

AN INVESTIGATION OF ACADEMIC POST-SECONDARY SCHOOL STUDENTS IN
KING EDWARD SENIOR MATRICULATION AND CONTINUING EDUCATION CENTRE

by

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ABSTRACT

This study seeks to discover any significant differences among the participants of three types of educational programs at King Edward Senior Matriculation and Continuing Education Centre. Selected measurable characteristics of these post-secondary students are tested in order to investigate any differences among the participants at the Centre.

The data chosen include various performance factors of continuing education participants. These characteristic factors of student behavior were coded for use in the key-sort cards, and tabulated for electronic processing and statistical analysis. The chi-square test and the "t" test were applied to the data to test for significant differences among the three types of participants in a post-secondary school. Relationships within groups and between groups were further tested by the Pearson product-moment coefficient of correlation using three selected factors: grade-point average, intelligence quotient, and final achievement.

The null hypothesis was upheld in most instances, and evidence could not be found that any single factor tested other than final achievement contributed to distinguishing young adults on the basis of the educational measurements selected. Further research into other characteristics of adult learners might more clearly account for differences in academic performance. Of the three groups of participants

which were analysed, the senior matriculation students were more distinct and had characteristics which were more singularly predictable when related to the criterion of success on a final examination than the interrupted program students or the grade XII students.

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CHAPTER I

INTRODUCTION

The opening of King Edward Senior Matriculation and Continuing Education Centre in 1962 has justified a study of post-secondary academic students in the City of Vancouver public school system. An academic general education program has been offered to continuing education participants who are at least eighteen years of age. Studies in elementary and secondary fields have measured characteristics of students which enable educators to distinguish between promising students and those students who need special attention. Much less is known about the characteristics of the post-secondary learner. The first year of operation at King Edward Centre afforded an opportunity to analyse and compare some of the measureable characteristics of young adults and older adults as participants in formal adult education.

Statement of the Problem

This study seeks to discover whether there are any significant differences measured in terms of certain selected factors among participants in continuing education programs conducted by the King Edward Centre. The factors studied include age, sex, attendance, withdrawals, from school, number of courses dropped, intelligence quotients, high school achievement as represented by a grade-point average and final achievement as scored on the Provincial Department of Education examinations.

Hypothesis

The hypothesis tested is: there are no significant differences among three groups of students with respect to selected educational characteristics.

The sub-hypothesis tested were:

1. There is no significant difference in age among the participants in the three types of programs.
2. There is no significant difference in the number of absences among participants in the three types of programs.
3. There is no significant difference in the number of withdrawals from the Centre among the participants in the three types of programs.
4. There is no significant difference in the number of courses dropped among the participants in the three types of programs.
5. There is no significant difference in the intelligence quotients among participants in the three types of programs.
6. There is no significant difference in the students' level of achievement in the final high school year as expressed by a grade-point average of academic subjects among participants in the three types of programs.
7. There is no significant difference in the final achievement as expressed by a mean percentage of achievement on the examinations which were set by the Department of Education among participants in the three types of programs.

Definition of Terms

The choice among three types of educational programs in which an individual may participate is designated by somewhat unique educational terms which are described here as they exist at King Edward Senior Matriculation and Continuing Education Centre. A participant entering the Centre may follow one of two curriculums: high school graduation or senior matriculation. This study describes the grade XII and interrupted students on the high school graduation curriculum; and the first year university students on the senior matriculation curriculum.

High School Graduation

A participant entering the high school program may follow either a General Course or a University Course which includes the equivalent of grades IX to XII. Graduation from either course involves completion of eighty-five credits in prescribed courses and a minimum of thirty-five credits in elective courses. Among the elective courses, a major study is required in one field in the General Course and in three fields in the University Course.

High school graduation of the University Course or the General Course means the completion of grade XII in British Columbia. High school graduation is normally completed at a secondary school which encompasses a grade VIII to XII curriculum. Adult participants in continuing education may also be concerned with completing the main requirements of either the University Course or the General Course; however, the regulations are relaxed to some extent if the student has been out of school at least one year and is at least nineteen years of age. The Department of Education of British Columbia invites adult students to apply for special arrange-

ments on the Interrupted Program if high school graduation is desired. High school graduation is sought by students who are described in the following two programs:

Grade XII Program. The term "Grade XII Program" is defined by King Edward Centre on the basis of a student's enrolment in fewer than three senior matriculation subjects and one to six junior matriculation subjects. Participants in the grade XII program are called partial students if they are enrolled in both grade XII and senior matriculation courses.

