2016 Churchill Fellowship

Evaluating international models for the facilitation of trades-based learning in a secondary school environment

USA & Canada

Paul Boys

Churchill Fellow

October to December 2018

Awarded by The Winston Churchill Memorial Trust
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1. Indemnity Clause

The Winston Churchill Memorial Trust

To evaluate international models for the facilitation of trades-based learning in a secondary school environment

Report by, Paul Boys, Churchill Fellow

2016 Churchill Fellowship to the United States of America and Canada

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Signed: Paul Boys

Date: 16th March 2019
2. Acknowledgements

My research project would not have been possible without the support of the Churchill Fellowship team, my family and the executive team at my employer, Federation Training.

I am especially thankful to my referees – Karen Cain, Executive Director of the Latrobe Valley Authority and Greg Barclay, Vice President TAFE and Adult Provision at the Australian Education Union (AEU). Their support and encouragement during the application process allowed me to believe that the research proposal was valid and worthwhile.

To the numerous people and organisations who supported my research and gave me their time and expertise during my fellowship, I am thankful to them as well. Travelling to multiple locations across the USA and Canada including Texas, New York, Pennsylvania, Massachusetts, Ontario and Colorado allowed me to view a range of innovative practices that were championed by passionate professionals who wanted to support young people to achieve their best. I have made personal and professional connections that will continue into the future, supporting collaboration and the sharing of best practice across the Pacific.

Lastly, I wanted to thank the senior management team at Federation Training for supporting my fellowship travels and affording me the time to have such a wonderful learning and cultural experience. I am especially grateful to the team at the Gippsland Tech School who shouldered the additional work responsibilities whilst I was away, with a special mention to Daniel Farrant for leading the team in my absence. To Grant Radford, CEO of Federation Training, I wanted to pay particular tribute to his vision and belief in supporting my travels.
3. Introduction

Secondary school students across regional Victorian communities are facing significant challenges to realise the attainment of year 12 equivalency, with only 62% of outer regional students achieving this benchmark compared to 78% in major cities (Lamb, Jackson, Walstab and Huo, 2015). Evidence has shown that there are numerous factors, including socio-economic status, location, family background and English language competency as being key, measurable determinants of a person’s likelihood to achieve their year 12 equivalency (Lamb, Jackson, Walstab and Huo, 2015). The social cost of these low completion rates can translate to a challenging future for early school leavers including limited employment opportunities, poor career progression and a tendency towards poorer health outcomes in later life (ABS, 2011). This is further referenced by the Foundation for Young Australian’s (FYA) in “The New Work Reality” report, where the authors claim that a lack of appropriate education and limited employment opportunities further erode a young person’s post-schooling opportunities especially in a rapidly changing workforce (FYA, 2018).

In addition to the low number of students in regional communities achieving a successful year 12 completion has been the reduced number of Australian youths taking up apprenticeships and traineeships (Wolfe, 2018). Since 2012, there has been a sharp decline in the number of young people beginning traineeships when compared with 2018 statistics although apprenticeships on their own have been stable over the past 20 years (Noonan and Pilcher, 2017). The low Year 12 completion rates measured against the significant reduction in new traineeships and a slight decline in apprenticeships, demonstrates that there is a need to address the structural deficiency within our education system that is not effectively supporting a significant number of our young people to achieve their best. With consideration to this challenge, there is a need to research international models for engaging all young people in education and to re-frame the way in which we work with students to support them to achieve the best outcomes from their education.

My initial research, prior to beginning the Churchill Fellowship, highlighted that the situation in Australia was being mirrored in a number of OECD countries including the United States of America (USA) and Canada. Both countries had taken differing approaches to address this
challenge and I was interested to see how these strategies were being managed “on-the-ground” and how this was impacting on school retention and engagement. Using a comparative evaluation methodology, I aimed to evaluate the policy and environmental systems of the USA and Canadian approaches to see how they would correlate to the Australian experience. The evaluative process allowed for an impartial and observational perspective against the systems as presented. It is also timely to note that the coordination, funding and management of secondary schools in Canada and the USA sits within the frameworks of Local School boards and not at a national or state level so there can be significant difference in resourcing across States and local communities.
4. Contact Details

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Position: Director, Gippsland Tech School

Telephone: 0447 071 297

Email: boypaul@hotmail.com
5. Keywords

- “Education”
- “Students”
- “Vocational Education and Training (VET)”
- “Opportunity”
- “Equality”
- “Technology”
- “School based training”
- “Apprenticeships”
- “Traineeships”
6. Report Overview/Executive Summary

Project Introduction

Australia has seen a downturn in young people taking up and successfully completing apprenticeships over the past 30 years, which is impacting the future labour needs as we head into the second quarter of the 21st century. There have been a number of factors that have contributed to this decline and I was interested to learn more about how Schools and Colleges in the USA and Canada were working to address this challenge at a secondary school and local level. The fellowship set out to achieve the following:

- To observe the international policy settings which influence the operations of Vocational Training in Schools.
- To observe the role that industry plays in the implementation and development of programs that provide viable career outcomes for students.
- Research the frameworks and supports that are used in the facilitation of trades based learning in a secondary school environment and report on the successes and challenges and how these may be applied to the Australian environment.
- Investigate the relationship between industry, schools and training colleges to design and implement training that delivers job ready graduates.
- Observe and monitor the operations of trades training in schools from skill identification and course development to student completion.
- The knowledge will allow for policy makers and practitioners to benchmark best practice and influence future program design and policy direction.
- The Australian community will be informed of the knowledge gained through VET practitioner networks and Industry conferences and the VET Development Centre networks across Australia.
- Research policy settings that influence the coordination and future goals of governments to meet their industry skills needs.

Intended Audience

- Secondary Schools
- Vocational Education and Training (VET) Institutes
• Australian Education Union
• Universities
• Community Education Providers
• Technical and Further Education (TAFE) providers
## 7. Itinerary

