

Image Cover Sheet

CLASSIFICATION UNCLASSIFIED	SYSTEM NUMBER 20538 
---	--

TITLE
CANADIAN FORCES' EDUCATION AS A CONTRIBUTOR TO NATIONAL DEVELOPMENT

System Number:

Patron Number:

Requester:

Notes:

DSIS Use only:

Deliver to: FF

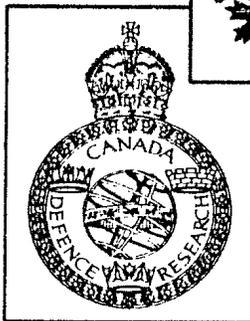


**CANADIAN FORCES' EDUCATION
AS A CONTRIBUTOR TO
NATIONAL DEVELOPMENT**

by

B.G. McROBERTS

REPORT NO. DRAE 37



DRAE

DEFENCE RESEARCH ANALYSIS ESTABLISHMENT

DEPARTMENT OF NATIONAL DEFENCE

DEPARTMENT OF NATIONAL DEFENCE
CANADA
DEFENCE RESEARCH ANALYSIS ESTABLISHMENT
MANAGEMENT AND POLICY ANALYSIS TEAM
REPORT NO. DRAE 37

CANADIAN FORCES' EDUCATION AS A
CONTRIBUTOR TO NATIONAL DEVELOPMENT

by

B. G. McRoberts

CAUTION

This information is furnished with the express understanding
that proprietary and patent rights will be protected.

OTTAWA

JUNE 1973

TABLE OF CONTENTS

	<u>Page No.</u>
<u>ABSTRACT</u>	iii
<u>ABREGE</u>	iv
<u>CHAPTER 1</u> - National Development and the Canadian Forces	1
<u>CHAPTER 2</u> - Education and National Development	7
<u>CHAPTER 3</u> - Formally Organized Education and Training Programs for Military Personnel	12
<u>CHAPTER 4</u> - Canadian Forces' Personnel as Educator of Canadians	33
<u>CHAPTER 5</u> - Additional Departmental Programs Which Promote Education	36
<u>CHAPTER 6</u> - Conclusions	41

ABSTRACT

This study outlines the contribution which Canadian Forces' education makes to the achievement of the government's objective of national development.

The major areas of concern of government policy with respect to the achievement of national development are outlined briefly, and education is identified as an important factor in the achievement of these policy goals. The education and training provided by the Armed Forces is then analyzed in consideration of its contribution to both the economic and social aspects of national development. From this analysis it appears that the Armed Forces' extensive formally organized education and training program, which is conducted in order to provide military personnel with the knowledge and skills essential for an effective military force, has an important impact on economic development when qualified military personnel are released into the civilian labour market at an early retirement age. In addition, the informal exchange of knowledge between military personnel and other Canadians, as well as programs such as those for the reserves, summer students, cadets, and professorships of military and strategic studies expand education in areas that contribute to social development. Some of the Defence Research Board's programs and activities promote education which contributes to economic and social development.

This paper illustrates the fact that education is an important means by which the Department of National Defence contributes to the achievement of the government's major objective of national development.

ABREGE

Cette étude souligne la contribution qu'apporte le système d'éducation des Forces canadiennes à la réalisation de l'objectif gouvernemental concernant le développement national.

Les principaux sujets d'intérêt de la politique gouvernementale quant à la réalisation du développement national y sont mentionnés et on indique l'éducation comme facteur important. Ensuite, l'instruction et la formation données par les Forces armées sont analysées en fonction de leur contribution aux aspects sociaux et économiques du développement national. Il semble, selon cette analyse, que le programme extensif d'instruction et de formation, formellement organisé et conçu de manière à fournir au personnel militaire les connaissances et la compétence essentielles au bon fonctionnement d'une force militaire, ait un impact important sur le développement économique quand le personnel militaire qualifié, encore jeune, entre sur le marché du travail civil. De plus, les échanges de connaissances qui se font entre le personnel militaire et les autres Canadiens, ainsi que les programmes tels que ceux destinés à la réserve, aux étudiants d'été, aux cadets et aux professeurs d'études stratégiques et militaires élargissent le champ de l'instruction sur des sujets contribuant au développement social. Certains programmes et activités du Conseil de recherches pour la défense favorisent l'instruction qui contribue à l'avancement économique et social du pays.

Cette communication illustre le fait que l'instruction est un moyen important par lequel le ministère de la Défense nationale contribue à la réalisation du plus important objectif du gouvernement, soit le développement national.

CANADIAN FORCES' EDUCATION AS A CONTRIBUTOR TO
NATIONAL DEVELOPMENT

CHAPTER 1

NATIONAL DEVELOPMENT AND THE CANADIAN ARMED FORCES

National development has always been an important objective of the Canadian government. In the last decade, the government has, however, placed increasing emphasis on this objective and has expanded its aim beyond the traditional limits of economic development. The development of the "quality of life" of the Canadian population has become an important factor in the government's current domestic policies and programs. Recent government programs such as those oriented towards relieving regional disparities, extending health and welfare programs, and supporting more extensive educational services reflect the growing concern over social issues. National development is now considered to involve both economic and social development.

The emphasis which the government places on the objective of national development, and the recognition of the importance of both economic and social factors in the achievement of this objective, have had important implications for the planning processes of all government departments. The inter-dependencies of government programs in the context of the extended aim of national development are widespread. These inter-dependencies must however be identified if the government is to be able to allocate its resources efficiently. The government is, therefore,

methods by which this contribution could be increased without diminishing military effectiveness.

In view of the necessity for a clear definition of national development and the lack of a formally accepted one, Fig. 1 provides a framework of the major elements of this objective which will be referred to throughout this study. It outlines some of the major areas of concern of government policy with respect to the achievement of both economic and social development.

Economic development basically involves a continuous increase in industrial productivity which may be defined as the efficiency with which labour and capital, the major factors of production, are combined in the production of goods and services. It arises from a variety of influences such as economies of scale, specialization, improvements in technology, improvements in the quality of labour, and increases in aggregate demand. The government has numerous policies aimed at stimulating economic development. It attempts to sustain financial conditions conducive to commerce through monetary and fiscal policies, and it also provides direct stimulus to increases in industrial productivity and profitability. Monetary policy helps to maintain a stable international money situation, while fiscal policy maintains a stable domestic market through personal taxation which regulates domestic demand, and corporate taxation or allowances which influence supply. With respect to directly stimulating industrial productivity and profitability, the areas of concern are the stimulation of national industrial growth and the expansion of commerce. In the last decade, policies for stimulating Canadian industrial growth have placed an increasing amount of emphasis on secondary industry, which provides a great potential for increased industrial productivity and profitability because of its sensitivity of economies of scale. One of the major areas