Interrupted Program. This is a phrase used to describe a program of courses designed to enable an individual to attain the completion of high school graduation. The individual who is placed on the interrupted program by the British Columbia Department of Education has to be at least nineteen years of age, out of school one or more years, and have an educational equivalent of a grade VIII level. An individual who is accepted as a participant in this program is known as an interrupted program student. An interrupted program student may pursue studies which lead to high school graduation, university course or general course.

First Year University

Participants at the Centre enrolled in a program equivalent to the first year of studies at a university are known as senior matriculation students.

Senior Matriculation Program. Students who have graduated from grade XII on a university program are eligible to enter a full senior matriculation program which is sometimes known as grade XIII. This

senior matriculation program consists of a year of academic study leading to admission to university at the second year level. It may also serve as a post-secondary year of study or as a prerequisite to certain technical programs in a vocational school.

For purposes of this study an individual is considered to be a senior matriculation student if he is pursuing three or more senior matriculation courses as specified by the British Columbia Department of Education.

Characteristics Studied

Seven educational characteristics of the participants have been selected for analysis: age, sex, attendance, withdrawal, intelligence quotients, (i.e., I. Q.), high school grade-point averages, and final achievement averages. These were considered to be measureable characteristics related to achievement that might show differences between participants in the three types of programs.

Procedure

The population for this study consisted of all students registered at the King Edward Centre in September, 1962. The data compiled from the records of the administration office at the Centre included: age, sex, withdrawals from the Centre, withdrawals from courses, absences, intelligence quotients, grade-point averages, final achievement, and student program classification. The data was recorded on McBee Key-sort cards with one card used for each student, and in the absence of information the nil information was recorded by the negative method on the key-sort card. The cards were then sorted for the desired tabulations.

Although data on all students who registered was recorded on a key-sort card, only those students who are still in attendance to the end of the year were included in the analysis of student characteristics.

The I.Q., grade-point averages and final percentage marks were also key-punched on I.B.M. data-processing cards for machine interpretation. This provided means of June percentages, the sum of the squared differences from the means of each of the student's average percentage of June marks, the intelligence quotient and the grade-point average by sex and by program.

For correlation purposes, a machine listing was made of the squared differences and the cross products from the means of the intelligence quotients, final achievement averages and grade-point averages of the three types of students as total groups and by sex.

The first general null hypothesis was tested by use of chi-square contingency tables for independent samples. The chi-square test of independence was applied to the data on the three types of students classified according to age, attendance, withdrawals, grade XII grade-point average, I.Q. and final achievement. The distributions of these factors were tested by the chi-square test for significant differences at the .01 level of confidence.

If the results of the chi-square tests were found to be significant, the "t" test was applied to discover the degree of independence among each type of student. The significance level of the "t" test was at the .01 level of confidence.

Further analysis was made of relationships of three factors for which data had been collected: I.Q., grade-point average, and final achievement.

The coefficient of correlation was determined by machine calculation and its significance established.

CHAPTER II

THE SETTING OF THE STUDY

The Public School System of the City of Vancouver first recognized the needs of the adult community it serves in 1909 when night school classes were introduced. Since then, the educational services for adults have been gradually increased to keep pace with the changing economic, technological and cultural patterns of the city. To do this, the Vancouver Board of School Trustees has extended public school services to adults in a number of ways. The Vancouver School of Art was opened in 1926. The next important expansion of services to adults occurred in 1949 with the establishment of a full-time Adult Education Department and the organization of the Vancouver Vocational Institute. Experimental classes in basic general education for the unemployed were inaugurated in 1960. King Edward Senior Matriculation and Continuing Education Centre was opened in September, 1962, and the extension of adult academic services to a six-day week was made operative in 1963.

In recent years the population of Vancouver has grown by 5.1 per cent from 365,844 in 1956 to 384,522 in 1961.¹ Educational enrolments have more than kept pace with the growth rate. The Vancouver school system enrolled 55,621 elementary and secondary students in 1956-1957 and 65,059 students in 1961-1962, an increase of 17 per cent. In addition to the elementary and secondary school programs in 1961, the Board of School Trustees operated two adult day vocational schools and

1 Dominion Bureau of Statistics, "1961 Census of Canada, Population and Housing Characteristics by Census Tracts", Vancouver, Bulletin CT-22, Ottawa, 1963, p. 4.

twenty-four evening class centres. Prior to 1962 there were only limited opportunities in the Vancouver school system for an adult to further his general education in a day program.

