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ABSTRACT

A significant increase in investment in lifelong learning must be made if Canada is to maintain its economic competitiveness. Without lifelong learning, British Columbia (Canada) will not have the skill base it needs to survive in the global economy of the 21st century. Many students go through the conventional education system without developing the skills necessary for lifelong learning. By the year 2000, full-time students under 25 years of age will be a minority in university and college programs. The number of adults who will require lifelong learning, along with traditional students, will be much greater than the current physical capacity of existing institutions can accommodate. In addition, the small business sector will need external assistance in providing training. A partnership between employers, labor, educational and training organizations, and the provincial and federal governments, with the roles of each spelled out, in order to improve the educational system. Educational television is one means by which education can be delivered but it should be augmented with opportunities for two-way discussions via telephone and computer conferencing and linked into community groups for local discussion. Distance learning is one of the most economical and effective methods of learning and should be expanded to meet the educational needs of British Columbia's citizens for the next century. (KC)

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LIFELONG LEARNING AND HUMAN RESOURCE DEVELOPMENT

A submission to
the British Columbian Human Resource Development Project
from
The Open Learning Agency

January 15, 1992

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CONTENTS

Executive Summary

1. There needs to be a significant increase in investment in lifelong learning if Canada is to maintain its economic competitiveness; without lifelong learning, B.C. will not have the skill-base to survive in the global economics of the 21st century.

2. The size of the problem requires radical and innovative solutions.

3. Many have gone - and will continue to go - through the conventional education system without developing the skills necessary for lifelong learning.

4. By the year 2000, full-time students under 25 years of age will be the exception rather than the rule, both in university and college programmes, This will require a great deal more flexibility of provision than colleges and universities have been able to provide to date.

5. The numbers of adults who will require lifelong learning (in addition to the traditional student) will be much greater than the current physical capacity of existing institutions can accommodate.

6. The small business sector will need the greatest external assistance in the provision of training.

7. Labour mobility will be essential in a competitive economy; the key to labour mobility will be the provision of generic training, and the accreditation of individuals.

8. There needs to be a partnership between employers, labour, educational/ training organizations, and provincial and federal government, with clearly defined roles for each.

9. There is strong support from senior decision-makers in B.C. for the provision of public education around key social and political issues, to sustain a healthy, participative democratic society within the province.

10. Educational television is one means by which this form of education, and general cultural programming, can be brought to very large numbers.

11. Educational television needs to be backed up with opportunities for two-way communication and discussion, via telephone, audio- and computer-conferencing, and linked into community groups for local discussion.

12. Open and distance learning is one of the most effective and economical ways of meeting the lifelong learning needs of mature adults; in general, open and distance learning is more suitable for the life-style of 'older' lifelong learners than campus-based education

13. Completion rates and grades from distance and open learning institutions compare favourably with those of campus-based institutions

14. Pedagogical design and use of technology in distance education more than compensates for distance and lack of face-to-face contact for adult learners

15. Open and distance learning, if properly structured, offers considerable economies of scale for lifelong learning; this is essential if the large numbers requiring lifelong learning opportunities are to be accommodated

16. B.C. is better placed than the rest of Canada in terms of the basic organizational infrastructure needed to support lifelong learning; this structure needs strengthening, and above all, funds need to be found for programme development that will exploit the investment in infrastructure.

17. Less than 10% of all public funds for education goes on learners over the age of 24, and less than 1% goes on open and distance learning

18. Substantial additional funding will need to be found, if opportunities for lifelong learning are to be significantly increased

19. Consequently, it will be essential to invest in cost-effective lifelong learning systems; relatively modest levels of investment in open and distance learning would enable substantial numbers of mature adults to access lifelong learning opportunities

1. The importance of lifelong learning

'Canadian men and women must have access to both the skills and the lifelong learning opportunities necessary to improve their job prospects and ensure their own prosperity. But Canadians are questioning whether this country's approach to learning...is adequate for the times.

The issue is not exclusively, or even primarily, money. Canada already spends more money per capita on education than almost any other industrialized country does. Every year the federal government alone spends about eleven billion dollars, directly and indirectly, on education and training. The issue is results.'

Canada, 1991

Without lifelong learning, B.C. will not have the skill-base to survive in the economics of the 21st century; this skill-base CANNOT or SHOULD NOT be provided by conventional full-time education alone

A mis-match between demand and supply of labour

There are major changes taking place in the economy of BC. These in turn are dramatically affecting the labour market, and consequently the educational and training requirements. There appears to be a major mis-match between supply and demand regarding educated/trained personnel in the province, and the size and nature of this mis-match is such that it cannot be addressed by conventional educational and training provision.

Jobs are changing

While BC will remain dependent on its primary resource industries for its economic well-being, the traditional sources of employment in the province are rapidly changing, due to increased mechanization, the need to diversify to 'value-added' secondary industry (e.g. furniture, paper), and the growth of new industries and services not directly dependent on the primary resource industries, such as communications, information technology, financial services and international trading.

Although in contrast with the rest of Canada, the economy of BC is likely to grow at a healthy if relatively slow rate, creating around 27,000 *new* jobs a year on average over the next 10 years, most of the new jobs will either be in service industries, in companies employing less than 20 people, or will require highly skilled specialists in the larger, resource-based industries, each 'new' employee often replacing many existing staff. Most of the new jobs will be in the south-west, where there will be both an overall shortage of labour, and severe shortages of labour in jobs requiring certain skills. At the same time, unemployment levels

are likely to remain high, especially in the interior, although this may be hidden to some extent by migration of unemployed people to the south-west corner. Many of the new jobs will be on a part-time or contract basis, with at least two-thirds of the new jobs going to women, and a majority of new jobs will be relatively low-paid (Kunin, 1988).

