Premier’s Commonwealth Bank Vocational Education Scholarship

An analysis of the diversity of Vocational Educational Programs

Comparing agriculture/horticulture/primary industries education offered to school students in the USA and Australia and how they prepare students for post school vocational education and training

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The purpose of my study tour was to analyse and compare the vocational education and training (agriculture/horticulture/primary industries programs offered to school students in the United States and Australia and how these prepare students for post-school vocational education and training. Singleton High School’s Vocational Education and Training (Primary Industries) program is designed to enable students to develop a range of technical, vocational and interpersonal competencies valued both within and beyond the workplace. VET Primary Industries helps students develop employability skills such as communication and teamwork that are transferable to other industry areas as well as being key features of each qualification available through the Framework. By studying this subject, students gain experiences that can be applied to a range of contexts, including work, study and leisure, as well as skills that will assist them to make informed career choices.

My study tour allowed me to visit schools and farms in the United States and analyse how they implemented and delivered VET programs. I was able to compare the experiences of US and Australian students and how they are prepared for post-school Vocational Education and Training. The study tour also gave me the opportunity to observe best practice vocational education programs that I have been able to share with my students at Singleton High School.

Vocational education and training in the United States

In the United States, and especially the Massachusetts Department of Elementary and Secondary Education, the need is understood to ensure that what career/vocational technical education students are taught is aligned to the needs of business and industry. In Massachusetts, the office for Career/Vocational Technical Education developed a comprehensive plan for including vocational technical education that resulted in collaborative partnerships comprised of teams of project administrators, highly qualified subject matter educators, and business and industry partners.

Schools in Massachusetts are involved with Community Involved in Sustaining Agriculture, an organisation that works with agriculture schools to strengthen farms and engages the community to build their local food economy. More than 250 farms participate in this program. The popularly known Buy Locally Grown program is the longest running agricultural buy-local campaign in the country and connects agriculture schools, farmers and the community to improve farm business viability and enhance the quality of life for residents across the state.

Vocational education objectives are more varied at the secondary level than at the post-secondary level. Secondary vocational courses can be classified into three types:

* + consumer and homemaking education
	+ general labour market preparation
	+ specific labour market preparation.

Specific labour market preparation courses teach students the skills needed to enter a particular occupational field. Such courses can be grouped into the following occupational program areas:

* + agriculture; horticulture and primary industries
	+ business and office
	+ marketing and distribution
	+ health
	+ occupational home economics
	+ trade and industry, including construction, mechanics and repairs, and precision production
	+ technical and communications.

Vocational education at the secondary level has traditionally had several objectives, including providing students with general employability skills, and preparing them to enter paid and unpaid employment in specific occupations. Subsequently, these goals have expanded to also include preparing students for career advancement and entry into further education and training. For instance, educators have been called upon to integrate academic and vocational education.

Secondary vocational education is provided primarily through three types of public high schools:

* + comprehensive high schools (the typical US high school)
	+ area vocational schools (regional facilities that students attend part of a day to receive their occupational training)
	+ full-time vocational high schools (schools that offer academic studies but focus on preparing students for work in a particular occupation or industry).

The latter two types of schools are referred to collectively as vocational schools. The National Assessment of Vocational Education recently found that most secondary vocational education is provided in comprehensive high schools, with vocational schools enrolling about 10 percent of secondary students and accounting for about 12 percent of students taking vocational courses.

While practically specific courses are organised into program areas, high school students typically do not formally enrol in an occupational program. Instead, they may take one or more courses in one or more occupational programs for a variety of reasons. Some students take introductory business or technical and communications courses to gain hands-on computer experience, whereas others are required by their high schools to complete a vocational course in order to graduate.

The sequence of courses defining an occupational program varies among high schools and school districts across the country. In addition to offering classroom-based courses, secondary schools and post-secondary institutions often provide opportunities for work-based learning, such as cooperative education, work experience, and school-based enterprises.

Cooperative education and work experience programs allow students to earn school credit in conjunction with paid or unpaid employment. They also place students in jobs related to their vocational field of study, and typically involve employers in developing a formal training plan and evaluating students. On the other hand, traditional work experience programs sometimes place students in vocationally unrelated jobs, and may not involve employers as extensively as cooperative education programs. School-based enterprises are class-related activities that engage students in producing goods or services for sale or use to people other than the participating students themselves.

Traditional Amish farming methods in Pennsylvania

I visited the Amish Country in Lancaster, Pennsylvania, where I saw how the Amish people engage their youths in preparing them for a career in agriculture within their own communities. I also looked at the traditional sustainable farming methods the Amish use in their communities.

The Amish live by two basic rules. First they do not want any unnecessary permanent physical attachments to the world outside their communities – no telephone wires or electrical or gas lines. Secondly, if something is not a necessity it should be different from the way the rest of the world has it. This means that the Amish prefer not to rely on modern technology for example if they buy a new washing machine, they tend to remove the electrical gadgets in it or the motor and they are still able to get it going without the use of electricity.