Educational Levels of the Vancouver Population

Among the population of Vancouver five years of age and over not attending school 59,837 or 21.5 per cent have prerequisite studies suitable for immediate entry into a high school program which would lead to the completion of grade XII requirements.

Of those individuals five years of age and over not attending school, 154,830 or 55.6 per cent of the total have fewer than two years of high school. The educational level of the population is indicated on Table I, p. 10.

Of the population of Vancouver five years of age and over not attending school, 8,976 or 3.2 per cent have never had any schooling.¹ Approximately one-third of this population, or 86,017 over five years of age and not attending school, have had the equivalent of an elementary schooling, and 55.6 per cent or 154,830 have had only the equivalent of nine years of schooling or less.

Limited Opportunities for Secondary School Drop-outs

The normal leaving age of students who graduate from high school after twelve years of school is eighteen years of age. Students are eligible for four years free secondary education beyond grade VIII up to age nineteen

¹ Ibid.

TABLE I

EDUCATIONAL LEVEL OF THOSE FIVE YEARS OF AGE AND OLDER
NOT ATTENDING SCHOOL, VANCOUVER, BRITISH COLUMBIA¹

Attainment Level by Category	Number	Percentage in Each Category
No schooling	8,976	3.2
Elementary, 1 - 6 years	86,017	30.9
High school, 1 - 2 years	59,837	21.5
High school, 3 - 5 years	96,856	34.8
University, 1 or more years	26,840	9.6
Total: 5 years of age and older not attending school	278,526	100.0

but an individual twenty-one years of age or older is excluded from the normal secondary school program. Furthermore, a high school student nineteen or twenty years of age pays a tuition fee of \$15.00 per month if remaining in a secondary school for a fifth or sixth year of high school beyond grade VIII to complete his grade XII standing.

Prior to the opening of King Edward Centre, the public school system offered only the facilities of the Vancouver Vocational Institute and the Vancouver School of Art to day-students not attending university who were

¹ Ibid.

continuing their education beyond a secondary school level. Adults had no other choice but to continue at night school for a general education leading to high school graduation or grade XIII standing.

In the City of Vancouver most academic studies have been offered at the centrally located King Edward Night School. Enrolment in the afternoon and evening academic program at King Edward increased from 1,918 registrations in 1955 to 6,667 registrations in 1963.¹ With the introduction of afternoon classes in 1958, academic opportunities were made more readily available to the public. Educational services have again been extended to adults in the lower mainland by the opening of Saturday morning classes on September 20, 1963 which enrolled 1,109.

Educational Needs of the Secondary School Drop-outs

According to figures released in Vancouver in 1963,² the retention of students in Vancouver from grade VII to grade XII is 72 per cent but 23 of each 72 students who enter grade XII do not graduate with their class. In Vancouver city, 51 per cent of the students who start junior high school do not complete grade XII. It is to this group of secondary school drop-outs that any young adults' program must look for its participants. The educational needs of these drop-outs must be met in the public school system by the Vancouver Vocational Institute, the Vancouver School of Art and King Edward Centre.

It is estimated in 1963 that 5,368 students leave Vancouver public schools each year: 107 prior to grade VIII, 161 in grade VIII, 322 in grade XI, 430 in grade X, 483 in grade XI, 1,235 in grade XII, 2,630 as

1 Table II, p. 12

2 Table III, p. 13

TABLE II

ACADEMIC ENROLMENT, AFTERNOON AND EVENING CLASSES
KING EDWARD CENTRE, 1955 - 1963

Year	High School Participants	Senior Matriculation Participants	Grade VIII Basic Subjects Participants	Total	Percentage Change Over Previous Year
1955	1,265	615	38	1,918	
1956	1,436	739	41	2,216	+ 15.54
1957	1,612	650	39	2,301	+ 3.84
1958	1,526	610	26	2,162	- 6.04
1959	1,902	855	59	2,816	+ 30.25
1960	2,565	1,485	60	4,110	+ 45.95
1961	2,719	1,959	76	4,706 506*	+ 26.08
1962	2,933	2,102	83	5,113 873*	+ 14.85**
1963	3,353	2,514	49	5,916 751*	+ 15.70***