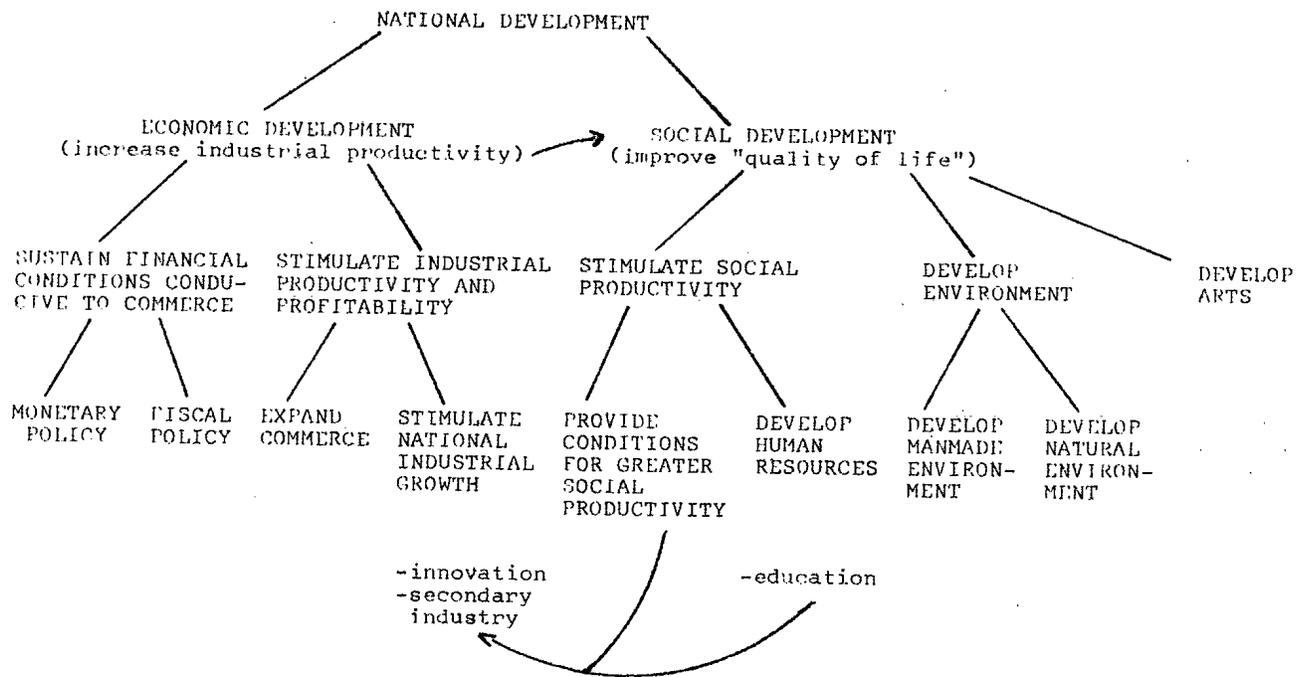


Fig. 1. Major Policy Goals For National Development

of concern in these policies for secondary industry is technological innovation, or the successful application of scientific and technical knowledge to the industrial production process. The expansion of commerce is essential in order to increase the foreign demand for Canadian products.

Social development, on the other hand, involves an improvement in the "quality of life" of the Canadian population as a whole. Three of the major areas of concern in the achievement of this element of national development are the development of the environment; the development of the arts, and the stimulation of social productivity. Social productivity is defined as the efficiency of people to be productive and it is an important aspect of social development because it determines to a great extent material well-being. The government stimulates social productivity through programs which provide the conditions which are necessary for people to be productive and through programs which attempt to develop human resources to their greatest potential. Regional development programs, health programs, welfare programs, and housing subsidization are all directed towards providing conditions which improve the productivity of a greater proportion of the population. Educational programs are the primary means by which the government attempts to aid in the development of the nation's human resources.

Education supplies occupational skills which promote an individual's productivity or efficiency in the labour force. Although there are many factors that determine an individual's potential productivity, education plays an important role in the achievement of this potential. A higher level of education tends to increase an individual's efficiency in the production of goods and services. The federal government, by providing more people with the opportunity to attain more education helps to increase the productivity of Canadian society as a whole.

In today's socially conscious society, there is increasing public demand for programs which will improve the "quality of life" of the Canadian population. Continuously expanding social development programs require an increase in financial support provided by high levels of industrial productivity. In other words, social development depends upon economic development. It is, however, also the case that economic development is dependent upon social development. Modern economic development requires an increasing number of productive human resources. Programs that provide conditions which make people more productive, and those that help to develop human productivity to its greatest potential, all contribute to an increase in the supply of productive labour. Economic development and social development are therefore interdependent in the achievement of the government's major objective of national development.

The major areas of emphasis of government policy which are aimed at achieving Canadian social and economic development have been outlined briefly in the preceding paragraphs. These policies form a context within which the relationships between the programs and activities of the Canadian Armed Forces and the government's major objective of national development can be identified and analyzed.

CHAPTER 2

EDUCATION AND NATIONAL DEVELOPMENT

The key to Canadian national development lies in Canada's ability to equip its population with the knowledge and skills required by a rapidly changing economic and social environment. In today's complex environment, the knowledge and skills essential for the efficient production of goods and services are considerably more specialized and advanced than those required in the past. Skilled and semi-skilled personnel are essential for the efficient operation and maintenance of technologically advanced equipment. Highly qualified scientific and technical manpower are needed for the research and development for technological innovation, which is one of the key factors in efficient production, as was outlined in Chapter 1. In addition, manpower qualified in managerial and administrative skills are essential for the operation and organization of increasingly large and complex firms. The knowledge and skills necessary for the implementation of today's social development programs are also more advanced than those required previously. In particular, highly qualified personnel are required to educate others to increasingly advanced levels of education and training. In order for industry to increase the efficient production of goods and services and for Canada to implement more programs which will increase the Canadian "quality of life", more Canadians must possess the necessary specialized and advanced knowledge and

skills. Education is the principle means of meeting this continually increasing requirement for qualified and highly qualified manpower. Therefore, the achievement of all of the policy goals of Canadian economic and social development may be said to depend upon the expansion of Canadian education.

In general terms, education may be defined as the exchange of knowledge and skills. This exchange of knowledge and skills can be conducted either formally through organized courses at educational institutions or informally through inter-personal contacts in the working or social environment. The expansion of education necessary for the achievement of national development must involve increases in both the informal and formal exchange of knowledge and skills.

Canadian expenditures on formally organized education and training have undergone a significant increase over the last few years. In the fiscal year 1967/68 the total Canadian expenditures on education were \$5,025.5 million, while in 1970/71 they rose to \$7,408.9 million.*

Since 1967, the federal government has become increasingly involved in the education of the Canadian population. Although the administration and organization of public education is a provincial responsibility in Canada, the proportion of national education financed by the federal government has risen significantly. In the fiscal year 1967/68, the federal government financed 12.5% of the total Canadian expenditures on education, while in 1970/71 it financed nearly 19%.

The federal government conducts or finances a number of formally organized programs designed to expand education in Canada. Some of the major programs are listed at Fig. 2. The

* Data were obtained from Statistics Canada, Educational Division.

<u>PROGRAM</u>	<u>GOVERNMENT DEPARTMENT</u>
1. Education of Indian and Eskimo Children	Indian Affairs
2. Education of Inmates of Federal Penitentiaries	Solicitor General
3. Adult Occupational Training Act	Manpower and Immigration
4. Citizen Training	Secretary of State
5. Health Resources Act	Health and Welfare
6. Support of Public Education (Elementary, Secondary, Post-secondary)	Transfer Payments to Provinces
7. Grants to University Personnel	Manpower and Immigration, Industry Trade and Commerce, Defence Research Board, National Research Council, Health and Welfare, Canada Council.
8. Student Loans	Transfer Payments to Provinces
9. Canada Council	Canada Council
10. Canadian Armed Forces' Education and Training	Department of National Defence

Fig. 2. Major Federal Government Programs
To Expand Canadian Education

Health Resources Act, the support of post-secondary education, grants to university personnel, student loans, Canada Council grants, and the Armed Forces' education and training program, all contribute to an increase in the number of qualified and highly qualified Canadians. As a result, each of these programs make a significant contribution to the achievement of the policy goals of the government's objective of national development.

Many government departments aid in the expansion of Canadian education either through the administration of specific educational programs, such as those mentioned above, or through spin-off from non-educational departmental programs and activities. Although recent increases in the federal financing of education appear to indicate a recognition of the important role played by education in the achievement of national development, there is no evidence of any attempt to integrate all the government educational programs or to identify spin-offs from other non-educational departmental programs and activities to Canadian education.

One of the major omissions in many studies and reports on Canadian education is the contribution of the Canadian Armed Forces to both the formal and informal exchange of knowledge and skill. While the federal government expenditures on formally organized education and training include the Defence Research Board's grants to university personnel and the operating costs of the three military colleges, they do not take into account either the education of military personnel financed by the department at civilian universities or the extensive vocational training program conducted for military personnel. Because only a relatively small proportion of the knowledge and skills supplied by these programs is relevant solely to the military environment, they do, in fact, represent an important element of Canadian education. The Canadian Armed Forces make a contribution to the informal ex-

change of knowledge and skills because military personnel act as informal educators in both the social and working environment. Also, departmental programs such as those developed for the reserves, cadets, summer students, and professorships of military and strategic studies, as well as some of the programs and activities of the Defence Research Board, promote education.

