

THE HISTORY AND PRESENT STATUS OF INDUSTRIAL ARTS
IN THE PUBLIC SCHOOLS OF BRITISH COLUMBIA

by

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THE HISTORY AND PRESENT STATUS OF INDUSTRIAL ARTS IN THE PUBLIC SCHOOLS OF BRITISH COLUMBIA

CHAPTER I

INTRODUCTION

For the past fifty-eight years public education in the Province of British Columbia has condoned and encouraged the use of industrial arts as a medium of instruction in the public schools. Consequently, both as a subject matter area and as a phase of general education, industrial arts has grown since 1900 from a place of virtual nothingness to a position of considerable importance. Perhaps at this time, particularly when our educational system as a whole is under the scrutiny of both educators and the public, it is well to retrace our steps and review the growth of industrial arts from its early beginnings.

It is thus with a spirit of enquiry that the writer has entered into this study of the history and present status of industrial arts in the Province of British Columbia. By tracing chronologically the steps through which industrial arts came to be what it is today, an effort is made to present clearly and concisely the position which this subject now holds in the present curriculum.

Purpose of the Study

In keeping with the general purpose of historical research, this study aims to outline events in the past which are thought to

have been instrumental in the building of industrial arts, with a view that these may serve some useful purpose in shaping future policy. It is intended that this report should serve as a stock-taking of the progress made to date, and also indicate such trends as have become evident.

Since the Second World War school enrolments have increased to the point where school construction barely keeps pace with the influx of new pupils. It is felt that this report will point out how the strain of over population of the schools has affected industrial arts as a subject.

Thus, in this study, particular consideration has been given to the growth in the number of centers offering industrial arts, to the growth of the school population and its effects upon industrial arts, and to the growth of teacher-training and sources of teacher supply. Further, an appraisal is made of the present status of industrial arts with particular emphasis on teacher qualifications and the teaching situation.

It is anticipated that this report will be of considerable use to future students of industrial arts education in British Columbia and may be of general interest to the public. As was further anticipated, through a study of the past and the present of industrial arts pertinent problems have emerged which face not only industrial arts as a phase of general education, but also general education itself. Having cited such problems, the author has attempted to

provide recommendations which may, it is hoped, prove to be both adequate and sound.

Sources of Material

As a main source of reference material the author has found the annual Public Schools Reports for the Province of British Columbia particularly useful. In these reports may be found an annual summary of pertinent happenings in the field, plus numerous and useful statistics. Such reports were available, dating back to the very beginnings of industrial arts in 1901. Public Schools Reports, dated from 1900 to 1928 were available only at the Provincial Library in Victoria. Through the kindness of Mr. P. G. Barr, Officer-in-Charge of the Provincial Text-book Branch of the Department of Education, Public Schools Reports dated from 1929 to 1957, were loaned to the author.

In an endeavor to obtain some measure of public opinion regarding the various events which have taken place in the field of industrial arts, the author has consulted past issues of Vancouver and Victoria newspapers. Through the kind co-operation of The Victoria Press Company, issues of the "Victoria Daily Colonist", and the "Victoria Daily Times" dating back to 1901, were made available to the writer. Similar editions of the "Vancouver Province", the "Vancouver Sun" and the "News Herald", complete with a convenient card index of both Victoria and Vancouver newspapers, was available at the Provincial Library.

The author is further indebted to the late Brigadier John Earl Sager, who in his thesis "History of Manual Training and Technical Education in the Dominion of Canada" written for the State College of Washington, thoroughly covered the history of industrial arts in British Columbia from 1900 to 1935. Brigadier Sager's outline of pertinent events has proven to be an invaluable guide towards further study in this area.

Publications ranging from pamphlets to manuals, published by the Department of Education of this Province, have been of considerable value in providing material useful in determining the present status of industrial arts.

Further data, useful in determining the present status of industrial arts, were obtained from the Bi-annual Reports of industrial arts instructors filed with the Department of Education. By the beginning of January 1958, not all of the reports had yet been filed, hence information obtained from these reports was based on approximately a ninety per cent return.

A further source of reference material, useful in the proper orientation of past events and rich in experiences of many years of teaching the manual training and industrial arts programmes, was found in those men who had chosen the city of Victoria in which to retire. Experience dating back to the year 1910 was thus available to the author, through interviews with these men, for the history of industrial arts in this Province is still young enough to be to some extent obtained first-hand from those who were instrumental in making it.

Limitations of the Study

It was found that in many respects industrial arts was somewhat interwoven with vocational education and night schools. This was particularly true in cases where facilities provided under the provisions of the Vocational Training Co-ordination Act of 1942, were to some extent a benefit to the industrial arts programme. In such instances an effort was made to separate, as much as possible, industrial arts activities from the allied areas of night schools and vocational education. Vocational, technical, and night-school education are mentioned only in passing, in an attempt to consider industrial arts by itself.

This study attempts to cover the complete history of industrial arts in British Columbia, from the early beginnings in 1901 to the present time. It was found, in some instances, preferable to omit interesting and informative details, in favor of emphasizing only the salient points.

The author feels that many happenings in this field have, through the years, unfortunately gone unrecorded. In an effort to gather such unwritten information to supplement available recorded material, the writer resorted to personal interviews with men who, through first-hand experience had observed and aided industrial arts through its infancy.

Time has been somewhat limited. The author has endeavored to cover this topic with less than three months time for research.

Although time was short, the writer was aided greatly by the fact that material generally was readily available in the city of Victoria.

Industrial arts has not been limited entirely to public schools in this Province. Some private schools and particularly federally-administered schools such as Indian schools, have been offering industrial arts in some form or another for a number of years. For purposes of this study, however, research was necessarily limited to the public schools of British Columbia.

CHAPTER II

INDUSTRIAL ARTS FROM 1900 TO 1914

Trends Leading up to the Beginning of Practical Education

During the latter half of the nineteenth century, first in Europe and later in America, a gradual revolution took place in the field of education. Those educators and civic leaders concerned primarily with the establishment of what were then "foundling education" systems, inspired by the glitter of Pestalozzian, Froebellian, and Herbartian methods, sought to implement the "new" education in American schools. An attribute of the "new" education, pertinent to this study, emphasized a phase of education which would provide practical experience for the pupil. One form of this practical experience was known as "manual training". In England, manual training, the forebearer of industrial arts, was realizing increasing success and popularity. The manual training movement in the United States was also gaining impetus at that time. In an article outlining the prospects of manual training for the city of Victoria, the Victoria Daily Colonist in 1900, reported the following findings from Agassiz School in Boston (24):

First, a distinct gain in accuracy, not only the habit of doing more work accurately, but also a better appreciation and knowledge of what accuracy really means.

Second, this makes the pupil more thoughtful.

Third, it makes him more attentive.

Fourth, it makes him more observant.

Fifth, the good effect of this training is quite valuable in drawing, and in arithmetic, especially in the subjects of mensuration and square root.

Sixth, it has given certain boys an increased interest in school.

Since the Agassiz experiment had then been running for only a short period of time the annual report of the School Committee stated the values attributable to manual training could not be dogmatically proclaimed at that time. Coupled with the increasing popularity of utilitarian values for education, educators sought to institute practical arts in the school curricula.

At the turn of the century, Canadian educators became attracted by the practical activities observed both in Europe and in America. In 1904, current thought with respect to manual training was aptly expressed in an annual report to the British Columbia Superintendent of Public Instruction, by Mr. S. B. Netherly, then an inspector of schools in the Province:

The idea that education shall be related in some way to our daily life has strongly attracted our attention. This is, no doubt, in consequence of the growth in popular education; for most persons must earn their living, and ability to earn a living must be increased, the person must be actuated by some inspiration and some satisfaction in the life that he must live. Most of the common people engage in the mechanic arts and agriculture. Thus we, as educators, must make these and all the industries mean more than they ever meant before, in order that the millions of persons who engage in them may live fuller lives. The education that makes men and women great is that which enables them to rise to a higher place, whilst still content with a day's wage and perhaps a humble life. Much has been said about ideals of education, but the true philosophy of life is to idealize everything with which we have to do. This is another leading point of the 'New Education'. It

begins in the home. It is perhaps expressed in the single term 'Nature Study' which is an outgrowth of an effort to put the child into living relationship with his own conditions. (12, 1903/04, p. A 25)

Once manual training gained a foothold in this Province, educators seemed quick to recognize its values. In 1903, Inspector A. C. Stewart wrote:

The extraordinary enthusiasm of the pupils in the prosecution of this work is due to the following facts:

(a) It deals with material entities, not with symbols and abstractions.

(b) Its processes are active and creative, not receptive and imitative.

(c) The unit of instruction is the single pupil, not the class.

(d) The teachers are specialists.

The discontinuance of this important factor in the moral and intellectual, as well as the merely manual training of the boys would be a serious blunder. (12, 1901/02, p. A 58)

According to the late Brigadier Sager, Inspector of Technical Classes, little change had taken place in the education scheme in the Province of British Columbia from 1878, when schools were first established, to 1900. People were thus more or less ready to receive the new idea when Sir William Macdonald offered to finance the equipping of a manual training school in 1900. (31, p. 28)

It was undoubtedly the application of the new philosophy and the feeling that some change was long overdue which brought about the speedy acceptance of the Macdonald proposals for manual training in the cities of Victoria and Vancouver.

The Macdonald Movement

Through the benevolence of a successful Montreal tobacco manufacturer, Sir William C. Macdonald, the manual training movement obtained its start in Canada. Donating more than eight million dollars to the advancement of education in Canada, Sir William's interests, at the turn of the century, centered mainly around elevating the educational opportunities of Canadian youth, particularly of those in rural communities. It was said by Professor Robertson that Macdonald's motto was, "Build up the country in its children". (32, p. 892)

Sir William Macdonald's benevolence was not entirely limited to the education of rural youth. Once, observing that Canada would need qualified engineers in order to sustain industrial progress, he endowed McGill University in Montreal with a fully equipped engineering building. Later his further endowments added a physics and chemistry building to the McGill University campus.

Perhaps what posed the greatest problem to Sir William's philanthropic efforts was finding a method whereby children in the rural communities could be reached. Professor James W. Robertson, then commissioner of agriculture and later principal of Macdonald College in Quebec, in discussing the formation of Manual Training centers throughout Canada, reported a conversation with Sir William as follows:

At that time in 1898-99, in fact before that, Sir William C. Macdonald had been anxious to help

to improve rural schools in Canada, and he came to me for some help in the way of plan making and administration. I said that, in my judgment, the first thing to do was to give object-lessons of manual training in the elementary schools of cities and towns so as to educate public opinion in favor of better methods of education in places where newspapers were published and to which the country looked for guidance. He rather demurred, saying that the city and town schools were already too good in comparison with country schools, and tended to draw people in from the country to the towns in order to get education for their children. Afterwards when he saw it would be a means of helping the rural schools, he said, 'All right, we will carry on the manual training in some town schools'. The man in the rural district imitates the man who lives in town. The man who lives in town has the best chance of being a leader; and the man in the country will not be willing to take a lower grade of education, for his boy than the town or city man. It is important to get leaders from the city to recognize improvement by means of practical education. This was the reason for the Macdonald Manual Training Fund and its work.
(29, p. 92)

It was therefore in the above described spirit that Manual Training Schools were established in cities across Canada.

Macdonald aid came to British Columbia through Sir William Macdonald's representative, Professor Robertson, in November 1900. Upon the mutual agreement of the Department of Education and the School Trustees of the cities of Victoria and Vancouver, manual training was introduced for a trial period of three years. Apart from having to provide a building in which to carry out this activity, no further expense was to be incurred by the cities, as the cost of equipping the three shops, one in Victoria and two in Vancouver, was paid for by Sir William Macdonald. The general intention and purpose of this experiment seems to have been to demonstrate the usefulness of handiwork to the general public.

The work was carried out for three years during which time, through press and displays of boys' work, an attempt was made to educate members of the public with regard to the values of manual training.

Mr. Harry Dunnell, one of the first manual training instructors, and later the first Inspector of Manual Training in British Columbia wrote:

Though no active opposition was apparent during these three years, there is no doubt many were skeptical about the work, its usefulness and ultimate success; not only amongst the public but more so amongst the teaching profession. (12, 1907/08, p. B 32)

It may be noted that one slight objection to the establishment of manual training schools in Victoria was registered in the Victoria Daily Colonist on November 24, 1900. The Trades and Labor Council declared themselves opposed to the establishment of manual training schools on the grounds that the trades were already overcrowded: "The school would be more or less a menace to the labour world." (25)

Professor Robertson returned to British Columbia in the spring of 1903 and announced that on condition the cities of Vancouver and Victoria carry on the work, at their own expense for at least one year, the equipment now found in each of the schools would be given to them free of charge.

By decision of the School Trustees, followed by a public meeting, it was agreed that the work would be carried on in Victoria. At a

public meeting held in the city hall in Vancouver, it was unanimously decided to continue manual training.

The cost of operating these schools was borne by the respective cities for a period of two years, at which time the Education Department instituted assistance to aid in the payment of salaries for manual training and domestic science teachers.

As Inspector of Manual Training, Mr. Dunnell stated in his first report (12, 1907/08, p. B 32) that throughout the trial period, 1900 to 1903, many other communities had expressed their interest in manual training by inquiring of Mr. Dunnell whether Macdonald Funds could also be made available to other districts. Unfortunately, Macdonald aid was not forthcoming for smaller centers. Although many communities would have been interested in inaugurating manual training in their schools, the initial expense posed a difficulty. The city of New Westminster, however, proved to be the exception, overcoming the difficulty unaided by setting up one manual training center.

Inspector Dunnell, in an effort to interest the Department of Education towards consideration of further financial aid, said in his report to Mr. Alexander Robinson, then Superintendent of Education,

Now, Sir, I venture to say that had not a start been made by Sir Wm. Macdonald seven years ago, there would still not be any Manual Training in this Province. Not that the public or the teachers would not want it, but that the initial expense would be the stumbling block.

I think the time has now come when the Education Department should take up the work vigorously, and in

cities like Nelson, Rossland, Grand Forks, Revelstoke, Cranbrook, Fernie, Armstrong, Vernon, Kamloops, and Nanaimo, provide the equipment (about \$800 each), if the cities provide the room and carry on the work.

All around us (in other parts of the Dominion, in the United States, and the other countries of Europe) we find manual training being introduced largely into the studies of the schools.

Can a young country like ours, that is constantly drawing from the older countries for its increasing population, ignore this fact? Our schools, good as they are, cannot afford to lag behind, and where the attendance is large enough Manual Training Schools should be established as soon as possible. Once established, I feel confident the work would be appreciated and carried on. (12, 1907/08, p. B 32)

Up to the time that Dunnell wrote his report of 1907/08, steady growth was evident in the manual training movement. From humble beginnings in 1901 when manual training was taught in three schools in the Province, this "new" phase of education had grown to ten Manual Training Schools, accommodating some 2000 boys and staffed by nine teachers in 1907. (12, 1907/08, p. B 33)

Dunnell's report further suggested regulations for the guidance of manual training and domestic science which might come into effect should the Education Department decide to act upon his suggested expansion of practical education facilities. These are quoted as follows: (12, 1907/08, p. B 33)

(1) A course of work, approved by the Education Department to be taught in each school.

(2) Every instructor must also be a qualified public school teacher.

(3) Each boy or girl must receive at least two hours instruction per week.

(4) Each instructor must be responsible for not more than 24 pupils per lesson and not more than 240 pupils per week.

(5) Plans for all new workrooms to be submitted for approval to the Education Department.

Although Dunnell's recommendations were not immediately acted upon, as early as 1905 manual training instructors were considered, for salary grant purposes, on an equal basis with public school teachers. (34)

Influence from the Department of Education

In 1903, when the Macdonald schools were turned over to the cities, full recognition as school subjects was given to manual training and domestic science by the Department of Education. It was not until the year 1910, however, that the Department of Education began to exert some influence upon the administration of manual training. First mention of a prescribed course of studies and the regulations affecting manual training was made in 1910. (7, 1910/11, p. 95) Provision was made at that time for the certification of manual training instructors. It is worthy to note that instructors were mainly obtained up to that time from other parts of Canada, the United States, and Europe. Hence, for purposes of certification, the Swedish Diploma (Naas), the German Diploma (Leipsig), and diplomas from the City Guilds of London Institute (England), Guelph College (Ontario) and Macdonald College (Quebec) were recognized.

Early Curriculum

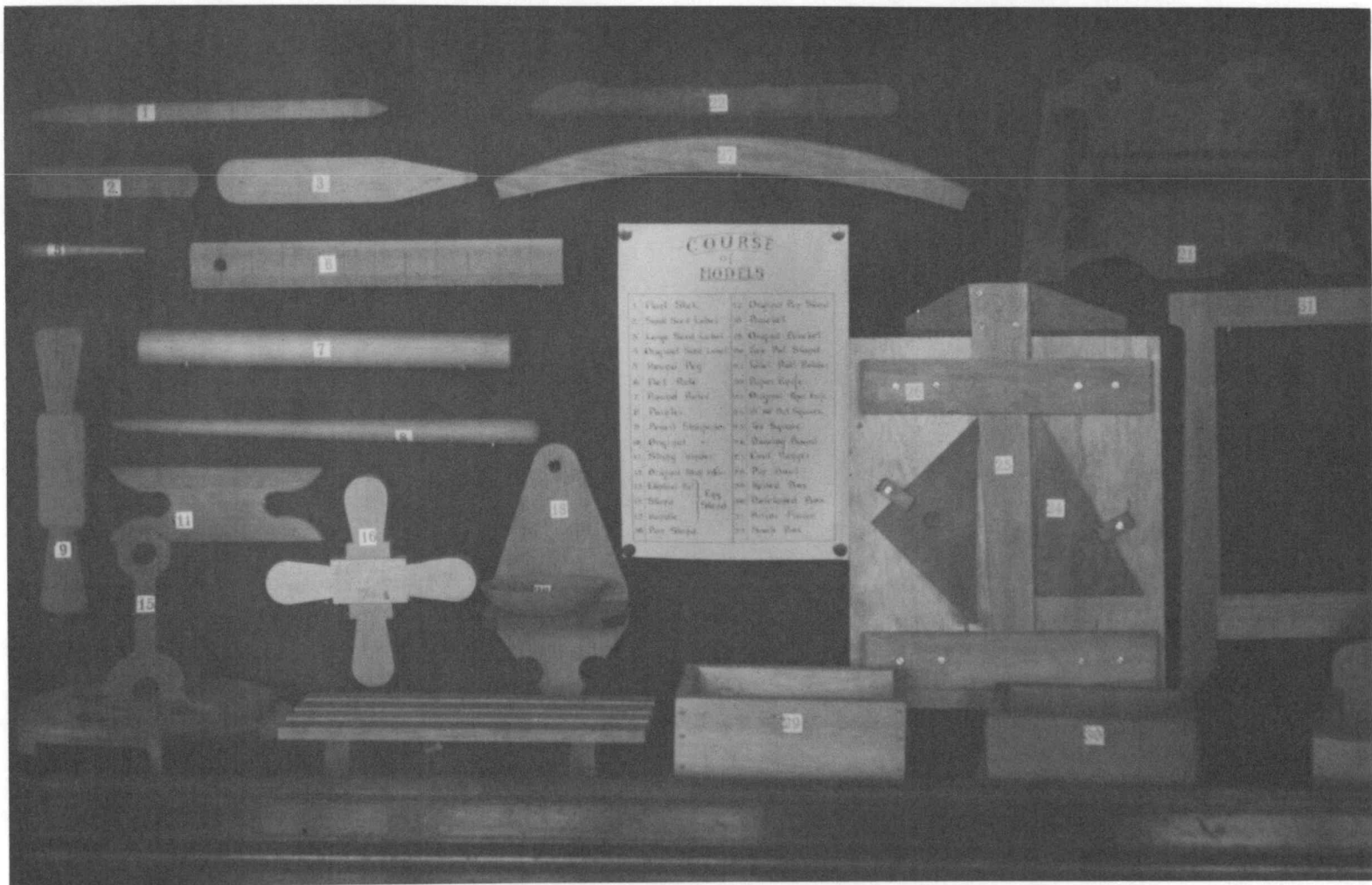
In the year 1910, at the previous suggestion of Inspector Dunnell, a curriculum was outlined for the guidance of manual training instructors. (See Appendix A) This course of study broadly

outlined the limits of the elementary woodworking and metal-working courses. It also required that the instructor develop the course in detail to suit his own requirements. The instructor's course of study was to be submitted to the Inspector of Manual Training for approval, prior to being put into use.

In the 1914 issue of the Manual of School Law, the above mentioned system was somewhat changed. Under previous regulations, the instructor was free to design and choose instructional models (projects) which he thought best suited the course and the needs of the district. The 1914 regulations specified that twenty nine models were to be made with some leeway provided for brighter students; and, further, the regulations specified the operations to be embodied in the construction of each model. This change was likely the result of an attempt to standardize teaching procedures.

