part of a unique opportunity to gain knowledge, skills and certification towards a potential career as an ***RPA (Remotely Piloted Aircraft…or 'drone') pilot!***

You will receive instruction from **Transport Canada Certified instructors** to secure your ADVANCED LICENCE.

NO COST to you. Participants must have their BASIC LICENCE!

Register by March 19. Start date to be determined with participants!

LEARN the technical skills and regulations in Canada that are required for drone pilots! This could be your path to future careers in many industry sectors!

TRAIN with Transport Canada certified instructors. Includes ground school and flight, Transport Canada exam, and flying drone missions.

EARN an Advanced Operations Pilot certification issued by Transport Canada and recognized by future employers!

Participants are eligible for transportation coverage where needed. All participants will be entered into a prize draw!

Eligibility Requirements.

- Age 16-21
- Living near Waterloo, ON
- Have Basic RAP licence.
- Approval by parent or guardian to participate (if required)
- Able to attend safe, in-person training sessions with an instructor
- Willing to fill out 2 surveys about your experience

Training Partner

REMOTELY PILOTED AIRCRAFT SYSTEMS
OPERATIONS & TRAINING CORPORATION

READY → SET → *AIM!*

If you meet the requirements…

1. Complete the Registration Form.
2. Submit it to ***AIM-AA*** thru Scott Lawson.
3. OR…contact Scott if you have questions

AIM-AA

FOR INFORMATION, CONTACT:

executivedirector@realservicescanada.ca

Scott Lawson

REAL SERVICES CANADA

A Collaboration with RPAS Operations & Training Corp. and R.E.A.L. Services Canada

REMOTELY PILOTED AIRCRAFT SYSTEMS
OPERATIONS & TRAINING CORPORATION

REGISTRATION FOR DRONE TRAINING INITIATIVE

AIM-AA
Helping Build The Future Workforce

Registration Form

ALL Sections Must be completed and form signed by a Parent/Guardian (if under 16 at present)

Participant Information

First Name: _____ Last Name: _____

Birth date: _____ Current Grade: _____

Address: _____

Town/City: _____ Prov: _____ Postal Code: _____

Cell Phone Number: (___) _____ Other Number: (___) _____

Email: _____

Parent/Guardian Information

Full Name: _____

Email: _____

Address: same as participant? ☐ YES If not, complete remaining information below:

Address: _____

Town/City: _____ Prov: _____ Postal Code: _____

Cell Phone Number: (___) _____ Other Number: (___) _____

Are you the emergency contact person for the Registrant? YES ◯ NO ◯

_____ _____

Parent/Guardian Signature: **Date:**
(Digital signature accepted)

All information provided will be kept confidential through the REAL Services Canada and will not be released publicly or to any source other than RPAS Operations and Training Corp. instructors/trainers involved in this program.

You may be contacted for further information or to discuss your registration in the program.

If accepted, you will receive full details about the program, leaders, schedule and requirements.

AIM-AA
Helping Build The Future Workforce

From Scott Lawson
Executive Director
REAL Services Canada

March 25, 2021

Information for Calgary RPAS Training Project

Hello Participants.

Thank you for being part of this initiative and we look forward to working with you virtually and in-person for one of the sessions.

This document will provide you with the important information and details about your participation and enjoyment. Your support team is here to make sure you have a safe, fun learning opportunity and achieve success in gaining your basic RPA licence. If successful, you will be prepared to pursue an advanced level licence which requires this first step and reaching the age of 16.

We will be reviewing this document and additional details at our advanced web meeting and also have the opportunity to introduce everyone to your instructors and each other.

Here is your first task:

- Please send me an email (executivedirector@realservicescanada.ca) at your earliest to confirm which of the following dates work best for you, and include ALL of the ones that may work. They will be held in the early evening, around 1830-1900 hrs start time:
  - Wednesday April 14
  - Thursday April 15
  - Tuesday April 20
  - Wednesday April 21

We will select the best date that fits most (hopefully all) of your schedules and send you the web link for the selected date/time.

And now, here's the main information about your session and we will be able to answer any questions you may have on the upcoming webinar meeting.