* Classes held at Centres other than King Edward

** Excluding day classes, 1,034 in 1962

*** Excluding day classes, 1,275; but including Saturday classes, 1,109 in 1963

TABLE III

RETENTION RATE AND APPROXIMATE NUMBER OF SCHOOL DROP-OUTS,
VANCOUVER SCHOOL SYSTEM, 1962¹

(Grade VII Enrolment, 5,368 June, 1962, Equals 100 Per Cent)

Retention Percentage	Grade	Estimated Enrolment	Estimated Annual Accumulation of School Drop-outs
98 enter	VIII	5,261	107
95 enter	IX	5,100	268
89 enter	X	4,778	590
81 enter	XI	4,348	1,020
72 enter	XII	3,865	1,503
*49 graduate from	XII	2,630	2,738
(29 university program**		1,552	
* (
(20 general program		1,078	
**29 (18 enter first year		966	4,402
(university			
(11 enter second year		590	4,778
university			

1 "Proposal for Consideration of the Vancouver School District College by the Board of School Trustees", A Report Issued by the Vancouver Board of School Trustees, Vancouver 1963, p. 2.

graduates. These figures represent the number enrolled in Grade VII in June, 1962 as reported in the Public Schools Report, 1961-1962. These students are eligible for four years free education up to age nineteen in a secondary school in the city. Compulsory school attendance is required to age fifteen years - normally grade X level. Within one year of leaving school these individuals reach an age that makes them eligible for the adult evening program. Approximately 2,150 students leave secondary school in grades X, XI, and XII each year and can be considered as prospective participants in a day-time continuing educational program. The high school drop-outs represent an annual pool of over 2,000 potential young adult participants in a curriculum geared to youths who have not completed four years of high school.

In addition, 2,630 potential participants are eligible for continuing education beyond their grade XII graduation in 1962. Of these approximately 18 per cent or 966 of the original grade VII enrolment enter the university. The remaining 1,664 students become eligible for some form of continuing education. If graduates begin full-time employment they would qualify for programs geared to their job requirements and up-grading as well as qualify for short courses and part-time programs to enhance their general education experiences.

Immigration of under-educated youth to Vancouver from points outside the metropolitan area of the city accounts for a relatively small number who might participate in post-secondary education. In the period April 1 to September 30, 1963, the National Selective Service office recorded 42 males and 39 females 18 - 21 years of age from out of town who had registered for work. This might mean that these youth are drop-outs and under-

trained and need further schooling to obtain work; however, it seems likely that those who move to the city are small in number in comparison to the Vancouver school-leavers and high school graduates who may be prospective continuing education participants.

Educational Needs of the Adult Whose Formal Education has been Interrupted

The second large group of adult participants in a continuing educational program are those who have interrupted their education prior to completing grade XII and who have been out of school for at least one year. Each successive year, over 1,600 persons are added to the out-of-school young adult group at a level of education generally unacceptable for post-secondary academic advancement. The potential for this group is limited only by their ability, interest, or health and by the availability of suitable programs at reasonable cost.

Reference has been made previously to the number of adults with less than grade XII standing in the City of Vancouver. In 1960 the Department of Education recognized this need for further education by developing a curriculum better suited to mature needs. This is called the British Columbia Interrupted Program and it has the advantage of shortening the time required to complete the academic work necessary for high school graduation.

The responsibilities assigned to local school boards under the British Columbia Public Schools Act provide for a recognition of regional differences. Schools emerge out of the communities they serve so that opportunities for adults to continue their education beyond high school are an outgrowth of the needs of the community. This was recognized in 1958 when the Royal Commission on Education in British Columbia noted the

need to extend the educational services of the public school to new groups hitherto not served by strongly supporting an expansion of adult education programs.¹ This recommendation was unique in that new groups in the community were considered as necessary recipients of new educational services.

The sharp upswing in enrolment at King Edward Centre in September, 1962 was indicative of the educational need met by this day-time institution of continuing education. In September, 1963 enrolment in day classes increased by 23.3 per cent over the previous year. By 1971 enrolment projections indicate that 18,200 students will be ready to enter first year university or some post-secondary educational institution, and increase of 61 per cent over the 1961 actual student pool of first year students of 11,270.² About 8.5 per cent of the city population was represented by the enrolment in the night school programs during the academic year 1961-1962.

