

**FORESTRY EDUCATION AND TRAINING
A BRITISH COLUMBIA PERSPECTIVE**

YVONNE DAWKINS

1995 GOTTSTEIN FELLOWSHIP REPORT

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The Joseph William Gottstein Memorial Trust Fund was established in 1971 as a national educational Trust for the benefit of Australia's forest products industries. The purpose of the fund is *"to create opportunities for selected persons to acquire knowledge which will promote the interests of Australian industries which use forest products for the production of sawn timber, plywood, composite wood, pulp and paper and similar derived products."*

Bill Gottstein was an outstanding forest products research scientist working with the Division of Forest Products of the Commonwealth Scientific Industrial Research Organization (CSIRO) when tragically he was killed in 1971 photographing a tree-felling operation in New Guinea. He was held in such high esteem by the industry that he had assisted for many years that substantial financial support to establish an Educational Trust Fund to perpetuate his name was promptly forthcoming.

The Trust's major forms of activity are,

1. Fellowships - each year applications are invited from eligible candidates to submit a study programme in an area considered to be of benefit to the Australian forestry and forest industries. Study tours undertaken by Fellows have usually been to overseas countries but several have been within Australia. Fellows are obliged to submit reports on completion of their programme. These are then distributed to industry if appropriate.
2. Seminars - the information gained by Fellows is often best disseminated by seminars as well as through the written reports.
3. Wood Science Courses - at approximately two yearly intervals the Trust organises a week-long intensive course in wood science for executives and consultants in the Australian forest industries.
4. Study Tours - industry group study tours are arranged periodically and have been well supported.

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Yvonne Dawkins
September 1995

Yvonne Dawkins has been in the position of Executive Director of the Hollybank Forestry Centre Inc, a training centre which is responsible for the development and delivery of training and training services to the forest industries in Tasmania, for the past six years.

Yvonne has a range of training, education and small business skills acquired over many years with the Tasmanian Education Department and small business sector.

During the past six years, it has been Yvonne's responsibility to develop the Hollybank Forestry Centre at Underwood, some twenty kilometers from Launceston. This \$1.2 million development now is the home for forestry training in Tasmania, with Hollybank Forestry providing a wide range of training, from milling and processing to harvesting, from forest growing and management to all types of equipment training.

Hollybank is unique in that it not only provides a diverse range of training, but it also operates on a commercial, fee-for-service basis. In 1996 it was awarded one of three "Best Practices" projects funded through the Australian National training Authority, to explore the theme of continuous improvement in resource based industry training.

The Gottstein Fellowship has allowed Yvonne to further her research into the development and delivery of forestry education and training, with particular emphasis on the establishment of best practices and the delivery of flexible, cost effective and relevant programs for the forest industries.

Yvonne has a Bachelor of Education and Diploma of Teaching from the University of Tasmania.



ACKNOWLEDGMENTS

As a relative newcomer to the forest industries, the opportunity to explore and investigate the way in which organisations and people in another country go about their work practices and training was invaluable to me personally and, I hope, that in some way it may assist others working in the forestry training and education areas.

This study tour was only possible by the generous support of the J W Gottstein Memorial Trust. I would like to thank the trustees for awarding me a Gottstein Fellowship, and in particular, thank Mr Bill Keating who has encouraged, reminded and coaxed me through the past two years.

I am most indebted to the Chairman, Mr Evan Rolley and Board of the Hollybank Forestry Centre, for their generous support. I am also most grateful to my staff at the Hollybank Forestry Centre and especially to Ms Jackie Greig, who worked through my report with such diligence and enthusiasm.

I am most appreciative of the assistance many Canadian forestry organisations provided to me and to those people in British Columbia, Quebec and New Brunswick who gave of their time and hospitality.

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Executive Summary

In the 7th Century BC, Kuan Chung Tzu was credited with the following:

"If you wish to plan for a year, sow seeds;

If you wish to plan for ten years, plant trees;

If you wish to plan for a lifetime, develop men."

Now, apart from being a little sexist and perhaps a little out in his planning in relation to the growing of trees, Kuan Chung Tzu would be right up there with our most enlightened managers of the 1990's in recognising that at the end of the day, our most valuable asset and probably our most neglected one, are the people who carry out the daily operations, whether it be in the factory, the store, the office or in our forests and mills.

Thirteen hundred years after Tzu had recognised that it was the development of our people that will ensure an organisation or country's prosperity, we are again realising that if we are to have successful, competitive, efficient organisations, then it is the range and level of skills, motivation and competence of the work force that will have a major influence on the prosperity of our organisations, and in particular, our forestry organisations.

It is apparent, that many businesses within Australia, have identified that if they are to be competitive in the global market place, then long term strategies, including training strategies, have to be put in place, if we are to have within our organisations productive, enthusiastic, innovative, motivated, hard working employees.

Executive Summary (*continued*)

Organisations that truly believe that "*People are our greatest asset*" are prepared to invest resources, time, money and energy, to ensure that they get the very best out of that human resource. Part of that strategy has to include identifying, not only the gaps that exist now in skills, but must identify the training needs for the future and be prepared to devise strategies for their implementation. It takes a committed management and committed leaders, to make this happen.

Forestry managers and planners, have in the past, been well trained to address all aspects of the planting, growing and harvesting of trees and maintenance of our forests. They have known how to address problems that arise in relation to the resource, to identify pests and diseases, to research new methods of propagation, to assess soil types, rainfall and optimum harvesting cycles. They have not been as well trained in the management of the human resource, in the identification of skills and knowing how to go about addressing that deficit in skills.

What our forestry personnel have not done in the past is to spend much time in looking at the people who have to carry out the daily operations of ripping and clearing, harvesting, planting, maintaining, fire fighting and spraying, and their needs.

Yet, there is clear evidence, both here in Australia and certainly in Canada, and British Columbia in particular, that where time and energy have been spent in addressing the long term training needs of an organisation, the success of these training strategies are reflected in that organisation's bottom line. Organisations such as ANM, McDonalds, Kodak, Canfor in British Columbia – all have developed a strong training culture and are reaping the benefits.

Executive Summary *(continued)*

It should be pointed out that there is a real difference between the development of a training strategy or training plan and what occurred in the early 1980's – that is, training for training's sake. The Training Guarantee Levy introduced by the Australian Labour Government in the 1980's did provide a real focus for vocational training in enterprises, but it also provided a lucrative money spinner for over zealous consultants who encouraged business organisations to use off-the-shelf training packages that did not meet the specific needs of the organisation nor were part of an overall training plan, resulting in poor or no upgrading of skills, disillusioned employees, frustrated supervisors and managers. It also created very negative attitudes in many managing directors of organisations that were badly burned during this period and it has taken much hard work by legitimate training organisations to resell the benefits of structured, accredited and relevant training.

Good training is all about the organisation identifying exactly what it needs now and for the future, and then selecting the training to suit its needs in respect of timing, place and cost. It is about the enterprise having ownership and control of its own training, not owned by a consultant nor by a training provider. Once the need has been identified, the training may be done in-house with on-site trainers, it may be done by using traditional training providers such as TAFE, it may be in the use of industry trainers such as Hollybank Forestry, it may be through self-paced learning packages or a variety of other means.

It would appear, that whilst Canada and British Columbia in particular, are recognised as leading in forestry research and management, when it comes to forestry training, they are experiencing similar problems to those we have in

Executive Summary *(continued)*

Australia. In many respects, Australia, because of the work done in the 1980's at a federal level on the national training agenda, is well ahead of many of the Canadian provinces in training. The development of national competencies for industry, including our forest industries, the establishment of industry training boards, the setting up of the Australian National Training Authority, the co-operation between state and national training authorities have all been major achievements in assisting business organisations to develop more structured and relevant training for their personnel.

Both Australia and Canada are at present working to address similar issues when it comes to forestry education and training. Both countries have in place long term, well respected programs within the university system. The question of how relevance is maintained in these programs is an issue that will be explored later in this paper, as will the issue of how to best ensure that results of the huge amount of forestry related research is transferred on to those who require that knowledge or skills.

Neither country has addressed the issue of operator training completely, but Australia has certainly been more pro-active in grappling with the question of addressing the needs of forest workers and mill operators, whilst British Columbia has certainly addressed the issue of forestry education with far more resources and certainly far more funding, than would appear to be the case in our states within Australia.

Executive Summary (*continued*)

Both countries are struggling to develop a national program either in forestry education or training and both countries would appear to be continuing to place it in the too hard basket.

Forestry education and forestry training need to be viewed as two quite separate issues.

Forestry education – for this paper – refers to the process of informing and educating the community, including school children, politicians, the person in the street and special interest groups – about the forest and forestry related industries. Forestry education is about providing relevant, factual information relating to all aspects of forestry to enable those concerned to make informed decisions, to enjoy and use their forests in a more holistic way and to assist sensible, constructive discussions relating to forestry issues to be held.

Forestry training refers to the process of skilling people in all forestry work areas relating to activities occurring in the forest and forest related industries, from the forest managers and planners to those who carry out those plans in the field. This includes the harvesting, sawmilling, chipping, silviculture, management, planning and value adding areas.

Forestry training is about providing the industry with safer, more competent, more knowledgeable, more co-operative, more involved and a more productive workforce.

1. Introduction

1.1 Background and purpose of research visit to British Columbia

In 1991, I took up the position as the Executive Director of the Hollybank Forestry Training Centre – a training centre established specifically to provide training and training services to all sectors of the forest industries in Tasmania. With the assistance of \$1.2 million of the Helsham compensation funds, the Hollybank Board of Directors, under the chairmanship of Mr Evan Rolley, Managing Director of Forestry Tasmania, established the Centre at the Hollybank Forest some 20 kilometres from Launceston, because, at that time, traditional educational institutions within the state, could not provide the industry with the type of training services it required.

In establishing the Centre, it was obvious that the traditional means of delivering training to the industry was not going to meet the needs of a diverse, sometimes isolated forestry workforce – a workforce made up of at least 96 per cent males, with varying levels of education, some with a real aversion to the words education and training.

More demands were being placed on the forest worker, the sawmillers and the associated operators. Higher standards of safety, a demand for a higher quality product, more stringent and demanding environmental controls and cost efficiencies were all having a major impact on the forest industries.

**1.1 Background and purpose of research visit to
British Columbia (*continued*)**

The forest industries in many countries were experiencing the phenomena of the "greens" and ordinary forestry people were finding their very livelihoods challenged because of the way in which they went about their work.