<table>
<thead>
<tr>
<th>Dates</th>
<th>Location</th>
<th>Organisation</th>
<th>Contact</th>
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<tr>
<td>22nd October to 23rd October</td>
<td>Houston, Texas, USA</td>
<td>TXRX Labs</td>
<td>Donnie O’Neil (Lab Manager)</td>
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<td></td>
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<td>NASA Johnson Space Centre</td>
<td>Site Tour only</td>
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<td></td>
<td>205 Roberts Street, Houston, TX</td>
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<td><a href="http://www.txrxlabs.org">www.txrxlabs.org</a></td>
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<td>NASA E NASA Parkway, Houston, TX</td>
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<td><a href="http://www.nasa.gov">www.nasa.gov</a></td>
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<td>29th October to 30th October</td>
<td>Boston, Massachusetts, USA</td>
<td>Harvard University</td>
<td>Attended “Strategic Management” short course</td>
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<tr>
<td></td>
<td></td>
<td>Cambridge, MA</td>
<td>Maryanne Small</td>
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<td><a href="http://www.harvard.edu">www.harvard.edu</a></td>
<td>Natalie Shearer</td>
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<td>6th November to 13th November</td>
<td>Toronto, Ontario, Canada</td>
<td>George Brown College</td>
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<td>300 Adelaide Street E, Toronto, CA</td>
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<td><a href="http://www.georgebrown.ca">www.georgebrown.ca</a></td>
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<td></td>
<td></td>
<td>Mohawk College</td>
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<tr>
<td></td>
<td></td>
<td>481 Barton Street, Stoney Creek, Ontario</td>
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<td><a href="http://www.mohawkcollege.ca">www.mohawkcollege.ca</a></td>
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<td>14th November to 16th November</td>
<td>Niagara, Ontario, Canada</td>
<td>Niagara College</td>
<td>Marc Nantel, Vincent Shaikh, Andrew Nkickel, Zoe McGhie</td>
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<tr>
<td></td>
<td></td>
<td>100 Niagara College Boulevard, Welland, ON</td>
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<td><a href="http://www.niagaracollege.ca">www.niagaracollege.ca</a></td>
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<td>16th November to 21st November</td>
<td>Harrisburg, Pennsylvania</td>
<td>AgWorks</td>
<td>Samantha Johnson</td>
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<td></td>
<td></td>
<td>One Innovation Way, Harrisburg, PA</td>
<td>Michael Brammer</td>
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<td><a href="http://www.ccaeducate.me">www.ccaeducate.me</a></td>
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<td>Pennsylvania Future Farmers Association</td>
<td>Scott Sheely and Russell Redding</td>
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<td></td>
<td></td>
<td>2301 North Cameron Street, Harrisburg, PA</td>
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<td><a href="http://www.paaged.org">www.paaged.org</a></td>
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<td>Department of Agriculture Pennsylvania</td>
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<td>26th November to 27th November</td>
<td>New York, New York, USA</td>
<td>IBM 51 Astor Place, New York, NY</td>
<td>Grace Suh</td>
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<td>P-Tech (Pathways in Technology, Early College, High School) 150 Albany Ave, Brooklyn, NY</td>
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<td><a href="http://www.ibm.com">www.ibm.com</a></td>
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<td><a href="http://www.ptechny.org">www.ptechny.org</a></td>
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<td>5th December to 7th December</td>
<td>Denver, Colorado, USA</td>
<td>Careerwise Denver, Colorado <a href="http://www.careerwisecolorado.org">www.careerwisecolorado.org</a></td>
<td>David Fulton</td>
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<td>Golden High School 701 24th Street, Golden, CO</td>
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<td><a href="http://www.golden.jeffcopublicschools.org">www.golden.jeffcopublicschools.org</a></td>
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<td>Messick’s Farm Equipment 187 Merts Drive, Elizabethtown, PA <a href="http://www.messicks.com">www.messicks.com</a></td>
<td>Joe Luther</td>
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8. Main Body

Over the past 30 years, the Australian education sector has seen a significant increase in the percentage of students undertaking higher education degrees, rising from 18% of school leavers in 1989 to 42% in 2016 (Norton and Cherastidtham, 2018). On the other hand, from 1996 to 2016, the Australian Vocational Education and Training (VET) sector has seen their participation rates, as a whole, falling slightly over that period (Atkinson and Stanwick, 2016). With the influence of government policy, aspiration and the expansion of the University sector, Vocational Education has suffered for growth and the impact has been felt the most by young people in regional communities who have limited access to tertiary education opportunities as opposed to their city-based counterparts. Tied into this has been the recent reforms to VET which has seen significant disruption to the operations of public Technical and Further Education (TAFE) providers which have been the backbone of quality VET provision across Australia.

These changes, tied in with falling completion rates amongst school leavers in regional communities has seen a large number of young people dis-engage with secondary schooling, placing them at risk of not achieving their best and falling behind at this critical stage of their lives. Without the investigation of new approaches to address these challenges, the likelihood that these rates will continue to fall or stagnate is high, potentially impacting further on the future of these vulnerable students.

Framing the school funding debate

Comparisons of funding and administration: Ontario, Canada – Pennsylvania, USA - Victoria, Australia - school systems

The United States of America secondary school system is managed under guidelines set out at the state government level which are then administered by an elected local school district board. Each board is elected to manage schools within the nominated regional boundaries with the primary responsibility for the funding and administration of schools in the region (Chingos, 2017). Although funding models do vary across the USA, the general rule is that K-12 schools are funded equally by the state and local governments through local school district boards (Chingos, 2017). It is important to note that because a large proportion of public-
school funding comes from local property taxes, there is a significant variation in the resources and outcomes for students based on their geographical location. This was evident as I travelled through numerous school districts where school resources, support staff and class sizes varied significantly. The variations in school resourcing were a direct result of the differences in local taxation or property taxes, which can only be increased by a majority vote of local constituents which is generally not supported as a universal rule, depending on the demographics of the local community.

Although the public-school system in the USA is considered to be under stress, over 90% of children attend public schools with the remainder attending independent and religious schools which attract no funding from the state or from local taxation (Jennings, 2017). This is in stark contrast to the Australian experience, where the government school sector accounts for 66% of enrolments, the catholic sector 20% and the independent sector 14% (Melbourne Institute, 2011). In Australia, it is worth noting that funding for Government schools is majority contributed by the local State government at a rate of 86% whilst the Federal government contributes the remaining 14% (Goss, 2018). It is also important to note that the level of funding from the federal government has increased from 9% to 14% in the decade to 2016 following the implementation of the School Funding Model that arose from the Gonski review (Goss, 2018). Independent and Catholic schools attract funding from both the Federal and state government at varying rates depending on the socio-economic status of the school population, making it difficult to attribute a standard rate per student or per school (Ting, Liu and Scott, 2018). In contrast to the USA, Australia has a blended model that supports all sectors with public funding.

Ontario, Canada is different again to the USA and Australia as it directly funds government and catholic schools but provides no support to the independent school sector. Canada also has no federal responsibility over education so each local school board is accountable for the allocation of funding within the defined school district (Neven Van Pelt and Emes, 2015). Ontario is unique, again, as it operates 2 separate school boards to cater to the public system and the catholic systems (also called the separate system). There is significant debate within the province at the moment around the sustainability of maintaining two separate school boards and the possibility of amalgamating the two to reduce costs and improve productivity.
(Trosow and Irwin, 2018). It is important within the context of this report to understand that funding, management and the operations of schools within the three countries varies significantly, whilst the challenges and debates around equity, access and outcomes continues to be argued amongst commentators.