Diplomas for Manual Training

Regulations were further changed in 1914 to provide diplomas for elementary students who had completed the Manual Training Course. These diplomas were issued by the Department of Education for the satisfactory completion of three years of manual training, and served as will be seen later, as proof that the high school entrance requirement of manual training had been fulfilled.



Course of Models - Elementary Woodworking as Taught in England in 1900 (Courtesy G. Anstey)
Figure 1

Manual Training Compulsory

What was probably the most important change appearing in the 1912 regulations centered around making manual training a compulsory high school entrance subject. (7, 1912, p. 65) This change had been recommended by Inspector Dunnell in his 1908/09 report. Manual training, not having previously been a compulsory subject, was frequently omitted by some boys in favor of academic subjects. Owing to the large initial cost involved in setting up manual training shops, teaching this subject was not deemed feasible unless sufficient numbers of pupils took advantage of the facilities. In this report Mr. Dunnell stated:

What do some of the other cities say? 'We see the good of the instruction and would like our children to have it, but the first year's expenses are too great'. Manual training not being a compulsory subject or a subject necessary to qualify for entrance to High School, is therefore not taken up.

If it is worth while, then I think it should be compulsory where there are sufficient boys to warrant a school being opened, and assistance should be given to that end. If it is not worth while, then the schools at present in existence should be closed, as it is only wasting one half-day per week of the boys' time. (12, 1908/09, p. A 28)

Hence, in 1912, manual training was made compulsory in those schools in which instruction in this subject was given. Candidates for high school entrance had to be in possession of either Manual Training Diplomas or, as stated in the regulations governing the requirements for high school entrance, "fulfill departmental requirements as to attendance and work".

The Visit of the Royal Commission

In the months of November and December 1911, the Royal Commission on Industrial and Technical Education visited the Province. The purpose of the Royal Commission was two-fold. Firstly, it had been appointed to survey what was being done in the field of industrial and technical education in each province in the Dominion of Canada. Secondly, it further attempted to obtain an expression of public opinion with regard to the need for such education in Canada. This marks the first interest shown by the Dominion Government towards the establishment of a Canada-wide system of vocational education. (15, p. 22) Although the matter of vocational education is somewhat out of the scope of this report, it is significant to note that the resulting investigations, interviews, and public hearings probably did more to bring the matter of manual training to the public eye than any other single event since 1900. (31, p. 36)

On the grounds of its findings, the Royal Commission recommended to the Dominion Government that a national vocational education plan be adopted. The passing of legislation in 1919, permitting the Federal Government to enter into the field of vocational education, had the effect of drawing a definite line of separation between manual training and vocational education.

Provincial Assistance for Manual Training

In 1912, upon the advice of Inspector Dunnell, and coincident with the requirement of manual training for all boys, provision was

made in the School Act to provide Provincial funds for the assistance of those districts interested in beginning manual training instruction in their schools. This provision was clearly stated in Section 47 of the School Act as follows:

To the Board of School Trustees in rural districts and to the municipal corporation of any municipality whose Board of School Trustees shall provide suitable accommodation, in connection with the school or schools under its jurisdiction, for instruction in manual training there shall be granted by the Council of Public Instruction a sum not less than three-fourths of the total initial amount expended for the necessary benches, tools, material, and other equipment required.
(7, 1912, p. 20)

The growth resulting from this change was encouraging, for by August of that same year, fourteen new centers were opened throughout the Province. These included Cranbrook, North Vancouver, South Vancouver, Vancouver, South Saanich and Oak Bay municipalities. This increase brought the Provincial total to 32 centers, staffed by thirty instructors and attended by 3,723 pupils, including 290 high school students. (12, 1911/12, p. A 43)

Recognition of Manual Training Teachers

Owing to the organization of more centers in British Columbia, manual training instructors began to gain recognition as full-fledged Public School Teachers. As previously mentioned, manual training instructors and Public School teachers had been recognized, for purposes of salary grants, on an equal basis since 1905.

In his report for 1914, Dunnell stated that Manual Training instructors should think of manual training as only one subject amongst many.

Specialists in all kinds of work have a tendency to think that their work is the pivot on which every thing else depends. They should not fall into this error. Manual training is only one subject amongst many by which the school life of a child is seeking to lay the foundations of greater manhood.
(12, 1913/14, p. A 59)

Dunnell further exhorted the school principals to recognize manual training instructors as members of the teaching team.

I would like to add one recommendation to the principals of the schools; when you hold your teachers' meetings do not leave out two members of your staff, the manual training and domestic science instructors. Many of your discussions may not have any direct bearing on their work, but it will do neither party any harm to become interested in each others work, as all are striving for the same end. (12, 1913/14, p. A 59)

That year a manual training section was held for the first time at the Provincial Teachers' Institute, which according to Inspector Dunnell, proved very successful. Further professional growth was evident at this convention through the formation of the Manual Training Association, with one branch in Victoria and another in Vancouver.

Expansion During this Period

Table I provides an indication of the amount of expansion in number of centers, number of instructors, and student enrolment

during this period. It will be noted that high school classes in industrial arts did not begin until the year 1910/11.

TABLE I

NUMBER OF CENTERS, INSTRUCTORS, AND STUDENT ENROLMENT FOR
MANUAL TRAINING CLASSES FROM 1907/08 TO 1913/14

Year	Centers	Instructors	Enrolment		
			Elementary	High	Total
1907/08	10	9	2000 ¹	---	2000
1908/09	10	9	2000 ¹	---	2000
1909/10	10	9	2000 ¹	---	2000
1910/11	17	N.A.	2606	266	2872
1911/12	18	21	3433	290	3723
1912/13	31	30	4442	287	4829
1913/14	38	36	5181	471	5652

Public Schools Reports 1907/08 to 1913/14

N.A. - Not Available

1 - Approximate Only

Summary of Chapter Two

By the end of the year 1914 manual training had secured a foothold in the Province of British Columbia. Thirty-eight centers were in operation, giving employment to thirty-six instructors and accommodating a total of 5652 students.

The Provincial Government not only recognized manual training as a full-fledged public school subject but had taken two important steps forward, first by making manual training a compulsory subject in those schools in which it was offered; and secondly, by providing financial aid to any district in the Province willing to provide suitable housing for manual training.

In both the positions of teacher and Inspector of Manual Training, Harry Dunnell had proven to be a very active promoter of manual training throughout the Province.

CHAPTER III

INDUSTRIAL ARTS DURING THE WAR YEARS 1914 TO 1918

A most significant step taken at the beginning of this period was the appointment of John Kyle to the position of Organizer of Technical Education for the Province. Mr. Kyle had previously been in charge of the Vancouver Night School programme and had recently served on the staff of the Provincial Normal School in Victoria. He was given a position which combined night school and manual training in one office, that of Organizer of Technical Education.

In passing, it is well to note that the night school programme had started during the previous year, 1913, in the larger communities of the Province. It was an attempt to make greater use of expensive manual training facilities and to provide adults, for whom the doors of formal education had closed, a means of improving their education.

Pre-vocational Classes

Another important event of the school year 1914/15 was centered around the establishment in Vancouver of three pre-vocational classes in woodworking. In an attempt to provide some useful skill to those who were approaching or had reached the school-leaving age, 135 students were enrolled in both woodworking and domestic science classes. Since many of the students enrolled were beyond the compulsory age-limit, attendance dropped rather rapidly during the term. It was felt by J. S. Gordon, Municipal Inspector of Schools for Vancouver, that

to some extent the measure had served a purpose in so far as those who left during the term would not have returned to school the previous August had they not been given the opportunity for the pre-vocational school work. (12, 1914/15, p. A 86)

This endeavor marks the first attempt to provide some means of retaining and training school leavers. The pre-vocational classes were discontinued during the following year, for lack of funds.

Statement of Objectives

The belief that practical studies such as manual training and domestic science were useful adjuncts to more formal studies still prevailed from the beginnings of manual training in 1900. Sir William C. Macdonald had put forth this idea when he desired that manual training should reach the rural communities. To a large extent, however, manual training and domestic science became increasingly popular more as a result of a revolt against formal academic education rather than as a desire to provide technically competent individuals for the country and the Province. (27, p. 96)

Manual training represented a departure from traditional methods. Guarded and sometimes not too guarded claims were made in favor of the pedagogical benefits derived from manual training schools. We have already considered the results attributable to manual training, as claimed by the Agassiz school in Boston, reprinted in the Victoria Daily Colonist at the time when the cities of the Province were considering the benefits of the Macdonald funds. Inspector Dunnell had,

through speeches and student displays, popularized manual training. Dunnell's successor, John Kyle, further fortified the claims of manual training by stating that one objective of the practical arts "should provide continual emphasis and proof of the theories taught by the grade teacher". He also stressed the importance of a "combined attack" by both teachers of practical subjects and teachers of academic subjects: "The instructors in those subjects (practical) should be perfectly at home with the studies in which the students are engaged in the classroom, and vice versa." (12, 1914/15, pp. A 88-89)

Mr. Kyle, an artist of some note, observed with wit the practice of stressing hand skills over and above skills in design, a practice which had grown out of manual training. "In most cases the work accomplished in the manual training shops shows that the hand training far exceeds that of the eye." (12, 1914/15, p. A 89) Mr. Kyle felt that the cultivation of good work habits in the shop was of prime importance, although not to be considered as the main objective of the manual training programme: "The desire of the instructor must be to get from the students the maximum of good taste and judgment, combined with skill in technique." (12, 1914/15, p. A 89)

Inauguration of Summer Schools for Manual Training Teachers

In order to supplement a dwindling supply of manual training teachers, and also to meet the needs for the expansion of manual training facilities, a summer school programme for manual training instructors was initiated at the Provincial Normal School in 1917.

Intelligent craftsmen and certified academic teachers were encouraged to attend this session of five weeks' duration which, according to Kyle, proved to be successful. The summer course of studies was divided into two parts, manual arts for the teaching of handiwork in the elementary grades, and manual training consisting of woodworking, metalworking, cardboard work and drawing. (See Appendix B) Upon completion of the summer school course permanent certificates were awarded to four men who had been engaged in teaching and had successfully conducted classes for two years.

Men who had previously qualified as manual training instructors expressed some concern that a course of such short duration might flood the Province with "half-trained" artisans, thus ruining the good work already accomplished. Organizer Kyle hastened to assure the instructors that certificates were not being issued indiscriminately and that "no permanent certificate would be granted unless the man had scholarship and a natural aptitude for teaching. On the other hand, the professional mannerisms in the use and care of tools and the professional standards of craftsmanship which these artisans would bring to manual training workshops are distinct assets in their favor." (12, 1916/17, p. A 81)

During that summer, manual training classes enrolled 19 men in the manual training section and a mixed class of 20 persons in the manual arts section. William H. Binns, Supervisor of Manual Training for Victoria, taught the manual arts course while the wood and metal

sections were taught by A. S. Hamilton, A. W. Jones, H. Dunnell, and S. Northrop, the latter, Supervisor of Manual Training for Vancouver.

Effect of the War

John Kyle, organizer of Technical Education for the Province, in his 1916/17 report to Alexander Robinson, Provincial Superintendent of Education, expressed regret that education during that time of stress should have been looked upon as a last step in the economy. When describing the plight in which Europeans found themselves, he tersely expressed his sentiments as follows:

The inhabitants are realizing as never before that they are the trustees of posterity; that they are guarding the lines of communication between the present and the future. The generation to come will not discover false play until it is too late; consequently it is the duty of the people today to make sacrifices before betraying posterity. (12, 1916/17, p. A 79)

Although he felt the above situation to have been aptly demonstrated in Europe, he intended to convey the idea that similar betrayal could happen in Canada and in British Columbia. He further attacked the philosophy of those who were "willing to barter away the educational advantages of the boys and girls in the Province in order to carry out a policy of retrenchment." He deplored the attitude adopted by some school board members, that, in order to alleviate the financial strain the war had imposed, education, and particularly night school classes, should be the first public endeavour to suffer the axe of retrenchment.

In the opinion of G. Anstey, formerly Supervisor of Industrial Arts for the city of Victoria, it was largely through the untiring and unselfish efforts of John Kyle that manual training survived the pressures of this and subsequent periods of criticism. Often at his own expense, Kyle journeyed to those districts considering the closing of manual training facilities to speak directly to board members exhorting them to continue this new phase of education. (1)

By the end of 1918, after a period of four years, the number of manual training centers had increased by only six, and the total enrolment in manual training classes averaged around 7700 pupils (Table II). Manual training not only held its own during these trying times but showed a commendable increase.

High School Technical-Science Course

In the year 1917 an interesting departure from the regular curriculum was made at King Edward High School in Vancouver. With the permission of the Provincial Inspector of High Schools, a science-technical course was inaugurated for boys embracing the following subjects: English grammar, composition, and literature; business forms and usages; Latin; practical mathematics and physics; shop work in wood and metal.

Organizer Kyle commented to the effect that the aim of such a programme was to have those students who intended to enter artisan fields begin a study, during the first year of high school, of those subjects which would be of most service to them. (12, 1916/17, p. A 82)

Although no specific trade was taught this endeavor bore considerable similarity to the pre-vocational programme which the city of Vancouver had attempted and discontinued during the previous year. It may be noted, however, that again some attempt was being made to provide an element of practical education for the boy who, either through mental inability, lack of desire, or lack of adequate finances, was unable to gain entrance to the university.

Admission to university was not entirely barred, however, for those who chose to elect this programme. Since a second language was necessary for university matriculation, election of the science-technical course necessitated extra effort and emphasis on Latin and, later, French, during the third year of high school.

In describing this course, Kyle stated:

Physics is well taught in this science course, and the system employed avoids plunging the students at once into a world of abstract symbols and definitions. Text-books are discarded in the first year, thus permitting the precedence of a realistic treatment of the subject. The advantage of the method is expected to be seen in the second and third years, when the students will exhibit a greater zest and increased desire for a continuance of the subject. The fundamental subjects of draughtsmanship, development of surfaces, and practical mathematics, which are so valuable in industrial work, are well taught. Practical work in wood and metal are undertaken and students construct all experimental apparatus required for the study of physics and mechanics. (12, 1916/17, p. A 82)

This departure from the standard curriculum had significant effects on manual training. Although primarily designed for prospective school-leavers, this marks the first attempt to incorporate manual training courses into the university matriculation programme.

Although not originally designed for this purpose, it was now possible for a boy to take the technical-science course and still obtain university matriculation. As will be noted in the next chapter, this meager and humble beginning at King Edward High School eventually grew into what has since been known as the Vancouver Technical High School. The apparent need for such a vocational approach was manifest by the fact that by 1918 the shops became vastly overcrowded.

At the end of two years of operation, results and enrolment were so encouraging that Kyle strongly recommended to the Department of Education that a Technical school be built which would accommodate graduates from King Edward High School. In the meantime the University of British Columbia had agreed to take graduates who passed a matriculation examination in technical subjects, as partial students, so that their technical education could continue.

TABLE II

NUMBER OF CENTERS, INSTRUCTORS, AND STUDENT ENROLMENT
FOR MANUAL TRAINING CLASSES FROM 1914/15 TO 1917/18

Year	Centers	Instructors	Enrolment		
			Elementary	High	Total
1914/15	49	40	6233	806	7039
1915/16	49	40	5907	992	6899
1916/17	61	46	6972	836	7808
1917/18	64	46	6255	964	7219

Public Schools Reports 1914/15 to 1917/18

Expansion During this Period

Statistics indicative of the growth which took place in the Province, relative to industrial arts, are shown in Table II.

Summary of Chapter Three

Owing to the effects of the war, some retrenchment took place in the field of education which affected mostly the night school programmes of Victoria and Vancouver. Manual training, however, was able to show an increase of six centers during the war years.

In an endeavor to provide practical education for school leavers, the city of Vancouver first organized pre-vocational classes which were discontinued for lack of funds, and secondly began science-technical classes in King Edward High School. The science-technical classes proved to be successful and were continued.

In an effort to supply an increasing demand for manual training instructors, summer school classes were established.

CHAPTER IV

INDUSTRIAL ARTS DURING THE INTERVENING YEARS 1919 TO 1929

Dissenting Voices

The years 1919 to 1929 saw steady progress in the field of manual training, even amid some dissenting voices, which claimed that manual training was both a waste of time and money. John Kyle, Organizer of Technical Education for British Columbia, aptly commented regarding these objections by stating:

It is gratifying to know that the result of having the limelight thus thrown directly on the subjects has been to establish them more securely than ever in the school curriculum. (12, 1919/20, p. C 83)

Probably the most serious objection raised to manual training during this period was voiced in an editorial which appeared in the Daily Colonist in 1925. The editor blandly stated that in his opinion two serious limitations threatened the establishment of manual training in the Province: time and money. He further attacked the practical subjects by asking: "Does it (manual training) serve any real economic need in the life of the community?" and "What proportion of the boys actually do enter the industries?". Both of these points, he stated, had previously been made by those favoring manual training. He felt that these two questions should be very carefully considered for the sake of already-burdened taxpayers. Speculating on the answers which he would receive to these questions, he further added:

If this figure does not constitute a good and sufficient reason why the public should find money for this special instruction it would be better left to private enterprise.

Assuming, however, that the case for manual training is made out, it is likely that most if not all of the benefits conferred could readily be secured by competent instructors with a very modest and inexpensive equipment of tools and machinery. (21)

During this period such criticism was common. Owing to the business recession then in progress, critics of practical education tended to measure the value obtained from such education in terms of observable effects on industry; that is, whether such a programme would fit a boy for immediate entrance into some industrial position. It is noteworthy that at this time such critics did not seem to be aware of the vast industrial potential which existed in Canada, and particularly in British Columbia. If they were aware of this, it was obvious that they did not feel there was value in introducing a boy to industrial processes by way of manual training. Furthermore, these critics did not seem to appreciate the value of introducing the younger generation to basic technological processes, even if many boys never did consider entering the ranks of industry as a vocation. The argument was that manual training at best could offer only an introduction to such fundamentals, by attempting at least to lay a foundation and to broaden the understanding of our machine age.

Despite such controversy manual training withstood both the critics and the economic crisis. In 1926, Kyle praised the work which had been done to date by saying:

We have no need to apologize for the men who qualify from our own training classes; they have established the work of manual training in the schools of the Province. Their work has withstood the wave of economy which passes over the country, and British Columbia still stands second in the Dominion for the number of manual instructors and the number of centers which are in the Province. (12, 1925/26, p. R 62)

Weathering this crisis was not without its effects. Criticism had shown that future policies would have to be strengthened and that some reconsideration of the methods employed in manual training would have to be effected if this subject was to win unanimous public approval. Kyle, in his 1920/21 report, stated that the future of manual training depended greatly upon three main factors:

(a) The inclusion of workshop projects which have useful purpose and are not mere exercise.

(b) An appreciation of the fact that high-grade benches and vises are not as essential to good work as careful grading of the projects and the thorough manner in which simple fundamental operations are mastered.

(c) Encouragement to the boys to build simple equipment in basements or sheds and engage in woodwork at home.

In relation to the third factor, Kyle stated:

When manual activities spread from the manual training centres to homes, a high standard of educational success may be confidently expected. For these reasons instructors are left free to develop a course of work suitable to the urban or rural districts in which they are placed. (12, 1922/23, p. F 52)

In the year 1926 the Department of Education decided to discontinue issuing Manual Training Certificates to students who had

completed the elementary manual training requirements for high school entrance. This was brought about by a feeling that issuing a certificate tended to convey the idea that manual training was a separate additive to the curriculum rather than an integral part of school education. (12, 1926/27, p. M 55)

Teacher Certification and Training Expanded

Manual training had now grown to the point where it was felt that a grade system of instructor certification was necessary. The advent of manual training in high schools brought about the need for high qualifications, hence, more comprehensive certification requirements for the high school instructor than the elementary school instructor. Furthermore, since technical high schools had now been established in the three major cities of the Province and since there was a demand for night school instructors, a need arose for a separate technical instructor's certificate. By decision of the Council of Public Instruction, separate certification requirements were established for each category, and appropriate certificates were issued. Through such certification an instructor could now, through summer school courses and special Saturday classes held in the Vancouver Technical High School, advance from the elementary certificate through to the technical instructor's certificate. The intent behind this change was clearly illustrated by the following remarks, made by the Organizer of Technical Training:

These classes provide outlets for the activity and ambition of the men; they are means whereby instructors may rise in their profession; rungs of the ladder by which they may climb from manual instructors in the elementary school to instructor in the high school, and from there to the technical school. By persisting in this policy we shall be ready for any progressive moves taken by School Boards in the Province and success in the work of technical instruction will be well assured. (12, 1923/24, p. T 78)

Summer classes continued successfully during this period. The demand for instructors of all categories mounted, and teachers were recruited as vacancies occurred. Kyle attributed much of the success of these courses (summer sessions and special Saturday classes) to the wholesome attitude displayed by the manual training instructors and particularly to the interest displayed by the Manual Training Teachers' Association. It was evident at this time that the system adopted by the Province to train manual training instructors had proved entirely satisfactory and was filling the demand.