In Australia, and for us in Tasmania in particular, there was a need to find out more about how other countries were meeting the education and training challenges and how they were adapting to ensure they met the needs of their changing industry and assist them to meet best practices.

It was realised that forestry training was becoming far more complex, it was more than just the chainsaw and equipment operations that had been the case when Hollybank and other forestry training providers around the country first commenced operations. Forestry workers needed to understand and be able to implement the Forest Practices Codes and/or legislation, the occupational health and safety requirements, read the weather on a daily basis, fight fires effectively, complete records, grade logs and timber, identify species of trees, understand the different soil types, identify flora and fauna, operate and maintain complex, computerised machinery and be able to work co-operatively in a team situation.

1.1 Background and purpose of research visit to British Columbia *(continued)*

Little had been documented on forestry training or education from an Australian perspective and much of the written information accessed during that time came from or via British Columbia. This large province of Canada was heralded as the most advanced in Canada and USA and on a par with many of the Northern European countries, in the way in which it was approaching its forestry practices and was one of the few countries providing documentation on a range of forestry issues.

Publications on chainsaw operations and treefalling, cable and conventional harvesting and occupational health and safety issues all had been addressed, particularly through the Workers Compensation Board of British Columbia. The BC Ministry of Forests and large private organisations had also been responsible for both publications and videos finding their way to forestry organisations in Australia.

In addition, personnel with specific forestry skills and academic qualifications from Canada were much sought after in Australia and their contribution over the past thirty years is in evidence in many states.

If we, that is Australian forestry personnel, were to explore innovative ideas and practices in forestry education and training, Canada, and British Columbia in particular, was an obvious choice.

1.2 Canadian Forestry

Canada is known around the world as a forest nation, with 43 percent of Canada's land base covered in forests.

Canada's forests make up about 11.6 percent of the world total and cover an area larger than all of western Europe. The Canadian forests – both softwood and hardwood – are critical to the Canadian way of life, providing economic, environmental and social benefits to the community.



Map of Canada and British Columbia

1.3 Forestry in British Columbia

Historically the forest industry has been very important to the economy of British Columbia, being its single most important industry. Over 85 percent of British Columbia's (BC's) land area is covered by forests. Softwood trees predominate and account for 92 per cent of provincial forests or 8.3 billion cubic metres. Hardwood trees make up the remaining 8 percent of BC's forests or 696 million cubic metres.

These publicly owned forests provide the timber that for more than a century have been a driving force of the provincial economy, and many rural communities remain almost wholly dependent on the availability of timber supplies. Other major sources of resource-based revenue include mining, oil and gas production, agriculture, fisheries and hydro-electric production. Tourism in the last decade has also played an increasingly prominent role in BC's economy.

(Source: Commission on Resources and Environment Annual Report 1994-1995)

The influx of tourists, whilst providing an additional boost to the already vibrant BC economy, also brings with it additional challenges for those in the forest industries, with a large number of generally poorly informed and anti-forestry visitors, ready to condemn the industry and reluctant about accepting new information or different points of view.

1.3 Forestry in British Columbia (*continued*)

The conflict throughout the 1980's led the stakeholders within BC forestry, to re-examine the long prevailing perception of their province as a wilderness with a rich and essentially limitless bounty of natural resources and unspoiled landscapes. The fact was that there was a need to ensure, through careful planning, the sustainability not only of timber supplies, but also of other resources such as fisheries, and of non-extractive values such as biological diversity, wilderness and landscapes.

There was also a real need to ensure that the average person in the street, understood the plans that were to be put in place for their forests.

Environmental groups such as Greenpeace, as well as high profile agitators have played a prominent and leading role in hastening change in the BC forest industry.

Wherever one goes in British Columbia, evidence of the forest and forest related industries is abundant, whether it be in the form of forests, forestry related tourist attractions, wood chip, pulp and paper mills, large and small sawmills or other forestry related organisations.

1.3 Forestry in British Columbia (*continued*)

From Vancouver city, visitors can raise their eyes and see the majestic mountains, most covered thickly in trees, with some bearing the scars of clear felling activities. Whether travelling by boat, car, train or plane, the forests and the harvesting of those forests are two of the dominant features.

When travelling with tourists or locals, the conversation will always feature the issue of trees, the harvesting and use of the trees. Everyone has an opinion on what should be done and how it should be done. It is an emotional and potentially "hot potato" topic to discuss while everyone will acknowledge the economic importance of forestry to BC and to Canada, this does not dispel the concern most travellers express for the future of their province and its forests.

As in Australia, many of the people working in the forests, come from families whose heritage is closely aligned with the history of the timber industry. Fathers, son, uncles and cousins, work side by side, and the new generation learn the skills from fathers, uncles and grandfathers.

In BC, in the past fifteen years at least, there has been an injection of "new blood" in to the industry, with many young city dwellers, looking to the forest industry for a career and at the University of British Columbia (UBC) a large percentage of graduates have had little or no experience of the forest industries before taking their degree course.

1.3 Forestry in British Columbia (*continued*)

Whilst in the larger mills a more structured approach to training certainly exists today, in smaller mills and in the harvesting sector, the handing on of skills and knowledge from one generation to another, on-the-job, is still the major means of training. This would be the case in BC and in many of our Australian states also.

1.4 Ownership of Forest Land

The public ownership of all but 6 percent of the land base puts BC in a unique position. Because the majority of BC's forest resources are public assets, ultimate responsibility for them rests with government, and decisions may be made, not necessarily based on good forest management principles, but based on political agendas and what may bring in the most votes at the next election.

The future of the BC forest industry and therefore the fate of jobs, communities and government revenue, relates directly to the amount of provincial land base that is available for commercial use.

2. Forestry Education – BC

Few issues have been as emotive or have suffered from such misinformation as the issues pertaining to the activities surrounding the management, growing and harvesting of trees, whether it be the manner in which land is cleared for plantations, the way in which weeds and/or pests are controlled, the type of trees grown or the way in which trees are harvested and their product utilised.

Any country, state or province that is seeking to ensure they have a sustainable, viable and acceptable forest industry, has recognised that to do nothing, in terms of countering negative and misleading information, is no longer a reasonable option and has gone about developing plans to provide accurate, detailed information about their forest management to the community.

Most countries initially had to tackle the issue from a reactive position, but it would appear that there has been some shift in community perceptions and the forest industry, whether it be in Australia, Canada or in Europe, have now adopted a far more pro-active, long term strategy in providing relevant, accurate and interesting forest educational programs to the public.

The BC forestry sector, despite the fact that all within the province of British Columbia would recognise the importance of their industry to the economy and their continued well being, have not been complacent in their approach in ensuring that sound forestry information and messages are provided to the community.

2. Forestry Education – BC (*continued*)

These messages and information are relayed through a number of organisations including:

- ♦ Forest Alliance of British Columbia
- ♦ British Columbian Forestry Association
- ♦ Ministry of Forests
- ♦ Council of Forest Industries
- ♦ Unions
- ♦ Individual organisations such as Canadian Forest Products, MacMillan Bloedel;
- ♦ Regional and local community forestry support groups

These organisations all have similar goals – to provide the public with sound, factual forestry information and to counter the emotive and often misleading environmentalist lobby. The forestry organisations tend to act in relative isolation of each other, appearing to have a superficial knowledge of each other's strategies, desired outcomes and seemingly in competition with each other. This gives the perception, certainly to an outsider, that the effort and resources expended are not being used as effectively as they might be.

These organisations have developed a range of strategies to deliver their "forestry" message to their target audience, including:

- ♦ brochures, fact sheets, reports, newspapers;
- ♦ media advertising, videos;
- ♦ demonstration forests;
- ♦ specific tourist attractions;

2. Forestry Education – BC (*continued*)

- ♦ education modules, forestry classes;
- ♦ summer schools;
- ♦ forestry scholarships;
- ♦ forestry people in the forests;
- ♦ high profile people supporting industry;

2.1 Promotional Materials and Resources

The BC forest industry produces a multitude of brochures, fact sheets and reports throughout any one year, providing factual, up-to-date information for those wishing to learn more about the industry. These publications range from simple brochure style productions in black and white, to sophisticated, coloured publications.

Many organisations produce "kits" suitable for school children and for the tourist, which are both interesting and informative.

Such an organisation is the Forest Alliance of British Columbia, a "coalition of British Columbians from all areas of the province and all walks of life, whose common concern is to protect the province's forest environment and forest-based economy". The mission of the Forest Alliance, the largest forestry educator in BC, is to find ways to achieve both environmental protection and economic stability in the use of its forest resources.

It is directed by a Citizen's Board of approximately 30 British Columbian's representing various communities and different points of view. The Alliance provides a broad-based perspective on forestry issues.

2.1 Promotional Materials and Resources (*continued*)

The Alliance sees itself as the conscience of the BC forest industry and is dedicated to:

- ♦ urging the forest industry to adopt the best forest environmental practices in the world;
- ♦ telling British Columbians the truth about forest issues;
- ♦ encouraging all citizens to take an interest in a responsible approach to the forests.

The Alliance has a very high profile information centre in the heart of Vancouver, which provides a range of resources to anyone who wishes to drop in. Videos, static displays, access to a computer database are all available, as well as staff to answer questions.

In conjunction with other organisations, for example the Vancouver Board of Trade, the Forest Alliance produces substantial reports relating to forestry, as well as producing the "*Choices – Issues and Options for BC Forests*" newspaper on a regular basis.

This is an excellent publication produced in colour and available free. It contains articles on a wide range of issues relating to forestry, including water and soil issues, BC wildlife, comparison of practices/standards with other countries and management issues to name a few. As it is a fully funded publication, it does not carry any advertisements, with all the content devoted to issues relating to the forests and forest users.

2.1 Promotional Materials and Resources *(continued)*

The key question in relation to this and other excellent publications is *whether or not the papers are reaching the audience for which they are designed*. These papers generally will reach those who are sympathetic to the cause but all too often, they fail to reach or are not read by those people that need the information. I am unaware if evaluation of the effectiveness of this or other papers is conducted, but as forestry funds are being utilised to address a need, then it would be anticipated that an evaluation as to its effectiveness is carried out on a regular basis.

The dilemma for any industry/organisation is to identify the target market for such publications and then to find a mechanism to ensure that they reach that targeted audience.