Furthermore, work will continue to change dynamically over the next few years. Someone leaving school today will need to be re-trained at least five times in their working life. Nearly half the new jobs created will required graduates or people with the equivalent of 17 years full-time education (CLMPC, 1989). The export trade will become even more an important part of the BC economy, with trade with the Pacific Rim increasingly exceeding that with the USA, despite the free trade agreement (BC Ministry of Finance and Corporate Relations, 1989).

The traditional picture of work as a lifetime commitment to a particular trade or institution, with a secure pension at the end, will apply to an increasingly smaller proportion of the population. In particular, secure middle management jobs of a general kind, requiring little or no professional or technical expertise, are disappearing rapidly. A very small proportion of the youngsters leaving school will find employment in the traditional resource-based industries as unskilled or semi-skilled workers; the majority of those already unemployed, and a good proportion of those already working in large companies or in primary-resource industries, will need to be re-trained in the next few years.

The most significant development is that many of the new jobs will require a much higher level of skill than the jobs they are replacing, especially in management and resource based industries; people will retain existing jobs only if they are retrained to higher standards; even for the majority of new jobs that will be low-paid and require generally low skill levels, training or re-training will be necessary, especially in basic skills, just in order to keep the job.

<u>There are not enough young people to fill all the new jobs</u>

Even if the current levels of immigration are maintained or even increased, there will be a short-fall of about 20,000 a year between new people coming on the labour market and job vacancies (see Appendix 1). It will be important then to convert the pool of around 150,000 unemployed into some of these new jobs. Unfortunately, many of those unemployed do not have the skills required; and increased mechanization will keep topping up that pool, even without a down-turn in trade.

<u>Not enough graduates</u>

The universities are producing around 10,000 graduates a year, increasing to 12,500 in five years when the Access for All policy is implemented. The demand for graduates, or rather for people with at least four-years post-secondary education - particularly in professional, managerial, and engineering occupations - however, is likely to be nearly twice that level (around 20,000 per year - see Appendix 1). Net immigration of graduates will bring the total of 'new'

graduates up to about 14,500, which still leaves a net shortage of around 6,000 a year, or about 30%.

There are several ways to reduce the gap. There appears to be a relatively high non-graduate completion rate in B.C. undergraduate programmes. In 1990/91, there were just over 61,000 FTEs (full-time equivalents) in undergraduate programmes (18,000 in college university courses and 43,000 in regular university programmes), but only 8,500 graduates. Even allowing for an increased rate of 12,500 graduates a year when the university transfer programmes 'mature', this still leaves a gap of 2,750 'lost' graduates (18%: if all students graduated in a four-year programme, one would expect 15,250 graduates a year from 61,000 FTEs). For some students, however, a 'degree' is not necessarily the main purpose of enrolment in university courses, and even if the number of students who enrol in university programmes and do not go on to get a degree was halved, it would still not anywhere near close the gap.

Many of these 'new' graduates will have to come from the existing work-force. With a total school cohort of about 26,000 a year, there are just not enough young people in the Province to meet a demand level of 20,000 four-year graduates. The graduate shortage will be particularly acute in science and technology areas: Canada has one of the lowest graduation rates for science and technology amongst OECD countries, and BC has about the lowest rate in Canada. The greatest demand for graduates in terms of overall numbers though will be for professional and managerial positions. The colleges are producing even smaller numbers of graduates in the career and vocational fields: 4,500 per annum.

Only 25% of Canadian employers currently provide systematic work-based training; over 1 million workers (70%) in the province have no post-secondary qualifications; at least 150,000 will require retraining every year as their jobs change (based on CLMPC estimates that people will need to re-train at least five times in their working life).

It should be noted that the figure of 150,000 is a re-training need, in addition to those requiring initial post-secondary education or training. We have not been able to find data which indicates how many of those currently being served by the B.C. university and college system are obtaining a second round of post-secondary education or training. While this statistic would be useful, the main focus of the public post-secondary system has been on providing initial post-secondary educational opportunities for those coming out from the high-schools, and is stretched to meet the demand even at this level; without dramatic changes, it will be difficult for the conventional post-secondary system also to absorb the very large numbers who will require additional education and training in later life. The private sector will pick up many of those requiring re-training, but nevertheless the demand on public education will still be significant.

Without lifelong learning, there will be high unemployment *and* major skill shortages in the province

In a context then of high levels of unemployment in parallel with severe shortages of trained staff, education and training are critical to the province's economic strategy. In particular, if BC is to attract new industry and to reduce structural unemployment in the interior, major re-training of currently unskilled or semi-skilled workers and the unemployed will be essential.

Furthermore,to enable the skills required of modern employment to be developed, workers require higher levels of basic skills, such as literacy, numeracy and social skills, on which to base re-training. Thus as well as specific skills, general levels of education of those already working need to be raised, to provide a flexible work force.

Those who pay for education will be different; those who require education will be different

Against this background are three demographic trends which have implications for the labour shortage in the province.

First, seniors are constituting an increasingly higher proportion of the population; furthermore, they increasingly will have more disposable income than any other group; there is a strong possibility (based on experience in California) that they will resist tax increases to pay for the education of young people.

Secondly, women will constitute an even greater proportion of the work-force. This will have implications for child-care provision. For both seniors and women returning to work, training (or re-training) will be essential; for both seniors and women requiring re-training or a return to education, flexible provision of learning opportunities will be essential.

Thirdly, while immigration may provide a partial solution to the skilled labour force needs in B.C., it cannot be relied on so much as in the past to fill labour shortages; indeed, it will generate its own demand for lifelong learning. The gaps in the labour market require more highly skilled people at all levels; even those in the lower-paying jobs for instance will require good communication skills. The immigrant population is increasingly multi-ethnic and multi-cultural. There is a large and growing need for English as a second language training for adult immigrants. Immigrants also need orientation, professional and technical up-grade programmes, and better accreditation services. A high proportion of immigrants (the 1986 census indicated 48% of international immigrants over the age of 15) have post-secondary qualifications from their country of origin; accreditation and up-grading of these workers will be more efficient than requiring them to start from scratch.