The main problems facing post-secondary education are those involving finance, facilities, curriculum development, and staffing to meet the large natural increase in continuing education both now and projected for 1971. Despite the operation of courses for adults sponsored by community agencies, university extension, private schools and the Department of Labour there are still many people for whom appropriate continuing educational opportunities are not available.

1 "The Royal Commission on Education in British Columbia", A Report Prepared by the Government of British Columbia, Queen's Printer, Victoria, 1960, p. 440.

2 Macdonald, J.B., Higher Education in British Columbia and a Plan for the Future, The University of British Columbia, Vancouver, 1962, p. 62.

The British Columbia Trustees Association made a statement in 1962 that indicated a recognition of the impact of participants in a post-high school education:

Boards of School Trustees should be responsible for meeting all educational needs in a community which may reflect the needs of the community for adults as well as children in academic and vocational fields alike, including the development and operation of community colleges¹

It was reported in the Ninety-first Annual Report of the Public Schools that:

Adult Education is presenting a tremendous challenge and is demanding serious thought and imaginary foresight. If this challenge is not met, those charged with the provision of facilities and opportunities will have to contend with problems of immense magnitude; these problems are acute because of the necessity of continuing education and the great desire to gain knowledge, which is continually expressed by so many people in our complex society.²

Categories of Prospective Participants

We have determined previously the numerical pool of individuals eligible for continuing education in the City of Vancouver; however, the question may be asked if numbers alone are sufficient reason to develop adult education services. The answer can be discovered by examining why such numbers require additional educational opportunities. At least five major groups can be considered as prospective participants in some continuing educational program in the adult field.

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- 1 "British Columbia School Trustees Report on the 1962 Convention of British Columbia School Trustees", British Columbia School Trustees Association, Vancouver, 1962.
 - 2 "Ninety-first Annual Report 1961-1962, Public Schools of the Province of British Columbia", Department of Education, Victoria, 1963, p. 92.

High School University Program Graduates

Approximately 59 per cent of Vancouver high school graduates are eligible for higher education at university. Not all young people, however, desire, have the ability, or can afford to go to a university. This group numbering some 1,664 "academic" students turn to further training in technical or trades courses or join the labour force in the community. The number will be further increased when the University of British Columbia's proposed higher entrance qualifications go into effect. On the basis of the Vancouver School System's past experience, some 1,078¹ of the 1956-1957 grade VII students who in 1961-1962 were general program graduates would be prepared to begin a post-secondary education in something other than a university program.

Estimates based on past experience are apt to be conservative. The availability of facilities, suitability of program, university entrance requirements, economic conditions and social motivation are all factors which will temper the 1961-1962 grade VII's outlook on continuing and higher education in 1967, the year of their high school graduation. The Macdonald Report² indicates that the proportion seeking higher academic training beyond high school will at least remain constant if not increase over the present rate of 18 per cent in Vancouver in 1962.

¹ Table III, p. 13.

² Macdonald, J.B., Higher Education in British Columbia and a Plan for the Future, The University of British Columbia, Vancouver, 1962, p. 62.

High School General Program Graduates

The second major class of potential participants in Vancouver is made up of those adults who need to develop vocational and technical skills. These are included among the 41 per cent who are graduates from high school and in the 51 per cent entering grade VIII who do not finish high school. These two categories each year represent 3,816 prospective continuing education participants in the City of Vancouver.

The Vancouver Vocational Institute, the Vancouver School of Art and the Radio Electronics Centre enrolled 1,496 pupils in their day programs in September, 1962 but approximately half of these came from outside the city.

The High School Drop-out

The third group overlaps the vocational and technical education students mentioned previously. The retention index in Vancouver for grade VII to XII is 72 per cent. This is considerably above the national figure in which one-third now drop out before grade VIII and another one-third during high school. Table IV, page 27, shows the levels of drop-outs by grade as experienced in Vancouver in 1962. Approximately 28 per cent of the grade VII enrolment is dropping out of school prior to graduation from grade XII. Of the 4,624 grade VII pupils enrolled in 1956-1957, 73 per cent or 3,358 were still enrolled in 1962.¹ These 1,266 drop-outs are potential participants in a continuing educational program.