Table III provides an indication of the number attending summer school classes from 1919 to 1929:

TABLE III
NUMBER ATTENDING MANUAL TRAINING SUMMER SCHOOL
CLASSES FROM 1919 TO 1929

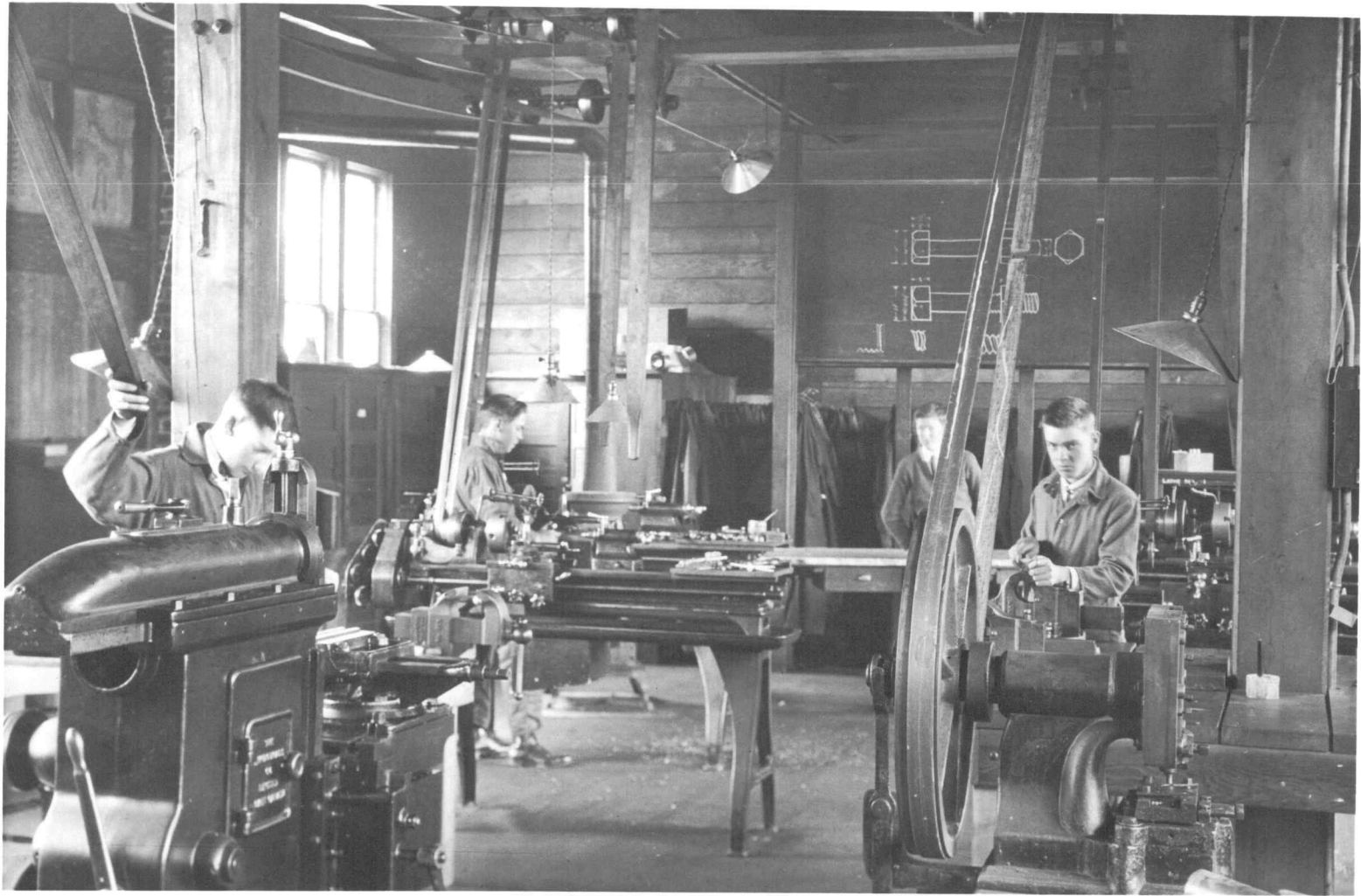
1919/20 18	1924/25 25
1920/21 25	1925/26 11
1921/22 18	1926/27 27
1922/23 24	1927/28 35
1923/24 13	1928/29 33

Public Schools Reports 1919/20 to 1928/29.

Technical Education Act - 1919

The Dominion Government entered the field of technical education in the year 1919, as a result of the findings and recommendations of the Royal Commission on Industrial Training and Technical Education. In 1919, the Technical Education Act was passed, which provided each Province with Federal funds in order to carry out technical education within its boundaries. Although manual training was not directly aided by these funds, it is well to note the effects which this Act had upon manual training in the Province of British Columbia.

It was observed in this and the previous chapter that the Province, through the establishment of three technical schools, had provided a continuation school system whereby students interested in entering industrial vocations could further their formal technical education. With Federal aid applied to this area, technical education in general was stimulated within the Province. The Dominion now agreed to pay one-half the cost of providing such facilities; hence, through the application of both Provincial and Federal funds, individual municipalities were able to provide for the increasing demand for technical education. One such, British Columbia, then and now has adhered to a policy of municipal control of technical and vocational education rather than what is common in other provinces, provincial control. (15, p. 21)



Machine Shop - Boys' Central School - Victoria, B. C. 1925 (Courtesy G. Anstey)
Figure 2

The Putman-Weir Survey and Recommendations

In the years 1923 to 1924, the Province appointed a commission to study the existing school system in the Province of British Columbia. This commission was comprised of two members, Dr. J. H. Putman, Senior Inspector of Schools for the city of Ottawa, and Dr. G. M. Weir, then Professor of Education at the University of British Columbia. Exhaustive investigations culminated with a report entitled "Survey of the School System", which was published in May 1925.

Probably the most important findings of the commission, which affected manual training, centered around the apparent need for a "middle school" curriculum, later called Junior High School, to fit the 6-3-3 plan.

Within the short time of one year, junior high schools first appeared in British Columbia with the opening of the first school in Penticton in September of 1926. By September of 1927, two more junior high schools had opened, Kitsalano and Templeton, both in the city of Vancouver.

With the advent of junior high schools, changes were brought about in the curriculum, particularly that of manual training. Whereas up to this time manual training had taken the form of woodworking in most centers across the Province, recommended changes now included the addition of metalwork, electricity and home mechanics, and drawing. Instructors were thus advised to qualify themselves to teach a full

junior school programme and school districts were advised to make suitable alterations to existing facilities in order to offer the new junior high programme.

Coupled with the establishment of junior high schools, came a renewed effort to effect the consolidation of school districts. One of the most forceful arguments in favor of consolidation centered around financial reasons. Districts, scattered as they were throughout the Province, could through consolidation, pool their resources and make the burden of establishing manual training and domestic science facilities lighter. Thus, by indicating the benefits which could be derived by the introduction of practical subjects into their schools, school-board members could to some extent be persuaded to consolidate districts and progress with the times at a lower cost than would otherwise have been possible.

It is well to note in passing that the appointment of the Putman-Weir Commission came at a time when public criticism of practical education was gaining considerable impetus. The publicity gained by the Commission's findings, although critical of some of the methods employed in these classes, tended to fortify the foothold which manual training had gained in the Province. Manual training was now deemed, more than ever before, a necessity for a progressive curriculum. School districts were exhorted to add to and expand their practical facilities to include such changes as were recommended.

Manual training at this time took on another name. The new junior high school programme, which included woodwork, metalwork,

electricity and home mechanics, and drawing, was now called "Industrial Arts", while the term manual training was applied to those centers which offered only woodworking.

What seems to have been one of the most pertinent problems facing manual training at the time was quickly recognized by the Commission. It will be noted that up to this time, although provision had been made for academic teachers to become manual training teachers, the large majority of these instructors were recruited from the ranks of craftsmen. The Commissioners stated in their report that they did not agree with this policy in-so-far as such a policy tended to:

. . . put undue emphasis upon techniques instead of upon culture. It subordinates growth to discipline. It makes the instruction more important than the child. It makes a part appear larger than the whole. (27, p. 338)

The Commissioners further recommended that, in-so-far as the number of young men entering the teaching profession often outweighed the number of available positions, it would be well to encourage some of these able young men, who already had obtained professional training, to take technical courses with a view to obtaining manual training teaching certificates.

It was the feeling of the Commission that the aims of manual training, as a part of the whole general education of the child, could be better handled by men who were not only technically trained but also professionally trained.

With this principle in mind, the Commission made the following recommendation:

That a year's training course for manual training teachers be established in Vancouver and affiliated with the Vancouver Technical School, to which were admitted only approved students who have the academic and professional training at least equivalent to that given in the Normal School. (27, p. 334)

Further criticism by the Commission was levelled at the methods then employed in the teaching of manual training. Since manual training, properly understood, was part and parcel of general education and not a segment independent of this process, manual training should provide ample opportunity for boys to profit from the benefits of planning their work rather than having to follow only prescribed exercises. The Commissioners stated their criticism thusly:

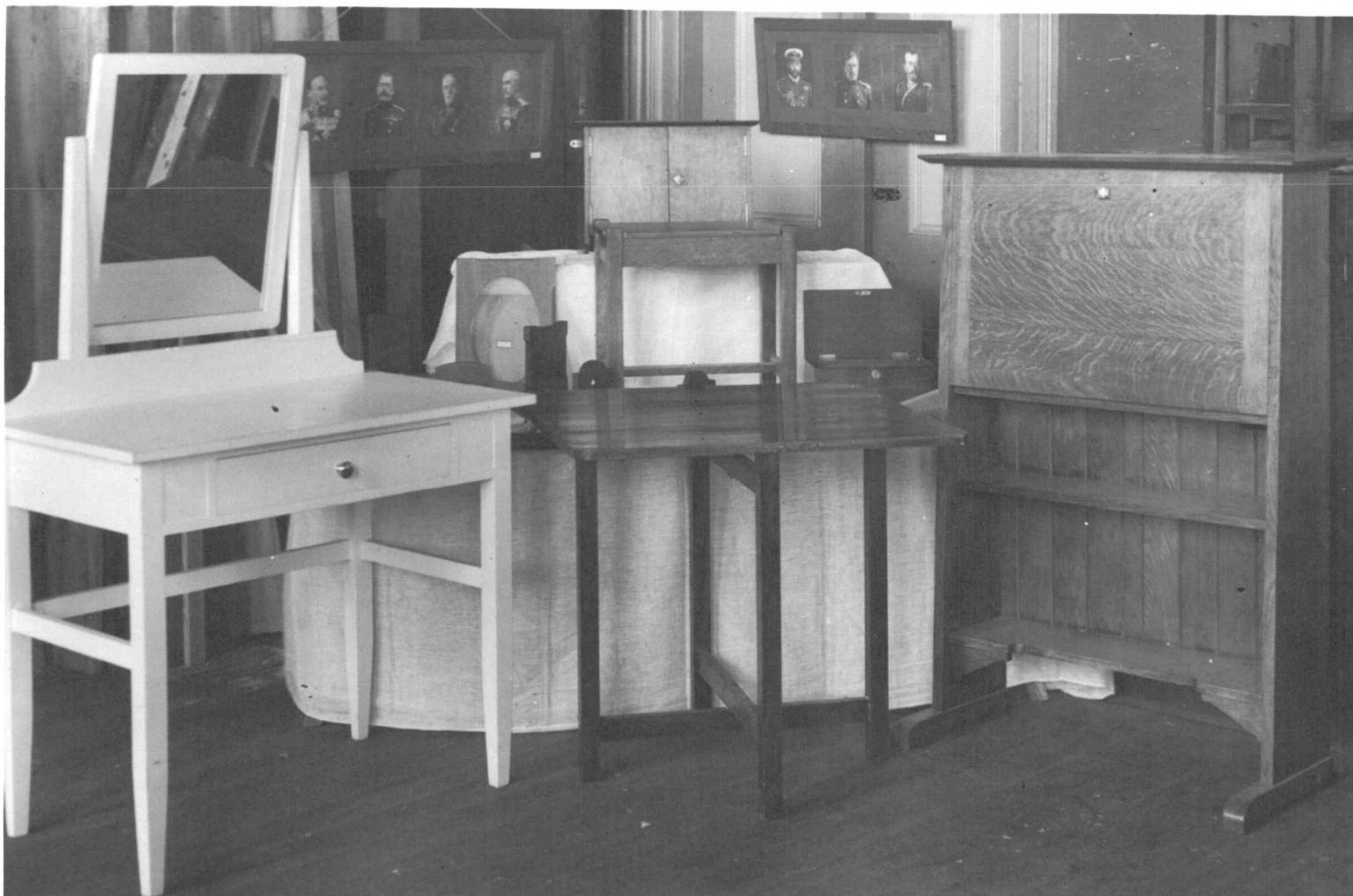
British Columbia manual training classes are spending the major portion of their time in learning the letters. Some boys never get beyond this state. Some reach a stage where they make some small articles of real furniture and a few attack big problems and gain much in educational values.

And yet, in spite of the emphasis is placed upon these formal, stilted, prescribed models, the boys are usually interested in manual training. This is a great tribute to the inherent interest in the subject and shows what its possibilities are. (27, p. 98)

It is evident that in the years to follow some attempt was made to increase the amount of planning done by the boy in the shop. Even prior to this time the "model" method of instruction had been discarded by some instructors, in favor of student-and-teacher-planned contemporary furniture stylings. G. Anstey, formerly Supervisor of Industrial Arts for the city of Victoria, mentioned in an interview



Hand Woodwork Projects - Boys' Central School - Victoria, B. C. 1919 (Courtesy G. Anstey)
Figure 3



Hand Woodwork Projects Grades 7, 8, 9 - Boys' Central School - Victoria, B. C. 1919
(Courtesy G. Anstey) - Figure 4



Hand Woodwork Projects - Boys' Central School - Victoria, B. C. 1919 (Courtesy G. Anstey)
Figure 5

that in 1925 the instructors in Boys' Central School in Victoria, decided that projects designed along the lines of "Morris" furniture would be more suitable for their high school classes. After completely re-organizing their course, these instructors presented the boys with sketches of pieces of furniture which the boys could make in the shops. Interest was immediately re-kindled, and at the end of the school year, other Victoria instructors were amazed at the quality of design and workmanship which was exhibited in the finished projects from Boys' Central School. (1)

Growth of Industrial Arts During this Period

As is evident from Table IV, industrial arts centers grew slowly but steadily during this period. Student enrolment on the other hand grew quickly, nearly doubling in a period of ten years.

Summary of Chapter Four

Despite mounting criticism of the value of practical subjects to education, slow but steady progress was evident in the field of manual training and industrial arts during this period.

The movement towards the consolidation of school districts gave further impetus to the establishment of manual training centers.

As a result of the Putman-Weir Survey, the "middle" or junior high school made its appearance attempting to bridge the gap between the elementary school and the high school. With junior high schools came a revised manual training and industrial arts curriculum.

TABLE IV

NUMBER OF CENTERS, INSTRUCTORS, AND STUDENT ENROLMENT FOR MANUAL
TRAINING AND INDUSTRIAL ARTS CLASSES FROM 1918/19 TO 1928/29

Year	Centers	Instructors	Enrolment			
			Elementary	Jr. High	Sr. High	Total
1918/19	72	58	7324	----	1527	9,851
1919/20	N.A.	N.A.	N.A.	----	N.A.	N.A.
1920/21	79	62	8349	----	1436	9,785
1921/22	79	62	8930	----	1540	10,470
1922/23	79	69	10,507	----	1564	12,071
1923/24	79	69	12,213	----	1937	14,150
1924/25	81	71	12,231	----	1992	14,223
1925/26	83	75	12,250	----	2001	14,251
1926/27	86	78	11,133	----	1910	13,043
1927/28	93	80	11,155	1291	1963	14,409
1928/29	111	89	10,604	2268	2109	14,981

Public Schools Reports, 1918/19 to 1928/29

N.A. - Not Available

Manual training as embodied in the curriculum of the junior high school became known as industrial arts.

Strong recommendations by the Putman-Weir Commission brought about desirable changes both in methods of teaching manual training and industrial arts, and the training of suitable instructors for these subjects.

More than ever before, the practical subjects were now thought of as an integral part of the whole general education process.

CHAPTER V

INDUSTRIAL ARTS DURING THE DEPRESSION 1930 TO 1939

During the period 1930 to 1939 progress in the establishment of manual training centers came to a near standstill. Brigadier J. E. Sager termed the first half of these years a "period of non-expansion" when time and money were spent in an effort to consolidate the gains already made. (31, p. 51) A similar observation can be made for the latter half of the period which, owing to a more severe economic crisis than was experienced during the years 1923 to 1926, saw the closing of some centers. During the last year of the period, however, signs of recuperation were evident and the number of centers offering manual training and industrial arts began again to increase. As in the previous crisis, manual training held its own despite opposition and endeavors by some to seek ways and means of decreasing public expenditure on schools.

Teacher Training Upgraded

Beginning as early as the year 1929, efforts were made by the Department of Education to upgrade teaching qualifications through the re-organization of teacher training courses given during summer school sessions, and during normal school sessions. Coupled with what seemed to be a gradual strengthening of academic qualifications for teachers-in-training entering Normal Schools (12, 1928/29, p. R 11) the Department of Education, taking the initiative revised

qualifying requirements. This revision particularly affected specialist instructors concerned with the teaching of physical education, commercial subjects, music, manual training, industrial arts, and high school technical subjects.

In the area of industrial education it will be noted that previous organization was aimed at providing a training programme which embodied some means of advancement for the instructor desirous of advancing from elementary manual training instruction to high school technical instruction. The new programme, first appearing in the year 1931, provided an enlarged instructor training curriculum containing woodwork, metalwork, electricity and draughting, commensurate with the now enriched junior high school curriculum. In keeping with the former system of certification, certificates obtainable by potential instructors were three in number: a British Columbia Certificate in Manual Training for Elementary Schools, appropriate for the teaching of woodwork in schools which had not yet enlarged their programmes to include industrial arts; a High School Technical (A) and (B) Certificate, qualifying the instructor to teach in junior and senior high schools; and a Technical School Teacher's Certificate, qualifying the instructor to teach in any technical or vocational school in the Province. The latter certificate, however, drew its recruits entirely from the ranks of men having previously obtained trade training, this being necessary in order to comply with the provisions of the Dominion Technical Education Act, which required that instructors be trade-trained.

Applicants for a certificate suitable for the teaching of manual training in elementary schools were obtainable from two sources; either craftsmen who were bona fide tradesmen of not less than five years experience, or persons who were holders of British Columbia First-Class Academic Certificates. In either case, special supplementary studies were necessary on the part of the applicant prior to entrance into the manual training education programme. Craftsmen, except those with Junior Matriculation Certificates, were obliged to take what was termed as four units of English and four units of mathematics prior to entry, while teachers holding First Class Certificates with successful teaching experience were required to take four units of woodwork. The above compensatory courses were calculated to balance the attainments of the craftsman and school-teacher candidates. (12, 1930/31, p. L 30)

Once having completed the preliminary requirements, the candidates completed the following programme of studies:

For Craftsmen:

Pedagogy:

I Theories and History of Education 2 units of 25 hours - 50 hrs.

II Teaching Methods and Manual Training

Class Management including Black board Drawing - 2 units of 25 hrs. - 50 hrs.

III Practice and Observation - 2 units of 25 hrs. - 50 hrs.

Drawing:

- I (a) Practical Geometry (Elementary) - 2 units of 25 hrs. - 50 hrs.
- (b) Practical Geometry (Advanced) - 2 units of 25 hrs. - 50 hrs.
- II Draughting (Elementary) - 1 units of 50 hrs. - 50 hrs.
- III Design for Manual Training - 1 unit of 25 hrs. - 25 hrs.
- IV Designing Course of Projects - 2 units of 50 hrs. - 100 hrs.

Woodwork:

- I Manual Training Woodwork - 4 units of 25 hrs. - 100 hrs.
- II Making Course of Projects - 2 units of 50 hrs. - 100 hrs.
- Total - 20 units - 625 hrs.

Teachers holding First-Class Certificates were exempt from Theories and History of Education and 50 per cent of number III in the Pedagogy group.