Consequently, learning as a lifelong process will be essential and will need to increase substantially, due to:

- the rapid change in occupational profiles (more 'different' jobs created each year);
- overall increases in the skills requirement of all jobs;
- rapid technological change impacting on the work-place;
- an inadequate supply of young people through the school system to meet the increasing labour demand
- a large pool of unemployed without the skills needed for the new jobs
- changes in the age distribution, affecting willingness to pay via taxation for 'conventional' education
- changes in the sources of labour for new jobs.

BC has an educational and training crisis, in terms of numbers, if it is to survive in the new, high-tech economic environment. The skill base is not adequate and cannot be provided through traditional routes alone. Even if the Access for All policy was extended to cover career, technical and vocational education in the College system, it would still hardly dent the problem.

2. Current provision for lifelong learning: the conventional system

Many have gone - and will continue to go - through the conventional education system without developing the skills necessary for lifelong learning

Full-time students under 25 years of age will be the exception rather than the rule, both in university and college programmes, by the year 2000.

This will require a great deal more flexibility of provision than colleges and universities have been able to provide to date.

The numbers of adults who will require lifelong learning (in addition to the traditional student) will be much greater than the current physical capacity of existing institutions can accommodate

Both schools and post-secondary institutions aim to develop critical thinking, basic literacy and communications skills, and open and enquiring minds, as part of the normal process of education. These are skills that are essential if learning is to continue beyond conventional education and into adult life.

However, there is a great deal of evidence to suggest that many leave the formal education system without some or all of these skills. For instance, different surveys vary in the detail of their figures, but most agree that somewhere between 12% and 30% of all Canadian adults are functionally illiterate. This incidentally is not because the schools have become less effective, but because the demands for literacy for even the lowest-skilled and lowest paid jobs have increased, as a result of the change in the nature of work.

Changes in the curriculum through the Year 2000 project will go some way toward improving the situation regarding generic, lifelong learning skills, but it will take many years before this works through the system into the workplace; in any case there will always unfortunately be those whom the system does not adequately prepare; standards required will continue to increase; and there are many already in the work-force who do not have these skills.

Thus there will be a growing need to provide basic, generic education for lifelong learners that will facilitate adults to become more independent learners. This is not a question of just providing high school equivalency or basic reading and writing skills; it is much wider than this, requiring the development of general learning skills, which can often be developed only through a particular subject area or 'discipline'. However, even if the teaching of these skills becomes an even higher priority in the conventional education system, there will still be many

adults in the work-force without the basic skills for independent, lifelong learning.

Part-time, campus-based formal education

In brief:

- nearly half of all university and college students in B.C. are part time (40% and 44% respectively in 1990 - Statistics Canada, 1990)
- the number of part-time students in post-secondary education in B.C. has doubled over the last 10 years (Statistics Canada, 1991)
- part-time students are older and are more likely to be women
- nevetheless, the great majority of the population over 24 years old (90% or more) are not yet engaged in university or college programmes

The trend to more part-time study is likely to continue, but it should be recognized that the actual numbers involved in part-time study beyond the age of 30 is very small indeed. There are obvious practical reasons for this:

- adults with families find it more difficult to combine work and part-time study, for financial and time reasons
- while colleges are regional, universities are not in B.C.; even for college students, though, travel can be a major problem for those not living in major urban areas, or working a good deal way from home, etc.
- a majority of distance education students live within one hour's travel time of a regular college or university, but choose distance education for reasons of convenience or flexibility.

A good deal more research is needed into part-time students. For instance, how many part-time students are continuing or finishing off a course started on a full-time basis, following on from high-school, or after a short break; and how many are returning to education after a break of several years?

A key group of people who will require extensive lifelong learning opportunities are professional people who are already highly qualified; in particular those working in areas subject to rapid technological, environmental and economic change, such as computing, health, mining and forestry, international trade, and biotechnology. The future for the province lies in the development of knowledge-based industries. Again, this target group for lifelong learning will find it particularly difficult in many cases to attend campuses on a regular basis. In some areas, medicine in particular, flexible methods of delivering advanced up-grading are being used already; in others, a great deal more work needs to be

done to fit the learning opportunities to the life-style and location of the target groups.

Also, priorities need to be set. Providing learning opportunites for those already well qualified is extremely expensive. It could be argued that the province needs to concentrate scarce resources for such development on those working in areas that will produce the greatest economic returns, such as job development, increased trade, etc., i.e. the 'wealth-generating' and 'knowledge-based' sectors, if these can be clearly identified.

The following arguments are offered for consideration:

- the trend for part-time rather than full-time post-secondary education will grow, as people seek up-grading or re-training, despite the difficulties;
- these students will increasingly be older, and will include many starting on post-secondary studies for the first time, with a long gap since they completed high school;
- more students already with a post-secondary qualification will return for further education and training, in order to up-grade, in most cases on a part-time basis, because they are either unemployed and seeking work, or already working;
- these students will require much more flexible provision than full-time students, or even part-time students 'finishing-off' full-time study.

This will mean that the full-time student going straight on to full-time post-secondary education following high-school will be the exception rather than the rule, both in the university and the college. The question then is: can regular campus-based institutions provide the flexibility of times, location and teaching methods required by part-time, older students, many of whom will have families and job responsibilities? If so, what changes will be necessary?