1 "Ninety-first Annual Report, 1961-1962, Public School of the Province of British Columbia", Department of Education, Victoria, 1963, p. 129.

Adults Requiring Job Upgrading

Some adults need job upgrading and retraining to meet changing employment requirements in Vancouver. Rapid technological changes and job reclassifications have made it necessary for adults to seek programs that provide an opportunity for retraining and new learning experiences. This may be met through intensive short-term programs developed especially for this group.

General Education for Adults

Another group representative of the need for continuing learning beyond secondary school is drawn from the "adult" graduates of high school. Many grade XII graduates are seeking instruction beyond grade XII, including advanced terminal programs. Formal education does not end necessarily with graduation. Each year Vancouver schools are graduating some 2,600 grade XII students. Private schools and trades' courses account for several hundred more prospects for some form of continuing education and represent a pool of some 3,000 "successful" young adults who are "ripe" for advanced programs.

The last group which would contribute to a pool of potential participants for adult education is the Vancouver citizen from every walk of life. Part-time programs for cultural enrichment are being sought by increasing numbers every year in Vancouver. A.A. Liveright, director of the Centre for the Study of Liberal Education for Adults, Chicago, identifies three basic requirements and principles for the expansion of

1 Liveright, A. A., "Education for Adults: Luxury or Necessity?" Fundamental and Adult Education, Vol. 12, (1960), No. 2, Paris, United Nations Educational, Scientific and Cultural Organization, p. 85.

an adult curriculum:

1. Education is not completed when a man or woman leaves regular school and goes to work. It is a continuing process which goes on through life.
2. This continuing educational process is concerned with all aspects of life including the growth of an individual as an individual--with his aesthetic and intellectual development as well as his physical and vocational development.
3. Adults want to, and can, learn but their capacity to study and learn is weakened by disuse. It is important, therefore, to provide opportunities for the educational process to continue so that their learning skills are not lost.

Secondary school drop-outs, graduates, the young, the middle-aged, or the elderly adult are not just part of a pool of potential participants for continuing education but are learners in a continuous educational process. As Peers notes:

All education must be a process of adjustment of the individual to the world in which he lives. Since the world is constantly changing, and since the young adult himself is one of the potential agents of the change, this adjustment must be a continuous process and not something which is accomplished once-and-for-all during the years of childhood and adolescence.¹

The needs and goals of learners change as age and status change. It is the responsibility of established educational agencies to discover these needs and to translate them into opportunities for continuing learning commensurate with community resources.

¹ Peers, Robert, Adult Education in Practise, London, Macmillan and Company, 1934, pp. 7-8.

The King Edward Adult Centre

The Programs

A post-secondary academic adult day program was offered for the first time in 1962. Enrolment was expected to reach 700; however, 1,149 students appeared for counselling and registration. Qualified students resident in Vancouver who are eighteen years of age and older or those who have had at least four years of high school beyond grade VIII are admitted to the Centre.

There were two broad programs offered. In the first of these individuals at least nineteen years of age and who have been out of school one or more years could follow either the interrupted-university course or the interrupted-general course for a high school graduation certificate. In the second, individuals could enroll in the senior matriculation course which includes those academic subjects prescribed for the completion of first year university.

These two programs are considered to be stepping stones to technical and trade courses, entrance to either first or second year university, or terminal programs of general education. In 1962-1963, King Edward Centre operated classes from 8:00 a.m. to 10:00 p.m. Monday through Thursday for ten months of the year. This school is now considered the academic centre for adults, but it is only part of a larger program operated by the public school system in the City of Vancouver.

The Participants

For the purpose of this study the participants have been arbitrarily distinguished by their registration in one of the three types of programs.

The interrupted participant belongs to the older age group. It is in this group that married adults, full-time workers, housewives, shift workers, part-time and full-time older students are to be found. Ages ranged from eighteen to fifty-two and educational levels in this group include those who enrolled with only grade VIII education as those who were completing one or two courses for grade XII standing.

The senior matriculation participant has, for the most part, completed university entrance standing. He may have one or two grade XII courses to complete along with at least three senior matriculation subjects. Most of these students were enrolled in a secondary school during the previous school term, and 83.8 per cent are eighteen to nineteen years of age.

The grade XII participant is relatively younger than the other two types of students.¹ These individuals identified as Grade XII students were in attendance at a secondary school the previous year and in most cases are completing university entrance standing. Grade XII students are carrying one or more grade XII subjects and one or two senior matriculation subjects in their program.