The lack of sound evaluation practices to determine the success or not of methods of educating the community is also a dilemma, not only in BC but also in Australia. Evaluation is always difficult and often threatening to those closely associated with the project, but if maximum returns are to be obtained from resources invested, it is imperative that the effectiveness of the program be gauged.

2.2 Role of Education Officers

In BC, one of the avenues for such publications to reach school children and then their parents is through the work of such people as Ann Bishop, Education Officer for Canadian Forest Products and by Linda Coss, a powerhouse of energy and enthusiasm for the BC forest industry and Chair of the Seymour Forest Committee. Coss also worked for the Council of Forest Industries – COFI, providing a valuable *liaison role* for forestry education. This position had just recently been made redundant, much to the concern of those involved in forestry education, as it was seen that this position allowed for the different forest education activities conducted by a range of organisations, to be pulled together.

Coss and Bishop have been two of the mainstays of forestry education in BC and have strong views in relation to how best forest education should be developed.

Bishop's role with Canfor has been a particularly successful one. In her role as the only education officer for that organisation, she conducts sessions with school children of all ages, taking an open, honest approach to teaching that focuses on forests, forestry facts and the fiction that fuels the forest debate.

2.2 Role of Education Officers (*continued*)

Canfor saw that young people were being inundated with sketchy, half truths and misinformation by organisations with biased agendas. Bishop's task was to develop a plain language picture of forest management that did not duck the issues and provided a forum for students to present their concerns, gain practical scientific information and debate the issues.

"It made great sense for a forest company to become involved in educating the public about what it does," said Bishop. "There was obviously a need for a forest education program when Canfor employees began voicing concerns about the 'fairness' of the information about logging their children were receiving in school."

Source: BCFA Landscapes newspaper

After extensive research and surveying all existing resources, Bishop developed a now popular and respected classroom program for all grades. During classroom sessions, the teacher is able to field many questions on the forestry issues children see making the news everyday, involving both students and their teachers in these sessions.

Over the past four years, around 30,000 students have participated in the program. Anne Bishop is the only full-time teacher providing this service through Canfor, seeing her role as both educational and public relations.

2.2 Role of Education Officers *(continued)*

The important aspect of this type of work is that it has not only had a profound effect on the students involved in the program, but has also had a positive effect on the teachers. "Teachers often comment that they felt they were fairly well informed before the presentation, but following the presentation they say they are impressed with the range of information and how open it is about the problems surrounding logging."

Both Coss and Bishop stressed the importance of the forest industry to Vancouver, a city of 3 million. No other single industry contributes more to the economy of Metro Vancouver than the forest industry. Approximately one in six metropolitan workers – 16.3 per cent relies on the forest industry to earn a living.

Bishop reflected that: "It was vitally important that those people working in the city, understand just what the impact of forestry on their lifestyle is and will be in the future and that there was an urgent need for the city people to have all the information relating to forestry to enable them to make informed decisions."

BC's forestry educators are a dedicated, enthusiastic group, providing some outstanding programs.

If there is a weakness in the system used in BC, it would be the lack of a cohesive plan for forestry education.

2.2 Role of Education Officers (*continued*)

Victor Godin, Chief Executive of the BC Forestry Association, feels that the industry could improve its overall communication between all the stakeholders and that if they were to form a network for forestry education, the impact would be much greater.

From the short time I spent in BC, this lack of communication and "sharing" was evident, with some duplication of effort occurring and very committed people expressing some frustration with the present system. This in no way diminished the excellent work that was going on, but results could be even better with a more co-operative effort.

The BC Forestry Association provides a range of forestry education courses, ranging from summer schools, to courses where students run their own wood lot, like a small business, with local industries and the forest service involved. This type of program is particularly popular in rural areas and is one that could well be adopted in Australia.

The down side of these programs is that at this stage there are no standards set and no articulation from these courses into college or university courses, although there were some plans developing for this to happen.

2.3 Forestry Education Opportunities

British Columbian forestry organisations provide a range of forestry education activities for students, teachers and the community. They include the following:

- **Teacher/job shadow program**

This program provides opportunities particularly in the rural areas, for teachers to shadow a forestry worker for a short period of time, eg a week. This program was seen as being quite successful and there were mutual benefits to teacher and forestry worker alike, including an opportunity to share information, and discuss differing perceptions, view points and ideas, but possibly because of the lack of a cohesive educational strategy for the industry, had run into funding problems which had caused the program to run down.

This program should logically link into the forest education programs such as the ones offered by Canfor or through the BC Forestry Association and into programs conducted through demonstration forests such as the Seymour Demonstration Forest.

- **Forestry personnel as ambassadors**

Linda Coss was convinced that one of the most effective ways for the forest industry to "get their message across" was to use all forestry personnel as ambassadors for the industry, rather than always using bureaucrats, politicians or high profile people when attempting to convey the right messages.

2.3 Forestry education opportunities (*continued*)

- **Forestry personnel as ambassadors** (*continued*)

She saw that there were enormous opportunities to take the ordinary forestry worker and use that person to provide the public with an insight on what it is like to work in the forests, why they work in the forests, their job, the way they undertake certain tasks, what it is like to work in the forest industry.

Some use was being made of the "ordinary worker" but it was felt by both Coss and Bishop that a more effective use could be made of them. These people were the ones most effected by the political decisions being made, these were the people who understood the industry. Both educators felt that these people could be used in advertisements, guides for forest tours in sawmills, the forests and in pulp and paper mills. It was also seen that unions could play an important role in this type of program.

- **Share Groups**

The idea of "**share groups**" was suggested in discussions with Coss and Bishop. This is where industry workers form working groups to assist in the planning and maintenance of an area. This provides the industry with opportunities to demonstrate to the community that forestry workers care about their environment.

2.3 Forestry education opportunities (*continued*)

- **Forestry Scholarships**

A substantial number and range of forestry scholarships are offered in British Columbia over a year, with successful applicants acquiring funding to encourage and assist them to study forestry. This issue will be further explored under Forestry Training.

- **Forestry related tourist attractions**

BC's burgeoning tourist trade is very much linked to its forest industries, with some of the major tourist attractions developed from forestry related activities. Good examples of this include the Grouse Mountain development, the Capilano Bridge Tourist Centre and the boat/rail tourist venture to the BC forests. In all these developments, BC has built on the strong physical features of BC – its mountains, trees and waterways to lure the visitor and then provide the forestry message.

The Capilano Bridge complex certainly showed how a simple idea, a swinging bridge across a canyon, can not only generate millions of dollars of income for a province, but is also the vehicle to capture millions of visitors into the forests to learn more about forestry and the forest industries. It would appear that the Capilano Bridge Centre has perhaps now reached its limits as far as tourist numbers goes, and that their visitor management strategy may need to be reviewed to ensure that their forest can cope with the sheer magnitude of numbers

2.3 Forestry education opportunities (*continued*)

- Forestry related tourist attractions (*continued*)

visiting the area every year. They also need to ensure that visitors can access interesting, relevant information whilst they are in the area.

This is a good example of how a very successful attraction needs to be constantly monitored and evaluated to ensure that:

- a) the facility is not over-extended and;
- b) that the original intention of the centre – that is, forest education – is maintained.

The Grouse Mountain complex is also close to the city of Vancouver and combines a trip to the mountain on a sky car, an extraordinary "film" show, logging demonstrations, a ski lift to the top of the mountain, restaurants and forest walks for visitors. Once again though, the numbers using the facility have put enormous pressure on the walking tracks and the forest and demonstrated the need for sound management practices of such a feature. Grouse Mountain perhaps is more "tourist" oriented and not enough has been made of the role forestry has played in the area.

2.3 Forestry education opportunities (*continued*)

- **Demonstration Forests**

Much has been written in the past in relation to demonstration forests, and certainly the Seymour Demonstration Forest, twenty minutes from Vancouver's central business district, is one of the most well known demonstration forests in BC. Spriggins 1989, Rolley 1991 and Ross 1993 provided detailed information in regards to the development and operation of the Seymour Demonstration Forest in their Gottstein papers.

Seymour demonstration forest has undergone some changes over the past two years, with all logging activity in the area now having ceased due to problems relating to water quality and safety issues. Seymour still attracts a large number of visitors each year. These visitors generally visit the area to undertake recreational activities and may take an "education" walk as an add-on to these other recreational activities.

As well, Seymour attracts large numbers of school and community groups.

A demonstration forest is one of a number of means that the forest industry may use as a vehicle to convey its message, and as in the case of brochures, magazines, newspapers, education officers, television campaigns and tourist attractions, should be looked at as one part of a holistic

2.3 Forestry education opportunities (*continued*)

- **Demonstration Forests (*continued*)**

approach to forest education, and not the only means to educate the public.

As pointed out in Michael Ross' Gottstein paper, "Demonstration Forests – Changing Public Opinion" that whilst over 200,000 people visit the Seymour Demonstration Forest each year, it is difficult to "critically gauge the influence of demonstration forests on the voting habits of schoolchildren, as adults in 10 to 15 years time."

Ross goes on to say: "Demonstration forests are not the definitive answer to changing community attitudes. ... No single forum of community education could ever hope to be."

The total costs associated with the Seymour Demonstration Forest in 1992, as outlined by Ross, was \$664, 440. This cost needs to be weighed against the benefits gained and against alternative forms of community education. In strong growth periods for the industry, these costs were willingly accepted by the forestry organisations, but as markets contract, competition becomes greater, the resource becomes more expensive, then the contribution to ensure the continuation of a demonstration forest project becomes a more difficult proposition.

2.4 Funding of Forestry Education

In all provinces in Canada visited, there was evidence of large amounts of money having been invested in buildings and associated infra-structure to facilitate forestry education. There was also some evidence of neglect, of buildings or sections of buildings closed down, of disrepair caused through the industry organisations no longer supporting the particular enterprise.

The funds initially used to develop education centres had been readily available in the 1970 and 80's, but with depressed markets, global competition and downsizing of organisations, funds had dried up considerably for such "luxuries" as forestry education.

The major issue for all involved in forestry education in Quebec, New Brunswick and British Columbia was the funding issue.

With industry organisations carefully monitoring their bottom line, one of the first areas to be cut was the forest education area. Whilst it was acknowledged that forestry education had been effective and was of continuing importance, the issues of who pays, to what level and for how long were still being debated. In the meantime, some of the very effective programs and some of the very effective personnel became redundant due to lack of funds.