Having completed the above course of studies, the candidate was granted an interim teaching certificate by the Department of Education which was made permanent upon two years of successful teaching experience. Teaching experience was deemed successful upon receiving two favorable inspector's reports. (12, 1930/31, pp. L 29-30)

As with the Manual Training Certificate, applicants for the High School Technical Certificate were either craftsmen or previously certified teachers. Minimum educational requirements stipulated that the candidate possess at least junior matriculation (high school

graduation) in English, mathematics, chemistry and physics or be in possession of a high school matriculation (senior matriculation) certificate or a Technical Leaving Certificate. A certificate obtained under the following plan was not of "Academic Standard"; that is, the certificate obtained by a successful candidate would not be considered as equivalent to a First Class Teacher's Certificate.

The training course consisted of five groups, the first being the pedagogical group as follows:

1. Theories and History of Education - 2 units of 25 hrs. - 50 hrs.
 2. Teaching Methods and Class Management - 2 units of 25 hrs. - 50 hrs.
 3. Teaching Practice and Observation - 2 units of 25 hrs. - 50 hrs.
 4. Junior High School Philosophy - 1 unit of 25 hrs. - 25 hrs.
 5. Special Teaching Methods re: Major Subject - 1 unit of 25 hrs. - 25 hrs.
 6. Thesis - 2 units of 25 hrs. - 50 hrs.
- Total - 10 units - 250 hrs.

All of the foregoing courses were required of Craftsmen candidates while teachers who had been previously certified were exempt Theories and History of Education and fifty per cent of items 2 and 3. It will be noted that a similar exemption was made for certified teachers entering the Manual Training Certificate programme. Special teaching methods pertaining to the student's major field of interest

(woodwork, metalwork, etc.) item 5, was to be taken along with related shop work in that field; that is Special Methods was not to be a course in itself but an integral part of a woodworking, metalworking, draughting, or electricity course.

It is interesting to note that two units of twenty-five hours of the pedagogical group were devoted to thesis work. The course of study for the pedagogical group, as outlined in the 1930/31 Public Schools Report, stipulated only one requirement for thesis work; that "it must be on a topic bearing on High School Technical Education". (12, 1930/31, p. L 30)

The succeeding group of studies included in the High School Technical Certificate training course, centered around the technical aspect. These were four in number and the programme for each was organized as follows:

Technological Group (I) - Drawing:

1. (a) Practical Geometry (Elementary) - 2 units of 25 hrs. - 50 hrs.
- (b) Practical Geometry (Advanced) - 2 units of 25 hrs. - 50 hrs.
2. Draughting (Elementary) - 1 unit of 50 hrs. - 50 hrs.
3. Draughting (Advanced) - 4 units of 50 hrs. - 200 hrs.
4. Design (Manual Training) - 1 unit of 25 hrs. - 25 hrs.
5. Design (Technical High School) - 3 units of 25 hrs. - 75 hrs.
6. Course of Draughting (Technical High School Projects) - 2 units of 50 hrs. - 100 hrs.

7. Theory of Advanced Draughting - 1 unit of 25 hrs. - 25 hrs.

Total - 16 units - 575 hrs.

Technological Group I, items 1 (a), 1 (b), 2, 4, and 5, were required subjects for the candidate wishing to obtain a High School Technical Certificate. If the candidate wished to obtain special draughting qualifications over and above other technical subjects, it was necessary for him to take all of the above listed categories. Men who possessed enough draughting experience to call themselves draughtsmen prior to entry into the teacher training programme, were exempt from items 1 (a), 2, and 50 per cent of item 3.

Technological Group II - Woodwork:

1. Educational Woodwork - 4 units of 25 hrs. - 100 hrs.
2. Bench-Work Practice - 4 units of 50 hrs. - 200 hrs.
3. Cabinetmaking (Elementary) - 2 units of 50 hrs. - 100 hrs.
4. Woodwork (Advanced) - 3 units of 50 hrs. - 150 hrs.
5. Wood-turning (Elementary) - 1 unit of 50 hrs. - 50 hrs.
6. Wood-turning (Advanced) - 1 unit of 50 hrs. - 50 hrs.
7. Original Course of Projects (Manual Training) - 2 units of 50 hrs. - 100 hrs.
8. Original Course of Projects (Technical High School) - 2 units of 50 hrs. - 100 hrs.
9. Theory (Wood-turning) - 1 unit of 25 hrs. - 25 hrs.

As with Technological Group I, high school technical qualifications could be obtained by taking only certain selected courses from the above list, namely items 1, 2, 3, and 5. Woodwork craftsmen were

exempt from item 2, which comprised bench woodwork. All courses, with the exception of item 7 (Manual Training Projects) were required for specialist qualifications in woodworking.

Technological Group III - Metalwork:

1. Sheet Metal (75 hrs.) - Art Metal (50 hrs.) - 5 units of 25 hrs. - 125 hrs.
 2. Machine Shop Bench Work - 3 units of 25 hrs. - 75 hrs.
 3. Sheet Metal (Advanced) - 2 units of 50 hrs. - 100 hrs.
 4. Machine-shop (Advanced) - 2 units of 50 hrs. - 100 hrs.
 5. Original Course of Projects - 2 units of 50 hrs. - 100 hrs.
 6. Theory Relating to Advanced Sheet Metal and Machine-shop - 1 unit of 25 hrs. - 25 hrs.
 7. Metalwork Practice (General) - 4 units of 50 hrs. - 200 hrs.
- Total - 19 units - 725 hrs.

For high school technical qualification Craftsmen were required to take items 1 and 2, while non-craftsmen were required to take items 1, 2, and 7. All of the courses listed were required for specialist qualification.

Technological Group IV - Electricity: (Comprising a total of 400 hrs., considerably less than either of the other three groups.)

1. Elementary (Practice) - 1 1/2 units of 50 hrs. - 75 hrs.
2. Elementary (Theory) - 1 unit of 25 hrs. - 25 hrs.
3. Advanced (Practice) - 3 units of 50 hrs. - 150 hrs.
4. Advanced (Theory) - 2 units of 25 hrs. - 50 hrs.

5. Original Course of Projects - 2 units of 50 hrs. - 100 hrs.

Total - 9 1/2 units - 400 hrs.

For high school technical qualifications, all candidates were required to take items 1 and 2. All courses listed were required for specialist qualification with the exception of electricians who were required to take only one third of item 3 plus items 4 and 5.

(12, 1930/31, pp. L 31-32)

Thus, it will be seen that a definite course of study had been outlined for instructors desirous of teaching industrial subjects in the elementary, junior, and senior high schools. In passing, it is worthy to note that such courses were offered only during summer-school sessions and only through special Saturday classes, all held in Vancouver Technical School. No provision had been made up to this time to have full-time courses offered during the academic year for those students wishing to complete all requirements during a shorter space of time. It was necessary for an instructor to qualify during his employment, necessitating that he annually journey to the city of Vancouver to obtain further courses towards the certificate he desired.

As mentioned before a third certificate, a Technical School Teacher's Certificate, was also available to those who desired to qualify themselves for technical school teaching. Although it is somewhat out of the scope of this report to consider technical and vocational education, it is worthy to note that the training course organized to qualify men for this certificate was to some extent

similar to that of the High School Technical Certificate. Pedagogy courses were required as with the other certificates. Technical courses, however, were of a much more comprehensive nature than those of the High School Technical Certificate requirements.

Where in theory applicants for the Manual Training Certificate and the High School Technical Certificate were drawn from both the ranks of Craftsmen and teachers, applicants for the Technical School Certificate were required to have served an apprenticeship in a trade and to have proof that they had reached "one hundred per cent of the requirements included in the analysis of the trade".

(12, 1930/32, p. L 32)

It may be seen from these requirements that it was possible for an intelligent craftsman, desirous of becoming an instructor, to work his way, certificate by certificate, from manual training level up to technical training level. Technical schools as such, however, were few and therefore there was really no great demand for technical instructors. Probably the most popular certificate among instructors was the High School Technical Certificate. High school technical options were becoming more popular among students, and school districts, under the advice of the Department of Education, at least agreed in principle to expansion of industrial arts and manual training facilities even though they may not have had the financial means at the time.

The fact that teacher training for industrial education was solely a summer school and special class endeavor does not seem to

have concerned the authorities at that time. Obviously the annual need for instructors was readily being filled. It is well to remember that during that period economic crisis existed and unemployment was rife, facts which to some extent probably added to the teacher supply. There was no great need at that time for those concerned with the training of instructors to worry about the source of prospective candidates as is the situation today. In those days of economic difficulty, teaching as a profession competed well with other more fortunate professions, hence, attempts to make the teaching profession and the teacher-training programme attractive were unnecessary. As explained by Drs. Putman and Weir five years previously, opinion among those concerned with the teacher-training programme strongly favored the trade-trained instructor rather than the teacher-instructor. The revision of certification requirements which took place at the onset of this period, at least on paper, modified entrance requirements to include both craftsmen and teachers of experience. This was in keeping with the recommendations expressed in the Putman-Weir Report.

The new programme, as illustrated in this chapter, seemed to please the authorities. John Kyle, reporting as the Director of Summer School Classes, stated:

The success of training courses for instructors in the subjects referred to in this report has been amply borne out by experience during the past ten or twelve years. No stability or sound progress is possible without them, and therefore a continuance of this policy is much to be commended for the future. (1, 1930/31, p. L 33)

Teacher training of suitable instructors for both manual training and industrial arts continued in this manner for the remainder of this period. Authorities, apparently unaware of the crisis which was to follow, seemed satisfied that the scheme thus evolved would take care of the needs well into the foreseeable future.

Manual Training, Industrial Arts and Technical Curriculum

Early in the year 1935 the Department of Education decided to embark upon a complete revision of the entire curriculum of public education, ranging from the elementary curriculum through to the high school curriculum. Up to this time only partial revisions of the curriculum were made year by year. (18, p. 130)

As a result of the revision, manual training, which consisted mainly of woodworking, remained largely as it was since considerable effort was being made by the Department of Education to persuade school districts which had not already done so, to alter their programmes to provide the enriched industrial arts programme. The day could now be foreseen when manual training would no longer exist as such.

Industrial arts, on the other hand, was to some extent altered and expanded. The Course of Studies for Junior High Schools for the year 1936 specifically detailed subject areas which were to be followed by the industrial arts instructor. These areas included woodwork, metalwork, draughting, and electricity, with skills in each area being particularly stressed. Woodwork, for example, contained the following

objectives, most of which stressed the acquisition of particular skills on the part of the learner:

1. To obtain through practical experience, some knowledge of the materials and equipment used in wood-working and wood-finishing.
 2. To learn the correct method of using the common woodworking tools through a gradual series of projects.
 3. To learn the correct methods of operating such machines as are part of the equipment, with emphasis on the use of safety devices.
 4. To understand the simpler scientific principles involved in the design of tools and machines.
 5. To cultivate the craftsman's appreciation and respect for good tools and carefully kept equipment.
 6. To develop some skill in the interpretation of the working drawings related to the projects made.
- (9, p. 537)

It may be readily seen that this particular area of industrial arts was developed mainly around processes and skills. It was felt, however, that a boy could receive maximum benefit from such a programme only if allowed, whenever possible, to design and plan his own projects. "To be a genuine project, the pupil should accept it as embodying his own purpose." (9, p. 536) To understand more readily the purposes of the total industrial arts programme, as conceived at this time, it is necessary to consider the general objectives as they appeared in this course of studies. They are quoted as follows:

1. To give the pupil some appreciation of the complex industrial society of the modern world through participation in processes simple enough for him to understand and perform.
2. To develop in socially useful directions the pupil's innate tendency to manipulation.
3. To afford opportunity for the working out of projects which give rise to problems and to thinking.

4. To give knowledge, habits, and skills useful in his home and vocational life and contributing to the worthy use of his leisure time.
5. To give a respect for honest labour and an understanding of its social significance.
6. To give an exploratory experience of possible vocational fields.
7. To give some vocational training to older pupils who are leaving school at the end of the junior high school period (Grade IX). (9, p. 536)

It is important to consider the make-up of the programme at this time in so far as it served as a foundation upon which subsequent industrial arts programmes were based. From the year 1936 to the present time, minor changes were effected in the programme, but many of the basic objectives and methods have remained to the present day.

With emphasis on the gaining of skills, which is evident from the statement of these objectives, it is little wonder that emphasis was also placed on obtaining instructors who were first craftsmen and secondly instructors.

At the end of this period (1930/39), the report of a committee appointed by the Department of Education to survey the schools in the Greater Victoria Area, further supported the industrial arts programme with the following statement:

Whether known as Technical Education or Industrial Arts, work of a vocational nature has a vital function in the general programme of junior high schools and senior high schools. It functions as 'general education' in the programme for High School Graduation or University Matriculation. It has particular significance in many courses where students will complete only a portion of a high school course. This work will differ in aims, in courses offered, and in the amount of time required. Some students may choose this work for its value in

connection with University options (leading to the field of engineering), some on the basis of general interest and for High School Graduation, and some students having decided that they will not attend a university, will disregard matriculation requirements and will major in technical subjects in order to take maximum of credits procurable in these courses and at the same time achieve high school graduation. Some students will have in mind special vocations such as ship building, naval engineering, electrical industries, etc. Many students, realizing that they will attend only one, two, or three years, will disregard even High School Graduation and endeavor to utilize the facilities of the school to give them better preparation for such occupations as may be available. (13, p. 60)

It was through a belief of the above philosophy that industrial arts existed, and even flourished to some extent, during this period of adversity. A belief that schools should not be maintained primarily for a select few prevailed and influenced the revision and adjustment of the curriculum to give as much as possible to as many as possible. The industrial arts programme, an outgrowth of the manual training programme, attempted to provide basic skill experiences to not only the university-bound student but also to the student who would soon find his way into the working world. For this reason, the industrial arts programme was limited to those basic skills common to most industries.

The high school industrial arts programme was somewhat more limited than the junior high school programme. Under this programme senior high students had a choice of one of two programmes, Technical "A" or Technical "B". Both of these courses were spread over a three year period. Industrial Arts "A" (as it was also known) consisted of a three year course in woodworking with draughting an integral part

of each year's work. Industrial Arts "B" embraced many aspects of the metal working field and, as with the woodworking course, draughting was also included each year. Just as in the junior high school programme, detailed operations, and tools to be used were outlined in the course of studies, leaving only the selection of suitable projects to the instructor and the student. (For further information see 13, pp. 112-119)

Effects of the Depression

Education, unlike many other public services, seems to be at a time of adversity one of the most susceptible to criticism and to attempts by economy-minded individuals at cutting the annual budget. One reason for this recurring problem probably lies in the fact that sources of revenue were, and still are, directly attached to the individual tax-payer and property owner in the form of an annual levy for the sole purpose of supporting at least a part of the school expenditures for his particular district.

During the trying 1930's considerable outcry was raised in the Province with regard to the burden of school taxes. Naturally, the costliest parts of the school programme were attacked first, these being the so-called "frills", officially termed Home Economics and Industrial Arts. The taxation burden grew to the point that in 1935 the Provincial Government appointed a Commission to investigate school finance in British Columbia. Dr. H. B. King, in the capacity of technical advisor to the commission, advocated in his report of

March 22, 1935, the building of larger shops and laboratories in an effort to reduce costs within the school system in which the practical subjects were the most costly subjects. Existing shops were presently designed to accommodate from twenty to twenty-four students at one time. In a standard class of forty pupils, assuming equal distribution of boys and girls, each practical subject room received twenty pupils at a given time resulting in the employment of three teachers, the home room teacher, who was then idle, and two specialist instructors. Dr. King's plan called for shops and laboratories designed to accommodate forty pupils at one time. Hence, under this plan each shop and laboratory would receive forty pupils per period, which would be sufficient accommodation to merit the sending of two classes to the practical subject rooms at one time. In the long run this plan would save the expense of employing two additional specialist instructors, a considerable saving in the school budget. In support of this plan Dr. King stated:

If the Home Economic and Industrial Arts rooms (shops and laboratories) were built large enough to accommodate forty students without crowding, competent teachers would be able to manage them.

If this policy were followed the practical subjects would be no more expensive than other subjects and their position in the school programme would be much more secure. (22, p. 149)

In support of his proposal that large groups could be handled in practical classrooms, King stated the most important requirement in the teaching of the practical subjects to the larger groups was the use of job sheets. He cited quotations from such institutions

as Boys' Vocational School in Baltimore, Maryland, Dunwoody Industrial Institute in Minneapolis, and the Supervisor of Industrial Arts for the city of Buffalo. All supported the use of job sheets for the purpose of effecting economy in education. The Principal of the Baltimore Vocational School was quoted as approving the use of job sheets to cover as much as ninety per cent of the total instruction given in the school. (22, p. 149)

During the school year 1933/34 the city of Vancouver had instituted courses in manual arts for pupils of the first six grades in an endeavor to better prepare them for the manual training and industrial arts courses to come. Manual arts did not require specialist teachers. Academic teachers, by taking one or two summer courses in this subject, were fully prepared to teach it. King viewed this course with admiration and saw economic possibilities such a course would have if it could be applied to the upper grades, particularly those concerned with junior high level. He stated his suggestions as follows:

From the standpoint of economy, the main advantage which this system had when taught at the junior high school level, above manual training, was that specialist teachers were not required. Classes were given in the home rooms with no great outlay of funds required.
(22, p. 149)

Summing up his recommendations concerning the teaching of the practical subjects in the Province, King outlined four major points:

1. Larger classes in the present junior high schools.
2. The conducting of elementary schools upon the platoon principle where junior high schools are not feasible.

3. The grouping of two or three adjoining small elementary schools so that they can be conducted as one school upon a platoon basis.
4. The teaching of Manual Arts instead of manual training and home economics when the teaching of these subjects would be unduly expensive. (22, p. 150)

Dr. King's recommendations regarding the teaching of industrial arts, fortunately, were not carried out. The public, at that time, seemed to be more concerned with his proposals to completely re-organize the educational system of the Province, and particularly with his suggestion that all public education should come under the direct finance and control of the Provincial Department of Education rather than the many individual school districts then in existence.

Considerable public reaction was evident at the beginning of that period concerning what seemed to be the heavy tax burden carried by the property owner with respect to the support of schools. During the 1932 Legislative Session the Minister of Education, Hon. Joshua Hinchcliffe, proposed that he would be in favor of supporting legislation which would place the disposal of "frill" subjects, (manual training, industrial arts, and home economics) in the hands of municipal councils rather than in the hands of school boards, which was then the case. For the sake of economy aldermen could then decide whether to continue practical education or whether to embark on a policy of retrenchment, at least temporarily. This proposal added considerable fuel to the problem of educational control which had been raging for some years between school boards and municipal authorities throughout the Province. The practical

subjects unfortunately became the bone of contention which, according to the editor of the Victoria Daily Colonist, "aldermen have found in the so-called educational frills what they conceive to be a useful stick to beat the recalcitrant School Boards with, and they are using it." (17) Opposition from both school trustees and parent-teacher organizations made itself known and such legislation was not presented to the legislature during that session. The editor of the Vancouver Daily Province aptly commented on the matter of retrenchment in the area of practical education as follows:

Our universities cater to the needs of only one or two per cent of our people. But they are not regarded as frills, nor are the professional schools of law, medicine, theology, and engineering. In fact, our whole educational system is arranged to provide a well lighted and nicely paved pathway to the university and the professions. If too many people follow the pathway that is the fault of the system. The 98 per cent of our people who never reach the university follow the paved and lighted pathway part of the way, then for one reason or another, lack of money, lack of ability, lack of interest, they drop off and take to the muddy and unlighted byways. Attempts have been made from time to time to improve these byways and brighten them a bit, to make them lead somewhere, to definite trades, to business, to better homes, to more healthful surroundings, to further appreciation of art, to a more practical or more pleasurable employment of leisure. But whenever the attempt is made, someone is sure to shout 'educational frills' and too often the shout is taken as an argument.

(16)

With the aid of gradually increasing public support, manual training and industrial arts managed to survive the economic crisis of the depression. Both the pressure of unemployment and the realization that the school system as a whole was somewhat responsible for giving the many non-university students something more than

reading, writing and arithmetic, seemed to have further strengthened the position of the practical subjects in the school curriculum.

Retirement of John Kyle

The year 1938, at the close of this period saw the retirement of John Kyle who, for twenty-five years, had directed the course of industrial arts in the Province of British Columbia. Through his unflinching efforts, first manual training, and then industrial arts had survived the austerity of the depressions and the criticism of the public. In his final report, 1937/38, Kyle cited the following accomplishments which had been realized in the Province during his term of office as Officer in Charge of Technical Education. High school technical options applicable for university entrance had been established. Teacher-training classes for instructors had been established by means of summer school sessions. Technical schools, night schools and correspondence courses had been instituted during this period. In spite of the voluntary nature of manual training and industrial arts, school boards throughout the Province had taken the initiative and established centers. In tribute to his fellow workers in education, Kyle said:

... I have had great satisfaction in my work as Director of Technical Education, and will look back with pleasure on the years I spent with helpful colleagues and a staff of reliable, earnest, hard-working and progressive men. (12, 1937/38, p. J 41)

During the same year, F. T. Fairey was appointed to succeed Kyle.