The Amish are very productive and thrifty farmers who use contour and strip farming to be as productive as any other farms. They use organic fertilisers and own no tractors for pulling equipment in the fields. They raise crops such as hay, wheat, barley, rye, corn and tobacco depending on where they live. Their dairy cows and poultry provide meat for their families and community. Life around the farm provides many opportunities for teaching children to work. The Amish feel that education is only necessary to the point of being a good farmer, or good wife, mother or housekeeper. The community buys land and other resources to support their one-room schools. They pay school taxes but do not accept any help from the government for their own schools.

The Amish in United States use the farming skills brought by their ancestors nearly three-hundred years ago from their their Swiss Anabaptist communities in Switzerland and Germany. To maintain their religious, family and community values, they have chosen to forego most of the technology that conventional farmers use. For instance, they often use horses to plant and plough their fields instead of tractors. Amish people do not use pesticides. Instead, they use organic matter and manure to fertilise the land. They also use crop rotation to keep the soil healthy. The Amish work to combine their knowledge of science, technology and experience to maintain their traditional way of farming. This type of farming benefits the families and the community.

Their practice of rotational grazing develops grass that withstands most of the winter. The cows graze for more months, so the farmers can grow and harvest less hay. They don't have to fertilise, spray, and seed each year for the cows harvest the crop. This technique works best on a small-scale farm which does not have large and expensive machinery.

By choosing to farm, the Amish are making a commitment to a way of life that fosters family unity, as ownership of land is important to the Amish and so is a commitment to family. Rural living reinforces Amish beliefs and philosophy. Toiling with the soil, raising livestock, and growing their own food is seen as cooperating with God's will. In other words, to the Amish way of life, farming is not merely a job but a sacred lifestyle dictated by the Scriptures that is meant to be handed down to succeeding generations.

I visited Mixon Fruit Farms in Bradenton, Florida, and investigated how technology is being implemented in the horticulture industries, and I saw how the community was involved in the production of horticulture crops. This farm provided employment within the community and an abundance of fruits all year round. Schools in the vicinity of Mixon Farm send students there for work experience. VET subjects were not offered in the schools around Bradenton, Florida.

I also had an opportunity to visit the Biotechnology Lab in Orlando, Florida. The lab is located at Epcot in Living with the Land, a 2-acre intensive food crop production and research facility. The main attraction is a 15-minute boat ride through a series of greenhouses showcasing agricultural research and production systems with emphasis on sustainable agriculture. Here researchers study fruit crops and develop root tissue culture for park cultivation and Disney visitor purchase.

Agricultural science study methods at the Biotechnology Lab are being implemented to increase disease and insect resistance in fruit trees, respond to factors of environmental change that influence fruit production and adapt fruit tree architecture for urban and small plot gardening. Most significantly, they have found a transgenic solution to stone fruit disease that could save all of the plum, peach, apricot and cherry trees in the world with zero measurable potential risk of environmental harm to pollinators.

Disney’s horticulture is dedicated to creating and preserving the magical guest experience through horticulture. The horticulture at this centre is an exemplary steward of the environment and a source of beauty, refreshment and inspiration for all who work and visit here. The Disney’s Horticulture Professional Intern Program is designed to provide qualified students with an opportunity to further their knowledge through practical hands-on work experience. Program activities include weekly seminars, projects and plant and pest identification.

I also visited Eagle Ranch in Colorado where I discussed with the owners the significant role played by ranches in the United States in facilitating work placements for students studying VET, especially primary industries. Although this ranch is more tourist oriented, it gives students interested in equine science and animal science an opportunity to be involved in work placement. There was not much activity going because of snow during the time of my visit.

Highlights of schools I visited

Walter Biddle Saul High School of Agricultural Sciences, Philadelphia, is the largest agricultural school in the United States. While there, I saw the various VET programs available, particularly to disadvantaged students. I spoke with VET teachers about the challenges they faced in delivering VET programs and how they are supported. I also discussed with these teachers the experiences gained by students within the classroom versus practical functions and real life situations.

A special admission school, Walter Biddle Saul High School is that focuses on preparing students both academically and vocationally for college and career. The programs offered explore the field of agriculture and its importance to society. Community involvement in the agriculture programs at the school is impressive, donating money and inputs required for running the programs.Students take ownership of their farm by caring for animals and vegetable plots. Students are divided into various groups and take part in daily activities involved in an agricultural school.

Walter Biddle Saul High School boasts a state-of-the-art indoor horticulture, animal and aquaculture facilities, all managed by students. The enthusiasm displayed by students while engaged in practical activities was excellent and they were able to explain practical concepts used in agriculture in general. They communicated among themselves and conducted risk assessments before handling and working with livestock.

Crystal Lake Middle School, Miami Florida was an interesting school to visit. The school was surrounded by a high security fence and all visitors, even parents, had to go through such security checks as identity card check, finger printing and photographing. The school taught agriculture and had no facilities to offer to students.

The school’s focus was on horticulture but they were limited by lack of land. Raised garden beds within the school corridors were the only practical facilities offered to students. I talked to the agriculture students and told them how agricultural education is delivered in Australia. I also taught them how to identify weeds and some other aspects of plant production. It was very interesting to see how engaged they were despite the lack of facilities.