2.4 Funding for Forestry Education (*continued*)

In our own country, forestry education funding is limited and in many states is the poor relation of the industry. There is no national approach to forestry education and it is left to a small band of dedicated forestry educators to continue to take a pro active approach to educating our young people to the value and multi-purpose use of our forests.

David Hamilton, Teacher-in-Charge of forestry education with the Forest Education Foundation in Tasmania, expressed his frustration with a system that sees duplication of effort across the states, limited resource sharing, little opportunity to network effectively with counterparts in other states and a lack of vision by the industry in not continuing to adopt a pro-active approach to forestry education. Hamilton was quick to point out that there will be new waves of protesters with each generation and the industry needs to continue to be committed to adopting a national and holistic approach to the issue of forest education.

3. Forestry Training

3.1 Overview

The term "forestry training" covers a diverse range of forestry related training activities, covering everything from occupational health and safety, forest practices code and equipment training to technical forestry and silviculture training. It covers all sectors of the forest industry, including the forest planning and growing sectors, the harvesting, milling and processing, timber merchandising, panel products and pulp and paper sectors. For the sake of this paper, I have also included under the umbrella of "forest training" the programs offered through universities and colleges.

The majority of formal forestry training in both Australia and Canada, has traditionally been aimed at those people wishing to move into the management and planning of forests and has been provided through well established and credentialled university and/or college programs at institutions such as the Australian National University in Australia and the University of British Columbia. (UBC) in British Columbia.

In BC, there has also been extensive investment of resources into what could be classified as the professional and technical forestry areas. In Australia, the professional forestry area is addressed by several of our universities, but technical forestry is either not addressed at all in some states or addressed in a rather ad hoc basis in other states.

3.1 Overview (*continued*)

Over the past fifty years, many industries – including the motor vehicle and tourist industries, the trades areas covering plumbers, electricians, builders, etc, and hospitality and mining to name a few, have been very well catered for in training through the traditional institutions such as TAFE colleges and universities. Apprenticeships, diplomas and refresher programs have been developed, with large amounts of public dollars being expended to provide equipment, teachers, trainers and infrastructure to ensure these industries have a well trained, competent workforce.

The forest industries have not been as well looked after, with the professional foresters being the only group to have their needs met through publicly funded institutions. The remaining personnel in the industry have largely been left to their own devices when it came to gaining or upgrading skills and it has only been in the last ten years that there has been some turn around in the way in which governments have viewed forestry training and commenced allocating some funds for skill development and training.

We cannot lay the total blame for this lack of funding or interest in forestry training at the doors of state and/or federal governments either. The industry must accept some responsibility for this neglect, for there has been adopted in the past what could be called an "isolationist policy" from the industry, with the thinking that the industry can best look after its own needs when it comes to training.

3.1 Overview (*continued*)

Although there has been varying levels of support for our industry training boards by industry organisations in Australia since their establishment – and some state training boards have been more effective than others – one of the positive outcomes from their work has been to highlight the training needs of industry to those who control/manage the government purse and in forestry, we have seen more funds in recent years flowing to facilitate forestry training than was the case previously.

This has led to the funding of induction programs, the development and delivery of traineeships and the provision of training programs to assist existing employees to upgrade and formalise their qualifications.

3.2 Competency Based Training and Assessment

Perhaps the most striking difference between forestry training provision in BC and in Australia is the fact that in Australia we have moved to adopt a "competency based" approach to our training. This requires that all training courses must have clearly defined learning outcomes for the participants and trainers, with equally well defined assessment criteria. It has also meant that each industry has been

3.2 Competency Based Training and Assessment *(continued)*

required to develop national competency standards so that if a chainsaw course is delivered in Albury, Creswick or Hollybank, the content and achievements of the participants – given the regional differences – will meet a minimum standard requirement.

This has been an enormous achievement and step forward for training in Australia and whilst it created many a headache in the years while standards were being developed, these guidelines and the strategy developed through the Australian National Training Authority (ANTA) has provided an excellent foundation from which industry and training providers can work and is looked upon with some envy by trainers in BC.

3.3 Industry Training Boards

If an industry training board works well then it can be of enormous service and benefit to its industry. The concept of training boards is a good one – *a lean, independent organisation that works with a specific industry to identify that industry's training and training funding needs for the future* – and is one that in discussions with BC personnel, had real appeal, particularly if it could assist in addressing their problems of a fragmented and costly training industry, that was struggling to meet the needs of industry.

3.3 Industry Training Boards (*continued*)

The National Forests Industry Training Board (Australian) was responsible for the development of competencies standards within the Australian forest industries and these standards have provided training providers working with industry organisations clear guidelines as to the minimum standards that must be addressed in providing training. As yet, no national competency standards have been developed in Canada and it is a case of each province and each individual organisation working out their own standards. Once again, this may work out for the larger organisations who have human resource departments to develop training programs, but it does not assist the smaller organisations that cannot afford this luxury.

3.4 Operator training

The forest industries have tended to be a "family" oriented industry, with son following father, uncle and grandfather into the forests. Those personnel, whether in Australia or BC, wishing to gain skills in the operational side of the industry, that is the harvesting operators, the milling processors, those working in the plantation establishment and supervisory areas, have generally acquired those skills through an informal on-the-job system.

3.4 Operator training (*continued*)

The luckier novice forestry worker may strike an experienced operator either in the form of a close relative or other experienced operator, with sound work skills who was good at passing on that knowledge and experience. This meant that sound practices, including safety practices, were acquired by the novice. If the novice was not so lucky, then they might strike someone who has been practising bad habits all his life and so those habits would be passed on also.

In the past, our forest workers have had very clearly defined roles within the forests and very clearly defined tasks. A skidder operator was required to operate that piece of equipment, the faller was responsible for falling trees.

In the 1990's, it is no longer that simple. It is imperative for a range of reasons for our forestry personnel to have a deeper understanding of their roles within forestry and a wide variety of skills. They need to know the reasons why trees grow in a particular way, what causes certain trees to fall the way they do, what causes end splitting in logs, the reason why the forest practice and other legislation is important and the implications this legislation has for them in their daily work. They need to take a pro-active approach to safety issues, they need to be able to represent the industry in an appropriate manner, they need

3.4 Operator training (*continued*)

to be enlightened to the benefits that sustainable development and sound work practices in the forests bring, they need to know the implications of the occupational health and safety acts, they must understand their rights and responsibilities under the workers compensation act.

Because today, whether we want it or not, everyone must be accountable – to our employers, our employees, the community and the forests in which we work.

We also know that good skills, sound work habits, a consistent approach and careful planning can eliminate many of the accidents that occurred in the past.

3.5 Training in Mills

Training in mills in both countries, whether it is in saw, chip, veneer or pulp and paper mills, has generally been well developed through the auspices of in-house training personnel. The larger mills, having the financial resources, generally have invested in appropriate training resources, consultants, external training providers, self-paced and computerised training packages etc to ensure that over the past fifteen years, the skills of their workers have been upgraded to meet the demands of the organisation.

3.5 Training in Mills (*continued*)

In both Australia and BC, there has been some support, both financial and in expertise, from the state and federal governments for individual organisations, but generally these organisations' leaders have recognised the need to ensure a safer, more efficient, more quality conscious employee and have gone about meeting those needs without necessarily accessing external financial assistance.

In addition, the need to meet national and international quality standards and to address the requirements of quality assurance to ensure the organisation is in a strong position to win government and overseas tenders, has also meant that these organisations have invested heavily in the upskilling of their workers.

This, coupled with the fact that many organisations in both countries are moving to enterprise agreements with their workers. These agreements generally have a strong training component incorporated into them, has further encouraged a training culture within these mills.

Whilst training in the larger mills has progressed and many now have quite sophisticated, well structured and relevant training programs in place, the same could not be said about our smaller mills, whether in Australia or BC. These smaller mills are still reliant on retaining the experienced operator to pass on their skills and knowledge to the new

3.5 Training in Mills (*continued*)

employee. In some cases, as mentioned previously, this training can be sound, but in too many cases, the training is sketchy, ad hoc and does not cover the key areas to ensure that the new employee is a safe and efficient operator.

These smaller mills face serious skills deficits when their experienced operators move on, as has been the case for many years.

The lack of structured training within these small mills is an ongoing issue and is certainly one that has not been addressed satisfactorily either in Australia or Canada.

3.6 Flexible training delivery

There has been a general recognition by those involved in forestry management and training, that changes in the delivery of training needed to occur, both in BC and in Australia, and some major changes have occurred in Australia over the past ten years and some activity in BC in the last couple of years.

Whilst on-the-job, master/apprentice style training had served the industry over the first one hundred and fifty years in both countries, the last fifty years has seen a gradual increase in the sophistication of the training techniques used in all aspects of the industry, with more complex equipment, more demands on operators to meet safety, environmental and quality standards and more need to ensure that the industry is operating at a sustainable level.

All this has meant that forest operators, team leaders, bush bosses, supervisors, leading hands and a diverse range of other forestry personnel must have the appropriate level of skills and knowledge and work practices.

To meet the various needs of industry, it has not been possible for all these skills to be acquired on the job and has meant that a combination of on and off-the-job training has needed to be developed. Partnerships have needed to be established between

employers, employees and training providers. Organisations and groups representing employers, employees, government and training providers have been required to co-operate and work together, to trust each other in their desire to develop a better skilled workforce.

Training providers have been required to upgrade their skills and services, developing high credibility to demonstrate to industry that they were capable of delivering the requirements of industry at a time, place and cost that was acceptable to all stakeholders.

3.7 Benefits of training

Training has needed to bring about real outcomes for the employers and employees. No longer is it good enough for an employer to send an employee off to a two day course and not see real benefits in respect to the bottom line of the business. Employers want to see gains in production efficiencies, safety improvements and quality increases from the time the employee spends off the job and the funds invested by the employer into that training. They also want to see secondary benefits, in that that employee can pass on the knowledge and skill gained from the off-the-job course, to other employees, thus further enhancing the outcomes.

This increased accountability has had a marked impact on the training provider, who now must clearly identify what the expected learning outcomes and assessment criteria for a program will be, identify clearly to both employers and employees how that person will be assessed and provide accreditation documentation supporting that assessment.

The "Recognition of Prior Learning" and/or the "Recognition of Competencies Held" principles have been very important developments for our forestry workers. This principle allows for the recognition of skills/knowledge and competencies that have been gained through on-the-job acquisition or other means. It provides an avenue for those experienced, highly skilled operators to gain formal recognition for their skills without having to undertake unnecessary, repetitive training. Used correctly, these principles can be real motivators for our forest operators to have skills recognised and act as an impetus for our operators to take on further relevant training.