1. In case it seemed confusing, ***REAL Services Canada*** is a new company that had it's beginning through the Air Cadet League of Canada and is now operating the projects that used to be done through myself at the League. The transfer was happening at the same time we were setting up this initiative, so you have seen 2 different organization names and email addresses for me. One of REALs main goals is to support youth across Canada to gain theskills and education required to gain future employment in numerous occupations and professions in aviation and aerospace,

and we also work with other industry sectors.

2. **Your RPAS team**. Along with myself, you will have 2 certified RPA instructors who will be leading you through the various elements and training to secure your basic RPA licence.

   - **Harish Jadeja** (your Web instructor) is Chief Pilot and Flight Instructor for *Remotely Piloted Aircraft Systems Operations and Training Corporation (RPASOTC)* and acquired his 'wings' at the age of 16 through an Air Cadet program in India. Harish has been a general aviation pilot for over 40 years.

     Harish is a Transport Canada (TC) and Federal Aviation Administration (FAA) certified commercial drone pilot with Flight Reviewer endorsement to conduct flight examinations on behalf of Transport Canada for pilot-candidates applying for a *Pilot Certificate – Small Remotely Piloted Aircraft (VLOS) – Advanced Operations*.

     As an Accredited Examiner for the Ministry of Innovation, Science & Economic Development (ISED), Government of Canada, Harish administers the Restricted Operator Certificate-Aeronautical (ROC-A) exam. Harish is a Certified Level-1 Thermographer and a seasoned Learning & Development professional with nearly two decades of corporate wisdom.

     Harish is a passionate member of various organizations supporting the aviation, innovation & science industry. During his spare time, Harish enjoys building his second airplane, a 3-seat Murphy Rebel.

   - **Grant Brown** (your Calgary Instructor) has spent over 30 years in the maritime industry working within various sectors including, container, offshore supply, anchor handling, subsea construction and offshore drilling. He completed his career as Captain & Offshore Installation Manager on deep water drilling rigs around the world. He has been a general aviation pilot for over 20yrs and has flown extensively in South Africa, New Zealand and Canada. He has been actively involved in the drone industry for 4 years, has his Advanced Drone Operators Certificate with Flight Review Rating, and runs a training school out of Calgary, *the Calgary Drone Academy*. Grant also provides drone services across numerous sectors in Canada.

3. **Scheduling**. Here is the main schedule of activities and some related information for you.

   a) There will be 2 part-days of online, web instruction which will take place on **Saturday April 24 and Sunday April 25**. Harish will coordinate the best time to start with you, it could be at anytime during the day based on his and your schedule. **See Itinerary in #4.**
   b) You will have 1 in-person session that will focus on flying and learning the skills to operate a 'drone' effectively and according to Transport Canada regulations. This will occur on May 8 or 9 and Grant will confirm the date and location with you. We have registered to use a park in southern Calgary and are awaiting confirmation. **See Itinerary in #4.**
   c) IMPORTANT: After your April 24/25 sessions, and before your May 8 or 9 session, you will have to **write and pass** your Transport Canada basic licence exam. Harish will be preparing

you for this exam as part of his lesson plan. The exam is online and cost $10. We will reimburse you for this amount, so please keep the receipt and confirmation of passing your exam. YOU MUST pass your exam in order to participate on May 8 or 9, as a licence is required to operate the drones you will be using. If you happen to fail on your first attempt, you can write the exam again in time for May 8 or 9. If you do fail, Harish or Grant can assist you in any difficulties you may have had or studying that you may need to do. Good luck to everyone, don't be too concerned as Harish will help you learn all the necessary information and success with the exam is very achievable.

d) Before May 8/9, but after you pass your exam, you will also be provided with a short, online session to assist you to prepare for the flying portion. It will cover site survey and checklists and you will be able to take it individually at a convenient time for yourself. Grant will provide the link for this element.

4. **Itinerary.** Here is a review of the Itinerary for both elements of your training, the web-based and in-person.