At a time when the government is placing increasing emphasis on national development and appears to recognize that this objective is dependent upon education, it is important that both the government and the Department of National Defence have a clear understanding of the role which the department plays in the achievement of national development through its own educational programs.

The aim of this study is to examine the contribution of Canadian Forces' education to national development. The education provided by the Armed Forces will be dealt with in the following three categories of programs and activities:

- a. Formally organized education and training programs for military personnel.
- b. Canadian Forces' personnel as educators of Canadians.
- c. Additional programs which promote education.

Each of the next three chapters will analyze one of these categories in consideration of its contribution to Canadian economic and social development.

CHAPTER 3

FORMALLY ORGANIZED EDUCATION AND TRAINING PROGRAMS
FOR MILITARY PERSONNEL

An effective military force requires personnel who are educated in a variety of knowledge and skills. In order to meet their requirement for qualified manpower, the Armed Forces conduct a formally organized education and training program for military personnel. This program supplies all military personnel with vocational training and some with formal education. It is extensive with reference to both expenditures and enrolment. Expenditures on the education and training program for military personnel in 1970/71 amounted to \$158 million, which represented 10% of the total federal government expenditures on education that year. Enrolment in the various courses of the program in the same year was approximately 30,000 military personnel as compared with the University of Toronto enrolment in that year of only 20,000 students. By conducting such an extensive educational and training program for military personnel, the Canadian Armed Forces make an important contribution to Canadian education and hence to national development.

Each year, the Canadian Armed Forces invest a considerable amount of money in the formal education of military personnel. In fact, in the year 1970/71 the expenditures on formal education, amounted to approximately \$17 million. In this area of education, the department is almost exclusively concerned with university education for officers. While the university degree for officers was in the past mainly a military tradition, it is

now, for practical reasons, considered by the Armed Forces to be increasingly important. For some officers formal education at the bachelor level or beyond is considered essential for the performance of their military duties. For others a degree may not be directly related to their military occupations, but it nevertheless appears to be important for credibility on interdepartmental committees and in interinstitutional contacts. The department's investment in university education is mainly concerned with supplying officer cadets with university degrees. It finances bachelor degrees for officer cadets through the Regular Officer Training Program (ROTP). Some cadets receive their formal education at military colleges, while others attend Canadian civilian universities. The department subsidizes specialist education for officer cadets at civilian universities through the Medical Officers Training Plan (MOTP), the Dental Officers Training Plan (DOTP), and the Dietic Internship Program (DITP). In recognition of today's requirement for increasing specialization and for continual upgrading of knowledge, the Armed Forces also supply formal education to some officers and other ranks personnel who have spent some time in the forces. Some officers are financed in post graduate degrees at either Royal Military Colleges (RMC) or civilian universities. Also, other ranks personnel and officers who have not completed degrees may receive complete financing for the last two years of a degree program through the University Training Plan Men (UTPM) and the University Training Plan Officers (UTPO) respectively or partial subsidization for university evening and extension courses. In addition to financing university education, the Armed Forces also encourage other ranks personnel who have not completed secondary school education to continue their formal education by attending secondary schools run by the department for dependents. In the fiscal year 1970/71, 1885 military personnel were enrolled in full time university training plans at either military colleges or civilian

universities and 2663 military personnel attended university evening and extension courses.*

The vocational training program for military personnel is particularly extensive. Investment in this area of education in 1970/71 accounted for 89% of the department's expenditures on formally organized education and training. It represented approximately 27% of the total federal government's investment on vocational training in Canada. Vocational training in the Armed Forces involves general military training, occupational/trade training, specialized and advanced training, and management and language training as outlined in Fig. 3. All military personnel receive general military training to acquaint them with the military environment. In the case of officers this training is referred to as officer qualification training, while in the case of other ranks personnel it is recruit training. Military officers receive occupational training in one of the twenty-six officer occupations. This training varies from short courses for doctors, dentists, and engineers that are designed for the purpose of adapting the officers' formal knowledge and skills to the military environment, to extensive training programs for pilots and navigators. All other ranks personnel receive trade training in one of the ninety-one men's trades. This trade training consists of both training courses and standardized on-the-job training. In addition to their general military training and occupational/trade training, some officers and other ranks personnel receive specialized and advanced military training such as staff training, specialized technical training, and survival training. A number of military personnel also receive management and language training.

* Data were obtained from the Directorate of Personnel Information Services and Canadian Defence Educational Establishment.

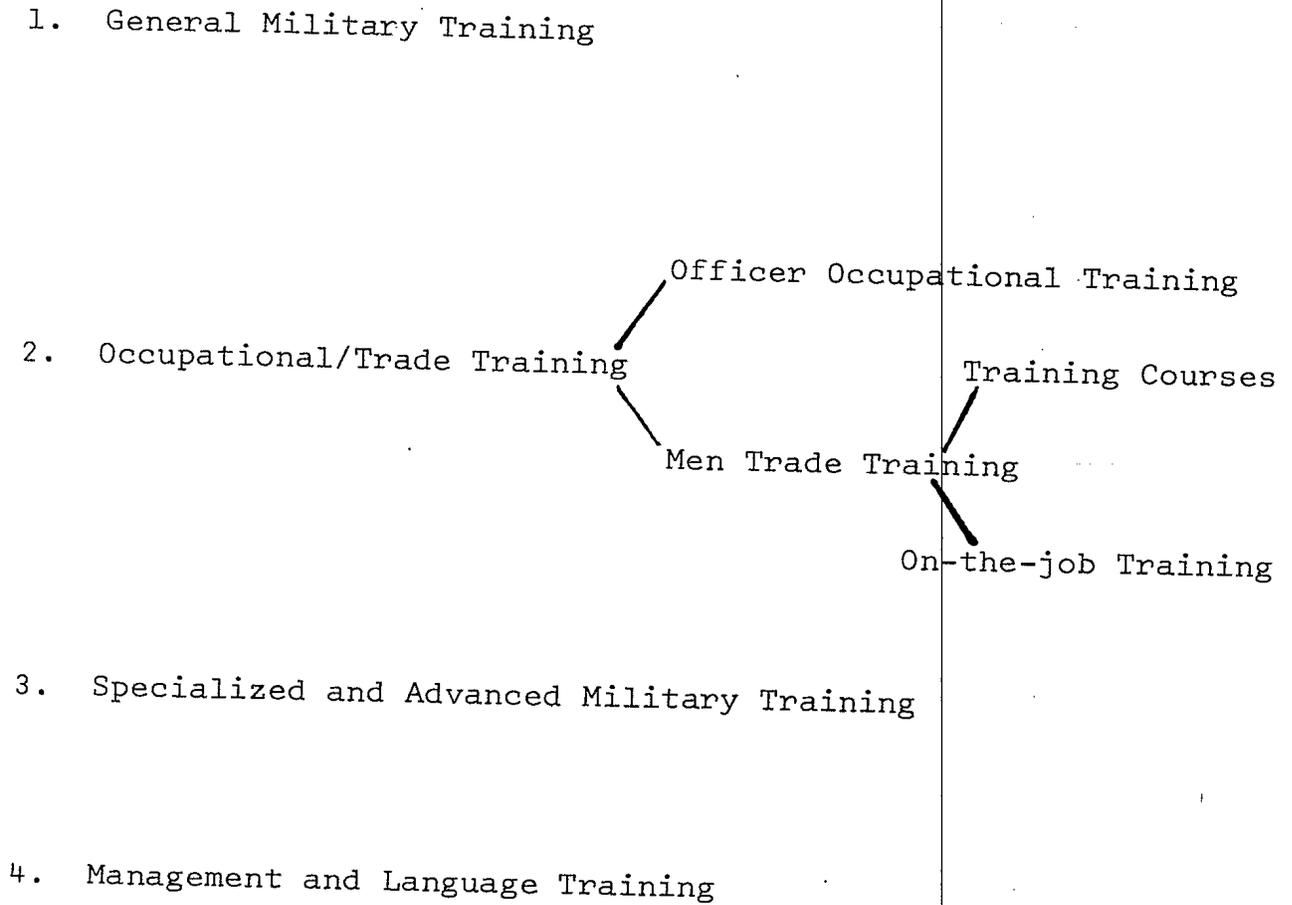


Fig. 3. Canadian Armed Forces'
Vocational Training

A certain amount of the knowledge and skills essential for effective military operations is specifically military in nature and must be supplied by the department. Clearly, general military training is unique to the department. All occupational/trade training for other ranks personnel and officers that is directed towards occupations or trades designated as specifically military in Annexes A and B is unique to the department.* In addition, most of the occupational training for officers in both professional/technical occupations and communications and transportation occupations may be described as specifically military. In the case of occupational training for professional/technical positions this is because the training is concerned mainly with the adaptation of formal skills to the military environment. In the case of occupational training for officer transportation and communications occupations it is due to the fact that civilian institutions conduct very little training in these areas because of a relatively small civilian demand. Therefore, with respect to occupational/trade training, some of the men's trade training and most of the officer occupational training is specifically military. Specialized and advanced training for both officers and other ranks personnel, because of its specialization, is unique to the department.