This increased accountability on training providers has also meant that they have had to ensure that trainers providing training are accredited, highly experienced, professional trainers who have a high degree of credibility within the industry.

In Australia, most states are moving to have industry trainers accredited, ensuring that they meet specific criteria before receiving the endorsement of the industry. The Australian Timber Trainers Association has also provided some guidelines in ensuring that the standard of forestry trainer continues to be upgraded.

4. British Columbia – Forestry Training

4.1 The culture and cost of training

The Director of the Business and Technical Programs Branch – Post Secondary Education Division of the Ministry of Skills and Training, BC, Mr Duncan MacRae, expressed his concern regarding the lack of a training culture in industry in general and in particular, in forestry. Whilst he saw that British Columbia had invested heavily in the "bricks and mortar" of training, the high borrowings to establish the infra-structure of education and training, had been at a great cost. It was felt that this had created a very heavy burden in the form of debt for the province to now carry and was, in fact, inhibiting real training from happening.

Figures provided by this department show that in British Columbia:

- ♦ before any training occurred, there was a cost of \$2, 700 on each vocational training placement;
- ♦ from Grade 8 to Grade 12 – 30 per cent of students opted out of education;
- ♦ \$1.5 billion was allocated to post secondary education, of which 66 per cent went to the universities;
- ♦ 11 out of 100 students in grade 8 go on to university;
- ♦ 12 out of 100 students in grade 8 go on to diploma level;
- ♦ 45 out of 100 never go near any post secondary education.

4.1 The Culture and Cost of Training (*continued*)

It can be seen from the above figures, that there is large percentage of young school leavers who are not able or do not choose to access further education and training and that two thirds of BC's post secondary education funding goes to educate/train a very small percentage of BC's young people.

Mr McRae could argue a very strong case for reintroducing into Grade 11 and 12 classes, a range of courses with a more **vocational and technical content**, to enable students to gain real and practical work skills in these years and for directing funds away from universities to those institutions that were endeavouring to provide training to those students not wishing to go on to a university education.

In Australia, this theme has certainly been picked up through the recently introduced Australian Vocational Training System, where colleges and private training providers have been pro-active in developing such courses. (See Recommendations and Appendix – Certificate 1 Forestry – Broad based AVTS).

Whilst there have been some excellent materials and resources developed through the Ministry of Skills and Development and the Ministry of Forests, it would appear that there has been a real difficulty in delivering the on-the-ground training. At the time of the report, there were no standards set for forestry training, either national

4.1 The Culture and Cost of Training (*continued*)

or provincial, no accreditation or professional qualifications required for forestry trainers and no requirements for training providers to be registered or hold any particular expertise.

Whilst it was generally agreed by those in the two ministries, that this needed to happen, it appeared that because of the lack of strong communications between the stakeholders and the lack of commitment to this area of training, that this would indeed be a very difficult task. The physical size and the nature of the terrain of British Columbia and isolation of many of the forestry communities exacerbate the problems associated with the provision of practical training to operators. As was the case in Tasmania some fifteen years ago, there is also no "culture" of training and any off-the-job training is viewed with some scepticism, by those working in the bush or in the mills.

In the last ten years, the revitalisation and restructuring of all training in Australia has been a major focus of the federal government. It is only when one looks at how little real restructuring countries such as Canada and the United States have undertaken in regards to their training reform agenda, that we can appreciate the work that has been done here in Australia and in forestry in particular.

4.1 The Culture and Cost of Training (*continued*)

British Columbia has focussed on training at the professional and technical level, with excellent programs established for those wishing to study forestry planning, management and research, with some very good technical programs being offered through colleges such as Capilano and Namaino.

Don Whiteside is a forestry trainer covering areas such as commercial thinning, planting, brushing, juvenile spacing and pruning and is also the head of a Forestry Trainers Association. This group has been responsible for much of the practical training delivered out in the forests, but as yet have not been able to establish any standards or recognition for trainers or their organisation.

In discussions with both the private trainers and with government personnel, the concept of industry training boards was one that appealed to them. At present in Australia, our own industry training boards are undergoing some rationalisation, but nevertheless the Australian model was one that appeared to make good sense.

It was seen that in BC, there was no one body responsible for the overseeing of forestry training – or any industry training – and that for a cohesive and affordable plan to be developed, there needed to be an independent organisation dedicated to that planning and accountable to the forest industry.

4.2 BC University Programs

The Faculty of Forestry at the University of British Columbia's (UBC) mission statement states that:

" (it) exists to help society solve problems collectively called "forestry" – the conservation and use of forests and forest products to sustain human material and spiritual welfare. The main way we (University of British Columbia) accomplish this task is through the people we educate, undergraduates for professional careers in land management, graduate students for service in science and professionals who require updating in the latest scientific information so they can perform their jobs at the high level expected by society." (1994 Annual Report, Faculty of Forestry, University of British Columbia).

The Faculty of Forestry, UBC's role in the context of forestry education/training is very clearly defined, in that it does not see that its function is to "train" forestry personnel for the industry, necessarily, but to educate its people for careers as professional land managers, in the more holistic sense.

It was pointed out that some professional foresters who completed their courses at UBC, went on to undertake the more practically based forest technician's course at one of the colleges.

4.2 BC University Programs (*continued*)

British Columbia's heavy reliance economically, on the forest industries, is reflected in the number both of programs offered, funds provided and the number of students entering forestry programs in any one year. These numbers have been consistently high over a long period of time.

The forestry programs offered at UBC are accredited through a national accreditation program , with a review conducted every five years by an independent body. In addition, the Faculty of Forestry UBC also undertakes its own evaluation program, based on a survey of students each semester. Faculty members receive the results of these evaluations for their courses along with their comparative ranking with others. Teaching performance figures heavily in faculty promotion and salary decision and ensure continuous improvement and relevance of the programs.

Graduates from the Faculty of Forestry, are eagerly sought by a range of forestry organisations, with their 1994 figures indicating that nearly 80 per cent of the graduates responding (73 per cent) to the survey were in permanent employment.

4.2 BC University Programs (*continued*)

The Faculty of Forestry offers a four year degree program in each of the following five areas:

- ♦ Forest Resources Management – BSF;
- ♦ Forest Operations – BSF;
- ♦ Wood science and Industry B Sc (Forestry);
- ♦ Forest Science – B Sc (Forestry);
- ♦ Natural Resources Conservation B Sc (Natural Resources Conservation). (Appendix)

In discussions with Sandy Thompson, a forestry graduate working at UBC, it was suggested that the forest industries had not accepted the Natural Resources Conservation course as wholeheartedly as anticipated, expressing concerns about the word "Conservation".

From a student perspective it was felt that the new course did not have the confidence of employers, with forestry people afraid the students and course would not offer what they wanted.

Traditionally universities have not paid a great deal of attention to industry and its needs and there has been a lack of real consultation between training providers and industry. Universities, in particular, have tended to adopt a rather superior role in their relationships with industry. Whilst we would not wish to see the independence of universities diminished too much, there surely is a role for industry, and in particular our forest industries to play, in the determining of courses and in some cases, the content of those courses. Tertiary

4.2 BC University Programs (*continued*)

institutions absorb very large research and development dollars from industry and there needs to be open and honest communications between these institutions and industry to ensure that the clients of the university – the students – and industry have their needs met.

For students in rural areas in BC, forestry has generally been viewed as a "respectable" career, but throughout the eighties and into the nineties, the city dweller has seen forestry as a "bad thing" and not something parents would want their children to move into.

Consequently, there was a decline over the eighties in enrolment numbers.

4.2 BC University Programs (*continued*)

Program	Number enrolled	% of total
Forest Resources Management	201	44.5
Forest Operations	25	5.5
Forest Science	25	5.5
Wood Science and Industry	33	7.3
Natural Resources Conservation	81	17.9
Undeclared*	87	19.3
Total	452	100

*First year students.

Distribution of students among programs – 1994/95

Female students represented 31 per cent of the above total, up from 29.5 per cent in 1993/94 and 14 per cent in 1990.

4.2 BC University Programs (*continued*)

Full time forest enrolment at UBC is now around 452, with 180 undergraduates. A high percentage of students, around fifty per cent come from overseas, which has proved beneficial to the university.

Numbers in forestry have fluctuated over the past ten years, due to the high profile the forest industry has had and depending on whether the media coverage was positive or negative, this had a bearing on the number of students wishing to take up forestry as a career. At one time, elementary teachers were actively educating against forestry, but with the introduction of forestry education programs developed by the industry, along with better and more balanced media coverage, forestry is once again perceived to be a desirable career for a young person.

Entrance level requirements into forestry are considered to be quite high, with a requirement of a 70 per cent grade average.

A number of forestry students fail in the first year, and Dean Kozak, Associate Dean, Undergraduate Programs and Academic Affairs, felt that this was due to the dramatic difference in the way in which study was approached between their "high" schools and university. Kozak saw that there was still a need to provide a more effective induction for students going into university, particularly for those students moving from the smaller rural communities into Vancouver.

4.2 BC University Programs (*continued*)

In 1994/95, 31 per cent of the intake into forestry of 450, were female, a marked difference from the 1970's when very few females saw forestry as a career option. Since these days, there has been a real change in the culture and expectations both of females and of forestry as an industry, with around 25 to 30 per cent of students being female over the past ten years. Academically females have done very well, but on graduating, often face trying jobs in very rough and isolated areas which does see a higher drop out rate of females.

4.3 Funding

BC universities are funded through the provincial government with the federal government moving away from funding tertiary education. As with most universities, there is never seen to be enough funds to cover everything the institution wants to do, with 80 per cent of funds coming from government and 20 per cent from fees, research grants etc.

Large numbers of students going into forestry courses, come from the Greater Vancouver area and have had little experience of forestry before entering the course. Bursaries and scholarships valued at around \$50,000 per annum are allocated to forestry students. In addition, interest free government loans are available to all tertiary students.

4.4 Other BC Forestry related programs

4.4.1 First Nations Forestry and Conservation Program

As well as running the programs outlined above, the Faculty of Forestry, UBC is heavily involved in research projects, has established a First Nations Forestry and Conservation Program and provides a continuing education program for its foresters and industry, under the BC Forestry Continuing Studies Network.