Charter Schools – the USA experience

It is important to note that a majority of states in the USA have legislated for the introduction of Charter schools, which are semi-autonomous schools that receive public funds from independent school district boards and they are not able to charge fees for enrolments (Jason, 2017). Some argue that by directing money to charter schools, it indirectly takes money away from the local school districts which reduces their ability to support students in the public system. Charter schools also have the luxury of being able to select their students, thereby reducing the percentage of high achieving students attending the local secondary schools. The charter school model within the USA is operating more than 7,000 charter schools in 2017-18, which cater to more than 3.2 million students nationally (David and Hesla, 2018).
9. Visited Organisations

TXRX Labs – Houston, Texas, USA

TXRX Labs is a not-for-profit “Maker Space”, in the inner-city fringe area of Houston. Established in 2008 TXRX aims to educate the public about technology and allow them the opportunity to design and create their own works using equipment and resources available on-site. TXRX is a member-based organisation that offers a range of membership options that will allow members varying levels of access and support to maker-space equipment.

Equipment available for members:

Laser Cutter
3D Printers
Welders
Pottery Kilns
Wood working tools (Hand and Table)
Jewellery Making
Plasma Cutter
CNC Router
Various software applications
Metal working tools (Hand and Table)

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<th>Membership Level</th>
<th>Access</th>
<th>Cost</th>
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<tr>
<td>Tinkerer</td>
<td>- Co-working access to wifi, computer lab, conference room, kitchen, printers during business hours</td>
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<td>- Full access to all tolls and equipment on Friday, Saturday and Sunday</td>
<td>$50 per month</td>
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<tr>
<td>Hacker</td>
<td>- Access as per Tinkerer</td>
<td>$90 per month</td>
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<td>- Unrestricted access to TXRX 7 days a week</td>
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<tr>
<td>Table Hacker</td>
<td>- Access as per Hacker</td>
<td>$145 per month</td>
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<td>- Your own private work table</td>
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<td>Maker (for profit)</td>
<td>- Access as per Hacker</td>
<td>$210 per month</td>
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<td>- For-profit use of lab equipment</td>
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<tr>
<td>Studio Resident</td>
<td>- Access as per Table Hacker space</td>
<td>$800 per month</td>
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<tr>
<td></td>
<td>- Your own private design studio with 24/7 access</td>
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NASA Johnson Space Centre – Houston, Texas, USA

Established in 1961 as the “Manned Spacecraft Center” to conduct human flight training, research and flight control. The centre offers public tours of the facility with a focus on rocket technologies, space flight, communications, project research and development. The tour involved an overview of the Mission Control Centre, Space Shuttle, International Space Station, Mars planning project and rockets and capsules from previous missions including Mercury, Gemini and Apollo. The facility allowed an insight into innovative control processes to support the development of training programs to build capacity towards future missions to Mars and beyond.

Ontario, Canada College System

Ontario is a province in the east-central region of lower Canada which extends from Hudson Bay to the Great Lakes region, bordering the USA. I was fortunate to be able to spend a few weeks working across 3 of their publicly funded colleges within the Greater Toronto Area (GTA) which is the most populous metropolitan area in Canada, with more than 6.5 million residents (Statistics Canada, 2016). The college system is responsible to the Ontario Ministry of Advanced Education and Skills Development, with each college being unique in its operations, based on local factors such as geography, regional employment demands, demographics and their relationship with school boards (Kaufman, Jonker and Hicks, 2018). Although the colleges are independent in their operations, they share a number of initiatives, which are supported through the Ministry, including the Ontario Youth Apprenticeship Program (OYAP), which will be a focus in the latter stages of the report. It is also worth noting that there is no federal ministry of education within Canada so all policy and programs are developed at a provincial level to meet the needs of local regions and communities.

George Brown College – Toronto, Ontario, Canada

George Brown College (GBC) is a public funded tertiary education provider that is similar in nature to an Australian TAFE college. GBC is located across numerous campuses in the central Toronto city area and it services a range of communities across its geographic boundaries. GBC offers a wide range of certificate, diploma and degree programs in arts, business, community services, construction, culinary etc. As one of the largest public tertiary providers in the province of Ontario, GBC works closely with its community and government partners
to provide “pathways to accessible education for non-traditional learners” (Impact Report, 2016, p.4). The focus on re-engaging learners with education has resulted in a number of new initiatives being introduced over the past decade including some examples below:

- First Generation Programs: Transition support and additional support initiatives for students who are first in their families to attend post-secondary education.
- School within a college program: High school students complete up to 6 high school credits and two college courses during a full semester at GBC.
- Second career program: Transition and pathway programs to support retrenched workers.
- Dual Credit Program: High school students can take one college level course and earn an Ontario Secondary School Diploma (OSSD) and college level credit.
- Ontario Youth Apprenticeship Program: Allows students in grades 11 and 12 to gain training, through a cooperative education course, in an apprenticeship trade whilst allowing these credits to be used towards the completion of their high school diploma.

These community focused initiatives have allowed GBC the flexibility and responsiveness to adapt, in a changing environment, to build capacity within its local communities to support all its members to achieve their best. The OYAP program will be a focus for further exploration in the presented report.

**Mohawk College – Hamilton, Ontario, Canada**

Mohawk College serves the Hamilton region of the Greater Toronto Area (GTA) which is located on the western tip of Lake Ontario around 70 kilometres from the Toronto CBD. As with other colleges in Ontario, it is responsible for facilitating post-secondary qualifications which are focused on apprenticeships, certificates, diplomas and degrees. Mohawk also works closely with secondary schools in the Hamilton-Wentworth District School Board to support numerous programs that are focused on supporting high school students by introducing them to various trades and assisting students to clarify their interest in future careers and study. These programs include the following:
• Ontario Youth Apprenticeship Program: Allows students in grades 11 and 12 to gain training, through a cooperative education course, in an apprenticeship trade whilst allowing these credits to be used towards the completion of their high school diploma.

• Apprenticeship-related dual credit courses: Allows students, whilst still in secondary school, to take dual credits, including Level 1 apprenticeship in-school training that counts towards both their Ontario Secondary School Diploma (OSSD) and a certificate of apprenticeship.

• Students in school-college-work initiative (SCWI) Primary target group: Similar in structure to the dual-credit courses detailed above but the facilitation methodology is more collaborative with Mohawk and the nominated school sharing facilitation.

• Specialist High Skills Major (SHSM) Program: A specialised program that allows students to focus their learning on a specific economic sector while meeting the requirements for graduation from secondary school.

• Pre-apprenticeship training: These programs are generally fewer than 52 weeks in length. Pre-Apprenticeship Programs offer academic upgrading for candidates that do not possess their Grade 12 or equivalent, which is the academic entry level in most trades.

Niagara College was established in 1965 by the Ontario Provincial Government as a public college to provide vocational education and training to the Niagara Region of Southern Ontario.
Ontario. The Niagara region is located 120 kilometres from the Toronto CBD, on the southern tip of Ontario province occupying the Niagara Peninsula area including borders with Lake Erie and Lake Ontario. Niagara College was the smallest of the 3 Ontario based colleges that I visited but it also facilitates a range of qualifications including Apprenticeships, Certificate and Diploma programs, Degree and Graduate programs, as per the other colleges. Niagara College works closely with the District School Board of Niagara to support a number of programs to connect secondary and post-secondary school students to trade pathways and experiential learning opportunities aligned to their school-based curriculum. As with George Brown College and Mohawk College, Niagara College manages similar programs as mentioned earlier but they have a unique sector that promotes research and innovation, in collaboration with industry and schools to improve the outcomes for a range of initiatives within the region. As with other colleges in Ontario, Niagara College supports the OYAP scheme and it is seen as one the main vehicles to keeping students engaged and supported to help them complete their senior school certificate.