A great deal of the knowledge and skill supplied to military personnel is, however, of a general nature. All formal education supplies general knowledge. With respect to vocational training, management and language training, as well as men's trade training and on-the-job training for trades other than those designated as specifically military are of a general nature.

* Classification of military trades/occupations was done in consideration of the Statistics Canada Occupational Classification System. This was done in consultation with the Central Classifications Division at Statistics Canada.

In the fiscal year 1970/71, 45.5% of the course days of vocational training conducted by the Armed Forces were concerned with training that is also applicable to the civilian sector (see Fig. 4).*

All of the education and training conducted by the Armed Forces which is of a general nature is also conducted by civilian educational institutions. The Canadian Armed Forces have, however, a strong preference for "in-house" education and training. They feel that it is desirable in the development of career personnel to supply military personnel with much of the knowledge and skills essential for an effective military force while they are in the forces. The Armed Forces prefer not to depend entirely upon civilian technical or post-secondary educational institutions for qualified or highly qualified manpower.

The education and training program of the Canadian Armed Forces and Canadian Industry represent the only two alternatives to institutionalized education and training. Therefore, it is worthwhile to contrast the programs that are conducted by them. The Armed Forces, because of their preference for "in-house" education and training, provide a considerable amount of the formal education and vocational training necessary for military personnel to be productive in the military environment. They also continuously retrain military personnel throughout their careers in the forces. All military personnel are trained with the expectation that they may advance to more senior positions. Those who display proficiency in their trade or occupation and who show an ability to accept responsibility are trained to increasingly advanced levels. Canadian Industry, on the other hand, finances virtually no formal education and only a small amount of vocational

* Data for Fig. 4 were obtained from Training Command, Statistical Review, 1970/71.

Type of Vocational Training	Course Days	%	% Specifically Military	% General
1. General Military Training	272,603	21.8	21.8	-
2. Occupational/Trade Training				
Officers	211,028	16.8	16.8	-
Men	513,325	41.0	7.7	33.3
3. Specialized and Advanced Military Training	102,198	8.2	8.2	
4. Management and Language Training	153,282	12.2	-	12.2
Total	1,252,436	100.0	54.5	45.5

8990.

Fig. 4. Course Days Involved In Canadian Armed Forces' Vocational Training Fiscal Year 1970/71

1190-formal
 unno.
 3RMC'S

training. It depends heavily upon educational institutions for its qualified and highly qualified manpower. Industry tends to hire personnel who have already attained most of the knowledge and skill essential for productive employment. The training which it does provide is concerned with supplying employees with the minimum amount of knowledge and skill necessary for the job they will perform in the immediate future and will continue to perform as long as they remain in the organization, and it involves orientation training, management and language training, and some trade training. In comparison with the 31.9% of the military establishment attending Armed Forces' vocational training courses in 1970/71, only 6.9% of the industrial employees in four major industries surveyed by Statistics Canada in 1965 took part in industrial vocational training.* The education and training program offered by the Canadian Armed Forces is relatively more extensive than that offered by Canadian Industry.

The Armed Forces' formally organized education and training program for military personnel is in fact, one of the largest education and training programs in Canada. It contributes significantly to the expansion of Canadian education because a large proportion of the knowledge and skills which it supplies is of a general nature. Therefore, as one of the largest contributors to the expansion of education, it has an important impact on the achievement of both the social and economic elements of national development.

The Armed Forces' education and training program supplies education and training to some Canadians who would not be able to afford to attain education and training at civilian educational institutions. The program removes some of the financial barriers to education. It involves no direct cost to individuals in the form of either tuition, books, or foregone earnings. The education

* Organized Training in Four Industry Groups 1965. (DBS).

and training program of the Armed Forces is available to people in regionally depressed areas because the Armed Forces recruit across Canada. Therefore, it may be said that the Canadian Armed Forces' education and training program contributes significantly to Canadian social development.

As a result of the knowledge and skills which they receive in the Armed Forces, military personnel themselves are able to contribute to social development. While they are in the forces and after their release, military personnel expand education through the informal transmission of their knowledge and skills to others. Chapter 4 will discuss in further detail the role of Canadian Forces' personnel as educators of Canadians and the departmental policies and programs which determine their effectiveness in this role.

The knowledge and skill supplied by the Canadian Armed Forces' education and training program are essential for an effective military force, but in many cases they also contribute to Canadian economic development. When military personnel are released from the Armed Forces and become employed in the civilian sector, the education and training which they had received while in the forces contributes to increased industrial productivity and hence to economic development.*

91 p. 4:

The manpower skills of other ranks personnel are outlined in the ninety-two men's trades. As indicated in Annex B, these trades may be grouped into the following occupational classifications: professional/technical, clerical, communications and transportation, service, manufacturing and mechanical, construction, and specifically military. Other ranks personnel of the rank of

* It is worthy of note that at Algonquin College in Ottawa, 15-20% of the academic and administrative positions are held by ex-military personnel.

Sgt. and above, in addition to possessing the occupational skills reflected by their trade, also have supervisory skills which they have acquired by means of both education and experience. Only ten of the men's trades may be described as specifically military. Training for these trades does, however, provide some knowledge and skill which is of a general nature. For example, training in Ammunitions and Weapons trades includes basic technical training and that in Firecontrolman and Artilleryman trades involves education in basic mathematics.

The twenty-six officer occupations, which identify the manpower skills of military officers, may be classified as professional/technical, communications and transportation, and specifically military occupations, as outlined in Annex A. However, most military officers, because of their level of formal education, possess manpower skills that may be described as professional/technical. Officers of the rank of major and above also have management and administrative skills which have been developed at the management school, staff school, and staff colleges, and through experience gained in leadership and man management.

Some military personnel are qualified in occupations that are specifically military in nature, but 84% of the Armed Forces' personnel are qualified in at least one of the following occupations, which are common to both the military and civilian sectors:

- managerial and administrative
- professional/technical
- clerical
- communications and transportation
- service
- manufacturing and mechanical
- construction

All of these occupations describe knowledge and skills for which there is an increasing requirement for economic development. As outlined in Chapter 2, manpower highly qualified in managerial and administrative, and professional/technical occupations are essential for increased industrial productivity. The remaining occupations describe knowledge and skills essential for the efficient operation of the manufacturing, service and construction industries which must expand rapidly for the development of the economy. Through attrition each year, the Canadian Armed Forces supply the civilian labour force with a significant number of personnel qualified in the knowledge and skills which are necessary for economic development.

Early compulsory retirement age based on the military requirement for physical fitness, results in the fact that qualified manpower are released from the Armed Forces with a significant civilian working life potential. Military personnel are released after a maximum number of years of service or at a maximum age depending on which occurs first, and both of these criteria vary with rank. The compulsory retirement age (CRA) indicates the maximum age on retirement and hence the minimum average civilian working life potential. The compulsory retirement age and the number of years of potential civilian working life before the age of sixty-five years for each rank are as follows:

<u>Rank</u>	<u>CRA</u>	<u>Years Remaining Before Age 65</u>
General Service Officer		
Col. and above	55	10
LCol.	51	14
Major	47	18
Capt/Lt.	45	20
Other Ranks		
Sgt. and above	50	15
CPL/PTE.	44	21

Clearly, military personnel may spend a significant proportion of their total working lives in the civilian labour force even if they do remain in the Armed Forces for as long a period as possible. Most military personnel seek employment in the civilian sector after their release from the Armed Forces not only because of the early retirement age but also because of the relatively small size of the military pension, whose purchasing power is diminished by inflation.