A second problem is that of numbers. Currently the colleges are graduating only 4,500 diploma students a year in career, technical and vocational areas. The universities will be graduating around 12,500 undergraduates a year in four year's time. However, a conservative estimate is that more than 150,000 working adults a year will require substantial re-training or skills training. Where will all these part-time students go, given that the numbers of students coming out of the school system and going on to full-time post-secondary education will continue to increase?

3. Workplace-based training

The small business sector will need the greatest external assistance in the provision of training.

Labour mobility will be essential in a competitive economy; the key to labour mobility will be the provision of generic training, and the accreditation of individuals.

There needs to be a partnership between employers, labour, education/training organizations, and provincial and federal government, with clearly defined roles for each.

Canadian employers have the worst record of all the major OECD countries for providing in-company training (CLMPC, 1989b). Many of those requiring up-grading or re-training could and should receive that training through their own company.

However, already it is the larger companies that provide the most training; they have the resources to have their own training departments, and often a well-developed training strategy. Training may be provided in-house, or staff may be supported financially and through paid leave to attend courses. Increasingly, the more advanced large companies are putting into place workplace-based training, sometimes using advanced technologies such as computer-based training or satellite delivery of lectures on-site. In general, although there is still considerable scope for improvement in many large companies, this sector is not where future lifelong learning problems lie.

We have seen that the growth of new jobs will come mainly in the small business sector. They have neither the resources to develop their own in-house training programmes, nor, more importantly, the ability to release key people for extensive periods of time.

A further difficulty with workplace-based training is an understandable reluctance by many employers to pay for 'generic' training, i.e. training that can be used by other companies. We have seen that workers will become increasingly mobile, and employers are reluctant to invest heavily in training for which they will get very little return, if the employee leaves shortly after receiving the training. Yet labour mobility will become increasingly important, not just to the individual, who needs to be able to survive in a rapidly changing work environment, but also for employers, who need flexibility to recruit new staff and new skills as new opportunities develop through new technological and market opportunities.

One way companies are trying to get round this problem is to 'tailor' training to the particular needs of the company. This means taking 'generic' curricula (for instance computer studies) and adapting them for the particular work

environment (e.g. CAD on Macintoshes). While the advantages of this in the short-term to a company are obvious, there are dangers in such an approach, in that as the technology develops, the staff are locked in to a particular approach. It will become increasingly important that individuals become developed in skills that have a wide rather than a narrow application, not just for the individuals, but for the long-term prosperity of the province. It is important that individuals have a good base on which to build applied skills.

This raises questions about the role of the provincial government and public institutions in training for the private sector. B.C. has the largest private training sector in Canada; this provides a valuable service to industry, but tends to be driven by the more short-term needs of employers. What is important if there is to be worker mobility is that there is quality control and recognition for training, and that skills are accredited and recognized, so that there is a proper development of skills for each individual.

This suggests then a number of requirements if workplace-based training is to meet the long-term economic needs of the province:

- recognized, provincially-approved standards for training: quality assurance;
- training that meets the needs of both individuals and employers;
- training that is as far as possible transportable across companies;
- training that can be flexibly delivered within the workplace;
- training that is progressive from basic to more advance and more applied skills, so that individuals can build a 'profile', or comprehensive set, of skills;
- good information for employers and individuals about training opportunities;
- good liaison between education and training organizations and employers;
- programmes that are both tailored to the needs of individual employers, but can plug in to a system-wide set of recognized qualifications.

For these reasons, there needs to be a partnership between employers, labour, educational and training organizations, and provincial and federal government, with clearly defined roles for each. While the various levels of responsibilities needs to be agreed through discussion with the various parties, we indicate below our own ideas, for illustrative purposes:

Provincial and federal government responsibilities

- funding for the development of 'generic' skills training through public institutions;
- quality control (regulation of private training organizations; validation of accreditation);
- funding of information services, advice and publicity regarding training opportunities for employers; funding or part-funding the promotion of alternative training methods (workplace-based training, open learning, technology-based training);
- funding or part-funding for training the trainers in the business sector in new methods of training.

Open Learning Agency and other public education and training institutions

- provision of generic training courses;
- provision of courses in a variety of formats (including campus-based courses, workplace-based training, distance education for individuals, open learning through local centres);
- tailoring of courses to meet both employers' needs, and to fit where appropriate into a province-wide credit system for individuals, and fulfill long-term training needs;
- accreditation;
- provision of information services, advice and publicity regarding training opportunities for employers and individuals;
- promotion of alternative training methods (workplace-based training, open learning, technology-based training); training the trainers in such methods.

Private sector training organizations

- provision of 'tailored' courses;
- provision of generic courses not being provided by public institutions, or being provided at standards unacceptable to employers;
- training the trainers.

Employers

- in-house training;

- part-funding of employees for generic training (fees, delivery costs);
- funding of tailored courses.

More important though than the details of the division of responsibilities between the various interested parties is the need for a strategy which enables these responsibilities to be defined; at the moment, there is a good deal of overlap, confusion and buck-passing on responsibilities for workplace-based training.

4. Informal/non-formal learning

There is strong support from senior decision-makers for the provision of public education around key social and political issues, to sustain a healthy, participative democratic society within the province.

Educational television is one means by which this form of education, and general cultural programming, can be brought to very large numbers.

Educational television needs to be backed up with opportunities for two-way communication and discussion, via telephone, audio- and computer-conferencing, and linked into community groups for local discussion.

In terms of hours spent learning, non-formal and informal learning is probably the largest area of lifelong learning for adults. Again, we see this area as likely to increase, rather than decrease, in terms of demand and need.

Non-formal and informal learning is provided by universities, colleges, school boards, community centres, newspapers, television and libraries. It is for those already with the skills, knowledge and confidence to be independent learners the main source of lifelong learning. Despite increases in user fees and financial restraint in recent years, British Columbia is probably as well served in this area as anywhere in the world. However, it is still not likely to be enough.