Image 2: Meeting with Walter Greczko, Interim Associate Dean (L), Holly Maillet, Assistant to the Associate Dean (M) and Wayne Toth, Coordinator, Motive Power, School of Trades (R).
Pennsylvania, USA

Agriculture and Food Sector

The Agriculture and Food industry in Pennsylvania is often referred to as the backbone of the state-wide economy with more than 579,000 jobs and $135 billion in total output being contributed to the overall economy (Redding, 2018). One of the major challenges for the sector is the need to attract and retain new workers as the current workforce is ageing and predictions are that there will be significant labour market shortages within the sector in the next 10 years (Redding, 2018). To address these challenges, the Pennsylvania Department of Agriculture has initiated a series of discussion papers and trial initiatives to look at how the sector can better engage with school students to expose them to careers and training in Agriculture and Food. To further investigate these initiatives, I visited 4 organisations in the Harrisburg, Pennsylvania region to look at how they are working to address these challenges.
Central Pennsylvania Institute of Science and Technology (CPI) – Bellafonte, Pennsylvania

Operating as a community college, CPI services the technical training needs of local high school students in the Bald Eagle, Bellafonte, Penns Valley and State College School Districts areas of central eastern Pennsylvania. In addition to their work with secondary schools, they also train adult learners, often in a shared environment, to upskill, retrain or to open new opportunities in emerging industries. Working locally with industry and government, CPI has developed a suite of new qualifications to prepare graduates for the modern industrial economy that recognises the value of Career and Technical Education (CTE) in conjunction with their high school equivalence. Through the connection with Penn College, a program of Penn State University, CPI has been able to introduce an initiative whereby college credits can be taken whilst at High School. These credits will count towards their high school qualification and also towards further studies in the college and university sectors, where a defined pathway has been established. The additional benefit to students is also a financial one as a majority of programs offered at CPI, but through Penn College, are free for most students within the nominated school districts. I will expand on the initiative further in the paper to demonstrate the overall benefits of students participating in this new initiative, referred to as Cooperative Education (Co-op).

Image 4: Industry Challenge for the refrigeration mechanics at CPI – Keep the snowman frozen in a classroom environment
Commonwealth Charter Academy - Ag Works – Harrisburg, Pennsylvania

Commonwealth Charter Academy is a Pennsylvanian public cyber charter school which established a new facility in December 2018 called AgWorks to provide hands-on learning experiences around agriculture. Pennsylvania is unique in the USA landscape with over 36,000 students being enrolled in cyber charter schools in 2014-15. A definition of the Cyber Charter School is provided at the end of the report (Mann, B and Baker, D, 2016). It’s the largest public education aquaponics facility in the USA and is housed in a 6,100 square foot facility that is temperature and humidity controlled. The building of the facility was funded through a federal grant, but the operations of the charter school initiative are publicly funded through the local School District. Students are able to grow and harvest a range of fruits and vegetables as well as fish and prawns in the combined aquaponic, hydroponic and aeroponics facilities. The facility also combines 3 separate laboratories to allow students the opportunity to conduct scientific experiments within the defined curriculum, in areas that include genetics, tissue cultures and research. The school also works to develop the entrepreneurial capacity of its students through the sale, marketing, packaging and labelling of its production resources to local business and general consumers. It is again worth noting that both the charter school and cyber charter school initiatives within the USA are often debated as to their merits and integrity by numerous commentators within the education spaces. I will expand further on this initiative later in the report.
Brubaker Farms – Mount Joy – Pennsylvania, USA

Brubaker Farms is a family-owned dairy and production agriculture farm in Lancaster County, Pennsylvania which is managed by three generations of the Brubaker family. The farm is a model of how innovation and technology can be combined to re-generate traditional farming practices for a more sustainable future for farmers and their livestock. Brubaker Farms have initiated a number of innovative practices to make their farm sustainable and ultimately self-sufficient in terms of energy and waste reclamation. They have also been working with the Pennsylvania Department of Agriculture to develop a “model farms” program that supports students and teachers to visit the farm to learn more about contemporary farming and management of waste and all resources to build towards a sustainable farming future.

Messick’s Farm Supplies – Elizabethtown – Pennsylvania, USA

Messick’s is one of the largest farm supply and equipment sales and service facilities in the state of Pennsylvania with the largest parts department in the USA. Having been in operation for more than 65 years, Messick’s have built a reputation for excellent community and customer service with a dedication to supporting the development of young people in the region. This commitment has seen Messick’s and three other equipment dealers in Lancaster County, as well as the Pennsylvania Department of Agriculture work towards the development of a registered apprenticeship program for adults, that connects to secondary students to maintain relationships to their home communities whilst experiencing a real-
world equipment and job experience. The program is still under development and the first trials will begin in mid 2019. There will be further discussion around the program later in the report.

**New York, New York State, USA**

The New York education system is similar in structure to that in Pennsylvania but being focused on the central New York City district, there are distinct differences to the experience in regional Pennsylvania. Working in the inner-urban landscape of Crown Heights, Brooklyn, the demographics and challenges for students were quite unique, reflecting the diverse ethnographic and suburban variations within the city. Reflecting on the pre-dominant business and technology career within the region, alternate pathways were developed that aimed to introduce local students to experiences within the environment of their program partner, International Business Machines (IBM) in Astor Place, New York City. Working with students from years 9-14 enrolled at Paul Robeson High School, IBM, University of New York and the New York City Department of Education have created a program that focuses on post-secondary training in information technology with direct industry links to IBM. I was fortunate to be able to work with IBM and Paul Robeson High to experience the initiative, titled **P-Tech** which was established in September 2011. I will discuss the initiative further in the report.

**Denver Colorado, USA**

The Colorado experience is a unique case-study into how industry, schools and community can work together to co-design a new approach to youth engagement. Over the past decade, Colorado has experienced significant challenges in meeting the future needs of its local industries as well as supporting young people to achieve their best. Over the past 30 years, as with most western democracies, there has been a significant push towards young people obtaining a university degree with the belief that this will be the most effective way to sure up their future careers and development prospects. The experience in Colorado has been positive for most but many university graduates have been saddled with significant debts that are funded through commercial loans, placing them at risk of loan default if they are not gainfully employed within 6-12 months of completing their qualification. This experience has led to significant debate within the state around the merits and costs of university study as
well as the need to look to alternate pathways for students to achieving well-paid and meaningful careers.