The First Nations Forestry and Conservation Program was established to assist in addressing the issue of few aboriginal people having received formal training and education in forestry or other natural resource sciences. It also recognised that with the formal recognition of aboriginal rights by the BC provincial government and the imminent resolution of the aboriginal land question, that the First Nations people will, in the future, be influencing resource management decisions.

This First Nations program recognises that their indigenous people hold a special relationship with the land, and in particular the forests, and the program includes provision of a more flexible program that provides some bridging courses to facilitate the First Nations people accessing and completing a university education.

It will be interesting to follow up this program in the next two years to evaluate its success.

4.4.2 BC Forestry – Continuing Studies Network

This unit has been in operation for four years, with six regional offices throughout BC. Each office is governed by an advisory board whose members provide input on a range of operational issues. The principal role of the Network is the co-ordination of the delivery of continuing education in sustainable natural resource management. One of the driving forces behind the creation of the network was a need to address the inconsistencies in availability, quality and cost of continuing education in forestry.

Although the initial focus of Network training was the professional and technical audience in forestry, more activities are now being organised for the forest worker.

4.5 Technical Forestry Training

Colleges throughout British Columbia offer a range of what is known in Tasmania as "Technical Forestry" training. These programs are generally a two year full time training program, which equips the participant with the relevant skills and knowledge to allow them to move into employment as a forest technologist in government, private enterprise or as a forestry consultant.

The Malaspina University – College offers such a program and in its promotion of the course states:

"The program emphasises the recognition and appreciation of all the major values of the forest including timber, recreation, wildlife, range, fish, water values and aesthetics, while covering the uses of wood and the related manufacturing processes in British Columbia."

Malaspina, as with most of the colleges and universities throughout Canada, has its own wood lot close to the college. In the case of Malaspina, its 1300 ha. wood lot is only ten minutes away from the main campus. This facilitates the fieldwork that is an integral part of the whole program.

As with the University of British Columbia programs, students are expected to take on summer forestry jobs to broaden their knowledge of practical forestry.

4.5 Technical Forestry Training (*continued*)

Tuition costs are around \$1, 080 per year, with an additional \$600 additional to cover cost of safety equipment and work gear. At Malaspina, there are up to \$13, 000 worth of scholarships and bursaries available each year, with the actual intake being limited to around 27 students.

The content of the course includes the following:

- ♦ Forest Measurement
- ♦ Photogrammetry and Photo Interpretation
- ♦ Forest Botany and Ecosystems
- ♦ Mathematics for Forestry Technology
- ♦ Natural Sciences
- ♦ Fire Management
- ♦ Statistics for Forestry
- ♦ Silviculture
- ♦ Forest Resources and Administration
- ♦ Forest Pathology
- ♦ Logging
- ♦ Roads and Transport
- ♦ Integrated Resource Management
- ♦ Forest Insect Pest Management
- ♦ Harvesting, Development and Economics
- ♦ Wood Properties and Products

Graduate foresters from the universities often take on teaching assignments for the colleges and there is some cross over of students, that is graduates from the universities then move on to the technician's course to gain additional practical skills.

4.5 Technical Forestry Training (*continued*)

Students who have undertaken the technician's course are also able to move across to take on the degree course. There is some credit transfer, but at this stage it is not a formal process and is an area that stakeholders agree needs to have immediate attention.

Most of the forestry graduates from the colleges go on to work in career-related forestry positions, on salaries ranging from \$1,800 per month to \$3,000 per month (1994 figures).

Secondary Colleges are offering a range of forestry programs for Years 11 and 12 students which provided them with an opportunity to get some skills and experience of forestry. These programs assist students in making decisions regarding selection of forestry as a career. Similar programs are offered in certain states of Australia, eg the Certificate 1 Forestry – Broad Based AVTS offered in Tasmania and similar courses in other states.

4.6 Training in Specific Forestry Areas

4.6.1 Forest Practices Code

The BC Forest Code of Practice was officially launched in June 1995, following extensive research both in Europe and in Australia, taking what was considered to be the best aspects from already established Codes of Practice.

4.6.1 Forest Practices Code (*continued*)

BC has established an independent Forest Practices Board, whose task it is to investigate public complaints about forest planning, practices, and protection, and enforcement of the Act. The Board has authority to investigate complaints about operational planning requirements, forest practices, protection of forest resources and appropriateness of government compliance and enforcement. The Board does not have authority over land-use decisions or strategic planning.

Where the public may have a concern or issue that needs addressing, they are encouraged to try to solve the problem before turning to the Board for assistance. The Board then may decide to investigate the complaint or may suggest a different approach.

The industry has been required to provide training for the 25,000 forest workers, through the Industry Training Task Force, especially established to deal with the development of a training package and the delivery of the training.

This action has resulted in a loss of ownership of the Code by some industry personnel, thus making the task of training just that much more difficult. In addition, some professional foresters felt that the establishment of the Code was an indictment of their past forest management practices and expressed real resentment at that implication.

4.6.1 Forest Practices Code (*continued*)

A system of peer training, with non-academic trainers, has been established to ensure that the workers on the ground firstly gained a basic understanding and awareness of the Code, with intensive training to follow in more specific areas, eg road rehabilitation, stream side reserves etc.

To facilitate the awareness stage, four very effective, low cost videos were produced, with multiple copies produced to enable all workers to access the videos.

The overall cost to industry, in implementing the Forest Practices Code has been substantial and there has been some criticism that funds available through the very well funded BC Forest Renewal program, have not been channelled into Forest Practices Code training. It is a further example of where the lack of a cohesive, long term plan for forestry training in BC has led to poor utilisation of funds and not provided the industry with the anticipated outcomes.

As outlined earlier, the BC Forestry Continuing Studies Network has played a significant role in assisting in the development and co-ordination of programs in this area.

4.7 Forestry Worker Development Program (FWDP)

The Forestry Worker Development Program (FWDP) has been designed to assist in the promotion of economic recovery in all regions of British Columbia, through investment and job creation. It draws some similarities to some of the labour market programs in operation in Australia.

The objectives of this program are to:

- ♦ increase the skills and knowledge of forest workers to enable improved productivity and quality of work;
- ♦ develop stable local contracting expertise that will be available to take on field activities of increasing complexity in a variety of activities;
- ♦ encourage longer-term, multi-activity contracts designed to provide continuous employment to workers and contractors;
- ♦ support community involvement and initiative in forest management.

The FWDP is an employment creating scheme that develops a more community based approach to contracting, providing a three tiered forestry training and employment program providing up to forty weeks of work and training.

Substantial training development has been undertaken on the program, with once again excellent training materials provided.

4.7 Forestry Worker Development Program (FWDP) *(continued)*

Whilst the program has merits and has achieved some good results, it does not necessarily meet the needs of those forestry workers who have found themselves redundant after spending many years in the forests. These workers have found that with increasing mechanisation, changes to work practices and the need to upgrade skills, that they have been left behind. It is a problem that not only BC has to address, for the problem is common in Australia today.

It is not simply a question of redundancy payments or retraining for these forest workers who find themselves superseded, for most of these forest workers it means major upheavals to their lifestyle, their heritage and the whole fabric of their existence which is being tampered with.

4.8 Occupational Health and Safety and the role of the Workers Compensation Board

The one BC organisation that most exemplifies forestry to those of us involved in forestry training in Australia would be the Workers Compensation Board of BC.

"In 1917, the Workers' Compensation Board of British Columbia (WCB) was created to ensure the safety, protection and good health of the workers of British Columbia." *Workers' Compensation Board of British Columbia – 1994 Annual Report.*

4.8 Occupational Health and Safety and the role of the Workers Compensation Board (*continued*)

The WCB's foremost priority is the prevention of workplace accidents and disease, but is also responsible for sustaining workers with wage-loss compensation and seeks to restore the worker's productivity through rehabilitation.

Whilst safety is recognised as ultimately the responsibility of the employer and employee, WCB sees itself as a partner with industry when it comes to occupational health and safety and, as such, is responsible for providing a range of services to the employer to assist in the promotion, monitoring and auditing of safety.

WCB, in 1994 focussed on logging activities, due to the increased number of fatalities in this sector. Rising claims were met with immediate preventative actions to determine causes and to develop strategies to maximise the resources available. The WCB released a Report on Fatalities in the Logging Industry, which was supported by a safety awareness campaign. Additional safety officers were deployed from other lower risk industries and the WCB's senior executive delivered a strong compliance message to the leaders of logging firms with chronically high claims.

4.8 Occupational Health and Safety and the role of the Workers Compensation Board (*continued*)

The WCB, has in the past, had a strong training development and delivery role, undertaken through its Prevention Division, which provides an education and consulting service to help employers fulfil their responsibility to provide a safe and healthy workplace. As well as providing field officers to work with employers and workers, it has developed and published a range of handbooks, brochures, videos and posters specifically for the forestry sector, including:

- ♦ Yarding and Loading Handbook;
- ♦ Cable Yarding Systems Handbook;
- ♦ Industrial Health Safety Regulations;
- ♦ Grapple Yarder and Supersnorkel Handbook;
- ♦ Fallers' and Buckers' Handbook;

WCB is probably best known in Australia, for the range of excellent posters and videos that they produce, as well as for their "WCB health and safety news for the workers and employers of BC –

PREVENTION at work."

This bi-monthly publication provides both employer and employees with up-to-date information relating to prevention of accidents and details of accidents that have occurred. It also published details of penalty actions taken against organisations.

4.8 Occupational Health and Safety and the role of the Workers Compensation Board (*continued*)

All this activity comes at a heavy cost, with WCB administrative costs in 1993 alone being \$185,986,000, with short term disability costs in 1993 at \$279 million and long term disability costs at \$246 million.

As in Australia, accidents and injuries in the forest industries are still far too common and both in financial and human terms, far too expensive. Whilst the WCB are taking pro-active, supportive role, a more pro-active approach; by all stakeholders, employers, employees, training providers, government instrumentalities and insurance organisations is required if the number of injuries is to continued to decrease.

4.9 Role of Forest Renewal BC

The Government of British Columbia has launched a multi-faceted strategy to restore and improve the health of BC's forests and the forest sector, which, along with a range of other initiatives to preserve and sustain the forests, maintain their diversity and ensure more jobs from every tree harvested, includes the Forest Renewal BC strategy.

4.9 Role of Forest Renewal BC (*continued*)

Forest Renewal BC is quite a unique organisation, being a partnership among all the stakeholders in the forest sector – workers, companies, indigenous people, communities, environmental groups and government.