The Organization

King Edward Centre is organized differently from the normal secondary school. The Vancouver Board of School Trustees declared that King Edward Centre was to function as an educational institution for adults and post-secondary students.² In keeping with the principles of adult

¹ Table IV, p. 27.

² Glenesk, A.H., "King Edward Senior Matriculation and Continuing Education Centre", Continuous Learning, Journal of the Canadian Association for Adult Education", Vol. 1, No. 6, Toronto, 1962, p. 284.

education,, required conformity to traditional high school regulations was noticeably relaxed; presence in the building was required only at scheduled classes; a library was available throughout the day and evening for study and reference purposes; and the student common room and cafeteria were open all day as well as into the evening.

Shift-workers, housewives and adults with full-time jobs as well as young adults are accommodated as classes are planned on a five-day time schedule so that students with regular work schedules are assured of programs arranged to suit their personal needs. Senior matriculation English and mathematics classes are scheduled for four hours each week. All other senior matriculation classes meet three hours each week in addition to two hours for science laboratory classes. Junior matriculation classes consist primarily of three one-hour classes each week. Normally, all students carry from 15 - 20 hours of assigned classes per week.

Seminar and tutorial periods are available for students and they may arrange private tuition with their instructors or the instructor may request any number of students to attend a coaching session for additional help. These tutorial periods were so popular with faculty and students prior to the Christmas examination period that one week was set aside for such tutorial assistance.

The articulation between day afternoon, and evening adult classes is satisfactory. There were some students who registered in day program, the extended day classes of the late afternoon and also in the evening program.

The Facilities

This study has not set out to describe the Centre in any detail with respect to facilities, however, it should be noted that the three types of participants studied were never segregated into separate instructional groups or into any designated area in the Centre. Furniture and floor areas have been adapted to the needs of older students. Large classrooms, a large library area and new furniture were features which contributed to a more flexible use of facilities than is found ordinarily in traditional secondary schools.

CHAPTER III

CHARACTERISTICS OF PARTICIPANTS

Age and Sex

The analysis of age by sex of participants in the interrupted program, senior matriculation program and grade XII program is shown in Table IV. The interrupted student had a mean age of 19.38 years in September, 1962 with an age range from 17 - 35 and the largest percentage in the 20 - 24 year age group. Among senior matriculation students, the mean age was 18.79 years with 83.9 per cent in the age group of 15 - 19 years. The mean age of grade XII students was 19.33 years, and 76.1 per cent of the total group was in the category of 15 - 19 years of age. Thus, senior matriculation students were the youngest, followed by grade XII, and finally interrupted program students. The median age of withdrawals shows the same pattern.

The adult participants at the Centre were distributed unevenly in the three types of programs analysed in this study.¹ In the age groupings over twenty years, approximately the same number of individuals registered in both the interrupted and senior matriculation programs. Eighteen per cent were included in the 20 - 24 year old group and nearly 9 per cent of the enrolment were individuals twenty-five years of age or older.

The 15 - 19 year old category of the senior matriculation group was the largest single category in the Centre and it represented approximately 73 per cent of the total enrolment. In this category there were

¹ Table IV, p. 27.

TABLE IV

AGE AND SEX OF STUDENTS ENROLLED AS AT
JUNE 30, 1963, BY TYPES OF PROGRAM

	Interrupted				Senior Matriculation				Grade XII				Totals for all Three Programs			
Age	M	F	T	P	M	F	T	P	M	F	T	P	M	F	T	P
15-19	26	9	35	25.4	363	144	507	83.8	33	15	48	76.2	422	168	590	73.3
20-24	64	5	69	50.0	58	7	65	10.8	10	1	11	17.4	132	13	145	18.0
25-29	17	1	18	13.1	13	2	15	2.5	2		2	3.2	32	3	35	4.3
30-34	2	3	5	3.6	6	4	10	1.7					8	7	15	1.9
34-39	2	4	6	4.3	1	3	4	.7	1	1	2	3.2	4	8	12	1.5
40-44	1	1	2	1.4	1	1	2	.3					2	2	4	.5
45-49	1	2	3	2.2		1	1	.2					1	3	4	.5
Totals	113	25	138	100.0	442	162	604	100.0	46	17	63	100.0	601	204	805	100.0

Age as at September 1, 1962. M: Male, F: Female, T: Total, P: Per cent

only thirty-five individuals registered in the interrupted program but five hundred and seven individuals registered in the senior matriculation program.