Growth of Industrial Arts During This Period

Table V illustrates the amount of growth which took place in the Province throughout this period. In-so-far as statistics for junior and senior high enrolments were given separately at the beginning of this period and then given as one through the remainder of the period, the writer has chosen to combine these enrolments for the entire period. Thus enrolments are given for elementary classes, which were in effect, manual training woodwork classes, and for junior and senior high schools, combined.

TABLE V

NUMBER OF CENTERS, INSTRUCTORS, AND STUDENT ENROLMENT FOR
MANUAL TRAINING AND INDUSTRIAL ARTS CLASSES FROM 1929/30 TO 1938/39

Year	Centers	Instructors	Enrolment		
			Elem.	Jr. Sr. High	Total
1929/30	114	91	9477	5702	15,179
1930/31	139	96	8475	6508	14,983
1931/32	140	95	8739	6689	15,428
1932/33	132	89	7965	5392	13,357
1933/34	130	88	8281	4977	13,258
1934/35	133	87	7364	5453	12,817
1935/36	138	94	7574	5966	13,540
1936/37	139	101	6849	6957	13,806
1937/38	132	99	5455	8185	13,640
1938/39	141	112	5001	9086	14,087

Public Schools Reports, 1929/30 to 1938/39.

It may be observed from the table that a gradual decrease in elementary enrolment was taking place. This may be largely

attributed to the fact that more and more school districts were enlarging their programme to include industrial arts. As a result their enrolments were re-classified as junior high school industrial arts.

Summary of Chapter Five

Amid severe difficulties and at a time when school taxes weighed heavily upon the individual taxpayer, manual training and industrial arts survived. Little expansion took place during the first half of the period 1930 to 1939. During the latter half of the period, economic conditions having to some extent improved, increases were evident in the number of centers, instructors, and student participants.

Regulations governing the certification of instructors were revised to include definite steps of advancement for those instructors willing to further their education by means of summer school sessions and special Saturday classes. Summer sessions and Saturday classes were the only means available to instructors, by which they could qualify for advanced certificates, for as yet no full-time training course had been instituted.

The Department of Education embarked upon a complete revision of the public school curriculum, stressing the junior high school and practical subjects such as industrial arts. As a result, manual training facilities were outmoded and school districts were encouraged to alter their facilities to include the enriched industrial

arts courses. The new curriculum emphasized the major role which the school should play in providing skills suitable for those individuals who would find their way into industry and business. This utilitarian aim proved to be in keeping with the prevalent policy of obtaining instructors for industrial arts who were trade-trained, or at least had had trade experience.

Strong public reaction, prejudicial to practical subjects, had prevailed during the greater part of this period. It was evident by the end of the period that public opinion was growing increasingly in favor of the values which could be gained from these subjects.

CHAPTER VI

INDUSTRIAL ARTS DURING THE WAR YEARS 1939 TO 1945

Upheaval caused by war, although appearing on the surface as being generally disrupting to existing institutions, often results paradoxically in changes for the better. Industrial arts, having survived the retrenchments of the "hungary thirties" faced the war years with high spirits and the knowledge that the battle for its existence was practically won. The war which in some respects imposed hardships upon the educational system as a whole, nevertheless gave industrial arts a new lease on life by providing some new objectives and renewing support for some of the old objectives.

The Question of Teacher Supply

Up to the beginning of World War II no great difficulty had been encountered throughout the Province in the matter of obtaining suitable recruits for the teaching profession. The practical subjects were no exception for the industrial arts instructors up to this time had been recruited from two main sources, the ranks of capable craftsmen and the ranks of interested and properly certified academic teachers. The emphasis, however, was largely in preference of the crafts-trained instructor.

Demands made on manpower at the onset of the war soon altered this situation. Instructors who felt it their duty to enlist in

one of the armed services left vacancies which were somewhat difficult to fill. The training programme up to this time had operated on a policy of filling vacancies as they arose, and with no full-time course being given at the time, no instructors were then in training to meet future needs.

To meet the approaching teacher shortage, F. T. Fairey, Officer-in-charge of Industrial Education, reported that renewed efforts were being made to induce teachers in service to take courses of instruction necessary to satisfy the requirements of industrial arts certification. He added that new men were also being recruited from industry, who had a satisfactory educational background. (12, 1940/41, p. D 61) With manpower at a premium due to the demands of the armed forces and industry, one can readily imagine the difficulty encountered in obtaining sufficient instructors for industrial arts.

By the summer of 1942, Fairey reported that summer school classes for industrial arts had experienced the lowest attendance in history, with only thirty-nine trainees. Since capable men had left for either the armed services or industry, some small centers would be forced to close at the end of the school year. For those who remained in the teaching profession throughout the war, industry offered lucrative employment during summer vacations.

Summer sessions, despite their small enrolment, continued to function. Expressing regret at the small enrolment, the Officer-in-charge of Industrial Education stated:

The numbers attending are not as large as they should be. Teachers whose qualifications are not complete sometimes have felt it their duty to spend their summers in connection with some war effort. It is my opinion, however, that, despite the valuable experience so gained, they would be well advised not to omit opportunities given them at Summer School. Their duties throughout the year in connection with giving instruction to the young students in the public schools of the Province are too important to be neglected and the Department cannot continue to permit partially qualified instructors to teach if they do not take advantage of the opportunities which the Department provides for them to increase their teaching skills. (12, 1942/43, p. B 57)

By 1944 an end to the war could be foreseen. The Second Front was successfully routing the enemy out of France and advancing toward the German capital of Berlin. Many of the instructors who had enlisted would return to their former positions, thus alleviating much of the teacher shortage. Although many of the instructors who were carrying on the work at home were far from being fully qualified, Fairey felt that much credit was due them for having endeavored to maintain a high standard of work, and he added that they would continue to improve as long as they faithfully attended Summer School. (12, 1943/44, p. B 58)

By the spring of 1945, the outlook for an ample supply of industrial arts instructors began to look brighter. Many returned veterans had expressed a desire to become industrial arts instructors. In conjunction with the Regional Director of Canadian Vocational Training, who acted by authority of the Veteran's Rehabilitation Act, A. R. Lord, Principal of the Vancouver Normal School, and H. A. Jones, Inspector of Technical Classes, arranged full-time classes for

twenty interested veterans. These classes, which lasted for the period of a year, qualified the men to teach industrial arts in elementary and junior high schools throughout the Province. The supply of instructors was further insured by the fact that a class of another ten veterans was then waiting to commence similar instruction during the following year. Considerable optimism was expressed by the authorities to the effect that the addition of these men to the ranks of industrial arts would add considerable incentive and varied experience to the profession.

A further advantage was gained by the admission of returned veterans to the profession. Through the provisions of the Veterans' Rehabilitation Act, the Federal Government undertook to pay the cost of training these men, thus alleviating much of the financial burden which otherwise would have had to be borne by the Province.

It is worthy to note at this time that some concern was felt regarding the methods which, up to this time, had been in use for the training of industrial arts instructors. Fairey expressed concern about the Summer School method of training instructors by stating that he did not feel this method had proven entirely satisfactory. The time which elapsed between the beginning of an instructor's training and the completion, in many cases, had proven too long. Many, through sporadic attendance at summer school sessions, had become discouraged and thus discontinued their training. There were those however who persevered and year by year drew closer to the day when their certificates could be made permanent. (12, 1944/45, p. Y 66)

Difficulties resulting from this system were partially overcome by granting credit for courses which some instructors had taken elsewhere. This became particularly true in the case of veterans where credit was granted for some courses which they had taken while in the service. It is evident however, that authorities were beginning to think in terms of full-time courses for instructors, thus shortening the training period.

By the end of the war period prospects for enough teachers to fill existing vacancies had brightened, at least temporarily. Veterans promised to provide an ample source of instructors until the time when rapid increase in both school enrolment and school building again created grave teacher shortages.

Instructional Problems Resulting from the War

Heavy demands upon society in the form of manpower, materials, long hours of work, partial supervision of the home while the mother worked in war industry, and in many cases the absence of the father, caused untold problems, one of the most serious being juvenile delinquency.

The schools along with other agencies in the community were called upon to render as much help as possible in an effort to curb delinquency. Dr. H. G. King, then Chief Inspector of Schools, stressed the importance of guidance as a means of providing some direction for young people.

In the industrial arts classes students were encouraged to build home workshops. Teachers were asked to encourage boys in making their own box of tools and beginning home workshop projects which "would stimulate the creative instincts of the boy, enrich his home life, and contribute something to the widening of his social contacts with wholesome companions of similar tastes." (12, 1942/43, p. B 52)

Shortages of materials, particularly metal, further aggravated the teaching situation. Considerable ingenuity, however, was shown on the part of both instructors and students in utilizing scrap metal such as old auto parts and discarded tin-plate containers.

Projects useful to the promotion of the war effort were also encouraged. Fairey reported that splendid contributions had been made by industrial arts students to the war effort. He stated that several projects had been undertaken by industrial arts classes to assist local Red Cross and A.R.P. (Air Raid Patrol) authorities. Clubs had been formed for the purpose of making model aircraft useful to members of the armed services for recognition and range estimation purposes. (12, 1941/42, p. B 56)

Further activity was evident in some junior high schools at this time, where students were constructing quantities of toys to be sent to British children who were somewhat less fortunate than themselves. This activity was heartily commended by the Officer-in-Charge of Industrial Education as being both educationally useful and patriotic. (12, 1943/44, p. B 52)

Beginnings of General Shops

The general shop, or the multiple activity shop as the term is now popularly conceived, was not as yet in general use in the Province of British Columbia. During this period, however, the term general shop came into limited use to describe those shops which were concerned with more than one activity, (i.e. wood and metal). The industrial arts programme as inaugurated some years previously included four main activities, woodwork, metalwork, draughting, and electricity. An obvious problem arising from the inclusion of this multiplicity of activities in one programme centered around the type of shop or shops which would be most suitable for the teaching of such activities. For those districts which had originally built shops to conform to the old manual training requirements, the addition of metalwork and electricity meant that the district would have to be prepared either to bear the cost of a separate room or, space allowing, to include metalwork and electricity in the same room as was then occupied by woodworking facilities. Not only were the old shops converted into so-called general shops, but new junior high school shops were erected on the general shop plan. Mr. Fairey reported in 1943 that many instructors had re-planned their shops into work areas, so arranged as to place all tools, equipment, and supplies in convenient locations for quick and efficient use.

(12, 1943/44, p. B 51)

The following year Inspector of Technical Classes, H. A. Jones, observed that some progressive teachers had stimulated greater pupil interest and had created more pupil satisfaction by combining media in the design of projects. (12, 1943/44, p. Y 60)

The choosing of multi-material projects was therefore being encouraged. Endeavors to correlate industrial arts with other departments in the school, through pupil-designed projects, were purported to give added meaning and application to science, mathematics and art.

Industrial Arts and War Time Emergency Training

The year 1940 saw the founding of the War Emergency Training Programme, which was designed to provide free technical courses to those adults and youths willing to contribute their efforts to war industries. Through the aid of Federal and Provincial funds, training classes were organized in various centers throughout the Province. Whenever possible such classes utilized existing industrial arts facilities and instructors. One of the main courses offered by the programme prepared youths, who had not yet reached enlistment age, for aircraft trades such as aircraft sheet metal, air frame construction and repair, and instrument repair.

With such a programme in operation, it is obvious that many youths left their studies in high schools and technical high schools in preference to this training, which would give them almost immediate employment. Boys fortunate enough to have gained shop

experience in high school industrial arts classes, found little difficulty in obtaining a position with either ship or aircraft building industries.

During the war years, as a result, there was a marked decrease in high school enrolment as noted from Table VI. City high schools seemed to suffer most of the losses, war industries being generally situated in and around the cities.

Fairey, in his 1941/42 report, warned that it was not always the best policy for a student to withdraw from high school to enter industry:

It is my duty to repeat a warning which I made last year, that the withdrawal of boys and girls from high schools before they have received training comparable to their capacities is something which should be discouraged. Industry continues to call for the better educated and better skilled. It is very unwise to encourage young people who have the capacity for further training to leave school before graduation. (12, 1941/42, p. B 56)

Industrial Arts Options for University Entrance

For some years industrial arts options, taken by the high school student in lieu of a second science or language, had been offered for credit towards university entrance. In order to gain credit for these options, students were required to write departmental examinations in both Industrial Arts Option "A" and Industrial Arts Option "B". The Department of Education decided in 1944 to discontinue examinations and allow the instructor and the principal concerned, in conjunction with the Inspector of Technical Classes, to decide

TABLE VI

HIGH SCHOOL ENROLMENT IN THE PROVINCE OF BRITISH COLUMBIA
FROM 1939/40 TO 1944/45

Year	Cities	Municipal District	Rural District	Total
1939/40	17,276	4,804	2,356	24,436
1940/41	16,775	4,362	2,431	23,568
1941/42	15,874	4,104	2,206	22,184
1942/43	13,572	3,553	1,994	19,119
1943/44	13,561	3,732	2,030	19,323
1944/45	15,012	4,186	2,226	21,424

Public Schools Reports 1939/40 to 1944/45.

the merits of a boy's work with regard to the granting of credit. These courses leaned heavily towards vocational training, and it was anticipated that they would be of particular use to the boy who intended to pursue a science course in the university. Drawing was given particular emphasis, as described by Fairey:

Drawing in the high schools has steadily improved. This training has been much appreciated by men in industry as well as by those students who are intending to take a Science Degree in the University.
(12, 1942/43, p. B 52)

These courses, however, did not seem to be very popular among high school students, for during the school year 1942/43 only sixty-seven students from fifteen high schools attempted to gain credit from these options. (12, 1942/43, p. B 52)

Growth of Centers and Enrolment

As may be seen in Table VII the number of centers offering industrial arts during this period remained almost the same. Largely through a lack of instructors many centers were closed from 1942 to 1944. Enrolments, although lower in the high school classes, gradually increased in the junior high shops. It will be noted that enrolment in the elementary classification was gradually decreasing. Since this enrolment represented the number taking the old manual training course, it should be remembered that gradually school districts were converting their old facilities in order to accommodate a more complete programme called industrial arts. Hence, as more of these shops were converted into industrial arts centers the class enrolment became categorized as industrial arts rather than manual training.

Appointment of H. A. Jones

The close of the war period saw a further personnel change. Dr. F. T. Fairey, who had during this period served as Officer-in-Charge of Industrial Education, was elevated, in 1946, to the position of Deputy Minister of Education. H. A. Jones, who had been serving as Inspector of Technical Classes succeeded Dr. Fairey as head of industrial education for the Province.

TABLE VII

NUMBER OF CENTERS, INSTRUCTORS, AND STUDENT ENROLMENT FOR MANUAL
TRAINING AND INDUSTRIAL ARTS CLASSES FROM 1939/40 TO 1944/45

Year	Centers	Instructors	Enrolment			
			Elem.	Jr. High	Sr. High	Total
1939/40	153	119	4596	6185	3160	13,941
1940/41	160	127	3690	6752	3468	13,910
1941/42	161	126	3796	6873	3583	14,252
1942/43	153	120	3415	6900	3024	13,338
1943/44	152	122	3525	7383	3084	13,992
1944/45	151	124	3394	7944	4076	15,414

Public Schools Reports 1939/40 to 1944/45.

The Industrial Arts Pool

During the war years when a shortage of instructors for industrial arts had resulted in the recruiting of many instructors with limited qualifications, a plan conceived to provide instructional aids to those instructors who wished to use them, was put into effect. Known as the Industrial Arts Pool, plans of projects, teaching aids in the form of instruction sheets, and sheets containing shop planning ideas were gathered and distributed by H. A. Jones, then Inspector of Technical Classes. All instructors throughout the Province were invited to contribute to the "Pool". The Industrial Arts Pool operated successfully for some years, many of the

instruction sheets then circulated still being in use. Since about 1950, however, most of the work done by the Pool has been taken over by the British Columbia Shop Teachers' Association, which through its quarterly bulletin, "The B. C. Shop Teacher", now devotes considerable space to the diffusion of professional information.

Summary of Chapter Six

Demands made upon manpower during the war created a serious teacher shortage which lasted until the later part of 1944. Veterans, returning from the war showed some interest in the teaching profession, hence training classes were started in Vancouver under the auspices of the Federal Department of Veterans' Affairs and the Provincial Department of Education. The influx of veterans into the teaching profession greatly stimulated activity in the field of industrial arts.

The inauguration of veterans' classes for teaching instructors-in-training, marked the beginning of full-time training classes.

Although grave shortages of materials existed during the war years, classes continued, making considerable use of salvageable materials.

The patriotic endeavors demonstrated by many industrial arts classes did much to enhance the value of industrial arts. This, coupled with class work demonstrated under the War Emergency Training Programme brought the values of industrial arts to the attention of the public.

General shops grew more popular as a result of the need for facilities which would provide the full industrial arts programme without incurring the cost of unit-type shops. The organization of existing shops into work areas was generally encouraged by the Department of Education.

Despite teacher shortages the industrial arts programme flourished during the war period. Although some centers had been forced to close, revival was evident at the end of this period.

CHAPTER VII

INDUSTRIAL ARTS SINCE THE SECOND WORLD WAR

The ending of the 1939 to 1945 world crisis was marked by considerable optimism for the future. The Allies, having suppressed the forces of tyranny in Europe and the Far East, now looked to the future with the hope that world peace may have at last arrived. Canadians looked to the future with particular fervor, for it was soon realized that in order to maintain a standard of living which had by now reached an all-time high, this country would have to prepare itself for imminent world trade competition.

The war had brought on improved methods of production throughout the country. New materials now in common use, the need for homes, and the realization from the experience of the war that there was still a great need for the expansion of both humanistic and industrial education throughout the country, prompted Canadians to take up the task of educating the youth of the country with renewed vigor.

The war had demonstrated realistically that there was a great need for technically competent individuals. Industrial arts had now reached the point where its values to the general education of youth had become very apparent. H. A. Jones optimistically described the role of industrial arts as follows:

The industrial arts programme should satisfy the needs of the pupil, and it is well to appreciate the fact that these have changed since the war. With the

development of new machines, and new processes and techniques new situations have arisen and the courses should be arranged to meet present and future conditions. Regardless of their future vocations or professions, pupils, when they work in school shops, meet on common ground. Here they may create material things in accordance with their individual ideas and interests and, in doing so reveal their own interpretation and understanding of modern industrial civilization. Here they may explore and experiment and make use of Mathematics, Science, and any other subjects. The finished project is a tangible result of technical knowledge and skill, and is also an expression of the full, integrated personality of the individual. (12, 1945/46, p. MM 52)

The period following the war was to witness unprecedented expansion of all educational agencies and in particular industrial arts.

Increase in School Population

It was seen in previous chapters that throughout the 1930 to 1939 period the total school population, although showing minor fluctuations, generally remained stable. During the war years, 1939 to 1945, a decreased school population was evident at the beginning and a steady increase was evident during the latter part. As may be seen from Table VIII, the school population had generally been increasing at an increasing rate during the period now under consideration.

It is evident from the figures given in Table VIII that the total school population of the Province had been increasing rapidly. To meet this increase, expansion of school facilities had necessarily been increased. Along with added classrooms school districts,

enlarging their school systems, also added industrial arts shops to accommodate increased numbers.

TABLE VIII

TOTAL SCHOOL ENROLMENT IN THE PROVINCE OF BRITISH COLUMBIA
FOR THE SCHOOL YEARS, 1945/46 TO 1955/56

Year	Enrolment	Increase	Per Cent Increase
1945/46	130,605	7,222	5.3
1946/47	137,827	8,881	6.45
1947/48	146,708	9,807	6.7
1948/49	155,515	8,697	5.7
1949/50	164,212	9,142	5.55
1950/51	173,354	9,287	5.35
1951/52	183,112	12,974	7.15
1952/53	195,290	14,923	7.65
1953/54	210,174	13,178	6.25
1954/55	223,840	14,064	5.9
1955/56	240,674		

Public Schools Reports, 1955/56.

Expansion of Industrial Arts Facilities

Coupled with the expansion of school population, industrial arts facilities were increased throughout the Province. New centers were established in many districts which had not included up to this time

either manual training or industrial arts in their school programmes. Centers also grew in those areas where the increased school population made the building of additional schools necessary. Table IX provides an indication of the growth of these centers.

TABLE IX

NUMBER OF CENTERS, INSTRUCTORS, AND STUDENT ENROLMENT FOR MANUAL TRAINING AND INDUSTRIAL ARTS CLASSES FROM 1945/46 TO 1956/57

Year	Centers	Instructors	Enrolment			
			Elem.	Jr. High	Sr. High	Total
1945/46	158	135	3451	7499	4118	15,068
1946/47	158	150	3392	7797	4427	15,616
1947/48	175	162	3141	8097	4407	15,645
1948/49	198	173	3742	8945	3898	16,585
1949/50	216	188	4188	9988	4280	18,456
1950/51	236	204	2941	11,983	4247	19,171
1951/52	253	226	3609	13,268	5861	22,738
1952/53	253	251	----	15,611	6966	22,577
1953/54	256	262	----	13,379	5983	19,362
1954/55	276	301	----	14,692	7146	21,838
1955/56	318	330	----	14,821	13,381	28,202
1956/57	N.A.	364	----	20,862	6865	27,727

Public Schools Reports 1945/46 to 1956/57.