Forest Renewal BC has permanent revenue from stumpage and royalty fees, guaranteed under the BC Forest Renewal Act. The corporation receives its revenue on a quarterly basis, estimated to be between \$430 and \$446 million in the 1995/96 year.

The organisation has been divided into Committees:

- ♦ **Land and Resources Committee**
makes recommendations to the board on incremental investments – that is, investments over and above what is currently required for industry and government – in the forest resources and in the forest land base.
- ♦ **Value Added Committee**
makes recommendations to the board on promoting activities that assist forest industry diversification, the further processing of wood supply and increased manufacturing of wood products.
- ♦ **Environment Committee**
makes recommendations to the board on investing in the environmental values of the forest.
- ♦ **Workforce Committee**
makes recommendations to the board on fostering employment opportunities, job training and other related initiatives to assist forest workers and to expand the forest workforce.

4.9 Role of Forest Renewal BC *(continued)*

- ♦ **Communities Committee**
makes recommendations to the board on supporting community development and adjustment through increased investment in forest-related activities.

Whilst all committees link back into training and education, it is Kelly Nontell's job to put into place the workforce training programs recommended through the Workforce committee. It was at first thought that these proposals would come through from community groups and service groups, who would identify training needs for the forestry community and personnel, but in 1995 this had not occurred. As Nontell pointed out:

"We have bags of money – but what to do with it? We do not develop or deliver training."

Nontell felt that there needed to be a mechanism to get it all going, that is to provide flexible, relevant training to meet the needs of existing workers and for those people who had been displaced from their forestry jobs. They – Forest Renewal BC – were looking for communities to come up with proposals for projects in intensive silviculture, land reclamation and in value adding ventures.

He also recognised that there were substantial difficulties with the project concept, in that it would place pressure on those older workers who did not have the skills to take on new projects and who felt under severe threat when the training came up.

4.9 Role of Forest Renewal BC (*continued*)

Nontell also saw a real need for the educational and training institutions to move closer together with industry, so that the real industry needs could be better met.

It also illustrates a need to have a combination of expertise involved in the establishment of such projects – forestry, training, development – but above all, it requires personnel with a real passion for what they are doing and who are prepared to do the hard work in getting projects up and going.

This was a good example of how money cannot necessarily solve the problems. In this case there were substantial funds allocated but because there was no strategy for implementation, no identification of needs, then funds alone could not solve the problems.

5. Quebec and New Brunswick

Several days were spent in the provinces of Quebec and New Brunswick, where time was spent at Laval University in Quebec and at the Maritime Forest Ranger School at Fredericton in New Brunswick.

Despite the language difficulties in Quebec, French only is used at Laval University, the programs offered, content and mode of delivery were very similar to that in British Columbia. Both universities are very traditional in their approach to their programs and have set high standards for their students.

Perhaps the most interesting and innovative training and education was being conducted at the Maritime Forest Ranger School at Fredericton, established in 1946 and providing skilled forest technicians for forestry organisations. This Ranger school works closely with the University of New Brunswick, where major changes have been made to their forestry degree program.

Both organisations have identified that it is not only important for foresters to understand the nature of trees, but it is equally important for foresters to be able to understand and deal with the people who will be handling those trees. This has meant that more emphasis and time is being devoted to the human resource management aspects of forest management.

Perhaps the most surprising change has been for the School of Forestry to move to a competency based training system, where clear learning outcomes have been defined and assessment criteria determined for every learning

Quebec and New Brunswick (*continued*)

outcome. Emphasis is on the individual progressing at his/her own rate and for being responsible for that learning. There has been a major learning curve for both students and for lecturers, but the Dean of Forestry believed that it was already showing results. In 1995, the school had 170 new students, 500 undergraduates and 20 graduates working in advanced forestry research areas. A substantial number of students come from 16 different countries.

This university operated under the assumption that everyone should have an opportunity to go to university, with all of the Maritime provinces, as well as 16 different countries, being represented in the university.

The Dean outlined the philosophy adopted by his school in relation to forestry education/training, including:

- ♦ making a move from traditional learning to what is called "reflective practice" – problem solving and dealing with people;
- ♦ goal directed, performance based learning;
- ♦ learning by doing;
- ♦ dealing with real world forestry problems;
- ♦ knowledge acquired on a need-to-know, just in time basis;
- ♦ group learning and team coaching a strong element
- ♦ subject relevance more important than disciplinary rigour;
- ♦ students taking more control of learning;
- ♦ teachers taking a more facilitory role.

Quebec and New Brunswick (*continued*)

The Ranger School provides a one year accredited course for forest technicians, training in surveying, photogrammetry, fire fighting, silviculture, logging and milling. The student is given the opportunity of becoming acquainted with the operation of a range of equipment, using the 1, 457 ha around the school as a field laboratory in which to practice.

The Maritime Forest Ranger School also provides training in the full range of activities related to sawmilling, having a fully equipped and very modern sawmill at their disposal. The University and the Maritime Forest Ranger School are well worth a visit.

6. Recommendations

What I brought back from my foray into British Columbian forestry, or more accurately, what was reinforced from my research into forest education and training in Canada, was very simple, even basic, and included the following:

6.1 General

6.1.1 Identify key issues in forestry education and training

If the forest and forest related industries are really serious about making progress in forestry education and training in Australia, then Australian forestry managers, leaders, planners, foresters have to identify the key issues to be addressed within the industry/organisation and once these issues have been identified, need to go about preparing a plan and a process that suits the industry and/or the organisations, given the conditions and the resources at the time.

What works for one state or country may not necessarily work for another. There is little point in picking up on ideas that worked for another country, province or region five years previous and expect that by lifting that idea and placing it in a different set of economic, social, industrial and environmental conditions that it will necessary work for that region. This does not mean that we should not learn from other people's and other countries' ideas and mistakes, but we should take

6.1.1 Identify key issues in forestry education and training *(continued)*

great care that we are not following blindly in the path of someone else's good idea of a different time.

Education and training in Australia has been plagued over the last two hundred years by well meaning travellers bringing back ideas that have been seized upon by bureaucrats within departments and organisations, deciding that this is the way it should be done in Australia.

What we haven't done enough of is to sit back and define exactly where we want to go, whether it be in general education and training, or more specifically in forestry education and training.

Finding our own answers to issues does take courage on behalf of an industry and its leaders and it also takes planning, time, innovative thinkers and commitment from all the stakeholders.

6.1.2 Support of industry leaders

No project, program or proposed solution, whether it be to do with strategic planning for an industry, or forestry education or forestry training, will succeed – that is, have the desired

6.1.2 Support of industry leaders (*continued*)

outcomes – if, it does not have the commitment and support of the industry leaders.

No matter what resources – money, people, research, is provided for a project or program, if the industry leaders do not believe in the need and benefits of the project and if these leaders do not openly demonstrate real commitment to it, then it is unlikely to succeed. This commitment must be a real, tangible commitment, more than just dollars, more than just a wave of approval at a Board meeting.

The results of such commitment from industry were particularly apparent on the east coast of Canada, in New Brunswick, where the industry was supportive of forestry education and training, and used their education and training bodies as extensions of their own businesses. They not only supported their educational and training organisations in dollar terms, but also used the facilities extensively for continuing training and education programs.

6.1.3 Evaluation of program and projects

If the industry has defined its needs and prepared a strategy to address these needs, if it has the commitment and support of its leaders, then there must be commitment to continually

6.1.3 Evaluation of program and projects (*continued*)

evaluate the project or program and to be prepared to put in place strategies to deal with the inevitable changes that will arise from this evaluation.

Decisions made in 1991 relating to, for example, a demonstration forest education program, may not fit with the changes that have occurred in the forest industry or in people's perceptions and needs, in the next five years. Programs, ideas, ways in which we tackle issues will change and our structures should be flexible enough to be able to deal with these changes and not believe that we can simply put a project in place and walk away from it.

There must be ongoing evaluation, maintenance, support and commitment to the program.

6.1.4 Money alone does not address issues

In BC, the forest industry organisations are very well resourced. This has not necessarily provided the industry with the outcomes the industry has been seeking. There are still not enough trainers out in the forests working with the operators, there are still no industry standards and they still have real issues to resolve in relation to the general public's perception of forests and forest harvesting activities.

6.2 Forest Education

6.2.1 National planning/programs

Whilst it is important for each state and each region within a state to identify and promote its specific qualities and conduct its own forest education programs, it would appear that there would be major advantages in developing a national framework for forest education, which would provide those working within this area with supporting infrastructure from which they could operate.

Forest educators tend to work in isolation, often reinventing the wheel, struggling with finances, yet passionate in their work and striving to provide the industry with real benefits, real outcomes.

A national approach to forest education would assist forest educators to provide a consistent message in relation to forests and forest management which would only make their messages more powerful.

6.2.2 Holistic planning

To maximise the limited resources – both in personnel and funds, it would seem to be important for a state or region, or in Canada's case a province, to take an holistic approach to its forest education planning, bringing together all the major stakeholders and those involved in the provision of forest education.

In some cases we have, in the past, developed demonstration forests, education centres, information kiosks and hoped that they would hit the mark. This shot gun approach is a very risky approach and generally never cost effective.

There has also been the tendency to run short term programs with the expectation that we will change people's perception of forestry and been sadly disappointed with the results.

6.2.3 Demonstration forests

Much has been written about demonstration forests and there is certainly both anecdotal and quantitative evidence that the Seymour Demonstration Forest and similar forests are providing BC with an excellent vehicle for its forest education programs. However, one cannot look at demonstration forests in isolation, as there are many other forest education programs, including summer camps, forest education newspapers, school programs and major tourist attractions that all are contributing to improving the public's perception of forestry.

For demonstration forests to have the desired effect, they need to have forestry guides available to assist in the interpretation and they need, at different times of year, to be truly working forests.

6.2.4 Resourcing of forest education

If the education of the community, of our school children and specific groups is an issue for the forest industries then as well as having a national approach to forest education, there needs to be appropriate resources allocated to ensure the job can be carried out as required.

6.2.4 Resourcing of forest education (*continued*)

There is little point in having grandiose ideas of developing a demonstration forest if there are insufficient funds to maintain this forest, to operate it as planned or to provide personnel as required to act as interpreters and guides.