In 2015, with the support of the Colorado government, schools, colleges and philanthropists, a collective of more than 90 representatives visited Switzerland to undertake a 10 day summer course that introduced the group to the Swiss education system. The course was managed through the Centre on the Economics and Management of Education and Training Systems (CEMETS), located in Zurich, Switzerland. The Colorado delegation was introduced to the Swiss education system, from secondary schooling to careers training, to apprenticeships and the role that industry plays in supporting these structures to develop capabilities for young people and the future Swiss workforce. The program had a profound effect on the delegation and upon their return to Colorado, they established a “Modern Youth Apprenticeship” system which is titled Careerwise and I will explore this initiative further in the report.
10. Approaches to youth engagement in Trade training

Careerwise – Colorado, USA

Careerwise was established to introduce a modern youth apprenticeship system to Colorado to support young people to complete their traditional high school studies whilst concurrently studying towards an apprenticeship in multiple career fields. As discussed earlier, the Swiss training system was used as the foundation for the development of the Careerwise initiative which focuses on bringing industry, students, colleges and schools together to help in shaping the future skill needs of Colorado. The model operates as below:

1. A targeted path to success: Informing communities about apprenticeships and how the transferrable skills are applied in conjunction with traditional secondary schooling.
2. Creating a skilled workforce: Working closely with industry, apprenticeships can be developed in “non-traditional” areas to meet the needs of a 21st century workforce that is adaptable and flexible to changing needs.
3. An innovative approach to an existing model: Replicating the Swiss vocational model, Careerwise is aiming to implement a similar model to meet labour market needs of the Colorado state.
4. A different look at learning: A 3-year apprenticeship, designed by industry, for industry, that operates in partnership with schools to combine practical workplace learning and secondary schooling with meaningful paid work.
5. Student Options: The program keeps options open for students and upon successful completion, they receive an industry certification, debt-free college credits as well as their high school qualification. Students can then take the apprenticeship and convert this into a position in the chosen industry or continue to higher education.
6. Business Benefits: Business develops the competencies and they have control of the hiring process.
7. Empowering educators: Careerwise supports educators to experience real-world learning applications whilst contributing to positive outcomes for students.
Since its inception in 2015, Careerwise has worked with local school districts to implement the initiative and they are currently focused on the following industry sectors to best support job outcomes for Colorado businesses:

- Advanced Manufacturing
- Information Technology
- Financial Services
- Business Operations
- Healthcare

Aligned to these industry relevant skills, Careerwise recognises the importance of young people developing 21st Century workplace skills, which are detailed by the Foundation for Young Australian’s (FYA, 2018) as essential skills to preparing young people for the future world of work and to build resilience and entrepreneurship in the changing world of work. These skills are detailed below. They have become a focus for integration into all curriculum across all industry areas.

- Critical Thinking
- Problem Solving
- Deductive Reasoning
- Active Listening
The new approach demonstrates that when preparing students for the future world of work, often in jobs that have yet been established, practitioners require a new way of thinking that involves all stakeholders in the decision-making process. The Careerwise initiative is cognisant of these new skills and they have worked to embed these into their training competencies so students and industry can be sure that a graduate has transferable skills that are adaptable to any workplace.

Another unique component for the Careerwise program is the focus on industry and the college that provides the formal vocational skills, as the primary facilitators of the curriculum, as students enter year 2 and 3 of the three year program. This is in contrast to traditional school-based training models in Australia and Canada which see the high school as the primary provider of education throughout the duration of the nominated studies. Careerwise has also set about creating a direct relationship between colleges and universities so credits that students achieve during the apprenticeship are able to directly translate to further study, again minimising the cost of education, which can be prohibitive in many areas of the USA (Gunn, 2018). Although the initiative is in its infancy, there is considerable political, community and school support to see further evidence that shows a direct impact on the lives of young people in the regions. The program is also aiming to expose women and cultural minorities, who have traditionally not been represented in the apprenticeship landscape, to careers in industries that are the future of the Colorado workforce (Gunn, 2018).
Image 9: Benefits to students for participating in the Careerwise program

Ontario Youth Apprenticeship Program – Ontario, Canada

What is OYAP?

OYAP allows students in year 11 and 12 to gain training, through a cooperative education course, in an apprenticeship trade which may be of interest to them as a potential career pathway. Cooperative education is defined as “a program governed by the Ministry of Education policy, which allows students to earn secondary school credits while participating in a work placement” (Ministry of Education, 2017). The program aims to increase the number of secondary school students exploring trades, thereby setting the groundwork for a smooth transition to a formal apprenticeship whilst using the learning as part of their high school graduation requirements. The program is designed to encourage students to participate in the “Awareness and Exploration” of their nominated trade area of interest.

How OYAP programs are approved

Each local school board is responsible for the submission of a business plan, on an annual basis, to the Ministry of Education (ME) and Ministry of Advanced Education and Skills development (MAESD), to seek approval for the following school year. Once the plan receives approval, each local school board is then responsible for the management of OYAP contracts within their nominated region.

Participant Eligibility

Students must meet the following criteria to be eligible for OYAP

• Be enrolled full-time in a secondary school within the nominated local school district
• Be working towards the completion of their Ontario Secondary School Diploma (OSSD)
• Be enrolled in a cooperative education course that includes a placement in a relevant apprenticeship trade.
• Must have successfully completed 16 credits towards their OSSD.
• Must be at least 16 years of age.

Eligibility can also be extended to adults over the age of 21 if they meet the following criteria:
• Be enrolled full-time in a secondary school
• Be working towards OSSD
• Have successfully completed 16 credits towards their OSSD

All applicants must show an interest in an apprenticeship trade and apply for the OYAP with a formal application and interview to determine their suitability. Parents are involved throughout the process especially for those applicants who are 16 years of age.

**Funding for OYAP**
MAESD will provide additional funding to local school boards to deliver OYAP and they may also supplement the funding with additional supports, at a local level, to improve the overall outcomes for students. Overall funding can be used to support the implementation of a local OYAP coordinator, administration, communication, events coordination, professional development and support for students including safety equipment, compliance training, transportation and testing fees.

**How are students supported?**
One of the primary benefits to students is that they receive direct support from the locally appointed OYAP coordinator, the cooperative education teacher, subject specialists as well as their employers and supervisors in their nominated work place. Students may access further support if they face additional barriers to accessing education, including physical, mental or socio-economic challenges.

**What are the benefits to students?**
In addition to the individualised support services mentioned above, students also receive the following benefits:

• Earn secondary school credit
• Participate and experience the operations of their nominated trade area of interest and interact with industry professionals
• Financial support to attend training and work placement (potentially includes safety equipment, transportation costs and an exemption from testing fees)
• Future support services to access apprenticeships, post achievement of OSSD.

**Opportunities post completion of OYAP**

Once students have successfully completed OYAP, and they are interested in pursuing an apprenticeship, they will need to find an employer who is willing to sponsor them. This will often be the employer who was the host for the students during their OYAP. Once both parties agree to the arrangement, the apprenticeship is then formalised through a registered training agreement.