OLA in the summer of 1991 commissioned the Angus Reid Group to conduct a series of interviews with 104 key policy-makers within the province (Angus Reid, 1991). The sample was drawn deliberately to give strong representation to views from the interior, and included representatives from the business sector, from the labour movement, from voluntary agencies, from senior officials in provincial government departments, from the arts and entertainment community, and from politicians in all five political parties in the province.

The aim of the survey was to identify which public policy issues were going to be most in need of attention by our provincial political leaders over the next few years, the views of those interviewed on the importance of general public education on these issues, and the appropriateness of the Knowledge Network in providing such general public education. The main findings were as follows:

- four public issues were identified as critical over the next five years (80% or more of responders): environment and pollution; the changing economy of B.C.; native Indian issues; the constitution, and B.C.'s place in it;

- also rated important (by between 60-80%) were population growth and an aging society; and immigration and multi-culturalism;

- those interviewed considered public education to be essential on all these topics, for a healthy, democratic society;

- the most effective means of providing education for the public on these issues were through schools, colleges and universities, and the Knowledge Network, as they were seen as being independent of corporate or special interest pressures;

- there was strong agreement from the majority of those interviewed that the main source of funding for public education on these issues should come from the provincial government, although a number of other sources were also commonly suggested;

- 64% considered provincial government funding for the Knowledge Network to be too little.

There is obviously strong support from senior decision-makers in the province for the provision of public education around key social and political issues, if a healthy, participative democratic society within the province is to be sustained.

Given that these issues are of concern to all adults, the value of using mass media to access individuals is clear. The Knowledge Network is viewed every week by between 450,000 - 650,000 British Columbians, or 20% of the total population. However, mass media on its own is not enough to encourage active participation in and understanding of major social, economic and political issues. The broadcasts need to be backed up with opportunities for two-way communication and discussion, via telephone, audio- and computer-conferencing, and linked into community groups for local discussion.

The infrastructure to do this is partly in place, through the Knowledge Network and its planning council. What is lacking are resources for British Columbian-produced programmes (over 90% of the Knowledge Network output is bought-in from outside the province), or for the linking services, such as community liaison officers, to co-ordinate the broadcasts with local community activities.

In addition to public issues programming, there is strong public support for general educational programming, including the arts, humanities and social sciences. For every government dollar spent on programming by the Knowledge network, four dollars is raised from individuals and the corporate sector. In a survey by Gallup Poll on behalf of the CRTC, the Knowledge Network was ranked second (of all the 21 channels available) by British Columbians as being the most valued television service in the province. Again, we have an example of a technological infrastrucure for lifelong learning that is in place in the province, but not fully exploited for lack of programming dollars.

5. Open and distance learning

Open and distance learning is one of the most effective and economical ways of meeting the lifelong learning needs of mature adults.

Open and distance learning is the fastest growing area of education world-wide, because it is seen as the most cost-effective way to up-grade large numbers in the work-force.

In general, open and distance learning is more suitable for the life-style of 'older' lifelong learners than campus-based education.

Completion rates and grades from distance and open learning institutions compare favourably with those of campus-based institutions.

Pedagogical design and use of technology in distance education more than compensate for distance and lack of face-to-face contact for adult learners.

Open and distance learning, if properly structured, offers considerable economies of scale for lifelong learning; this is essential if the large numbers requiring lifelong learning opportunities are to be accommodated.

Of all the modes of lifelong learning, we believe that open and distance learning to be the most appropriate for adults. Indeed, it is the only form of education that was designed from scratch with lifelong learning in mind.

Provision in British Columbia

All three existing universities already use distance education, as well as several of the colleges. Currently, there are approximately 14,500 students studying through open and distance learning methods in the province, constituting just over 2,100 FTEs (approximately 2% of all FTEs).

Open learning and distance education is co-ordinated through the Planning Councils of the Open Learning Agency. Thus there is a single calendar for all institutions offering degree programmes through open learning (the Open University calendar), and a similar single calendar for college programmes. The Planning Councils (on which representatives of post-secondary institutions and other interested sectors sit) allocate funds for the development of programmes to the various institutions.

The Open Learning Agency also offers its own courses, and manages the Knowledge Network, the provincial educational television channel. Knowledge Network's transmission facilities are available free of charge for any educational institution wishing to distribute learning materials via broadcast television. It is available in 98% of homes in B.C., and has an average weekly viewing figure of approximately 450,000.

The Open Learning Agency also provides for credit transfer within the system. For instance, it now has agreements for 14 laddered degree programmes, allowing students with two-year qualifications from colleges to complete a degree course within two years by taking courses at the regular universities, and/or through the Open University programmes.

Lastly, the Open College component of the Agency is increasing its activities in the workplace training area, where it has 41 contracts with 33 different organizations, and in delivery through the learning centres of other agencies, such as the 15 native learning centres for which it has contracts.

The province is unique in Canada in having a planned and co-ordinated open and distance learning system, avoiding duplication, and building on collaboration between institutions and with employers.

The fastest growing area of education on a world-wide basis

> *'A large structural effort in distance and flexible learning is required in Europe...distance learning systems should be assisted in redirecting their actions more towards industrial environments. In addition, new technology itself should be used in the production and delivery of training materials to allow for individualised learning and to increase the efficiency of the training process.'*
>
> *'The interest of the European Community in open (and) distance learning arises from a recognition of the contribution it can make to the achievement of the objectives of education and training policies in the Member States and in the Community as a whole'*
>
> Commission of the European Communities, 1991

Open and distance learning is not unique to British Columbia. It is the fastest growing area of education world-wide. There are 12 national, autonomous distance teaching universities in Western Europe. Five national and regional open universities were established in SE Asia in 1990 alone. The British Open University produces 8,500 first degree graduates a year (more than all the universities in British Columbia); this constitutes 9% of all undergraduates in Britain each year, for 5% of the total university budget (its annual budget is approximately $200 million a year). In addition to the Open University in Britain, there is also an Open College and an Open Polytechnic. The European Commission in 1990 spent $400 million to encourage cross-national partnerships

between commercial companies and universities, to develop and deliver education and training through open learning methods and advanced technology.