At Smith Vocational and Agricultural High School in Massachusetts I discussed accreditation programs for staff and trainers. I also observed students being engaged in both practical and theory activities. After that, I visited Norfolk County Agricultural High School, also in Massachusetts, where I compared the range of VET programs available in the area of agriculture/primary industries with what is offered in Australia.

Smith’s agriculture program provides students with an opportunity to learn about a broad and diverse industry that deals with the biological sciences and emerging new technologies. Students spend their time studying and working outdoors, nurturing living things, operating and repairing equipment, and working with natural resources.

Hundreds of different jobs are available in the area of animal science and agricultural mechanics that require many different types and levels of educational training. As with most careers, salaries and working conditions are usually better in jobs that require more education. Smith Vocational and Agricultural High School has the only vocational and agricultural program in western Massachusetts that offers majors in both animal science and agricultural mechanics. The facilities at this school include working animal enterprises with over 500 acres of managed land.

Norfolk County Agriculture High School, in Walpole, Massachusetts, offered Animal and Marine Science to their students with an aim of preparing students for work or college in those fields. VET primary industries courses at the school are clustered so that each student has the opportunity to obtain the knowledge and skills necessary to work or continue studies in canine science, equine science, farm and livestock management, marine science, research animal technology and veterinary science.

The Horticulture Program offered at Norfolk County Agricultural High School provides students with a strong foundation of skills for a variety of career paths within landscaping, ornamental horticulture and arboriculture. Students who choose to major in horticulture are prepared to continue their education or enter into the workforce. Students are offered a varied curriculum that explores careers, presents technical and botanical knowledge and appreciation of natural resources.

Bristol County Agricultural High School in Dighton, Massachusetts, was a great school with excellent facilities. I observed the delivery of VET lessons and worked with the students during practical activities. This is one of the wealthiest public school in Massachusetts and is 100 per cent funded by the community. The focus on agriculture is animal production and the school has large herds of Hereford cattle, sheep and pigs. This school supports strong academic and vocational and technical programs that focus on agriculture and the natural environment.

The majority of Bristol County Agricultural High School students go on to further their education at two or four year colleges or advanced technical training within their major with an increasing number choosing to pursue a graduate level education. A small percentage of students move directly into careers such as agriculture or horticulture.

Greeley West High School in Colorado was the last school I visited. The majority of the
1200 students are from the city and many of them have no interest in agriculture. Only a few students from a farming background participate in agricultural activities at the school, but the facilities are poor and there are no animals or vegetable plots on site. The emphasis on agriculture was through theory activities, although students can attend work-placement at various farms in the region. The school does not get funding from the community, and the minimal funding it receives from the county does not support vegetable plots or animals.

I also attended the Agriculture Teachers Conference in Colorado Springs. The Colorado Vocational Agriculture Teachers Association is a professional organisation for agriculture teachers and supporters of agriculture education. It informs agriculture teachers about the latest agricultural education practices, encourages higher standards of teaching agriculture and provides agriculture education a unified voice in the state legislature.

It was a great experience to share notes and resources with fellow agriculture teachers. The conference aimed at strengthening links between agriculture teachers, sharing teaching resources and evaluating the range of concepts offered to students. I addressed the teachers at the conference about implementation of VET programs in New South Wales Australia.

Summary

In the United States, vocational education encompasses diverse objectives, activities, providers, and participants. No single description of the vocational education experience covers all situations. Experiences vary among education levels, types of schools and institutions, vocational program areas, and groups of students and teachers. Vocational education involves a broad range of activities, including occupationally specific, general labour market, and consumer and homemaking coursework; school- and work-based experiences; and integrated academic and vocational curricula.

My study tour was educational, adventurous and rewarding. One of the most important things I learnt during my tour was that weather can change everything. I was forced to change my itinerary because of severe weather. The presence of snow in the areas I visited resulted in cancelled flights, car hire and hotel accommodation. I had to change directions and use new destinations to complete my tour.

Since I arrived back to Australia, I have been able to practise some of the agricultural concepts I studied in the United States. The study tour enabled me to realise how lucky we are here in Australia to be able to farm throughout the whole year. In many parts of the United States, farming activities are curtailed in winter time because of snow and cold weather. However, there is a significant level of indoor farming activities during that time.

As an agriculture teacher, I believe that it is important to engage farmers, parents and other community members in teaching and delivering agriculture/horticulture programs. I also believe that effective parent and family engagement in agriculture education is a positive way of engaging students’ learning both at home and at school.

Dedicated agriculture students are engaged when they see their teacher actively involved in their education and tend to excel when their parents show an interest in their choice of study. Businesses in the community and community members need to assist schools offering agriculture with such resources as finance, skills, knowledge, equipment and seeds. At Singleton High School, we offer agriculture education programs that provide integrative learning experiences that reflect the complexities, values, and challenges inherent to sustainable agriculture. We implement innovative curricular practices that allow emergence of new ways of teaching and learning amongst our students.

I would like to encourage other teachers to apply for a NSW Premier’s Scholarship.

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