**Other opportunities around OYAP**

If students are looking for opportunities that are framed around the formal OYAP initiative, they have a significant amount of flexibility to try a range of other programs that may be better suited to their needs. The range of options is listed below. They incorporate connections to school, colleges and employers with recognition of the needs of each stakeholder.

**Level 1: Apprenticeship Dual Credit Program: Students in the School-College-Work Initiative (SCWI)**

Dual credit programs are undertaken by students at secondary school where they take dual credits including Level 1 apprenticeship training that counts towards their OSSD. The main features of the program include:

- Co-delivered between school boards and publicly funded colleges. Students would generally spend 2 days per week at their designated college to complete their Level 1 apprenticeship in-school training
- Team-Taught: students are enrolled in a course that includes both the secondary school curriculum and the Level 1 apprenticeship.
- 8 weeks in duration – exposes students to the industry, with language, literacy and numeracy (LLN) support and job readiness support
- Programs are approved on a yearly basis by the Ministry of Education. The enrolment fees are supported by the Ministry of Advanced Education and Skills Development (MAESD) and the School-College-Work Initiative (SCWI).
• Similar support services are available to participants as those that are offered to registered OYAP participants.

![Image 10: Opportunities available for Ontario students to engage with trade training. (Source – Pathways to Apprenticeships: Options for secondary school students in Ontario)](image)

OYAP has been shown to provide a broad range of experiences that allow students the opportunity to share in how trades operate whilst still remaining connected to their local schools and communities.

**TXRX Labs – Houston, Texas**

TXRX is focused on developing young people into 21st Century practitioners who are adept at creating their own working environment with tools, equipment and mentoring available through the facility and its wider creator network.

In 2018, TXRX began the process of working closely with schools from the Houston School District to incorporate Apprenticeship and STEM learning experiences into the school curriculum. This included advising schools on how to create a STEM learning environment within their own facilities. Challenged by a lack of structures and systems in place to support innovative education, TXRX has taken on the role of supporting schools and students through professional development, industry engagement, practical training and an insight into how innovation and collaboration are the primary drivers to being successful in the future world of work.
Another primary role that TXRX plays is to support within the Houston Independent Schools District (HISD) to assist in the integration of maker-based learning programs that allow for integrated experiences that cover multiple disciplinary outcomes within the school. This can include a range of teacher professional development activities which are customised depending on the school’s access to equipment, teacher experience and the learning goals of each individual school. The professional development (PD) process helps to identify champion teachers within each school who are then trained, supported and empowered through access to additional PD, XRX specialist trainers and a web portal. This is further supported by access to events coordination that involves community, schools, parents and teachers to share their experiences and build capacity within the region.

TXRX has further expanded its reach to include pre-apprenticeship and work-ready programs that introduce at-risk youth to careers in industry, work experience, employment preparedness and access to a wide range of targeted skill-sets from their in-house trainers. Resourcing for these programs is accessed through grants which are administered by the Texas Workforce Commission to assist in supporting the tuition fees for students to complete the initial 26 weeks of training prior to them entering a traditional apprenticeship program or employment. Although the initiatives that are mentioned above are in their infancy, there is a definite recognition of the need for community groups, industry and secondary schools to closer align their operations to benefit the learning and experiential outcomes for all.

**P-Tech – New York, New York**

Established in 2011, P-Tech was developed in partnership with IBM, City University of New York-City Tech and the New York Department of Education. Focused on grades 9-14, the P-Tech model targets specific degrees in the applied sciences that have a direct connection to entry-level jobs that further connect directly to careers. Over the past 40 years, the American workforce has continually up-skilled to the point where 59% of workers have some college education, compared to 28% in the mid 1970’s (IBM, 2014). The result of these changes in skills levels has been the displacement of those students who drop-out of high school as having limited opportunities to achieve their best in the changing world of work (Sharp and Dvorkin, 2018). P-Tech aims to work on addressing these deficiencies and provide new opportunities for students to connect to local careers within IBM and study towards a college
diploma whilst achieving their high school equivalency. The model is focused on bridging the gap between where students are currently at and connecting them to industries that have a more holistic approach to the facilitation of Science, Technology, Engineering and Mathematics (STEM).

How P-Tech Works

P-Tech provides students with a high school-college-career continuum that helps them to understand the links between school, college and the skills needed to be successful in the future world of work. The main components of the program are:

- **Focus on early college:** Beginning in Grade 9, students begin a 6 year journey to achieve their Associate in Applied Science degree in either Computer Science Technology or Electromechanical Engineering Technology at CUNY. The curriculum is aligned to the common core standards for STEM and college preparations.

- **Focus on careers:** Workplace Learning is an integral component of the program and is supported by IBM through structured workplace visits, internships, mentoring as aligned to career goals. IBM has worked to ensure that the curriculum within the program is mapped to entry level positions within their organisation whilst aligning to academic benchmarks and targets. IBM further supports the graduates through supporting entry level jobs, strengthening the continuum from school to college and career.

- **Focus on personal pathways:** Students move through an individualised academic pathway that is paced to meet their needs and circumstances. Teachers and advisors support their individual needs and performance through meeting all requirements as mandated by the high school and college frameworks.

- **Extended learning time:** The school day and learning sessions are extended to support individualised support to help the students achieve their goals.

- **Specialised staffing:** A full-time early college liaison and an industry liaison are appointed to work with students, staff, leadership and IBM to monitor and guide student experiences.
Fundamentals of the P-Tech initiative

Focused on grades 9-14, students tie in the completion of the traditional year 12 completion followed by two further years of study to complete the associate degree across the six year period. Students can move through the program at different rates, with some completing in four years and others taking the full six. The program targets specific degrees that have connections to careers in local industries linked to workplace experiences to build capacity and confidence for participants. Further benefits include:

- Open admissions: Programs are open to all students but they are specifically targeted to historically underserved communities.
- No cost to families: The associate degree is achieved at no cost to families, reducing one of the primary barriers to students achieving success.

How to set-up the P-Tech model?