- **Web-based sessions April 24/25:**

Section 1: Air law, air traffic rules and procedures
Section 2: RPAS airframes, power plants, propulsion and systems
Section 3: Human factors
Section 4: Meteorology
Section 5: Navigation
Section 6: Flight operations
Section 7: Theory of flight
Section 8: Radiotelephony

- **In-person flight training session May 8 or 9:**

  - Preparation for a flight (site surveys, checklists, normal & emergency procedures, roles and responsibilities, etc)
  - How to do a proper inspection of the drone and set it up for flight
  - Introduction to the Application used for the drone
  - Manual flying, flight techniques, automated flight & RTH functionality

5. **Questionnaires.** I will be providing you with 2 short questionnaires, one before you start and one when you complete the session. The main focus is to get input on your current situation and goals, and then input on the session you took and what you learned. They won't take too long and I will send them individual to you in a PDF fillable form for you to complete.

6. **General Rules, Responsibilities and Information**

a) If you have any questions, concerns or requirements at anytime that are not related to the material being taught by your instructors, please contact me directly by email or phone.
   a. Email: executivedirector@realservicescanada.ca

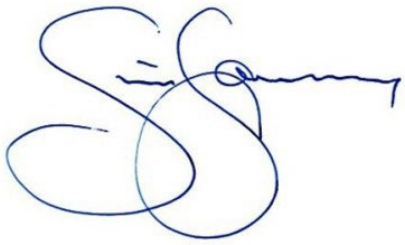
b. Cell Phone: 647-884-2183 (Ontario)

b) Your parents or caregivers are welcome to monitor your web sessions and attend the flying session to watch your activities.
c) You will be responsible for getting yourself to and from the facility on May 8 or 9. We are trying to book a facility that has washrooms and refreshment at the location or very close by. Standby for details once we have confirmation of the location.
d) If you do not have a ride or method to get to the May 8 or 9 session, please contact me directly and I will work with you to finalize a plan.
e) At the in-person session, you will need to **bring a mask.** We will **provide gloves** for each person as it is required for operating the drone, in conjunction with any safety cleaning the instructors will provide.
f) Also at the session, we will provide some **drinks and treats**. We will discuss providing some lunch and will finalize this on our advance webinar meeting. You should bring some snacks and money just in case you need either. Wear comfortable clothing and bring a windbreaker/rain jacket in case there is a chance of rain. We are trying to be flexible between May 8 or 9 in case the weather looks bad on either date so that can switch if required. We'll know more soon and let you know the plans and options.

That's the main information other than 'have fun'! I look forward to meeting you on the upcoming webinar, but contact me anytime if you need assistance or information.

Best wishes in your current school, Cadet and recreational activities!

Sincerely,



Scott Lawson

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S.T.E.M.

Comprehensive courses for Grades 6 to 9. Developed with aviation & aerospace curriculum.

Key Features

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Our online Campus supports private training rooms and classes….plus many features to support instructors and students learn, gain success and achieve results!

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VR City is designed to help students and interested aviators gain the skills and knowledge for securing certifications and private pilot's licence. Able to be customized to meet class or program requirements, *VR City* is built to the standards identified by ***ICAO*** *(International Civil Aviation Organization).*

FOR A CUSTOM TOUR, PACKAGE OPTIONS AND PRICING, CONTACT:

executivedirector@realservicescanada.ca *or at* **www.realservicescanada.ca**

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FOR GRADES 6 TO 9

CULTIVATING 21ST CENTURY SKILLS THROUGH VIRTUAL STEM EDUCATION

Our interactive platform blends STEM education with Artificial Intelligence (AI) to take students from grades 6 to 9 on a virtual journey through **flight, environment** and into **space.**

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GRADE 6 • FORCE OF FLIGHT

- Gravity and Lift
- Bernoulli's Principle
- Investigating Air
- Thrust and Drag

GRADE 7 • AIRCRAFT DESIGN

- Comparing and Evaluating Aircraft Design
- Different Aircraft Designs
- Parts of an Airplane
- History of Aviation

GRADE 8 • COMPONENTS, ENERGY AND FORCE

- Comparing and Evaluating Based on Components
- Energy Sources & Fuel
- Hydraulic and Pneumatic Systems
- Simple Machines