In the wake of this expansion, desirable trends and changes resulted. New schools, particularly new junior high schools which were built in the Province, now accommodated industrial arts classes in modern shops which boasted the inclusion of modern up-to-date equipment. The 1947/48 report of the Director of Technical Education amusingly revealed the following situation:

New junior high schools now being planned provide adequate shops with ideal working conditions. The expansion of Industrial Arts has justified the move from basement rooms to spacious well-lighted, well-equipped shops. (12, 1947/48, p. JJ 40)

The general shop idea, although rather more limited than similar shops in the United States, became more popular. In the junior high schools the general shop became somewhat of a standard, particularly since increased facilities also meant increased school building costs. The unit type shop, however, remained throughout this period in the high schools. At the close of this period consideration was given to the establishment of general shops in such cities as Victoria and Vancouver, where additions to existing schools did not merit the building of a complete set of unit shops. As will be discussed under the heading of curriculum changes, a general-shop programme for high school students was instituted during the latter part of this period.

Personnel changes were effected during the period, which saw the retirement of H. A. Jones, who for eight years had served in the capacity of Director of Technical and Vocational Education. It will be noted that Mr. Jones was appointed to this position in 1946, the

office carrying the name of Organizer of Industrial Education. The name, Director of Technical and Vocational Education, was given to the position in the year 1947. The duties of the Director were largely concerned with technical and vocational education in the Province, hence, Industrial Arts was largely administered by the Inspectors of Technical Classes, as it is today. On the retirement of Jones, J. S. White, formerly Supervisor of Industrial Arts and Night Classes for the city of Victoria, was appointed to the position.

The work of annually inspecting the many industrial centers in the Province increased to the point where it was found necessary to appoint an Inspector of Technical Classes. Brigadier J. E. Sager, who having recently completed a distinguished career in the army overseas, was chosen to carry out these duties. His untimely death during the year of his appointment was a shock to both his friends and the teachers with whom he associated. In July of 1946, Lieutenant-Colonel C. J. Strong was appointed to carry out the duties of Inspector of Technical Classes. By the year 1951 the work of inspecting again became too much for one man, hence, T. A. Quayle, formerly director of teacher training classes at the Vancouver Vocational Institute, was also appointed Inspector of Technical Classes.

Teacher Training

Many veterans returned from the war, showed a definite interest in entering the teaching profession. As related in the previous

chapter, classes organized on a full-time basis had been established in Vancouver. At the end of the first year's course, twenty veterans had completed a one year training course and had found positions in schools which had been forced to close owing to the wartime shortage of teachers. A further class was under training during the following school year, 1946/47.

Considerable optimism was felt towards the influx of veterans into the ranks of industrial arts teachers. Writing in the Public School Report for the year 1946/47, Inspector of Technical Classes, Colonel C. J. Strong stated:

The schools are now being staffed by young veterans who have brought new visions, better standards, and better leadership ability. Instead of taking years of training at Summer School, these men have been able to complete their training and obtain their certificate in a much shorter time. Thus our schools are staffed by better-trained men than ever before. (12, 1946/47, p. Y 42)

Beneficial as this one-year training programme was, these men, through the course of one year, completed the requisites necessary to teach junior high school industrial arts only. In order to obtain a high school certificate it was still necessary to return to Summer School. In an attempt to speed up the process of certification correspondence courses, under the auspices of Dr. E. Lucas, Director of the High School Correspondence Branch of the Department of Education, and Dr. H. P. Johns, Director of the Summer School, were offered to instructors wishing to further their qualifications during the winter months.

By the end of the 1946/47 school year, the Inspector of Technical Classes reported that up to this time over seventy veterans had been trained and placed in positions. He further stated that the training of veterans had now come to an end and that, owing to the rapid pace at which school building was taking place and the prospects of many men retiring, the Department would soon have to consider establishing a new teacher-training programme. (1, 1947/48, p. JJ 39)

During the early part of 1949 the Department of Education complied with the above recommendation by establishing a teacher-training unit in the new Vancouver Vocational Institute. Shops in the Institute were rented from the Vancouver School Board, and equipment was supplied by the Department of Education. The programme offered was similar to the veterans' programme, in that the courses preparatory to junior high school industrial arts qualification were given on a full-time basis for the period of one year. Prior to the completion of Vancouver Vocational Institute, classes were held on a temporary basis in Slocan School in the same city.

Under the provisions of the Vocational Schools Assistance Agreement, the Federal Government agreed to pay one-half of the cost incurred in the training of industrial arts and vocational instructors, provided the Provincial Government agreed to pay the other half. The Provincial Government readily agreed and the classes were begun on both a full-time and a part-time basis. The first class consisted of ten part-time students and twelve full-time students. Apart from

night school classes which were made available to industrial arts teachers in both Victoria and Vancouver, classes at Vancouver Vocational Institute and Summer School classes remained the sole means of training industrial arts instructors until the year 1956/57 when an emergency programme was organized at Vancouver Vocational Institute to aid in fulfilling further needs for industrial arts teachers. This programme, in operation at the present time, seeks candidates from high school graduating classes, trade personnel, and certified teachers. Operating ten months of the year and eight hours per day, the students enrolled, complete all technical requirements necessary for them to qualify for what is now known as the Secondary Basic Certificate in Industrial Arts. During this time the student has not taken any professional courses. A full complement of these courses must be taken by the student either through night school classes or summer school classes, in order to complete the requirements for the Secondary Basic Certificate.

Also during 1956/57, the Department of Education implemented vast changes in the teacher training requirements for the whole Province. Beginning in the year 1957/58, all training taken by any teacher in the Province from Provincially established schools, (i.e. Vancouver or Victoria Normal Schools, or the College of Education, University of British Columbia) would be based upon the requirements necessary to attain the degree of Bachelor of Education. Presently, both academic and industrial arts teacher-training courses are based upon a university degree programme. In the summer of 1957 the vast

job of converting existing credits held by teachers throughout the Province into equivalent university credits, was undertaken.

It is anticipated that the training of Industrial Arts teachers will be shifted from the Vancouver Vocational Institute to a new site situated within the College of Education at the University of British Columbia. Preliminary plans, estimates, and specifications have already been drawn up for an industrial arts wing to be connected to the Education Building at the University, and it is anticipated that final approval will soon be given, thus beginning a new era in teacher-training of industrial arts instructors in the Province of British Columbia.

Improvements in Curriculum

Generally speaking the industrial arts curriculum, apart from some minor changes, has remained somewhat the same throughout this period. In certain localities such as Victoria and Vancouver, changes had been made commensurate with the requirements of the War Emergency Training Programme. These, however, were discontinued in 1945 when the end of hostilities was near.

Revisions had last been effected during the years of 1936 to 1939. At that time the curriculum had taken the form of two separate bulletins, one for the junior high school industrial arts, and another for the senior high school technical courses. The technical courses were defined in the course of studies as follows:

Technical courses refer to those sections of Industrial Arts dealing with wood, metal, and electricity, through the shops or draughting-rooms.

Industrial Arts has been well defined by Dr. Frederick G. Bonser, 'Industrial Arts is a study of the changes man makes in materials to increase their values to meet needs of the appropriate usage of products made, and the social advantages and problems resulting from the making of these changes and products'. (14, p. 5)

Thus, although termed technical courses, these were in reality a continuation of the junior high school industrial arts programme, a fact borne out in subsequent revisions.

By 1947 the Department of Education decided that the time was ripe for a major revision of the curriculum. A committee, comprised of Department representatives and mostly industrial arts instructors, under the chairmanship of Lieutenant-Colonel C. J. Strong, Inspector of Technical Classes, revised the industrial arts section of the curriculum and presented an experimental edition of the revisions in 1948.

The major change which took place as a result of the revision centered around the reconstruction of the high school programme. The name of the high school courses was changed from "Technical Courses" to "Industrial Arts". The new curriculum included both junior and senior high school programmes. The course numbering system previously in use was altered in an effort to give some continuity to the whole industrial arts programme. This revised numbering system persisted and in most respects is very similar to that described in the following chapter.

Whereas the old curriculum contained courses in aeroplane construction and automotive engineering, these were dropped and provision was made for an enlarged sequence of courses in farm mechanics, more in keeping with the needs of the rural communities. Arts and crafts work, a new departure in curriculum making, made its debut in the 1948 curriculum bulletin (10, p. 6). Since some community schools did not contain sufficient enrolments to merit the expense of installing industrial arts facilities, arts and crafts was recommended as an economical substitute. Arts and crafts, however, was doomed to a short existence. As a result of the 1957 revision, it was discontinued.

A significant change, noted in the 1952 revision of the industrial arts curriculum, featured the establishment of industrial arts as a major field of study, ". . . having equal status with other subjects for High School Graduation (University entrance)".

(4, p. 12) In principle, this option proved somewhat similar to the previously described Industrial Arts "A" and "B" options. The latter were discontinued and superceded by the industrial arts major. Subsequent minor changes provided for the completion of a similar major for those students not seeking university entrance. The requirements for the completion of an industrial arts major, as presently in effect, are outlined in the following chapter.

Under the 1952 revision of the curriculum, general shop courses involving woodwork, metalwork and draughting were instituted. These courses, designed for the small school where enrolments did not

justify separate provisions for both woodwork and metalwork, were given the same status as other high school industrial arts courses, and a general shop sequence was thereby made applicable to either university entrance programmes or high school graduation programmes.

Farm mechanics, which had for some years been incorporated in the industrial arts programme, entered the agriculture programme in 1957. Agriculture instructors were either previously qualified or have since qualified themselves to teach these shop courses in rural communities. (5, p. 13)

Summary of Chapter Seven

The end of hostilities and the beginning of what was anticipated to be an era of peace was ushered in with optimism. The obvious lack of trained technical personnel, aptly demonstrated during the crisis, caused educationists and members of the public to approach education with renewed vigor.

The war had ironically pointed out the values of practical subjects such as industrial arts, hence these expanded parallel to the unparalleled school expansion which took place following the war.

Training veterans had temporarily solved the instructor shortage problem. Needs, however, soon outgrew the supply and new sources of instructors were sought. Finally an emergency training programme and later a full university training programme were established, in an attempt to fill the demand for trained industrial arts instructors.

Curriculum revisions provided for a full industrial arts major, at the high school level, applicable to either university entrance or high school graduation.

CHAPTER VIII

THE PRESENT STATUS OF INDUSTRIAL ARTS

In this chapter, data are presented which are of such nature as to give the reader an accurate estimate of the status industrial arts now enjoys in the Province of British Columbia.

These data were obtained from two main sources; the bi-annual reports submitted by instructors of the Province, (Appendix C) to the Department of Education at the end of September 1957, and those Department of Education publications pertinent to this study. Both the bi-annual reports and Department of Education publications have been analyzed in order to present, topically, a clear and concise outline.

Industrial Arts Courses Offered in the Schools of British Columbia

The industrial arts courses offered in the Province are divided into six grade levels, each consisting of two or more subject areas. (Table X) Junior high school courses bear considerable resemblance to each other and are designed to provide, through work which increased in difficulty, a sound foundation of manipulative skills in the areas of woodwork, metalwork, electricity, and drawing. Industrial Arts for the three junior high school grades, grades seven, eight, and nine, is a compulsory subject.

TABLE X

INDUSTRIAL ARTS COURSES OFFERED IN THE SCHOOLS OF BRITISH COLUMBIA

Grade	Abr.	Content	Minutes/Week	Prerequisite	Credits
Grade Seven	IA 7	Woodwork Draughting Metalwork Electricity	160	None	0
Grade Eight	IA 8	Woodwork Draughting Metalwork Electricity	160	None	0
Grade Nine	IA 10	Woodwork Draughting Metalwork Electricity	200	None	0
Grade Ten	IA 20	Woodwork Draughting	200	None	5
	IA 21	Metalwork Draughting	200	None	5
	IA 22	General Shop Draughting	200-600	None	5-15
Grade Eleven	IA 30	Woodwork Draughting	200	IA 20	5
	IA 31	Metalwork Draughting	200	IA 21	5
	IA 32	General Shop Draughting	200-600	IA 22	5-15
Grade Twelve	IA 91	Woodwork Draughting	200	IA 30 or IA 32	5
	IA 92	Metalwork Draughting	200	IA 31 or IA 32	5
	IA 93	General Shop Draughting	200-600	IA 32	5-15

Adapted from Course of Studies for Junior and Senior High School Industrial Arts 1957, p. 15.

It is worthy to note that throughout the whole of the industrial arts programme drawing is stressed. Drawing time is allocated, particularly in the senior grades, not only for draughting but also as a suitable time in which to teach related knowledge. It will be noted from Table XI that beginning with the ninth grade, with the exception of the general shop programme, two fifths of total time allotted is devoted to draughting and related knowledge.

The high school programme in British Columbia is organized around two main categories, a university programme for those seeking university entrance, and a general programme for those who do not wish to attend university but wish to obtain high school graduation. In both cases a student may take an industrial arts major which has equal status with any other high school subject. An industrial arts major is obtained for either programme by following any one of the following sequences of courses:

- (a) Woodwork series, IA 20, 30, 91
- (b) Metalwork series, IA 21, 31, 92
- (c) General Shop series, IA 22, 32, 93, or 91, or 92

In addition to one of the above industrial arts sequences, university programme students require, when taking an industrial arts major, an accompanying major in mathematics and an accompanying major in science. General programme students on the other hand are not required to take the accompanying majors in science and mathematics. In either case the industrial arts sequence is taken in three years of study with a minimum of 15 credits.

TABLE XI

PROPORTION OF TIME ALLOCATED TO INDIVIDUAL INDUSTRIAL ARTS
CONTENT AREAS IN PERIODS OF FORTY MINUTES FOR JUNIOR HIGH SCHOOLS
AND SIXTY MINUTES FOR HIGH SCHOOLS

Course	Draughting	Woodwork	Metalwork	Electricity	General Shop
IA 7	1	1	1	1	
IA 8	1	1	1	1	
IA 10	2	1	1	1	
IA 20	2	3			
IA 21	2		3		
IA 22	1 - 3				4 - 12
IA 30	2	3			
IA 31	2		3		
IA 32	1 - 3				4 - 12
IA 91	2	3			
IA 92	2		3		
IA 93	1 - 3				4 - 12

Adapted from Course of Studies for Junior and Senior High School
Industrial Arts, 1957, p. 15.

Both general and university programme students who do not wish
a major in industrial arts may elect a different industrial arts
course each year.

A minimum of 120 credits is required to graduate in either
programme.

Number of Students Taking Industrial Arts Courses

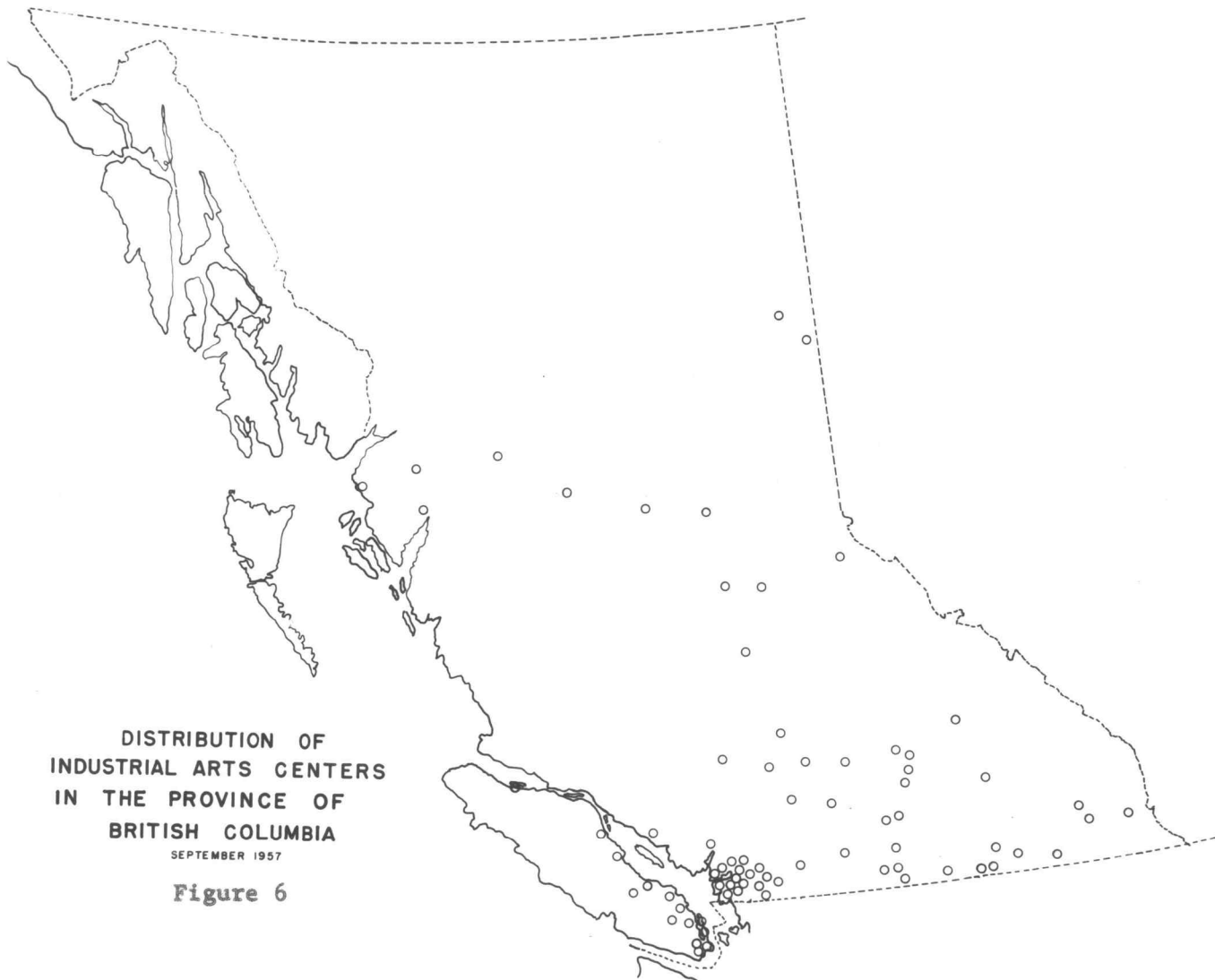
As may be noted in Table XII, in the school year 1956/57, 27,727 students in public junior and senior high schools took industrial arts subjects. On the basis of the number of boys enroled in the public schools for this same year, industrial arts courses were reaching 57 per cent of the eligible boys of the Province. It may also be noted from Table XII that this percentage has remained fairly constant.

TABLE XII

COMPARISON OF NUMBER OF BOYS TAKING INDUSTRIAL ARTS WITH
THE NUMBER OF BOYS ELIGIBLE TO TAKE INDUSTRIAL ARTS COURSES

Year	Eligible Boys	Boys Taking IA	Per Cent
1949/50	28,344	18,456	65
1950/51	30,547	19,171	62.7
1951/52	32,182	22,738	70.5
1952/53	34,833	22,577	64.7
1953/54	37,504	19,362	51.6
1954/55	40,990	21,838	53.5
1955/56	44,703	28,202	63
1956/57	48,536	27,727	57
Average = 61%			

Adapted from Public Schools Reports 1949/50 to 1956/57.



Fluctuations in the percentage of boys taking industrial arts is very probably directly related to the school building programme. Generally, however, from the above figures, it is evident that the building of industrial arts centers has kept up with the increased school population.

Number of Centers and Distribution

Figures obtained from the Office of T. A. Quayle, Inspector of Technical Classes, indicate that 157 industrial arts centers are in operation in the Province. (28) The location of these centers which closely correlates with the population distribution in the Province is illustrated by Figure 6. Owing to the topographical features of the Province, the establishment of industrial arts has had the advantage that population is generally centered in the southern part of the Province. The population in the northern portion is centralized in a few urban communities with few people residing in locations where the building of schools is not feasible.

Number and Qualifications of Instructors

Latest figures available from the office of the Inspector of Technical Classes place the total number of instructors engaged in teaching both industrial arts and vocational subjects at 382. (35) This number was taken at the beginning of the 1957/58 school year. For analytical purposes, only the bi-annual reports of those instructors engaged in teaching industrial arts were chosen.

Table XIII gives the number of years of teaching experience for 339 industrial arts instructors in the Province of British Columbia. Years of teaching experience includes credit given to veterans for overseas war service.