The reason why governments and commercial enterprises are investing so heavily in open and distance learning in both Europe and the Pacific Rim is because it is seen as the only cost-effective way to bring lifelong learning opportunities to very large numbers of working adults, and because of their recognition of the economic necessity of up-grading the work-force if their countries are to remain economically competitive. What is also interesting is that in these countries, students have flocked to enrol in such institutions, preferring the flexibility and convenience of open and distance learning to the constraints of campus attendance.

In contrast, there is still considerable suspicion of, or resistance to, open and distance learning in North America, and especially in B.C. It is seen by some as second-best, inferior in quality to campus-based learning, and not wanted by students.

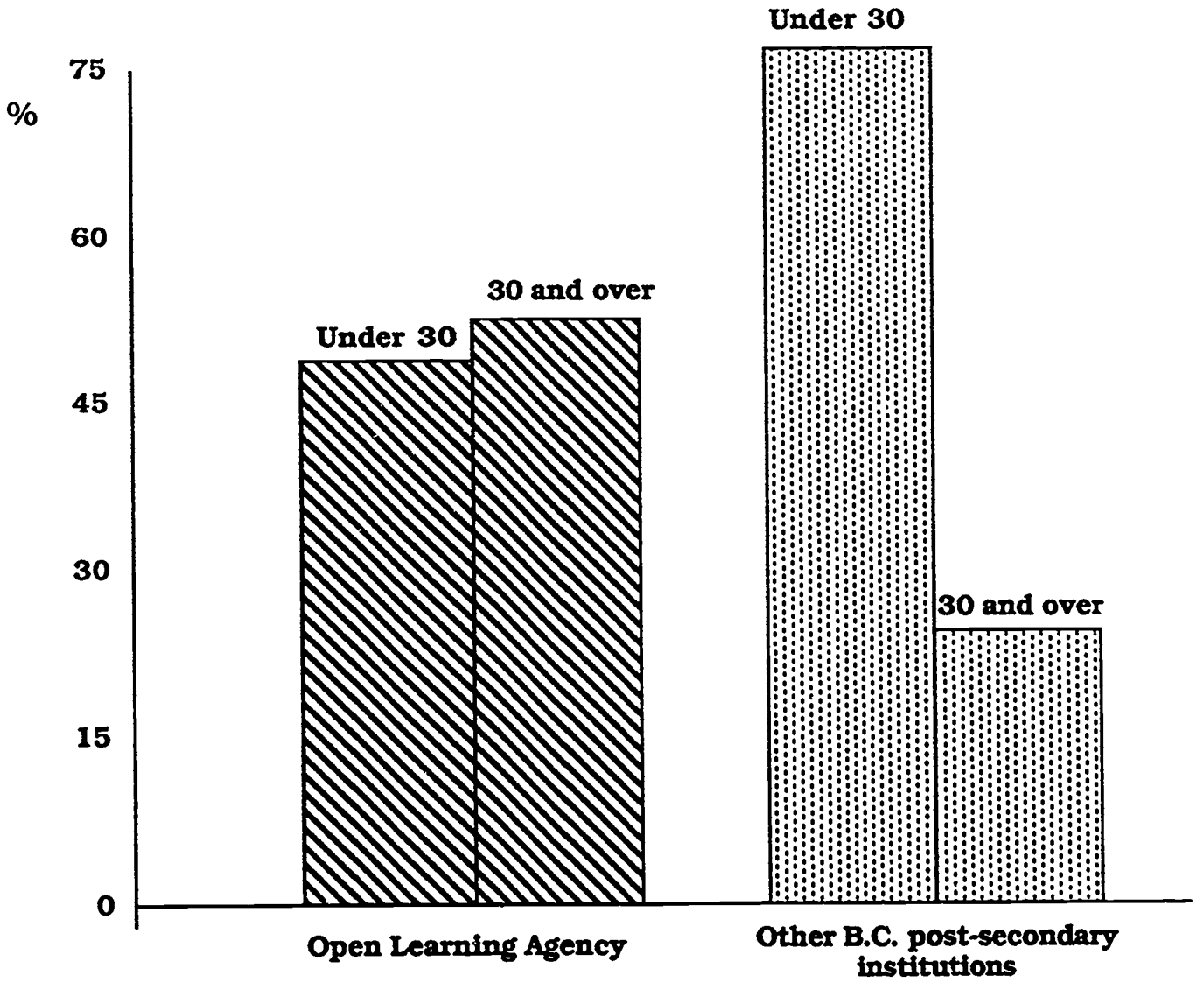
Part of this suspicion is due to some major differences between North America and other countries where open and distance learning are more heavily used. In both Canada and the USA, a much higher proportion of students continue on from high-school into university and college education; many of the distance education students in other countries are those excluded from conventional universities and colleges, due to lack of access. For these students, there is no alternative. Secondly, there has always been a strong tradition of off-campus teaching, extension services and distance education within campus-based institutions in North America; this has been less usual in Europe, and consequently they have tended to design from scratch institutions solely dedicated to open and distance learning, and hence have been more easily able to prioritize and develop distance education.