In the fiscal year 1970/71, 9612 military personnel were released into the civilian labour force. Of those released in that year, 81% had completed initial trade training or had received their officer commission. The remainder had received some education and training at the department's expense but could not be considered "trained". The manpower skills of the other ranks personnel released in 1970/71 are at Annex C. With respect to officers, those released at the rank of major and above have managerial and administrative skills as was discussed previously. Except for those officers who are doctors, lawyers, dentists, or nurses, officers of the rank of major and above are more valuable at the time of their release as managers and administrators, not only because of their skills in these areas but also because they have not worked in their fields of specialization for a number of years. Annex D outlines the manpower skills of those officers released in 1970/71. The manpower skills of all trained military personnel released from the Armed Forces in 1970/71 are summarized as follows:*

* Data were obtained from the Directorate of Personnel Information Services.

MANPOWER SKILLS OF
TRAINED MILITARY PERSONNEL
RELEASED 1970/71

<u>Occupation</u>	<u>No.</u>	<u>%</u>
White Collar		
Managerial and Admin.	377	4.9
Professional/Technical	1114	14.3
Clerical	1168	15.0
Blue Collar		
Manufacturing and Mechanical	2234	28.7
Construction	74	1.0
Communications and Transportation	991	12.7
Service	561	7.2
Specifically Military	1263	16.2
Total	7782	100.0

These trained personnel were released into the Canadian labour market with an average working life in the civilian labour force of 29 years.

Of the qualified manpower released from the Armed Forces in the fiscal year 1970/71, 83.8% were trained in occupations which are crucial to economic development. The remaining 16.2% were other ranks personnel who were trained in specifically military trades. The knowledge and skills possessed by these other ranks personnel cannot however be dismissed as being irrelevant to their potential productivity in the civilian sector. Because of their training in the Armed Forces these personnel have developed the ability to communicate effectively and to work well with others. As was discussed earlier in this chapter they have also,

in many cases, received basic technical training or mathematical education. Other ranks personnel qualified in specifically military trades are in all probability easily retrained because of the education and training which they have received and therefore they can be expected to be valuable to the industrial sector. Also, 23% of the other ranks personnel trained in specifically military occupations who were released in 1970/71 had reached the rank of Sgt. or above and therefore possessed supervisory skills. Although without the relevant advanced trade training this supervisory skill may not be utilized in some industries, it is of value to the expanding service industry.

In addition to possessing occupational skills essential for economic development, military personnel have unique characteristics which should contribute to their productivity in the industrial sector. Military personnel have a knowledge of the operations of a complex organization. This knowledge has been acquired by working in one of the largest and most complex organizations in Canada and by education which they have received on its methods of operation. Military officers have an ability to organize activities within a complex environment. Because modern industry in Canada appears to lack the talent for organization, which becomes increasingly essential as firms get larger and more complex, military officers with this talent are extremely valuable to Canadian industry. Military personnel have a much more varied working experience than most people because of frequent postings to a variety of jobs in their fields of qualification. Their training and experience in the Armed Forces have helped to develop self-discipline and the quality of good leadership. They are accustomed to working long and irregular hours when the need arises. Military personnel have a much broader range of training than personnel trained in either civilian educational institutions or industry because they are trained not merely for jobs they will perform in the immediate future but for jobs they may be called upon to perform

at a later date at more senior levels, as was discussed previously.

In 1970/71, the Canadian Armed Forces provided a potential supply of 7782 qualified personnel to the industrial sector.

Although actual data on civilian positions obtained by these personnel are not available, either internally or in other government data sources, if it is assumed that they received employment in positions for which they were qualified they represented 4.5% of the additions to the national supply of qualified labour over that year. The remaining qualified personnel who entered the qualified labour force in that year were supplied by over 1800 civilian educational institutions and by immigration. The potential annual contribution of the Canadian Armed Forces' formally organized education and training program to economic development is clearly significant. However, this potential contribution is realized only when ex-military personnel are employed in the industrial sector in positions which utilize the manpower skills which they possess.

There appears to be some reluctance on the part of industry to hire military personnel. This is relevant mainly to some of the other ranks personnel and to some of the junior officers. Perhaps the primary reason for this reluctance is that industry tends to use formal recognition of education and training as well as previous industrial employment records as convenient employment screening devices. Industry seems to make little attempt to acquaint itself with the qualifications of military personnel. Military personnel are very often regarded as individuals who are starting a new career at 40 years of age. Little consideration is given to the fact that most ex-military personnel have had extensive working experience in areas relevant to industrial employment and who possess unique knowledge and skills which increase their productivity in the industrial sector. Once firms have hired military personnel they seem to continue to do so, but

the problem appears to be to convince them to hire the initial one. Unless industry overcomes its reluctance to hire military personnel, the potential contribution of qualified military manpower to industrial productivity can not be realized.

In addition to the reluctance of some firms to hire them, military personnel are faced with other problems when seeking civilian employment. They must be geographically mobile in order to make the most of their employment opportunities in the Canadian labour market. An excess of qualified labour in a certain area will result either in unemployment or employment at a salary less than the position would normally command. Geographic mobility is crucial for military personnel in such cities as Halifax, Victoria, Kingston, and Ottawa. Military personnel, particularly naval personnel, also have the problem of adjusting to a completely different life style.

In order to aid military personnel in seeking employment in the civilian sector, the Canadian Armed Forces have just recently established the Civilian ^{Employment} Assistance Program ^(CEAP). This program involves counselling, assistance in writing career resumes, occupational retraining, and job information. It is a voluntary service offered to all military personnel released at compulsory retirement age or voluntarily released prematurely. Although some counselling in writing career resumes was available before the formulation of this program, it was conducted on a much smaller scale. Little attention was paid to occupational retraining and the amount of job information available was much less than that which is now provided. One important aspect of the Civilian Assistance Program that has just been started with support from both the Department of Manpower and Immigration and the Ontario Government, is that five diploma courses in Accounting, Business Administration, Electronics, Electrical, and Mechanical are being offered to military personnel at Loyalist College in Belleville.

The time requirement for military personnel is reduced from two years to one year because of military training in these areas. Diplomas from these courses will help to satisfy industry's apparent preference for formal recognition of education and training. The Civilian Assistance Program by helping military personnel in their search for productive civilian employment aids considerably in the realization of the potential impact of the release of qualified military manpower into the Canadian civilian labour market on economic development.

As one of the largest educational and training programs in Canada, the Canadian Armed Forces' education and training program for military personnel makes an important contribution to Canadian national development. Approximately 5% of the qualified male labour force over 25 years of age in 1971 had received education and training in the Canadian Armed Forces.* The contribution of the Canadian Armed Forces' education and training to national development may, however, be less than the maximum possible contribution.

A great deal of the education and training supplied by the Armed Forces is also supplied by civilian educational institutions in Canada. In some instances, the education and training conducted by the Armed Forces costs more than similar education and training in the civilian sector. With respect to technical training, it may be the case that some of the department's schools were set up before such training was available in civilian technical schools, and that the department continues to run them although more civilian training is now available in these areas; perhaps even at a lower price because of economies of scale. In consideration of formal education, that conducted "in-house" or financed externally by the Canadian Armed Forces is definitely more expensive to the

* This was determined by applying Canadian Life Tables (1968) to the approximate number of releases from the Armed Forces each year since 1946.

nation than that supplied wholly by civilian universities. The education provided by civilian universities costs approximately \$4700 per student per school year. This cost involves a university operating cost of \$3300 per student, and a living and book allowance for the school year which amounts to \$1400 per student.* With respect to the university operating cost, the university pays \$2300 through federal grants and other sources and the student pays the remaining \$1000. The total cost to the nation of the education provided by the Royal Military College is approximately \$13,350 per student per school year.** With respect to ROTP officer cadets at civilian universities, the cost to the Armed Forces is approximately \$6500 per student per school year but the cost to the nation involves an additional \$2300 per student supplied by the civilian university. The cost to the nation of an officer cadet's education under ROTP(C) is actually \$8800 per student. Therefore, it may be said that the university degree obtained at RMC costs the nation approximately three times that obtained at civilian universities, and the education financed through ROTP(C) costs approximately twice that of education financed totally in the civilian sector. The Armed Forces' preference for "in-house" formal education results in an inefficient allocation of the nation's resources to university education, which to some extent decreases the magnitude of the department's contribution to national development.***

* University operating cost per student was obtained from the "Commission on Post-Secondary Education in Ontario" Draft Report, 1972.