TABLE XIII
TEACHING EXPERIENCE OF 339 INDUSTRIAL ARTS INSTRUCTORS

Years of Experience	Number of Instructors	Per Cent
0 - 5	117	34.6
6 - 10	76	22.4
11 - 15	55	16.1
16 - 20	44	13.0
21 - 25	21	6.2
26 - 30	18	5.3
31 - 35	6	1.8
36 - 40	<u>2</u>	<u>0.6</u>
	339	100.0

Bi-annual Reports of Instructors to the Department of Education
September 1957.

Under existing certification requirements, industrial arts teachers may receive the following certificates: Elementary Conditional (EC) This certificate, valid for a period of five years, is issued to industrial arts teachers in training. To be eligible for admission to training for this certificate the candidate must satisfy

one of the following requirements:

(a) He must be eligible for British Columbia First-Class or Academic certificates, or their equivalents.

(b) He must be a graduate of a senior or technical high school and have completed prescribed junior and senior high school courses in Metalwork, Electricity, Woodwork, and Drawing.

(c) He must be a craftsman with education equivalent to the standard required for high school graduation.
(2, p. 6)

Secondary Conditional (SC) (Formerly Junior High School Industrial Arts Certificate) The requirements for admission to training are the same for this certificate as for the Elementary Conditional and it is issued upon the completion of 30 units of work. The course requirements necessary to obtain this certificate are outlined as follows:

Education courses:

1	Principles and Techniques of Elementary Education	25 hours	1 1/4 units
110	Educational Psychology	25 "	1 1/4 "
220	Teaching Methods for Industrial Arts in a junior high school	50 "	2 1/2 "
221	Teaching Observation in a Junior High School	25 "	1 1/4 "
222	Practice-teaching under the Supervision of a Qualified Teacher in a Junior High School	25 "	1 1/4 "

Laboratory courses:

Drawing

223	Plane and Solid Geometrical Drawing	50 "	1 1/4 "
224	Freehand Sketching Applied to Industrial Arts	50 "	1 1/4 "

225	Draughting Applied to Woodwork and Metalwork	50 hours	1 1/4 units
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Art

226	Design in the Industrial Arts in the Junior High School	25 "	1 1/4 "
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Woodwork

227	Elementary Woodwork	100 "	2 1/2 "
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228	Elementary Woodturning	50 "	1 1/4 "
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229A	Farm Mechanics	25 "	3/4 "
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230	Application of Basic Operations in Pupils' Projects	50 "	1 1/4 "
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Electricity

231	Elementary Electrical Theory	50 "	2 1/2 "
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232	Elementary Electrical Workshop	50 "	1 1/4 "
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229B	Farm Mechanics	25 "	3/4 "
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233	Application of Basic Operations to Pupils' Projects	50 "	1 1/4 "
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Metalwork

234	Art Metalwork	50 "	1 1/4 "
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235	Elementary Sheet-metal Work	50 "	1 1/4 "
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236	Elementary Machine-Shop Work	100 "	2 1/2 "
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229C	Farm Mechanics	25 "	3/4 "
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237	Application of Basic Operations to Pupils' Projects (20, p. 15-16)	50 "	1 1/4 "
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Secondary Basic (SB) Upon completion of the Secondary Conditional certificate requirements and the successful completion of two years

teaching experience, the instructor may now proceed to the Secondary Basic Certificate. Course requirements for the SB Certificate are outlined as follows:

Education Courses:

14	The Curriculum and its Objectives and Procedures	25 hours	1 1/4 units
238	Teaching Methods for Industrial Arts in a Senior High School	50 "	2 1/2 "
239	Teaching Observation in Senior High School	25 "	1 1/4 "
240	Practice-teaching under the Supervision of a Qualified Teacher in a Senior High School	25 "	1 1/4 "

Laboratory Courses:

Drawing

241	Practical Geometry	50 "	1 1/4 "
242	Freehand Sketching	50 "	1 1/4 "
243	Draughting Applied to Woodwork and Metalwork	50 "	1 1/4 "

Art

244	Design in Industrial Arts in the Senior High School	50 "	1 1/4 "
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Woodwork

245	Advanced Woodwork (Benchwork)	100 "	2 1/2 "
246	Advanced Woodturning	50 "	1 1/4 "
247	Practice in the Use of Woodworking Machinery: Care and Maintenance	25 "	3/4 "
248A	Farm Mechanics	25 "	3/4 "

Metalwork

249	Advanced Sheet-metal Work	75 hours	1 7/8 units
250	Advanced Machine-shop Work	100 "	2 1/2 "
248B	Farm Mechanics	25 "	3/4 "
251	Arc and Oxy-acetylene Welding (2, pp. 20-21)	50 "	1 1/4 "

Secondary Advanced (SA) For the industrial arts instructor, 15 additional units are required in order to obtain the SA Certificate. Six of these units must be approved Education courses applicable to secondary school work, and nine of the units must be applicable to secondary school work in the teacher's subject-matter field. The holder of a Master's degree from the University of British Columbia or a recognized university, whose programme is acceptable to the Department of Education, also qualifies for an SA Certificate.

(2, p. 22)

Table XIV shows the number of instructors in the Province holding the various certificates described above. It will be noted by the reader that in some instances, instructors hold Elementary Basic (EB) and Elementary Advanced (EA) Certificates. The holders of such certificates represent those individuals who are in a period of transition, transferring from academic teaching to industrial arts instructing. They may have completed one summer school session, thereby not yet qualifying for an industrial arts certificate. They are, however, allowed to teach some aspects of the industrial arts programme until such time as they are properly qualified.

TABLE XIV
CERTIFICATES HELD BY 355 INDUSTRIAL ARTS INSTRUCTORS

Certificate	Frequency	Per Cent
Secondary Advanced	71	20.0
Secondary Basic	151	42.4
Secondary Conditional	86	24.2
Elementary Advanced	1	0.3
Elementary Basic	35	9.9
Elementary Conditional	10	2.6
Pending	2	0.6
TOTAL	355	100.0

Bi-annual Report of Industrial Arts Instructors to the Department of Education

Table XVI represents a sampling of 355 of the 382 instructors now teaching in the Province. This represents a 92 per cent return.

Since January 1957, new regulations equating the existing qualifications of industrial arts instructors in terms of the Bachelor of Education programme have come into effect. Those instructors holding SB and SA Certificates are now close to completion of the B. Ed. programme. This will involve 222 instructors or 62.4 per cent of the instructors of the Province. Since the process of converting these courses into their university equivalent is still being carried out,

it was not possible at this time for the writer to obtain accurate figures representing the number of degrees which would be awarded, or the number of courses still required by instructors.

Table XV provides an indication of the number of degrees already held by industrial arts instructors prior to the change in regulations. Since, up to this time, no definite degree programme has been in effect in the Province, it will be noted that these degrees vary greatly in type, many having been obtained outside of British Columbia.

TABLE XV
DEGREES HELD BY 359 INDUSTRIAL ARTS INSTRUCTORS

Degree	Frequency	Per Cent
Master of Education	1	0.3
Bachelor of Education (Industrial Arts)	4	1.1
Bachelor of Science (Industrial Arts)	1	0.3
Bachelor of Education	3	0.8
Bachelor of Arts	5	1.4
Bachelor of Science	3	0.8
No Degree	<u>342</u>	<u>95.3</u>
TOTAL	359	100.0

Bi-annual Reports of Industrial Arts Instructors to the Department of Education

Since it is apparent that by far the majority of industrial arts instructors in the Province of British Columbia are not in possession of a degree, it is worthy to note that most of the industrial arts instructors were trained wholly, or at least partially in the Province. As previously mentioned, provisions for the training of industrial arts instructors have for many years taken the form of summer schools, night classes, special Saturday classes, and only since the Second World War, full-time day classes. Table XVI indicates where instructors now teaching obtained most of their training.

TABLE XVI
WHERE 363 INDUSTRIAL ARTS INSTRUCTORS HAVE TAKEN THE
MAJOR PART OF THEIR TRAINING

Where Taken	Frequency	Per Cent
British Columbia	331	91.0
England	13	3.5
Saskatchewan	5	1.4
Alberta	6	1.7
Ontario	2	0.6
U. S. A.	2	0.6
Manitoba	1	0.3
Scotland	1	0.3
Ireland	1	0.3
Holland	1	0.3
TOTAL	363	100.0

Bi-annual Reports of Industrial Arts Instructors to the Department of Education

A considerable variety of trade experience exists in the qualifications of industrial arts instructors in the Province. Trade

TABLE XVII
TRADE EXPERIENCE IN YEARS AS REPORTED BY 359
INDUSTRIAL ARTS INSTRUCTORS

Trade	Apprentice	Journeyman	Experience Only	Total
Machinist and Allied Trades	9	10	35	54
Carpentry and Building Trades	12	8	32	52
Draughting And Design	0	0	8	8
Cabinet Making	2	0	11	13
Pattern Making	2	2	3	7
Auto Mechanics	1	2	8	11
Electrical Trades	2	2	14	18
Aircraft Trades Airframe, Aircraft Sheet Metal	0	1	16	17
Sheet Metal	4	2	1	7
Welding	0	0	2	2
Watchmaking	0	0	3	3
Sign Painting	0	0	1	1
Printing	1	0	0	1
Trade Not Specified	4	0	2	6
No Trade Training				<u>159</u>
TOTAL				359

Bi-annual Reports of Industrial Arts Instructors to the Department of Education September 1957.

qualifications vary from apprentice training, to many years in the trade, to only the short time of one year's experience. Tables XVII and XVIII provide an indication of this trade experience.

Owing to the variety of answers received concerning trade experience this information as compiled in Tables XVII and XVIII can be taken as only approximate. It is likely, for example, that many men who completed apprentice training may have also obtained journeyman standing in their trade but did not report this. Many responses did not specify the amount of time spent in the trade, hence the writer has assumed that such time may have extended for one or more years. Table XVIII attempts to give an indication of the total number of years spent in a trade by 359 industrial arts instructors.

From Table XVIII it may be seen that 197 industrial arts instructors have received some training in trades either through apprentice training or only through experience in a particular trade. Of the total of 359 instructors considered in this survey, this figure represents 55 per cent who have at some time been associated with a trade. Although instructor recruiting policies have in the past stressed the entrance of tradesmen into the teaching profession, at present only about one half of the instructors have at one time or another been connected with a trade.

The Teaching Situation

In order to assess some aspects of the teaching situation, instructors' timetables and lists of all classes taught including

TABLE XVIII

NUMBER OF YEARS SPENT IN A TRADE BY 197 INDUSTRIAL ARTS INSTRUCTORS

Number of Years	Frequency	Per Cent
1 - 5	44	22.3
6 - 10	29	14.8
11 - 15	15	7.6
16 - 20	3	1.5
Over 20	1	0.5
Did Not Specify	<u>106</u>	<u>53.3</u>
TOTAL	197	100.0

Bi-annual Reports of Industrial Arts Instructors to the Department of Education, September 1957.

numbers enrolled as given in the Bi-annual Reports of Industrial Arts Instructors to the Department of Education for September 1957, was again consulted. Where instructors taught both industrial arts and vocational courses, an attempt was made to separate those giving data for industrial arts only.

Consideration was first given to the number of pupils per week taught by each instructor. Table XIX indicates roughly, that the median number of pupils per instructor is 157.8.

From an analysis of the Bi-annual Reports, the writer observed that many instructors were not engaged in the full time teaching of industrial arts subjects. Many, through either desire or lack of

TABLE XIX
NUMBER OF PUPILS PER INSTRUCTOR FOR 341 INSTRUCTORS

Pupils Per Instructor	Frequency	Per Cent
0 - 49	8	2.4
50 - 99	34	10.0
100 - 149	116	34.0
150 - 199	78	22.8
200 - 249	35	10.3
250 - 299	19	5.5
300 - 349	26	7.5
350 - 399	18	5.3
400 - and over	<u>7</u>	<u>2.2</u>
TOTAL	341	100.0

Median = 157.8

Bi-annual Reports of Industrial Arts Instructors to the Department of Education, September 1957.

enrolment or both, teach other subjects as well as industrial arts. Again, in some schools, some instructors are engaged in teaching both industrial arts and vocational courses. Table XX shows the percentage of time 354 instructors are employed in teaching industrial arts subjects. This table includes as industrial arts teaching time those spare periods allocated for shop maintenance work.

TABLE XX
 PERCENTAGE OF TIME 354 INSTRUCTORS ARE EMPLOYED
 TEACHING INDUSTRIAL ARTS SUBJECTS

Percentage of Time	Frequency	Per Cent
0 - 9	0	0.0
10 - 19	2	0.6
20 - 29	4	1.1
30 - 39	5	1.4
40 - 49	7	2.0
50 - 59	10	2.8
60 - 69	14	4.0
70 - 79	30	8.5
80 - 89	141	39.8
90 - 100	<u>141</u>	<u>39.8</u>
TOTAL	354	100.0
Median = 86.9		

Bi-annual Reports of Industrial Arts Instructors to the Department of Education, September 1957.

Although the Department of Education does not stipulate that industrial arts instructors should be allowed "spare" periods for the purpose of shop maintenance, Bi-annual Reports disclose that most instructors do have time allotted to such activities. It would seem that wherever possible principals have been most co-operative. Table

XXI shows what percentage of the total school time is allocated to instructors for the purpose of shop maintenance.

TABLE XXI

PERCENTAGE OF TOTAL TEACHING TIME PER WEEK ALLOWED TO INDUSTRIAL
ARTS INSTRUCTORS FOR PURPOSES OF SHOP MAINTENANCE

Percentage of Time	Frequency	Per Cent
1 - 4	37	10.7
5 - 9	107	31.6
10 - 14	93	27.3
15 - 19	21	6.1
20 - 24	16	4.6
25 - 29	2	0.6
No Spares	<u>65</u>	<u>19.1</u>
TOTAL	341	100.0
Median = 10.9%		

Bi-annual Reports of Industrial Arts Instructors to the Department of Education, September 1957.

Industrial Arts Instructors' Salaries

It will be noted from Table XXII that a comparison is drawn between the salaries received by 334 industrial arts instructors in September 1957, and the salaries received by the teaching body as a whole for the Province. The latter figures, not being available for

September 1957, were obtained for the previous school year 1956/57. It is felt, however, that little if any effect results from this discrepancy in so far as few school districts implemented salary increases during the course of the summer. It should be observed at this time that all teachers would have received a salary increment of 100 to 200 dollars at the beginning of the 1957/58 school year. No correction for this factor has been included in the table.

Evidence from Table XXII indicates that, in general, industrial arts instructors receive higher salaries than approximately 64 per cent of all teachers in the Province. This may be accounted for in two ways. Firstly, many industrial arts instructors with a trade background, upon gaining employment with a particular school board, often received credit in the form of additional increments for as much as one half of their time spent in the trade. Secondly, a large portion of the teachers of the Province are holders of Elementary Teaching Certificates. The salaries paid to holders of Elementary Certificates are considerably lower than the salaries paid to holders of Secondary Certificates. Since the present instructor training course aims generally at qualifying instructors for secondary teaching, and since in the past most instructors improved their certification to fulfill the secondary requirements, the majority of industrial arts instructors now hold secondary certificates. Thus, industrial arts instructors in general receive higher salaries than many of their compatriots in the teaching profession.

TABLE XXII

COMPARISON OF SALARIES RECEIVED BY 334 INDUSTRIAL ARTS INSTRUCTORS
AND THE SALARIES OF TOTAL TEACHING BODY OF THE PROVINCE

Salary Range	Frequency I.A.	Frequency All Teachers	Per Cent I.A.	Per Cent All Teachers
Below - 2700	0	1492	0	15.8
2700 - 2899	2	465	0.6	5.0
2900 - 3099	4	506	1.2	5.4
3100 - 3299	13	401	3.9	4.3
3300 - 3499	10	582	2.9	6.2
3500 - 3699	16	458	4.8	4.9
3700 - 3899	18	468	5.4	5.0
3900 - 4099	12	573	3.6	6.0
4100 - 4299	21	575	6.3	6.1
4300 - 4499	19	475	5.7	5.1
4500 - 4699	11	549	3.3	5.9
4700 - 4899	8	444	2.4	4.6
4900 - 5099	12	283	3.6	3.0
5100 - 5299	29	232	8.7	2.5
5300 - 5499	23	296	6.9	3.2
5500 - 5699	37	214	11.1	2.3
5700 - 5899	19	288	5.7	3.1
5900 - 6099	19	215	5.7	2.3
6100 - 6299	12	168	3.6	1.7
6300 - 6499	20	209	6.0	2.1
6500 - 6699	10	208	2.9	2.1
6700 - 6899	15	49	4.5	0.5
6900 - 7099	4	48	1.2	0.5
7100 and over	0	236	0	2.4
TOTAL	334	9374	100.0	100.0

Adapted from Public Schools Report 1956/57 and Bi-annual Reports of Industrial Arts Instructors to the Department of Education, September 1957.

Summary of Chapter Eight

Industrial arts is presently offered in the schools of British Columbia, beginning in the grade seven level and extending through to

the grade twelve level. High school industrial arts can be elected either in partial fulfillment of the general programme or as a part of the university entrance programme. High school industrial arts may be taken as a sequence which includes draughting, and a choice of one of the following: woodwork, metalwork, or general shop. The completion of a sequence (a minimum of 15 credits) constitutes a major area of study. The student who does not wish a major in industrial arts, may freely elect industrial arts courses throughout his high school career.

Industrial arts courses are reaching approximately 60 per cent of the eligible boys in the Province. Centers offering industrial arts courses are roughly distributed proportional to population densities, with most of the centers in the southern part of the Province.

For the school year 1957/58, industrial arts instructors total 382 for the Province, with experience ranging from none to 40 years. Most of these instructors have obtained secondary certificates with, 13.4 per cent still in possession of elementary certificates.

Ninety-five per cent of the instructors of the Province do not hold degrees from a recognized university. Approximately three per cent hold degrees in education or combinations of education and industrial arts.

Ninety-one per cent of the instructors now teaching in the Province obtained their training within the Province. Although much emphasis in the past has been placed upon the trade-training of

instructors, only half (approximately) of the instructors presently employed in the Province have been trade-trained.

Instructors in the Province are responsible for the teaching of from 49 to 400 pupils per week. When calculating central tendency, it seems that in terms of median, each instructor is responsible for 157.8 pupils per week.

Approximately twenty per cent of the instructors are engaged in teaching subjects other than industrial arts. Spare periods are generally allocated for purposes of shop maintenance, with only 19 per cent of the instructors having no time allowance for maintenance.

Comparing the salaries of industrial arts instructors with those of the teaching body as a whole, indicates that the industrial arts instructors are generally better paid than many of their academic counterparts. Since most instructors are in possession of secondary certificates, and a great many academic teachers possess elementary certificates, this difference is understandable.

CHAPTER IX

SUMMARY AND RECOMMENDATIONS

The growth of manual training, and later of industrial arts in the Province of British Columbia has been gradual and positive, by extension and expansion rather than by radical change. During the fifty-eight years of its existence, growth has been steady although sometimes slow. Through what now seem to have been calculated efforts the various aspects of industrial arts were expanded to meet the needs of a continually widening curriculum and an increasing school population. Amid the adversity of depressions and tax burden, the practical subjects -- notably the industrial arts -- have continued to expand, a phenomenon which to some extent is indicative of both its popularity and its ability to fill a real need in the education of the youth of British Columbia.

The Curriculum

The growth of the industrial-arts curriculum is summarized briefly as follows:

Under the Macdonald schools, with instructors mainly obtained from England, the curriculum first took the forms which had been practiced by these instructors in the home country. A combination of English Sloyd, common in the north of England, and the so-called manual training practiced in southern England, resulted in a "model" course in British Columbia. The "model" course consisted of a list

of thirty models or small exercise projects embracing necessary hand-tool operations in woodwork. These projects were not only designed to provide exercise in selected operations, but were also designed as useful household articles. Apart from the few instructors who saw the educational possibilities of larger pieces of furniture designed and made by students, the model-method of teaching industrial arts persisted for some years. It may be said that the chief aim of such a course was to provide the boy with basic and necessary skills requisite to the proper use of hand tools for woodworking.

The results of the Putman-Weir investigations, and their criticisms of this "model" method of teaching the industrial arts, brought about gradual changes, one of which was the establishment of the junior high school programme. In this programme, metalwork, electricity, drawing, and home mechanics were added to the woodworking courses. What had previously been termed "manual training", now took on the character and name of industrial arts. This widening of the curriculum was done in an effort to provide a practical education for those boys and girls who would not find their way to the professions but would soon enter the working world. Thus, by widening the industrial arts curriculum, a boy at the junior high school level could gain experience in at least four basic technical fields. With the wide field of application which the junior high school programme then provided, it was now possible to attempt a definite correlation between academic and practical work, particularly in the areas of mathematics and science.