However, it is important to make a distinction between those leaving high-school to continue in further education, and those who need to return to higher education, or need to up-grade their post-secondary qualifications. The Open Learning Agency agrees that the best option, where possible, for students leaving high school and wishing to continue with full-time education, or a mixture of part-time education and work experience on leaving high-school, is through campus-based institutions. Such students require not only the instructional services, but also the social, recreational and cultural activities found in campus-based institutions. There is strong evidence that younger students do less well on open and distance education courses than older students; younger students require more support and direction, and in particular, peer-group support is essential.

However, those returning to post-secondary education, or who find later in life that they need better or higher qualifications or new skills, are by definition older and more mature, the majority are working full-time, and have families. For them, time is precious, and education and training is not their main pre-occupation; it is often a means to an end. Their emphasis is on convenience,

accessibility, quality and above all, flexibility. Open and distance learning is designed specifically for such learners. It attempts to provide education and training in a way that fits their life-style. This can be seen by the age-distribution of students in the conventional post-secondary system, and those enrolled through the Open Learning Agency (Figure 1).

FIGURE 1: AGE DISTRIBUTIONS:
OLA compared with
REST OF B.C. POST-SECONDARY INSTITUTIONS



It can be seen that while over half the Open Learning Agency students are 30 years of age or over, less than a quarter of the students in other institutions are in this age-group.

One common criticism of open and distance learning is that it is inferior pedagogically to campus-based education, and in particular it does not provide personal contact between students and teacher, or peer-group interaction. It has been argued for instance that true learning comes only from discussion and interaction, the true 'Socratic dialogue'. Distance education is seen as merely providing information, is centralized and authoritarian.

However, the reverse of this is that most distance teaching courses are developed using a thorough approach to curriculum design, learning theories, and technology applications, which is true of relatively few university and college courses, where most teachers are not trained in pedagogical methods. The forms of teaching in most campus-based universities and colleges have changed very little over the last 100 years: lectures, laboratory classes, seminars. Indeed, it is not unusual now to find classes of 100 students or more, offering virtually no opportunity for interaction and discussion. Even where campus-based universities in the USA have tried to extend the classroom to other sites through the use of instructional television, this has been merely the continuation of the lecture method; it does not exploit the unique presentational characteristics of television, nor does it draw on recent developments in curriculum design. The fact is that despite the difficulties and time pressures of distance education students, completion rates and grades from distance and open learning institutions compare favourably with those of campus-based institutions. This is as true in B.C. as elsewhere (see, for instance, Open Learning Agency, 1991).

Furthermore, developments in technology have not only made it easier to extend teaching beyond the campus, they allow now for greater individualization of learning, and greater interaction. Audio-conferencing and computer-conferencing allow for two-way interaction; computer-based learning provides more interactivity and control over learning; television provides materials and phenomena not otherwise available to students. Many adults have access at home or work to these technologies. The Commissioner of Inquiry for Canadian University Education (Smith, 1991) noted that it was in distance education where the most innovation was taking place in the use of technology and teaching methods. There are then strong social and pedagogic reasons why we think open learning and distance education should be a major means through which lifelong learning opportunities should be provided.

Another compelling reason though is cost. The existing campus-based universities and colleges are struggling merely to keep up with the increased demand for places from the high-school leavers. Despite the high participation rate (roughly 55% of each age cohort eventually goes on to post-secondary education) the proportion of an age-group wanting post-secondary education will almost certainly continue to increase for many years, especially as the message regarding the relationship between education and income becomes more widely understood by high-school students. Faculty are already feeling pressured by the difficulty of balancing research, teaching and community service, as class sizes continue to increase.

Where then are all the lifelong learners to go? Our estimate is that 150,000 people a year will require some form of substantive training or up-grading each year. The cost of building physical plant alone to house such students would be prohibitive (Phase 1 of University of Northern British Columbia, housing approximately 2,500 students, will be $130 million). The AUCC is concerned that there will be a substantive shortage of university teachers as the profession ages.

Open and distance learning, if properly structured, offers considerable economies of scale. For instance, the direct cost of taking each additional student at the Open Learning Agency, once the course has been developed, is nearly the same as the student fee. Thus there are no significant net costs for increasing student numbers, at least until significant 'steps' in numbers are reached, where new systems have to be introduced to handle the extra numbers (e.g. a new warehouse for materials). With campus-based teaching, costs rise roughly in proportion to the number of students, as extra teachers have to be recruited. In addition, and perhaps more significantly, there are increasing capital costs, now amounting to approximately 12% of operating costs, to add to every new campus-based place.

We are not arguing of course that all lifelong learners need to be served through open and distance learning; many will continue to educate themselves through informal learning; employers will need to increase substantially the training they offer their employees; and many older students will continue to return to college or university campuses, where this is possible and convenient. However, if lifelong learning is to be treated seriously, the means of providing it have to be equally carefully considered. It is our view that the most effective and economical way of meeting the lifelong learning needs of mature adults is through open and distance learning, not because it is the second best or only alternative available, but because it is the most appropriate, convenient and cost-effective means of doing so.

6. Lifelong learning within the cost structure of public education

Less than 10% of all public funds for education goes on learners over the age of 24, and less than 1% goes on open and distance learning.

Substantial additional funding will need to be found, if opportunities for lifelong learning are to be significantly increased.

Consequently, it will be essential to invest in cost-effective lifelong learning systems.

Relatively modest levels of investment in open and distance learning would enable substantial numbers of mature adults to access lifelong learning opportunities.

It is beyond the scope of this organization to assess accurately the current expenditure on all forms of lifelong learning within the province. Considerable sums no doubt are spent by business and industry on training, and many individuals spend some of their income on informal learning activities, such as buying a newspaper, or a self-instruction manual, in ways that are difficult to measure.