The most powerful forest education messages have not come from demonstration forests, high tech video touch screens or well produced newspapers. The most powerful messages I saw in Canada or in Australia came from forestry educators such as Linda Coss, Ann Bishop in Canada, David Hamilton or Darcy Vickers in Tasmania when they are working with groups, whether they are school children, teachers or community groups. These people have real passion and commitment to their work.

6.2.5 Tourist attractions

There would also seem to be enormous potential within Australia to link our forests and the forest messages to major tourist attractions. With all states of Australia boasting outstanding forests, deep gorges, flowing rivers etc it would appear that we have not been all that entrepreneurial in our approach to bring people into these areas by providing them with top ecological/adventure experiences.

6.2.5 Tourist attractions (*continued*)

Swinging bridges, giant wooden statues, cable cars to the top of mountains, miraculous video shows – all these were part of the major tourist attractions of BC and all were part of the of the forestry story.

Our forests have always been multi-use forests – available for production, for recreation, for sport, for leisure – now we should capitalise on them further and tap into the tourist dollars.

6.2.6 Scholarships and camps

Scholarships and summer and winter camps are part of the culture of Canada and the USA. Business organisations of all kinds provide scholarships and bursaries to primary, secondary and tertiary students to assist them in their studies. Not only does this assist financially the young people to take up the challenges that further academic study brings, and encourages the highly motivated student to take up careers in that industry, it also provides those organisations and industry contributing to those scholarships with a profile in education and training.

6.2.6 Scholarships and camps (*continued*)

Summer camps are a very important part of the culture of American summers and whilst I am not advocating copying exactly the American model, there are opportunities for education and training providers, as well as industry organisations, to offer young people forestry experiences in their vacations.

6.3 Forest Training

6.3.1 Industry Training Boards

Industry Training Boards, if they are supported, are encouraged, are well managed by the industry board members and are given clear and unambiguous guidelines as to their role, should be of enormous assistance to an industry and have real potential to develop sound training strategies and assist industry in the development of a training culture.

Training Boards should be non-political, made up of the key players in industry, people who have a vision for the future of that industry and have ideas as to how that vision can be achieved.

6.3.2 Industry involvement and ownership of training

Question:

Why do we have training for our forest and mill workers?

Answer:

To upgrade skills to ensure the workers are competent – that is they are safe, efficient and quality conscious and able to produce the product required to the established standard.

Bottom line:

A safer, more productive, more cost effective, more profitable business?

If it is agreed, that upgrading of skills and continuous improvement for the organisation are desirable states, then ongoing training is essential. However, it is imperative that the organisation never gives up its **ownership or responsibility** for that identification of training or the management of the program to any outside organisation, whether it be to a consultant or to a training provider.

The provision on training services to any organisation should be a partnership between employer, employees and training provider.

6.3.3 Research/development and training

In both Canada and Australia, there is an enormous amount of research work being undertaken through the universities, organisations such as the CSIRO and by individual forestry organisations. There is a real need to ensure that the completed research work is able to be translated back to those people within the forest industries who need to apply the research to their day to day work.

A weakness of research work in the past has been that the results of such work is not available to those who could use it and we do not incorporate the findings into our training.

There needs to be a close working relationship between researchers and trainers to facilitate the dissemination of such materials.

Similarly, there is real potential for industry training providers to provide researchers with relevant information through their daily contact with the industry and its employees.

6.3.4 Forestry programs in year 11 and 12

In several states around Australia, courses providing students with a range of forestry skills have been introduced to provide alternative programs for those students who are looking to make a career in forestry or forestry related areas. Students and parents are looking for more relevant courses that provide practical work skills to enhance their employment opportunities. As mentioned earlier there are a range of courses being developed.

An example of such a course is the Certificate 1 in Forestry (Broad Based – AVTS) which is delivered by the Hollybank Forestry Centre and Newstead College in Launceston. This course consists of four components:

- a. Education based subject, including applied mathematics, communications, integrated applications in computing and applied science environments;
- b. forestry vocational modules including occupational health and safety, workplace 2 first aid, chainsaw and brushcutter operations, forklift and/or tractor operations, plantation operations, map reading, radio communications, timber technology;

6.3.4 Forestry programs in year 11 and 12 (*continued*)

- c. simulated work projects – students/trainees work in a protected environment on forestry related projects to practise skills over a five week period;
- d. work placement – trainees/students under supervision from industry trainers/supervisors gain valuable work placement skills, over a six week period.

At the conclusion of the course, successful students gain the Certificate 1 in Forestry (Broad Based – AVTS). Many of these trainees over the past two years have gone into industry to work, articulating into forestry traineeship programs.

Similarly in other state, courses have been developed to provide our year eleven and twelve students with a range of practical forestry related skills, as well as allowing them to continue their general education.

If it is no longer acceptable to send our untrained young people straight out into the forests, then we must provide them with relevant courses at years 11 and 12 which can articulate into traineeships, apprenticeships and other structured training.

We must also be aware that forest training has special needs and substantial resources – with equipment, training time and transport adding to the costs of training.

6.3.4 Forestry programs in year 11 and 12 (*continued*)

The rates of trainer to trainees is one area that has potential to increase training costs, with treefalling and equipment operations requiring a maximum of 1:4 trainer/trainee ratio.

6.3.5 Forest workers/mill operators training

With the increased demands on all forest and forestry related workers, ongoing skills development needs to occur to ensure that our forestry personnel are safe, efficient, quality conscious operators.

The very nature of the work undertaken by our forestry personnel means that they are often working in isolated areas, unable to access traditional avenues for training through TAFE and university.

This requires training providers to be far more flexible in the provision of training for the industry, needing to assess the needs of these workers and how best to meet their needs.

The industry, through its training boards and industry providers needs to prepare a strategy to ensure workers receive ongoing training in areas such as occupational health and safety, environmental guidelines, quality requirements as well as ensuring that those progressing into management and supervisory roles receive the appropriate training.

6.3.5 Forest workers/mill operators training (*continued*)

In the past, those people moving from being a good machine operator to being bush boss in charge of a number of people, or from being an excellent machinist to being supervisor of a sector in the mill, have received little or no additional training and yet the skills required to do the supervisory job are far different from those of the initial job.

There has been little recognition with industry that managers and those in supervisory roles require a different package of skills to enable them to be effective managers and supervisors.

Certainly in the forest industries, specific training for managers and supervisors has been a neglected area.

7. Conclusion

"One of the worst forest fires in the history of British Columbia was defeated by a group of college boys from Greater Vancouver under the management of an accountant who works for an educational association. Based in a dormitory residence on the British Columbian Forestry Association (BCFA) site in Green Timbers, this 19 member fire-fighting SWAT team is one of two elite, specially trained ground "unit crews" managed by the BCFA on behalf of the Ministry of Forests."

So reported the article in the forestry newspaper "Landscapes" published through the BCFA and funded through the forest industries of British Columbia.

The fire fighting units described, are part of a unique fire fighting network, established in 1990 and funded by the Ministry of Forests. These units travel the province of British Columbia, assisting local fire crews with forest fires that get a little too hot for the city or volunteer expertise.

These fire fighting crews are highly trained, well paid and, as one college student talked about his latest experiences in the publication, "...a vacation in hell, for those students who make the grade and become fire fighters."

The fire fighting unit and the newspaper used to convey the message, probably best demonstrates the style and approach BC takes to its forest education and training.

Conclusion (*continued*)

When the British Columbians are serious about a forestry issue, whether it be addressing the need to educate the general public, fire fighting, forest practices code or safety, then they are prepared to put the necessary resources – time, money, expertise – into the project to ensure its success.

This is not to say that the British Columbian forestry organisations have found all the answers or solved all the problems in relation to forest education and training. They haven't. Nor should BC be looked upon as being the most advanced in every aspect of forestry education and training, because they are not.

What they have done is tackled some of the difficult issues and found their own answers to these issues. As Victor Godin says in his inaugural BC Forestry Association President's message in the paper: " This premier issue of Landscapes has been 70 years in the making. The British Columbia Forestry Association jealously guards its reputation for approaching new initiatives cautiously."

The "Landscapes" article demonstrates this commitment to both forestry education and training. Fires cause millions of dollars of damage and lost resource in BC in any one year, as well as causing enormous human suffering. BC has defined fire management as an issue that must be addressed and has gone about finding its own solutions to the fire management question.

Conclusion (*continued*)

The "Landscapes" newspaper provides the forestry community, schools and the wider community with informative, articles relating to forestry activities, in an effort to better educate and inform its community.

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The weeks that were spent in British Columbia and the small amount of time spent in Quebec and New Brunswick, provided an insight into how other countries go about the organisation of their education and training, specifically related to forestry.

One of the major differences noted was the fact that Australia has undertaken major training reform over the past five years, as have New Zealand and the British Isles. This training reform is only now starting to occur in Canada, and is occurring at a much slower rate in the United States.

Because of these changes in training in Australia, it has had a marked effect on how we go about our forestry training and has put us in a strong position for continued improvement in the forestry sector. We are now developing that "training culture" that is not apparent in BC, particularly in the harvesting sector.

Conclusion (*continued*)

Australia has established national standards – that is – minimum requirements for our training programs. We have a requirement for training programs to be accredited, for training providers to meet a pre-determined standard and we have opened our training system up to competition, so that no one training organisation has a monopoly on the training.

British Columbia has the advantage of having a thriving and very large forest industry and the necessary funds to be able to progress the development of training and education materials. It has an excellent School of Forestry at the University of British Columbia that is well resourced both in personnel and equipment.

What appeared to be missing in BC and Quebec were the "trainers" – the people on the ground undertaking the training at the grass roots level.

As one forestry bureaucrat pointed out – it was relatively easy to find the funds, to develop the programs, but it was far more difficult to take the next step of delivering the goods – relevant forestry training.

In Australia, we – those involved in the development and delivery of forestry training – need to be in tune with what the forest industry needs and ensure that the training that is provided is relevant, timely and cost effective.

Conclusion *(continued)*

What the forest industry organisations and leaders must ensure is that they continue to have real input into the identification of industry training needs and the education and training programs, thus ensuring that forestry education and training providers are delivering what the industry and its organisations need.

Whilst the training delivered to forestry workers has improved over the past ten years there are still many forestry and forestry related workers who are operating in the forests and the mills with little or no training, and with no understanding of the implications of unsafe work practices, of using incorrect falling techniques, no understanding of the forest practices requirements and who endanger themselves and their fellow workers everyday. Despite our lip service about people being our most important asset we demonstrate by actions that we value our resource and our equipment over our people.