** Data on costs of military formal education were obtained from Officer Career Development Program, July 1972.

*** In the context of the department's goals for officer education, it may well be the case that the "in-house" education is very efficient. However, if the consideration, as it is here, is primarily that of skills acquired for use outside the military environment then the term "inefficient" is technically correct--the dollar cost per year of university education is higher for "in-house" institutions than for civilian educational institutions.

The Armed Forces represent approximately 1% of the total Canadian labour force. However, their policy for length of service is formulated in isolation from the civilian labour market. This lack of integration between departmental manpower policy and the civilian labour market has important implications for national development when the civilian labour force has a shortage of qualified manpower.

Military personnel are for the most part, qualified in the knowledge and skills essential for economic development. The Armed Forces reduce the national supply of qualified manpower who are available for employment in industry. The freedom of movement of the scarce resource of qualified manpower between the military sector and the civilian sector is reduced by the compulsory length of service. This is particularly the case for military officers. There are minimum periods of service that are required for courses of instruction of more than six months duration that are taken at public expense, and these periods of compulsory service vary up to a maximum of five years depending on the course attended. This restriction of movement is in the interest of the department but not in the interest of the nation. It protects the department's investment in the education and training of its personnel, but it may, under some circumstances, hinder economic development. If there is a serious shortage of qualified civilian manpower, the inability of qualified personnel to move from the military sector to the civilian sector to counteract some of this shortage may result in a loss of potential national industrial productivity.

As was discussed previously, the Armed Forces make an important contribution to social development in Canada by supplying education and training to a proportion of the population who might otherwise not receive it. However, in times of high unemployment this contribution is less significant than would normally

be the case because the Armed Forces recruit a greater number of people who have attained a considerable amount of education in the civilian sector and could probably attain more at their own expense. In times of high unemployment, the applicants for the Armed Forces have a higher average level of education, and the Armed Forces respond to this situation by recruiting from the more highly educated. This is beneficial to the department, but it is not beneficial to the nation in consideration of social development. In view of the fact that the average level of education of other ranks recruits was recently Grade 12, it may be said that in times of high unemployment the education and training program of the Canadian Armed Forces, like civilian education, becomes unattainable to a great proportion of the Canadian population. In times of high unemployment, the Canadian Armed Forces' education and training program contributes less to social development than it usually does because of the department's recruitment programs.

Thus, the contribution of the Canadian Armed Forces' education and training program to Canadian economic and social development may be less than optimum because of the fact that the department's manpower policies and programs are formulated in isolation from the national education system and the national labour market. At a time when the Defence Department's policies as a whole are becoming more closely related to domestic affairs, its manpower policies and programs should, perhaps, also be more closely related with the civilian sector.

The Canadian Armed Forces' education and training program for military personnel makes an important contribution to the achievement of national development. It aids social development both while military personnel are in the forces and after they are released. It has a very significant impact on economic development when qualified military personnel are released from the forces at

an early age and are employed in the civilian sector. The contribution of this education and training program to social and economic development would perhaps be even greater if the problems of employment of retired military personnel in the civilian sector could be overcome and if the manpower policies and programs of the department were more closely related to conditions in the civilian sector.

CHAPTER 4

CANADIAN FORCES' PERSONNEL AS EDUCATORS OF CANADIANS

The informal exchange of knowledge and skills, which as defined in Chapter 2 is the exchange of knowledge and skills that takes place in inter-personal contacts in the working or social environment rather than in formalized educational courses, is an important aspect of education. It is not easily identifiable and clearly not measurable, but it nevertheless represents a major method by which individuals acquire knowledge and skills. Military personnel contribute to the expansion of Canadian education by transmitting their knowledge and skills informally to other Canadians.

Qualified military personnel acquire new knowledge in the performance of their military duties. For example, one important area in which they have acquired new knowledge in the past is the Canadian north. Extensive aerial photography and surveys, and new techniques for dealing with Arctic conditions have all provided new information on the north. By transferring this new knowledge to other Canadians, military personnel have played an important role in the development of the northern regions of the country.

Military personnel on occasion work with other government departments and agencies. They are called upon by the government to respond to government emergency activities such as the clean-up

of oil spills, fire fighting, and flood control, and military officers are also occasionally loaned to other government departments. In the working environment, there is an informal exchange of knowledge and skills between military personnel and other government employees which contributes to the expansion of education. In addition to transferring specific occupational skills to others, military personnel transfer the knowledge and skill which they have about the organization of large operations.

Each year, the Canadian Armed Forces conduct seminars at the National Defence College for senior military officers and senior government officials. These seminars are designed to encourage the informal exchange of ideas concerning Canadian economic, social, and political issues, and hence they too contribute to the educational process in Canada.

Military personnel contribute to the informal exchange of knowledge particularly when they are deployed in isolated or remote areas across the country. It is the policy of the Armed Forces to hire indigenous labour at bases, installations, and stations for such jobs as base maintenance workers. This indigenous labour is trained informally in the working environment by military personnel. They receive training in the fundamental skills that are essential for the performance of their jobs and in the case of labour hired in remote areas such as the north, they may even receive some language training. It is worthy of note that this training of indigenous labour was conducted more formally by the Army in the 1960's when Eskimos were brought to Barriefield for training as diesel mechanics. The Armed Forces encourage military personnel in isolated areas to take part in community development programs and activities. Military personnel organize and attend recreational activities such as social events, sports programs, and youth groups in the community. Through the informal exchange of knowledge in both the working and social en-

vironment, military personnel enhance the lives of Canadians in isolated areas.

Thus, military personnel expand Canadian education through the informal transmission to other Canadians of both new knowledge which they acquire while performing their military duties and existing knowledge and skill which they possess as a result of the education and training they have received in the Armed Forces. This expansion of Canadian education affects the development of the "quality of life" of Canadians and hence it may be said to contribute to the achievement of Canadian social development.

CHAPTER 5

ADDITIONAL DEPARTMENTAL PROGRAMS WHICH PROMOTE EDUCATION

The Canadian Armed Forces make an important contribution to the expansion of education through their formally organized education and training programs for military personnel and through the informal exchange of knowledge and skills between military personnel and other Canadians. In addition, there are other departmental programs which promote the expansion of education in Canada. Some of the programs and activities of the Defence Research Board as well as the Armed Forces' programs for reserves, summer students, cadets, and professorships of military and strategic studies, all make a contribution to the expansion of education.

The Defence Research Board contributes to the expansion of Canadian education through the transmission of knowledge gained in its research activities. Clearly knowledge gained from research conducted by the establishments of the Defence Research Board is transferred to the Armed Forces, but it is also, in some cases, transmitted to other government departments and to Canadian industry. In addition, the Defence Research Board gives direct stimulus to the expansion of Canadian higher education by providing research grants to university personnel and by subsidizing some of its personnel in university graduate programs.

The Defence Research Board works closely with other govern-

ment departments in some areas. In this working environment Defence Research Board personnel transmit some of their knowledge and skills to others. For example, work performed at the Defence and Civil Institute of Environmental Medicine is conducted under a collaborative arrangement with the Department of Health and Welfare, and the Board also works with other government departments in such activities as the development of the north. Knowledge transferred in these inter-actions contributes to the achievement of social development.

On occasion, the Defence Research Board transmits knowledge to Canadian industry. For example, knowledge obtained through research on lasers, analogue pneumatic decompression computers, and satellite communications has in the past been transmitted to industry. This transfer of knowledge which expands Canadian education has resulted in the production of competitive Canadian products. It has therefore, contributed to economic development.