However, it is possible to take a broad view of the way the provincial government funds education, and the proportion that goes to lifelong learning. Our main aim here is not to argue the case for increased public expenditure on open and distance learning (although there is a strong case for this) but to raise issues for discussion about the role of public sector funding for lifelong learning, given the comment of the Deputy Minister, Gary Mullins, that there is no consensus as to how lifelong learning for those over 24 years of age should be provided.

Table 1 below shows a breakdown of operating expenditure in 1988-89 by the Ministry of Education and the Ministry of Advanced Education Training and Technology (MAETT):

Table 1: Provincial government operating expenditure on education, 1988-89

MAETT:	regular:	$997 million	27%
	Access for All	$70 million	2%
	Open learning	$22 million	<1%
	Sub-total	$1,089 million	30%
MoE		$2,560 million	70%
Total		$3,649 million	100%

25% of university FTEs (including part-time students) were over 24 years of age, and 32% of college students. This means that approximately $330 million or 9%, was spent on mature students in college or university education; together with the open learning figure (which includes funds from both regular universities' distance education programmes and the Open Learning Agency budget), less than 10% of all public funds for education goes on learners over the age of 24, and only 0.6% goes on open and distance learning for adults.

In addition to the operating budget, the annual debt service on capital, covering campus construction and facilities, etc., is approximately $125 million a year. No doubt that there are other expenditures on mature students that have been missed, but the general point holds; the vast majority of public funds is being spent on those under 25 years old.

Our view is that while there may be efficiencies to be achieved in the regular education system, the need to modernize and improve the K-12 system, and increased demand for greater post-secondary participation by those leaving the school system, will make it extremely difficult (and unwise) to reduce funds in the regular system to pay for lifelong learning. Clearly, a large part of the costs for lifelong learning will need to come directly from employers and individuals; however, there will still in our view be a major role to be played by the public sector in providing lifelong learning opportunities. We identify several sectors below:

- the unemployed;
- those currently employed, but whose job is likely to disappear as a result of increased mechanization, or changes in international markets;
- those in low-paid and/or part-time employment;
- those requiring generic rather than specific skills, for long-term labour mobility.

Furthermore, there is a key public sector role to be played in stimulating and animating the private sector to provide lifelong learning opportunities, and to use flexible, cost-effective methods for doing so.

Therefore there will need to be some increase in public funding. Since such funds though are likely to be limited, at least over the next few years, it will be essential to invest in cost-effective lifelong learning systems. This is why we believe that open and distance learning will be so important in this area.

We indicate some of the ways (requiring public funding) in which cost-effective lifelong learning can be stimulated:

- investment in developing local open learning centres, using as far as possible existing facilities in local colleges, adult learning centres, and the work-place;

- development of an advanced two-way technology network for delivery, and in some locations, origination, of teaching and training through local centres, available on a cost-recovery basis to employers and 'free' to educational institutions within the province;

- development of open learning materials for ESL, ABE and generic skills training and advanced professional development, for use both by individuals and targeted small business sectors, and marketed on a cost-recovery basis to medium-sized and large businesses;

- use of the Knowledge Network for general public education on issues of critical importance to British Columbians, such as the changing nature of work in B.C, the constitution, native land rights, and the environment;

- use of the Network's technical facilities to bring in professional development and technical training programming via satellite from anywhere in North America.

Although we are suggesting some increased public expenditure to support and stimulate lifelong learning, we are not advocating huge increases; even if the current provincial funding for open learning was doubled for this purpose, it would add no more than $20 million per annum, or less than than 2% of the current MAETT operating budget, to public expenditure.

Conclusions

We are not arguing that open and distance learning is the only way to improve access to lifelong learning opportunities. We are convinced though that:

- there needs to be a significant increase in investment in lifelong learning if Canada is to maintain its economic competitiveness;
- the size of the problem requires radical and innovative solutions, of which open and distance learning is the most promising;
- B.C. is better placed than the rest of Canada in terms of the *existing* organizational infrastructure needed to support lifelong learning; this structure needs strengthening, and above all, funds need to be found for programme development and technological delivery that can exploit the investment in organizational infra-structure.

While there will certainly be a cost in giving greater emphasis to the provision of lifelong learning opportunities, the cost of NOT doing so will be even higher. We will face a deteriorating economic infrastructure, an exodus of capital and industry, loss of jobs, and a significantly lower standard of living. Indeed, we can see this is beginning to happen already.

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Note: Although we have checked back as far as possible to original sources, in some cases key data were not available and we have had to make our own estimates. In other cases, we have had to make calculations from original data, which itself is not always firmly based. The Open Learning Agency would welcome comments, corrections, and additional information regarding the data in this report. Please send comments to:

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Appendix 1: Labour market and education training needs projections

Table 1: Labour market projections
(average per annum over 5 years, 1990 - 1994)

New jobs (net)	27,000	
Retiring	28,000	
New job vacancies		55,000
Net immigration	10,000	
From education	26,000	
New workers		36,000
Job surplus		19,000
Unemployed		144,000
'Best-case'scenario for unemployed		125,000 per annum

Sources:

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Table 2: University graduates: supply and demand
(average per annum over 5 years: 1990-1994)

Supply		
First degree graduates	8,000	
Access for All (UNBC, colleges)	2,500	
Post-graduate degrees	1,700	
Immigrants with recognized degrees	2,300[1]	
Total		14,500
Demand	**(FTEs)**	
45% of new jobs (27,000) will require 4-5 years post-secondary education	12,000	
Up-grading to graduate status[2]	2,000	
Retirement/emigration of graduates	4,500	
Graduate professional development[3]	2,000	
Total		20,500
Gap:		6,000

[1]17,600 net immigration in 1987; 13% of immigrants with recognized university degrees;
[2]e.g. nurses becoming graduates
[3]from the total of 273,000 existing graduates in B.C., we assumed that half would require up-grading every five years, by one month = 2,000 FTEs

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