GRADE 9 • OUR ENVIRONMENT & SPACE

- Environmental Chemistry
- Space Exploration

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GRADE 6
INTERACTIVE STEM PROGRAM
DETAILED COURSE OUTLINE

MODULE 1
FORCES OF FLIGHT: GRAVITY AND LIFT

- The Evolution of Travel
- What is Gravity?
- Gravity and Nature
- Power and Lift
- Bernoulli's Principle

MODULE 2
FORCES OF FLIGHT: INVESTIGATING AIR

- Vocabulary
- What is air?
- Does air take up space?
- How does air behave?
- Air Pressure
- Density and Buoyant Force
- Atmosphere
- Gravity

MODULE 3
FORCES OF FLIGHT: THRUST AND DRAG

- Drag
- Thrust
- Propulsion Systems
- Aircraft and Spacecraft Steering

STEM FOCUS:

Deep focus on science as students explore gravity, lift and Bernoulli's principle. Math application in terms of understanding the formula for force. Understanding engineering within propulsion systems. All learning takes place in a digital environment, offering technological development.

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GRADE 7
INTERACTIVE STEM PROGRAM
DETAILED COURSE OUTLINE

MODULE 1
AIRCRAFT DESIGN: COMPARING & EVALUATING

- Comparing Different Uses
- Interactive Review: Water Bomber CL415
- Interactive Review: Spy Plane Lockheed U2
- Interactive Review: Transport Plane C295W
- Agricultural Aircraft Comparison
- Interactive Review: Helicopter

MODULE 2
AIRCRAFT DESIGN: DIFFERENT FORMS AND FUNCTIONS

- Monoplane Design: The Bleriot X1
- Triplane Design: The Fokker Dr. 1
- Large Aircraft Design: Airbus Air 380 & Airbus Beluga
- High Speed Design: The Concorde

MODULE 3
AIRCRAFT DESIGN: COMPONENTS

- General review of parts and components
- Elevator
- Rudder
- Ailerons
- Aircraft materials and fabrics

MODULE 4
AIRCRAFT DESIGN: HISTORY OF AVIATION

- Why do we fly?
- A brief history of aviation in Canada and the world
- Spaceflight
- Space Exploration

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GRADE 8
INTERACTIVE STEM PROGRAM
DETAILED COURSE OUTLINE

MODULE 1
COMPONENTS, ENERGY AND FORCE: COMPONENT COMPARISON

- What makes for a good machine?
- Evolution of Commercial aircraft
- Machine Efficiency
- Environmental Impacts

MODULE 2
COMPONENTS, ENERGY AND FORCE: ENERGY SOURCES

- What is Energy?
- Types of Energy
- Energy Sources and Fuel
- Fuel to Thrust
- Types of Propulsion
- Future of Aircraft

MODULE 3
COMPONENTS, ENERGY AND FORCE: HYDRAULIC & PNEUMATIC SYSTEMS

- What are Hydraulics and Pneumatics?
- Control Systems
- Hydraulic Advantages
- Pascal's Law
- Video: Hydraulic Systems in an Aircraft

MODULE 4
COMPONENTS, ENERGY AND FORCE: SIMPLE MACHINES

- What is a Simple Machine?
- Parts of an Aircraft
- Control Systems
- Video: Control Surfaces
- Flight Control Systems
- Landing Mechanisms

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GRADE 9
INTERACTIVE STEM PROGRAM
DETAILED COURSE OUTLINE

MODULE 1
ENVIRONMENT AND SPACE: ENVIRONMENTAL CHEMISTRY

- Measuring Substances
- Substrates and Nutrients
- Biological Monitoring
- Chemical Factors of an Environment
- Measuring Concentrations
- Acids, Bases and Neutrals
- Bio-degradation
- Hazardous Chemicals

MODULE 2
ENVIRONMENT AND SPACE: SPACE EXPLORATION

- Technology and Science
- Celestial Bodies
- Technological Advancements
- Distribution of Matter
- Our Solar System
- Objects: tracking them through space
- Challenges and technology for life in space
- Traveling to space
- Satellites
- Space Exploration
- Rockets
- Astronauts
- Space and Aviation

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