- Build an effective partnership: Schools, colleges and industry must be clear around the roles and expectations of the model prior to sign-up
- Leadership with a clear vision and shared decision making: All stakeholders need to share responsibility for the project
- Design a rigorous and focused curriculum: As there is no pre-testing or entry requirements, all instructional activities must be carefully designed and have flexible applications.
- Create an integrated college experience: Integrate the college experience into their high school experience early-on and provide academic and social supports to give students the best opportunity to succeed.
- Create an integrated workplace experience: Workplace experiences must be meaningful and place the students at the centre of each engagement.
- Build a strong and collaborative teaching faculty: Hiring, retaining and supporting the best teachers is critical to the success of this program
- Foster family and community engagement: Supports parents and carers to support their children by understanding the program, the expectations and the importance of P-tech in helping them achieve success.
Central Pennsylvania Institute (CPI) – Penn College NOW initiative – Bellafonte, Pennsylvania

The Penn College NOW initiative was set up by CPI as a direct response to support students in years 10-12 (Juniors and Seniors) to access vocational training and career pathways whilst working towards the completion of the high school equivalency. As with other programs that have been detailed above, the initiative was introduced as a direct response to better support the high number of students who were leaving high school without completing their equivalency due to them not being suited to the traditional academic pathway. The program also aims to reduce the costs of diploma and degree qualification by allowing students to complete portions of these studies whilst at school, for little to no cost. Students participate in high school and college programs that are interlinked and connected to support outcomes in both qualification fields.
How Penn College NOW operates:

- Courses are offered at no tuition to families although there may be fees for books and materials.
- Students interlink their studies to connect high school with college so both qualifications are achieved together and mapped to support both outcomes.
- Students are connected to the “college experience” so that the next step in their study pathway is seamless and less intimidating than previously experienced.

Benefits of the Penn College NOW initiative:

- Reduced costs to students, thereby removing some of the financial challenges that are faced to achieving post-secondary school qualifications.
- Students are shown to be more likely to succeed in their careers and further study after participating in the initiative.
- Confidence and capacity have shown to be significantly improved following participation in the program.
- Students get to experience the real-world of work at an early age so they have more knowledge around opportunities and expectations of a modern-day workforce.
- Students can achieve a college credit in a shorter timeframe than before.
- Program options are diverse and opportunities exist in multiple fields including traditional trades, early childhood education and care, IT systems, medical technologies, business services and security.

AgWorks – Cyber School initiative – Harrisburg, Pennsylvania

Established in late 2018, with formal enrolments to begin in the 2019/2020 academic year, Agworks is an example of a cyber-charter school that supports its students with a formal operational campus to build capacity with their online learning experience. Sitting within the structures of the Commonwealth Charter Academy (CCA) cyber school, Agworks is a unique facility that includes production agriculture, aquaponics, hydroponics, aeroponics and laboratory facilities. The initiative is a uniquely American one that allows students from Kindergarten to Year 12 to complete their schooling in an online environment that is
supported with three specialist training facilities across the state of Pennsylvania to enhance the online experience.

**How CCA works**

- Students from across the state of Pennsylvania are able to enrol in the CCA at any time across all primary and secondary school age groups (K-12).
- There is no charge for enrolments as CCA is approved under the Charter School framework and as such, student funding is granted from the local school board budgets.
- All curriculum is available to students from the online learning portal titled “Edio” which was developed by CCA to meet the needs of their student cohort.
- Students are provided a guidance timetable that they can work from, they can manage their access to the learning tasks on their own schedules.
- Students and parents are encouraged to work together with the support of CCA networks to share the learning experience in collaboration with the 3 specialist training facilities and opportunities to participate in field trips or have their mobile class visit communities.

**Criticisms of Cyber Charter Schools**

Since being established over 15 years ago, cyber charter schools have been a direct response to the “School Choice” initiative and is seen by many commentators to be a contentious addition to the K-12 learning spaces in Pennsylvania. “School Choice” which is defined as “seeking alternatives to traditional public schools for children who have poor educational options in their neighbourhoods and to give parents a choice in their children’s education” (Strauss, 2017, pg.1) is a movement that has grown extensively over the past decades with more than 6% of all school children enrolled in a charter school by 2017 (Strauss, 2017). Supporters of school choice believe that as parents, they should have the right to choose their children’s school and be able to select the neighbourhoods that their children attend the school, with the schools being run as a business in a competitive environment. They further argue that the public education system has failed a generation of learners and they should not be forced to pay excessive fees at private schools to access better educational
opportunities. On the other side, opposition groups argue that charter schools take money away from public schools, thereby reducing their capacity, that they can “pick and choose” the students they admit, they are not accountable as public schools are, and communities are weakened by the division within schools. Debate will rage into the next decade but the initiative is here to stay and will further develop to respond to changing consumer needs.

**Messick’s - Dept Agriculture initiative – Harrisburg, Pennsylvania**

The Pennsylvania Department of Agriculture, in collaboration with numerous industry partners are currently working on the development of a pre-apprenticeship program to support school students to experience the agriculture sector whilst at school. Facing similar challenges to Australia, Pennsylvania has an ageing workforce with difficulty in attracting new entrants to the sector and schools are seen as the best point for exposing future workers to the sector. The program is likely to be structured in a similar manner to other initiatives that are mentioned above, so that high school, college and work are combined to allow for dual recognition of each sector when measured against each qualification outcome.

**School based apprenticeships and traineeships (SBAT’s) - Victoria, Australia.**

SBAT’s have been a part of the Victorian secondary schooling system since 1998 and they play an integral role in linking students to real-world learning experiences that combines secondary school, employment, and a recognised VET qualification. Students enter into a formal training plan that recognises the relationship between schools, employers, trainers and government as coordinated through the Australian Apprenticeship Support Network (AASN). SBAT’s operate, as detailed below and they are under additional reform in the coming months, with the introduction of the headstart initiative in Victoria which aims to better support SBAT’s within and post-secondary schooling.

**SBAT Eligibility**

- Must be at least 15 years of age
- Must be enrolled in a high school in either VCE or VCAL
- Australian citizen or permanent resident
Advantages of SBAT’s

- Incorporate VET and work into their senior secondary studies
- Gain credits towards VCE or VCAL
- Hands on applied learning
- Earn money whilst studying
11. Conclusions and recommendations

The opportunity to travel, observe and participate in a variety of innovative engagement strategies has allowed me to develop an overall perspective that all students are important and need to be supported to maximise their opportunities for success. The best outcomes for all community members are achieved when all relevant parties are working towards the same goal with a shared understanding of the need to place the student at the centre of any program design. Each organisation that I visited was facing similar challenges to those in Australia and they have all implemented a unique approach to supporting young people to remain connected to schools and community. No system was able to respond effectively to all the challenges as faced, but a combination of ideas, presented as a new approach and developed in collaboration with all partners would be the best response. Based on these visits and the experiences of schools, industry and community, I am putting forward the following recommendations to allow all youth within our communities to achieve their best and be supported for years to come.

- Greater collaboration between schools – School District Model to be further explored so that schools in regional communities are sharing spaces, experience and equipment to better the region as a whole. I see this as a critical component to supporting regional aspirations.

- Youth Mentoring – support person for apprenticeships and training from school to industry and post-completion. Although this is a component of the Australian system, through AASN, we need to link students to workplace mentors who are supported and trained in working with apprentices to improve their outcomes.

- Credits to college and high school diploma – recognising school credits to reduce the cost and time associated with further study. Additional research needs to be facilitated around how students can have flexibility to move between high school, VET and employment whilst still maintaining their connection to community and the opportunity to achieve a high school qualification that is recognised across sectors and is malleable to link skills between each sector.
• Innovation and the freedom to take risks – allow teachers and industry to collaborate to facilitate the best outcomes for their needs. Industry needs to have more recognition and influence in the development of training skill sets to remove the barriers that can exist in the current VET frameworks.