Throughout the history of industrial arts in this Province, it is evident that much stress has been placed upon the pre-vocational values of the subject. Early attempts were made to provide technical-leaving courses at the high school level. Recognizing that a large percentage of high school students were not able to attend university, high school courses were, and still are, organized to provide the student with basic woodwork, metalwork, draughting, and electricity skills, useful when he enters into the industrial world. In this respect the Province of British Columbia had for some years ranked second in Canada. Provision was also made for the student who would enter university by providing technical courses at the high school level which were preparatory to entering a university technical programme. Thus to this day, the University of British Columbia has recognized high school industrial arts options when planned as a major field of study, as partial fulfillment of entrance requirements.

Frequent curriculum revision has attempted to align the industrial arts curriculum with the needs of the students. Revision of the curriculum, although directed by the Department of Education, has been, and presently is, carried out by a committee comprised mainly of industrial arts instructors from many parts of the Province. Complete revisions have been undertaken at regular intervals of approximately five years, while minor revisions occur annually. The British Columbia Shop Teacher's Association, through its parent body the British Columbia Teachers' Federation, annually submit recommended changes, for consideration by the Department of Education.

Federal and Provincial Aid

Although committed by the terms of the British North America Act to have no powers of jurisdiction in the matter of education, the Federal Government has, since 1919, entered into the financing of technical education. Through the provisions of the Technical Education Act of 1919 and by mutual consent of the Provinces of Canada, aid was given to those provinces which were willing to share the cost in providing such education. Further aid from Federal sources came with the enactment of the Dominion-Provincial Vocational Assistance Agreements of 1942. Although industrial arts was not directly affected by this aid, schools established under this agreement were allowed to provide industrial-arts courses as well as vocational courses, using the same facilities. Further benefit was gained in the area of teacher training, where industrial-arts teachers have been trained for the Province on a cost-sharing basis with the Federal Government.

Since its inception, industrial arts has been recognized by the Provincial Department of Education as a full-fledged public school subject. As a result, early industrial arts centers benefited by Provincial salary grants for industrial arts instructors. By 1912, the Department of Education made industrial arts, then known as manual training, a compulsory subject for grades seven and eight. In an effort to encourage the establishment of industrial arts in more school districts, the Provincial government offered to pay three

quarters of the equipment cost, providing the district was willing to provide necessary housing. This financial aid resulted in considerable expansion of facilities throughout the Province. The equipment grant was later reduced to one-half of the equipment cost, and has remained at that figure up to the present time.

Teacher Supply

As previously mentioned, instructors for the first Macdonald schools were obtained mainly from England. By the beginning of the First World War, the expansion of industrial-arts facilities became such as to require the recruiting of instructors from the Province. Summer school training of instructors was instituted in 1914, and instructors were obtained both from the ranks of qualified teachers and the ranks of craftsmen. Generally between the two wars the supply of teachers kept pace with the demand. With the years of depression which followed the First World War, the teaching profession remained sufficiently attractive to ensure a continuing supply of instructors. Little difficulty was encountered during that time in recruiting instructors who had previously been craftsmen. In fact, it is evident that the craft-trained instructor was then much preferred over the teacher-trained instructor.

The advent of the Second World War, however, changed this picture. Heavy drains in manpower for both the armed forces and industry, caused a grave shortage of instructors. The situation was not alleviated until near the end of the war when returning veterans

filled the ranks of industrial-arts instructors. Thus the instructor shortage was at least temporarily remedied, that is until school enrolments and expansion again brought about an even more severe shortage.

One of the main problems of the post-war period has been to find ways and means of attracting young men into the industrial-arts teaching profession. Teacher training has been expanded in an effort to meet the increased need. Today, when manpower requirements have become highly competitive, comparatively low salaries of the teaching profession do not attract candidates so well as other professions, such as engineering, law, medicine, pharmacy and architecture. Some teachers are, however, are still obtained from the ranks of the non-professionals.

In January 1957 all teacher training in the Province was re-organized around a university programme leading to a degree in education. This change has had the effect of placing the training of teachers on a university level, and by the same token on a "professional" level. Although teachers can still qualify for higher certification and a degree by means of successive summer school sessions, the teacher-in-training may obtain the degree in education by completing a five year programme at the university. This five year programme now equates the teacher training programme with the time requirements of many other professions. If a student intends to attend university for a period of five years he therefore, theoretically, has a choice of professions such as teaching, pharmacy, engineering etc. On that

basis, whether the teaching profession and in particularly the industrial arts teacher training programme, proves to be competitively attractive remains to be seen. Salarywise, this is still very doubtful.

Teacher Training

Teacher training of industrial arts instructors began with summer school sessions as early as 1914. These were soon expanded to special Saturday classes to further provide instructors the means to increase their qualifications. Through a system of qualifying certificates the instructor could, after the successful completion of summer and Saturday classes, progress from the elementary industrial arts teaching certificate to the senior high school technical teacher's certificate.

Up to 1944, summer sessions, Saturday classes, and night school classes remained the only means by which the instructor could qualify for higher certification. The commencement of veterans' classes in 1944, marked the beginning of full-time classes in instructor training. Full-time classes, held at Vancouver Vocational School have continued to the present time.

Owing to the recurring teacher shortage, an emergency programme organized in 1955 at the Vancouver Vocational School allows candidates to complete full Secondary Basic Technical requirements during one school year. Candidates for this programme may attend either day or night classes. Summer school sessions still continue as a means of

increasing the qualifications for men who are already employed in teaching.

As mentioned under the heading of "Teacher Supply", recent changes have placed all teacher training under the jurisdiction of the College of Education, University of British Columbia. Thus, in effect, teacher training has now become curriculum at the University, and now leads to the degree of Bachelor of Education. The full industrial-arts degree programme constitutes five years of study, combining both technical and professional courses.

It is worthy to note that although other Provinces in the Dominion, and many States in the United States, had long since deemed it expedient to establish degree programmes for industrial arts teachers, little had been done in British Columbia until 1957. As a result of the need for teachers, the process of converting existing qualifications of employed teachers into equivalent university requirements, is proving to be a complex problem. Had such a change been carried out immediately following the Second World War, as it was in the Province of Alberta, this change probably would have been greatly simplified.

If it can be said that the university training of teachers and particularly that of industrial arts instructors is desirable, then retaining Normal Schools and Summer Schools as the sole means of teacher-training in British Columbia up to 1957, has to some extent kept the Province behind-the-times. Summer school sessions in themselves, however, are a necessary part of a teacher-training programme,

even in those States and Provinces which enjoy the facilities of a College of Education.

Generally, the training of industrial-arts instructors seems to have been conducted on a basis of temporary expediency. Reorganization of the training programme came from time to time as the pressures of necessity dictated. Up to the year 1957 little long-range planning seemed evident. In the writer's opinion, the recent establishment of a university training scheme for industrial-arts instructors is definitely a step in the right direction. Its success, to a large extent, will likely depend upon the degree with which the teaching profession will be able to compete salary-wise and professionally, with other professions that require training periods of equal length.

Effects of Increasing School Population

Prior to the Second World War, school population showed slow but steady increase. Since the war, however, enrolments have grown at an increasing rate. Generally, the growth of industrial arts facilities has kept pace with the growth of the school population. Since it is a well established fact that the cost of teaching the practical subjects is considerably larger than the costs of those subjects which are generally limited to one classroom, industrial arts is very susceptible to the scrutiny and criticism of the public. This is particularly true during times of economic crisis, as was the case during the depression period of the 1930's. Under present taxation formulae, the major portions of school funds are obtained

through the direct taxation of the property owner. The property owner is thus directly affected by increased school costs, brought about largely by increased enrolments. As a result the more costly aspects of the curriculum again are subject to possible retrenchment. Cognizant of the dangers of over-centralization, strong recommendations have still been made to the Provincial Government with a view of having the Government take over the full financial responsibility for education in the Province. Such action would probably have the effect of removing the evidence of direct taxation, particularly its danger to the existence of the practical subjects. However, the undemocratic implications of transferring the entire responsibility to the Provincial authorities, are worthy of serious consideration.

Industrial arts in the Province has grown to represent a considerable investment of both manpower and capital outlay. For this reason industrial arts is probably here to stay. Hence it is necessary that a greater effort be made to bring the values of industrial arts to the attention of the public. If this is not done, public opinion will remain, as it is today, largely uninformed and misinformed.

The Teaching Situation

In terms of number of pupils per class and number of pupils per week, the teaching situation has changed very little since Inspector Harry Dunnell first made his recommendations to the Department of Education in 1909. Dunnell had recommended that the optimum class

size should be 24 pupils; this figure has remained nearly the same to the present time. Apart from some extreme cases, the number of students per week taught by each instructor has conformed to his recommended 200.

Since the Second World War the trend has been to build shops in well-lighted and well-ventilated wings of the new school buildings, a desirable departure from the basement facilities and separate buildings which originally had been considered suitable for industrial arts.

With the inclusion of shops as an integral part of the main school building, came the inclusion of the industrial-arts instructor as a full-member of the teaching staff. The days when the industrial-arts instructor was considered a "glorified janitor" seem to have passed, especially when the instructors show willingness to teach other subjects apart from industrial arts. The writer has observed that in many schools the members of the industrial-arts department now, possibly more than ever before, exert considerable influence upon administrative policies of the schools, and generally provide a positive contribution to the discipline of the school. Thus, the professional status of the industrial-arts instructor has been raised, particularly in the eyes of his fellow academic teachers. It is anticipated that the new degree will contribute even more to the professional status of the instructor.

Teaching salaries over the years have figuratively improved. Whether these increases in salaries represent increased buying power, is doubtful. Owing to the high certification requirements (secondary

certificates) industrial-arts instructors generally receive salaries commensurate with the upper half of the total teacher salary picture of the Province. Relative to the salaries received by at least half of the academic teachers, it may be said that the industrial-arts instructor is fairly well paid. Relative to salaries received by members of other professions, however, the salary picture is not bright. A high salary, of course, will not insure that the best teachers will always be available. Salaries will of necessity need to be commensurate with those of beginning engineers, pharmacists, and accountants, if a five-year degree programme is to succeed. This assumes that the economy will continue at the present level. Should the Province experience another economic crisis as in the 1930's, in all probability teachers will again become plentiful.

Recommendations

1. It is evident from this study that there is a need in the Province for publicizing the values of industrial arts. The writer recommends that the values of industrial arts to the junior and senior high school student be clearly defined and itemized, and presented to the general public with concrete evidence based on research.
2. Assuming that the industrial arts major as presented in the high school provides suitable groundwork for entrance into the university science programme, the writer recommends that guidance personnel be informed of this matter in an endeavor to encourage.

more high school students to take industrial arts sequence majors prior to entry into the higher-education science programme.

3. Apart from the references cited in this study, the Provincial Library and Archives are void of much primary information which the writer feels certain still exists within the Province. The writer recommends that the "B. C. Shop Teachers' Association" or one of the local associations, undertake to find and compile photographs and documents pertinent to the history of industrial arts in the Province, for the benefit of those who in the future may be interested in the growth of industrial arts in British Columbia.

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APPENDIXES

APPENDIX A

COURSE OF STUDIES AND REGULATIONS FOR MANUAL TRAINING SCHOOLS,
AS FIRST ISSUED BY THE DEPARTMENT OF EDUCATION IN 1910
(Manual of School Law 1910/11 p. 95)

Instructor's Qualifications

The following Instructor's Certificates shall be issued after July, 1911:

- a) Third-class Certificate, valid for one year
 - b) Second-class Certificate, valid for life
 - c) First-class Certificate, valid for life
-
- a) Third-class Certificate will be issued to a person holding a Public School Teacher's Certificate and having experience in manual work, but not holding any Manual Training Certificate.
 - b) Second-class Certificate will be issued to a person holding Manual Training Certificates in one of the following: woodwork, metalwork, carpentry and joinery, cabinet making, etc., and having teaching experience, but not holding a Public School Teacher's Certificate.
 - c) First-class Certificate will be issued to a person holding First-class Manual Training Certificates in woodwork or metal work, and holding a Public School Teacher's Certificate.

Certificates from similar institutes in the following will be recognized:

- Swedish Diploma (Naas)
- German Diploma (Leipsic)
- City of Guilds of London Institute (England)
- Guelph College (Ontario)
- Macdonald College (Quebec)

Second-class Certificates may be raised to First-class after three years' satisfactory reports from the Government Inspector. Only instructors holding a First-class Certificate are eligible to be in charge of other instructors.

Rules for Manual Training Schools

1. Where Manual Training Schools are established, attendance is compulsory, and must be continuous throughout the school year,

- with not less than two hours per attendance per week for each child.
2. All pupils above the Second Reader shall attend, and in some cases classes may be taken from Second Reader pupils.
 3. Attendance registers, visitors' book, and stock book must be kept and be open for inspection at all times.
 4. A three year course of woodwork shall be taken in the Public Schools (compulsory), and in the High Schools (not compulsory) a two years' advanced course in woodwork or a two years' course in metal work.
 5. Only one course of work will be recognized for all the schools in any one city, and one instructor to be in charge.
 6. Manual Training Instructors shall be subject to the same general regulations as Public School Teachers.
 7. The educational aspect of the subject should be of primary importance in the Public School Course, teaching: Observation, Representation, Originality, Accuracy. The technical side of the subject should be led up to towards the end of the High School Course.
 8. All courses of work to be based on the following syllabus, and to be submitted for approval to the Inspector of Manual Training.

First Year Manual Training Course

- (1) Drawing -
 - Easy plans and elevations; use and meaning of the same
 - Easy scales and their application
 - Lettering
 - English and Metric measurements to be used
- (2) Woodwork -
 - Tools
 - Saws - Rip, cross-cut, tenon, bow
 - Planes - Jack, smooth
 - Bench-Hooks, brace and bit, calipers
 - Chisels, 1 in., 1/2 in., 1/4 in.; files and glass paper
 - Marking-gauge, ruler, scraper, sloyd knife
 - Striking-knife, try square, winding-lath
 - Sharpening of 1" chisel
 - No joints in this year's work

(3) Theory -

Recognition of six common trees by their leaves, flowers and fruit

Recognition of common woods by their markings, weight, smell, etc.

Materials used in construction of tools

Second Year Manual Training Course

(1) Drawing -

Section drawing and more difficult scale drawing

Simple lessons in design as applied to construction of models

English measurements

(2) Woodwork -

Tools

Planes - block and jointer

Gauges + cutting and mortise

Bradawl, clamps, glue, gauges, hammers

Mallet, nails, pincers, set-bevel, screws

Shooting-board, spoke-shave

Exercises (to be included in models)

Joints - half-lap, housing, slip, mortise, and tenon

End-grain planing

Grinding and sharpening of 1-inch chisel and plane iron

(3) Theory -

Recognition of six additional common trees by their leaves, flowers, and fruits

Growth of timber

Seasoning and marketing of timber

Products from trees

Enemies of trees

Third Year Manual Training Course

(1) Drawing -

Colouring of drawings

Isometric projections

Lessons in design as applied to construction of models

English and metric measurements

(2) Woodwork -

Tools

Planes - rebate, router, and other special planes or tools

Panel-gauge

Grinding and sharpening of gauges, etc.; filing of saws

Exercises

Dove-tailing, dowelling, rebating, etc., and the application of joints in their proper places in models.

(3) Theory -

Revision of first and second years' work

About thirty models should form a three years' course of work

High School Manual Training Course

First and Second Year's Woodwork (where there is not provision for metal work)

A scheme of work to be submitted approaching the technical side of the subject, based on the exercises taken in the Public School Course, but including larger and more complicated models, some of which might be class work.

Lathe work and its use in modes made to be introduced. Grinding and sharpening of bench and lathe tools and saws.

(1) Metalwork

First Year - A scheme of work to be submitted based on the following:

Models to be made embracing -

- (a) Soldering
- (b) Brazing
- (c) Chipping and filing
- (d) Forge work

Elementary knowledge of metals and their uses

(2) Metalwork

Second Year - More difficult exercises than in the first year and easy exercises in:

- (a) Turning
- (b) Bent-iron work
- (c) Etching in copper, copper modelling, or kindred artistic treatment of metals

APPENDIX B

CURRICULUM FOR THE FIRST MANUAL TRAINING SUMMER SESSION JULY 1917
(Public School Report 1916/17, p. A 70)

Manual Training

- (a) Manual Arts, Primary and Intermediate
- (b) Wood and Metal Work for School teachers and Certificated Manual instructors.

- (a) MANUAL ARTS, Primary and Intermediate Grade Hand work.
(Instructor - William H. Binns, Supervisor of Manual Training, Victoria)

Pedagogics:

The child and the work; organization and equipment; lesson plans and methods of presentation; Manual of School Law on primary and intermediate grade work.

Drawing:

Sketching the various views of objects made -- top, front, end, and perspective view; lettering; the use of ruler, set square, compasses; simple draughting exercises; lessons in design as applied to the construction of models; suitability of design to purpose; discussion of good taste and form; blackboard practice.

Applied work:Paper Folding and Cutting

Process - To illustrate arithmetical and geometrical truths.

Design - Colour harmonies and contrasts

Projects - Square, oblong, triangle, etc.

Mat WeavingThin Cardboard Work

Process - Use of ruler, drawing patterns, cutting out, decorative design, folding and pasting

Projects - Trays, boxes, booklets for school work, mounts, bookmarks, desk blotters

Heavier Cardboard Work

Process - More accurate drawing; working out of development patterns; use of ruler, compass and set squares; calculations.

Projects - Book covers, simple portfolios, envelopes and files, booklets, desk pads, boxes, section booklets and their sewing.

Clay and Plasticene Modelling

Process - Acquaintance with material; study of type forms and models; relation to drawing; correlation to school-work, such as nature study, geography, etc.

Projects - Fruits, vegetables, flowers, and common objects; their relation to type models.

CERTIFICATE:

Tests were conducted as the work proceeded and a certificate awarded to those students who successfully completed the course.

(b) WOOD AND METAL WORK

(Instructors - A. S. Hamilton, Manual Training Instructor; A. W. Jones, Manual Training Instructor; H. Dunnell, Manual Training Instructor and Art Teacher; S. Northrop, Supervisor of Manual Training, Vancouver)

Manual training instructors holding positions with temporary certificates had an opportunity at this class to qualify for certificates of a permanent character. Instructors already holding permanent certificates were permitted to attend and give their time to special subjects, such as wood-turning and metal repousse.

Pedagogics of Manual Training:

The history, theory, and methods of educational hand-work; lectures given each day; written tests each week.

Cardboard Modelling:

A course will be carried out suitable to intermediate grade classes, and preparatory to woodwork.

Woodwork:

Drawing and Design

- (a) Plans, elevations, and sections
- (b) Translations of isometric views into orthographic plans and sections to scale, and vice versa.
- (c) Designing models and exercises suitable for elementary schools.

Bench-work

To design and execute in suitable material exercises or models involving the use of tools detailed in the Manual of School Law.

Copper and Brass Repousse:

Processes - Bending, filing, sawing, riviting, planishing, polishing, raising repousse, etc.

Projects - Paper-knife, blotter corners, hat-pin, watch-fob, tray, book-ends, napkin-rings, frames, box, hinges, lamp-shade.

Mathematics:

Calculating time and cost of production; use of school-room methods in workshop.

Written Work:

- (a) To answer questions on construction and methods of using and sharpening any of the ordinary woodworking tools.
- (b) To understand the general conditions of the growth of timber, its preparation for market; the particular uses and sources of supply of materials used in British Columbia; to recognize specimens, tree pests, diseases, etc.

CERTIFICATE:

A first-class certificate was granted to candidates who attended the class regularly and passed first-class in the final examination in drawing, bench-work, and written work. Seventy-five per cent of the available marks in each subject were necessary to entitle the candidate to a first-class certificate, and fifty per cent to a certificate of second-class. After the holder of a first-class certificate has satisfactorily conducted a manual training center for one school year, and had his certificate endorsed by the Inspector of Manual Training, a permanent British Columbia certificate will then be awarded.

APPENDIX C

PROVINCE OF BRITISH COLUMBIA
DEPARTMENT OF EDUCATION
VICTORIA, B.C.

REPORT OF:

COMMERCIAL ☐. HOME ECONOMICS ☐. INDUSTRIAL ARTS ☐. VOCATIONAL ☐.

Name of school	City

School district _____ Date _____

(Name.)

List *all* classes you teach, including academic courses.

[illegible]

Remarks (list here any irregularities as to courses) _____

TEACHER'S TIME-TABLE

Under "Time" enter length of period in minutes.

Under "Day" enter course abbreviation and number: e.g., IA 10, IA 92, etc.

Period	Time	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
1								
2								
3								
4								
5								
6								
7								
8								

Years of teaching experience..... Gross salary.....

What is your college training_____

What is your professional training (where taken)

Trade training

Teaching certificates held

Teacher's signature _____

P.O. address

City or municipality