As well as expanding education by transferring knowledge which it gains through research, the Defence Research Board contributes to the expansion of Canadian education by collecting and disseminating Canadian and foreign scientific and technical information of defence origin. The Defence Scientific Information Service (DSIS) administers this service to all who participate in Canadian defence research and development. It expands Canadian education by increasing the informal exchange of knowledge.

Each year approximately three million dollars is given by the Defence Research Board to personnel at universities across Canada for research on university proposed topics. The Board also offers scholarships for its own personnel to return to university for educational upgrading. These grants and scholarships provide direct stimulus to the expansion of Canadian higher education and hence contribute to national development.

The Canadian Armed Forces conduct a formally organized training program for reserve personnel, of which there were approximately 19,000 in 1972. It involves general military training as well as training in some military trade/occupations and is designed to prepare reserve forces for their role as support for the regular force. The education and training of the reserves enhances the lives of those who receive it, and like training provided to the regular forces it produces personnel who themselves contribute to the expansion of education. By expanding education, the reserve training program conducted by the Armed Forces aids in the achievement of social development.

In 1972 approximately 11,000 summer students took part in the four summer employment programs which were run by Mobile Command at a cost of approximately six million dollars. The basic aim of these programs as outlined in Mobile Command Directives is "to encourage and create student employment and activities which will be socially useful, personally satisfying, and could reduce the predicted rate of student unemployment." The military aspect of each of these four programs is almost incidental. The Department of National Defence is, however, a convenient operator of federal summer student employment programs because of its size and its deployment across the country. Each of these four programs involves some training, conducted formally or informally by the department.

Program 1 is for casual and career-oriented labour and involves some informal training for positions such as clerk/typist and postal orderly. Program 2 concerns cadet summer employment, and Program 3 is for reserve force training. Programs 2 and 3 include formal training courses conducted on the military environment and in some military trades. Program 4 entitled Citizen and Community Assistance involves such formal training as safety training, first aid training, and defensive driving.

The training conducted formally or informally in the summer employment programs contributes mainly to social development. It enhances the lives of those who receive it by broadening their knowledge and skill. It also helps to develop self-discipline, and ability to get along well with others, and the quality of good leadership. Even with respect to training conducted in Programs 2 and 3 which includes some courses on the military environment and in some military trades, the overall emphasis is on social development. In the case of Program 4, and to a lesser extent Program 3, the training also supplies students with knowledge and skills which enable them to contribute to community projects. In particular, the Citizen and Community Assistance Program is itself concerned with carrying out such social development projects as the developing of hiking trails.

The Canadian Armed Forces have a cadet strength of approximately 75,000. Cadets receive a wide variety of training including survival training, seamanship training, pilot training in gliders and powered aircraft, rifle coaching, and first aid training throughout the year and a number of them receive training at cadet summer camps across the country. Cadet training is designed to stimulate an interest in the Armed Forces and to broaden the knowledge and skills of those involved. It develops self-discipline, the ability to get along well with others, and good leadership and it also promotes physical fitness. Cadet training contributes to social development by enhancing the lives of those who receive it. Because of the large number of cadets involved, the Canadian Armed Forces' cadet program contributes significantly to social development.

Since 1968, the Department of National Defence has conducted a program of professorships of military and strategic studies, including post graduate fellowships and scholarships, at selected Canadian universities. This program is designed to provide financial support for the establishment of military and

strategic studies at civilian universities. In 1970/71, the funds allotted to this program amounted to \$212,000. In that year, five Canadian universities were involved and seven fellowships and scholarships were granted to post graduate students. Support of education in military and strategic studies through this program contributes to social development.

Reserve training, cadet training, summer student training, and the professorships of military and strategic studies all involve an expansion of Canadian education which contributes to social development. Some of the programs and activities of the Defence Research Board promote the expansion of education which affects both social and economic development. By conducting these programs, the Department of National Defence aids in the achievement of the government's major objective of national development.

CHAPTER 6

CONCLUSIONS

The Department of National Defence is one of the largest educational institutions in Canada. It conducts an extensive education and training program which supplies military personnel with knowledge and skills that for the most part are applicable to both the military and the civilian sector. In addition, it encourages the informal exchange of knowledge and skills between its personnel and other Canadians and it conducts programs such as those for the reserves, summer students, cadets, professorships of military and strategic studies, and some of the Defence Research Board's programs and activities which promote Canadian education. The Canadian Armed Forces make a very significant contribution to education in Canada.

The government does not appear to recognize the extent of the Canadian Armed Forces' contribution to Canadian education. In reports on federal government expenditures on education, the Department of National Defence's expenditures include only the operating costs of the three military colleges and the Defence Research Board's grants to university personnel. These two programs in fact represent only 10% of the department's expenditures on formally organized education and training. In consideration of the federal government's increasing involvement in education, it would seem desirable, from the point of an efficient allocation of national resources to education, that the government be more

aware of the department's contribution to the Canadian educational system.

The Department of National Defence has not, in the past, found it necessary to consider its contribution to Canadian education. Studies conducted by the department on its education and training programs have for the most part tended to deal with the efficiency of the formally organized education and training programs from a departmental perspective. As a result, these studies have placed a great deal of emphasis on attrition rates and the loss of the department's investment when personnel educated at the department's expense retire prematurely. They have not identified how these educational and training programs relate to the national educational system.

Because the department has tended to consider its education and training from a departmental perspective rather than a national perspective and also because there is no formally accepted definition of national development, the department has appeared to give little attention to the relationships between its education and training programs and national development. However, as has been outlined in this study the contribution of the Canadian Armed Forces' education to national development is significant.

The Armed Forces' extensive formally organized education and training program, which is conducted in order to provide military personnel with the knowledge and skills essential for an effective military force, has an important impact on economic development when qualified military personnel are released into the civilian labour market at an early retirement age. The informal exchange of knowledge between military personnel and other Canadians, as well as programs such as those for the reserves, summer students, cadets, and professorships of military and strategic studies expand education in areas that contribute to social

development. Some of the Defence Research Board's programs and activities promote education which contributes to economic development and social development.

Canadian Forces' education aids considerably in the achievement of national development. It could however contribute more to this objective if the problems of employment of retired military personnel in the civilian sector could be overcome, and if the department's manpower policies and programs gave more consideration to the civilian educational system and conditions in the civilian labour market. If the department kept records on civilian positions attained by ex-military personnel after their release from the forces, a better understanding of the employment problems faced by ex-military personnel could be obtained as well as a more detailed account of the impact of the Canadian Forces' education and training on economic development.

Education is an important means by which the Department of National Defence contributes to the achievement of the government's major objective of national development. In view of the fact that the government is currently placing a great deal of emphasis on national development, it is important that both the department and the government be more aware of the significant contribution which is made to this objective by Canadian Forces' education.

OFFICER OCCUPATION STRUCTURE

PROFESSIONAL/TECHNICAL

Aerospace Engineering
Comm/Electronics Engineering
Land Ordnance Engineering
Maritime Engineering
Military Engineering
Dentist
Dental Assistant
Doctor
Medical Assistant
Nurse
Chaplain
Lawyer
Logistics
Meteorology
Musician
Professional Development
Personnel Support

COMMUNICATIONS AND TRANSPORTATION

Navigator
Pilot
Air Traffic Control
Maritime Surface and Sub-Surface

SPECIFICALLY MILITARY

Armd
Artillery
Infantry
Air Weapons Control
Security

MEN'S TRADE STRUCTURE

PROFESSIONAL/TECHNICAL

Construction Engineering Technician
Draughtsman
Meteorological Technician
Map Reproduction
Field Engineer
Topographical Surveys
Medical Assistant
Nursing Assistant ~~CODE 2~~
Laboratory Assistant
Operating Room Assistant
Hygiene Technician ~~—~~
X-Ray Technician
Biosciences Technician ~~—~~
Dental Clinical Assistant
Dental Laboratory Assistant
Dental Therapist ~~—~~
Dental Assistant ~~—~~
Musician

CLERICAL

Administrative Clerk
Accounting and Finance Clerk
Supply Technician
Teletype Operator
Traffic Technician
Transportation Controller ~~—~~
Transportation Operator ~~—~~