• Piloting of new and creative ideas – the freedom to fail and learn – build on creative ideas and resource the most suitable to support development, evaluation and implementation. Set up a framework that supports new ideas and concepts to build new initiatives and pilot these with formal evaluation and assessment of their practicality.

• Further investigation of the Swiss VET system and how elements could be applied to the Australian experience – the Careerwise model in Colorado is based on these learning experiences. A Victorian delegation needs to travel and experience the program to learn about how a modern, productive VET system operates with a true collaborative model of ownership.

• Industry involvement in program development, implementation and course structures – examples from the P-Tech Model with IBM and Paul Robeson High allowing for programs to be built by industry, matched to curriculum outcomes and supported through funding by governments. Great work is already underway within Australia around this space following the initiatives implemented by Nicholas Wyman, who was a 2012 Churchill Fellow. The P-Tech model is currently operational across a number of sites in Australia and further research needs to be reviewed around the benefits and applications of the model.

• Freedom to tailor nationally recognised programs to meet the needs of industry – more flexibility in the structure of training programs so RTO’s are responsive to the needs of industry.
• Micro-credentialing of workplace and community skill sets to empower young people to move freely between industries with transferable and recognisable skills

• Greater influence from State and Federal governments to support students and industry to value the apprenticeship and traineeship system

• Flexible high school completion opportunities including self-directed learning and individual learning plans – young people need greater flexibility in how they can achieve their year 12 equivalency with work, VET and external community engagement being considered as suitably recognisable skills within the framework of recognised outcomes

• Career counsellors in high schools having greater involvement in local industry through a formalised mentoring program – this is offered through the Careerwise network in Colorado and provides additional support and mentoring to apprentices throughout their course of study and into the first years of work.

• Equity and accessibility for all – financial barriers to access need to be removed and students must be encouraged to participate in education for as long as possible to provide them with the best platform for future success. Costs associated with certain subject choices need to be removed to allow Victorian students the same level of access as those in many communities within the USA and Canada

• Supporting the development of structured research teams within TAFE’s to grow their influence on education with a clear linkage to school curriculum and skills. VET practitioners need to be more influential in the development of Victorian Certificate of Applied Learning (VCAL) framework, supporting greater connections to applied learning in a contemporary industry environment.
• Further investment in teacher training to support a “real-world” industry led learning environment that mimics the modern workplace. This again supports the need for VET practitioners to be influencing school curriculum at the VCAL level.

• Support industry to invest in young people and their skills development through tax offsets and other mechanisms to drive collaboration. Industry also needs to have their input recognised at a curriculum level that is recognising the needs of their local communities.

• Greater exposure to industry and future opportunities for students whilst they are at school through work experience, career expo’s and modern day apprenticeships that link students to their communities whilst exposing them to work.
12. Definitions

**Australian Apprenticeship Support Network (AASN):** Under contracts administered by the Australian government, AASN are required to provide support services to apprentices to help them complete their apprenticeships.

**Brubaker Farms:** A family owned and operated dairy farm that promotes sustainable farming practices through the capture, storage and processing of waste to generate renewable energy to power their farming operations.

**Careerwise:** Careerwise’ model for sustainability is based on the premise that each party involved—the apprentice and the hiring business—benefit from participating in apprenticeship. Student’s graduate from high school on time, earn a nationally-recognized industry certification and debt-free college credit. Additionally, apprentices enter the workforce—either after they’ve completed a higher-ed degree or immediately following their apprenticeship—with a professional network and valuable experience in high-paying and in-demand fields.

**Central Pennsylvania Institute of Science and Technology (CPI):** Community College serving communities in the northern outskirts of Harrisburg, Pennsylvania, USA.

**Charter School:** a publicly funded independent school established by teachers, parents, or community groups under the terms of a charter with a local or national authority.

**Community Training and Education (CTE):** Programs which are managed through the community college sector in the USA. These programs include certificates, associate diploma’s, apprenticeships and short courses. They are similar in definition to an Australian Technical and Further Education (TAFE) Institute.

**Cyber Charter School:** Instruction is typically facilitated to the enrolled students using an online platform, wherever they may live, as long as they are residents of the state in which the cyber charter school operates.

**Dual Credit Courses:** Approved by the Ministry of Education in Ontario, dual credit programs allow students, while they are still in secondary school, to take dual credits, including Level 1 apprenticeship in-school training that counts towards both their Ontario Secondary School Diploma (OSSD) and a Certificate of Apprenticeship.

**Freshman:** A student in their 1st year of a 4 year qualification (equivalent to Year 9 in Australia)

**George Brown College:** Community College serving the Greater Toronto region.

**Junior:** A student in their 3rd year of a 4 year qualification (equivalent to Year 11 in Australia)

**Messick’s:** Farm and equipment suppliers in Lancaster County, Pennsylvania, USA
Mohawk College: Community College based in Hamilton, Ontario, Canada, a regional community near the city of Toronto

National Aeronautics Space Administration (NASA): Peak body for space research, administration and planning in the USA

Niagara College: Community college serving the Niagara region of Ontario, Canada.

Ontario Skills Passport (OSP): The OSP provides definitions of the essential skills and work habits that are transferable for success in work, learning and life.

Ontario Youth Apprenticeship Program (OYAP): is offered to students who are currently registered as full-time students in high school, are about to graduate and are planning a career in a traditional trade. The program supports students to complete their High School Diploma and recognises their OYAP credits towards their High School Diploma.

OSSD: Ontario Secondary School Diploma (Equivalent of Victorian VCE or VCAL)

Pathways in Technology, Early College High School (P-Tech): A 6 year high school program that prepares students for college and STEM careers in competitive industries. The program is affiliated with the City University of New York (CUNY) which offers courses towards an associate degree level alongside key industry collaborators who provide real-world work experiences. IBM is the primary industry partner for the initiative.

School Based Apprenticeships and Traineeships (SBAT’s): Allows students the option of combining a senior secondary program with part-time employment and training whilst working towards a nationally recognised qualification under a formal training contract.

Senior: A student in their 4th year of a 4 year qualification (equivalent to Year 12 in Australia)

Sophomore: A student in their 2nd year of a 4 year qualification (equivalent to Year 10 in Australia)

TXRX Labs: is a non-profit makerspace in Houston, TX. The lab has classes, tool and space rental to promote job training, youth education and events to expose the local community to innovation and product development.

Victorian Certificate of Applied Learning (VCAL): A senior secondary qualification within Victoria that focuses on applied learning and is widely seen as the pathway to apprenticeships, traineeships and work.

Victorian Certificate of Education (VCE): The senior secondary qualification within Victoria that is widely seen as the direct pathway to University

Vocational Education and Training (VET): An organised education system in Australia that enables students to gain qualifications for all types employment through the awarding of nationally recognised training
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