COMMUNICATIONS AND TRANSPORTATION

Postal Clerk
Driver Signals ~~—~~
Radio Operator
Communications Research
Communications Operator
Lineman

COMMUNICATIONS AND TRANSPORTATION (cont)

Signalman (Sea)
Sonarman (Sea)
Radioman (Sea)
Radar Plotter (Sea)
Observer
Air Traffic Controller
Air Defence Technician
Mobile Support Equipment
Boatswain

SERVICE

Physical Education and Recreation Instructor
Military Police
Cook
Steward
Clearance Diver
Fire Fighter

MANUFACTURING AND MECHANICAL

Dental Equipment Maintenance Technician
Machinist
Metal Technician
Radio Technician
Teletype and Cipher Technician
Communications Systems Technician
Terminal Equipment Technician
Radar Technician
Radar Systems Technician
Marine Engineering Technician
Hull Technician
Electrical Technician
Aero-Engine Technician
Airframe Technician
Instrument Electrical Technician
Integral Systems Technician
Safety Systems Technician
Refrigeration and Mechanical Technician
Vehicle Technician
Electro-Mechanical Technician
Flight Engineer
Aviation Technician
Avionics Technician

MANUFACTURING AND MECHANICAL (Cont)

Performance Oriented Electronics Training *not a trade*
Communications Technician
Photographic Technician
Stationary Engineer
Water Sanitation and POL Technician
Mechanical Systems Technician
Electrical Generating Systems Technician

CONSTRUCTION

Refinisher Technician
Structures Engineer
Plumber Gas Fitter
Electrician
Construction and Maintenance Technician

SPECIFICALLY MILITARY

Crewman
Artilleryman
Infantryman
Intelligence Operator
Firecontrolman
Weaponsman Surface
Weaponsman Underwater
Weapons Technician (Air)
Weapons Technician (Land)
Ammunition Technician

RELEASES 1970/71 - MEN

how were these figures obtained?

TOTAL - 8170

NUMBER COMPLETED INITIAL TRADE TRAINING - 6673

MANPOWER SKILLS OF THOSE WHO COMPLETED INITIAL TRADE TRAINING

<u>OCCUPATION</u>	<u>NO.</u>	<u>%</u>
Professional/Technical <i>Rank?</i>	382	5.7
Clerical	1168	17.5
Communications and Transportation	991	14.9
Service	561	8.4
Manufacturing and Mechanical	2234	33.5
Construction	74	1.1
Specifically Military	1263	18.9
Total	6673	99.0 100.0

AVERAGE AGE ON RELEASE - 35 years

AVERAGE CIVILIAN WORKING LIFE - 30 years

RELEASES 1970/71 - OFFICERS

TOTAL - 1442

NUMBER OF COMMISSIONED OFFICERS - 1109

NUMBER OF OFFICER CADETS - 333

MANPOWER SKILLS OF COMMISSIONED OFFICERS

<u>OCCUPATION</u>	<u>NO.</u>	<u>%</u>
Managerial and Administrative	377	34.0
Professional/Technical	732	66.0
	—	—
Total	1109	100.0

AVERAGE AGE ON RELEASE - 40 years

AVERAGE CIVILIAN WORKING LIFE - 25 years

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall document is classified)

1. ORIGINATING ACTIVITY Defence Research Analysis Establishment National Defence HQ - Ottawa, K1A 0K2		2a. DOCUMENT SECURITY CLASSIFICATION Unclassified	
		2b. GROUP Three	
3. DOCUMENT TITLE Canadian Forces' Education as a Contributor to National Development			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)			
5. AUTHOR(S) (Last name, first name, middle initial) McRoberts, B. G.			
6. DOCUMENT DATE June, 1973		7a. TOTAL NO. OF PAGES	7b. NO. OF REFS None
8a. PROJECT OR GRANT NO. 7204		9a. ORIGINATOR'S DOCUMENT NUMBER(S) REPORT NO. DRAE 37	
8b. CONTRACT NO.		9b. OTHER DOCUMENT NO.(S) (Any other numbers that may be assigned this document)	
10. DISTRIBUTION STATEMENT			
11. SUPPLEMENTARY NOTES		12. SPONSORING ACTIVITY	
13. ABSTRACT <p>This study illustrates the fact that education is an important means by which the Department of National Defence contributes to the achievement of the government's major objective of national development. The major areas of concern of government policy with respect to the achievement of national development are outlined briefly, and education is identified as an important factor in the achievement of these policy goals. The education and training provided by the Armed Forces is then analyzed in consideration of its contribution to both the economic and social aspects of national development. From this analysis it appears that the Armed Forces' extensive formally organized education and training, which is conducted in order to provide military personnel with the knowledge and skills essential for an effective military force, has an important impact on economic development when qualified military personnel are released into the civilian labour market. In addition, the informal exchange of knowledge between military personnel and other Canadians, programs for the reserves, summer students, cadets, and professorships of military and strategic studies, and some of the programs and activities of the Defence Research Board promote education which contributes to national development.</p>			

KEY WORDS

National Development
economic and social factors
Armed Forces education and training programs
manpower
military personnel

INSTRUCTIONS

1. **ORIGINATING ACTIVITY:** Enter the name and address of the organization issuing the document.
- 2a. **DOCUMENT SECURITY CLASSIFICATION:** Enter the overall security classification of the document including special warning terms whenever applicable.
- 2b. **GROUP:** Enter security reclassification group number. The three groups are defined in Appendix 'M' of the DRB Security Regulations.
3. **DOCUMENT TITLE:** Enter the complete document title in all capital letters. Titles in all cases should be unclassified. If a sufficiently descriptive title cannot be selected without classification, show title classification with the usual one-capital-letter abbreviation in parentheses immediately following the title.
4. **DESCRIPTIVE NOTES:** Enter the category of document, e.g. technical report, technical note or technical letter. If appropriate, enter the type of document, e.g. interim, progress, summary, annual or final. Give the inclusive dates when a specific reporting period is covered.
5. **AUTHOR(S):** Enter the name(s) of author(s) as shown on or in the document. Enter last name, first name, middle initial. If military, show rank. The name of the principal author is an absolute minimum requirement.
6. **DOCUMENT DATE:** Enter the date (month, year) of Establishment approval for publication of the document.
- 7a. **TOTAL NUMBER OF PAGES:** The total page count should follow normal pagination procedures, i.e., enter the number of pages containing information.
- 7b. **NUMBER OF REFERENCES:** Enter the total number of references cited in the document.
- 8a. **PROJECT OR GRANT NUMBER:** If appropriate, enter the applicable research and development project or grant number under which the document was written.
- 8b. **CONTRACT NUMBER:** If appropriate, enter the applicable number under which the document was written.
- 9a. **ORIGINATOR'S DOCUMENT NUMBER(S):** Enter the official document number by which the document will be identified and controlled by the originating activity. This number must be unique to this document.
- 9b. **OTHER DOCUMENT NUMBER(S):** If the document has been assigned any other document numbers (either by the originator or by the sponsor), also enter this number(s).
10. **DISTRIBUTION STATEMENT:** Enter any limitations on further dissemination of the document, other than those imposed by security classification, using standard statements such as:
 - (1) "Qualified requesters may obtain copies of this document from their defence documentation center."
 - (2) "Announcement and dissemination of this document is not authorized without prior approval from originating activity."
11. **SUPPLEMENTARY NOTES:** Use for additional explanatory notes.
12. **SPONSORING ACTIVITY:** Enter the name of the departmental project office or laboratory sponsoring the research and development. Include address.
13. **ABSTRACT:** Enter an abstract giving a brief and factual summary of the document, even though it may also appear elsewhere in the body of the document itself. It is highly desirable that the abstract of classified documents be unclassified. Each paragraph of the abstract shall end with an indication of the security classification of the information in the paragraph (unless the document itself is unclassified) represented as (TS), (S), (C), (R), or (U).

The length of the abstract should be limited to 20 single-spaced standard typewritten lines; 7/8 inches long.
14. **KEY WORDS:** Key words are technically meaningful terms or short phrases that characterize a document and could be helpful in cataloging the document. Key words should be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context.

205 38

73-05990