The participants in the three programs were significantly different in age. Their age distributions were completely independent and significantly different at the .01 level of confidence. The independence of ages was so great that there it is extremely unlikely that the groups will ever have a similar distribution of age.

The Centre is, therefore, dealing with groups of individuals unrelated as to age. The factor of age in relation to the program is an independent variable to be considered when searching for characteristics which identify individuals in the three educational programs.

Attendance

The length of the school year is set by the Provincial Department of Education. One hundred and ninety-six days are included in the two terms from September 1, 1962 to June 30, 1963. The record of attendance for students is kept by the administrative office staff and reported weekly by the members of the faculty. Absence in one or more periods in a day constitutes a full day's absence. Each absence recorded here represents at least one daily report of an absence by a student.¹ Withdrawals are not included in this attendance report due to the irregularity of attendance prior to leaving the school and because 30.0 per cent of the withdrawals left school during the first month.²

1 Table V, p. 29.

2 Table VII, p. 32.

TABLE V.

RECORD OF DAILY ABSENCES, 1962-1963

	Interrupted			Senior Matriculation			Grade XII				
"Days" Absent	M	F	T	M	F	T	M	F	T	Grand Total	Per cent
0 - 9	18	2	20	47	23	70	3	2	5	95	11.8
10 - 19	13	5	18	68	24	92	5	2	7	117	14.5
20 - 29	25	3	28	65	39	104	8	3	11	143	17.8
30 - 39	11	2	13	53	23	76	8		8	97	12.0
40 - 49	10	6	16	62	17	79	1	2	3	98	12.2
50 - 59	9	5	14	36	13	49	5	3	8	71	8.8
60 - 69	12	1	13	46	8	54	9	3	12	79	9.8
70 - 79	8	1	9	32	9	41	3	1	4	54	6.7
80 - 89	2		2	24	5	29	3	1	4	35	4.4
90 - 99	2		2	5	1	6	1		1	9	1.1
100 -109	2		2	4		4				6	.7
110 -119											
120 -129	1		1							1	.2
Totals	113	25	138	442	162	604	46	17	63	805	100.0

M: Male, F: Female, T: Total

TABLE VI.

COMPARISON OF DAILY ABSENCES OF STUDENTS ACCORDING TO TYPES
OF PROGRAM

CONTINGENCY TABLE FOR THE CHI-SQUARE TEST

Days Absent	I. fo (fe)	II. fo (fe)	III. fo (fe)	fo (fe)	$\frac{(fo - fe)^2}{fe}$
0 - 9	20 (16.29)	70 (71.28)	5 (7.43)	95 (95)	.84 .20 .79
10 - 19	18 (20.06)	92 (87.79)	7 (9.16)	117 (117)	.21 .02 .51
20 - 29	28 (24.51)	104 (107.29)	11 (11.19)	143 (143)	.50 .10 .003
30 - 39	13 (16.63)	76 (72.78)	8 (7.59)	97 (97)	.79 .14 .02
40 - 49	16 (16.80)	79 (73.53)	3 (7.67)	98 (98)	.04 .41 2.84
50 - 59	14 (12.17)	49 (53.27)	8 (5.56)	71 (71)	.28 .34 1.07
60 - 69	13 (13.54)	54 (59.27)	12 (6.18)	79 (79)	.02 .47 5.48
70 & up	16 (18.00)	80 (78.79)	9 (8.21)	105 (105)	.22 .02 .08
Totals	138 (138)	604 (604)	63 (63)	805 (805)	15.39*

*Chi-square equals 29.1, df equals 14.

Test results: significant difference at .01 level of confidence.

I: Interrupted Program, II: Senior Matriculation, III: Grade XII

Attendance was recorded by marking only the absences of each student. The Centre initially made known that attendance in class was required for at least seven-eighths of the scheduled time. In an attempt to simplify the recording of attendance, the instructors were required to report at the end of each week those students who had missed a class. When the student was reported absent beyond the limit set by the school, the student was interviewed by the counsellor. Chronic absence resulted in the student's dropping his course and in some instances in the student's withdrawal from the Centre.

The average number of days in full-time attendance for the year for students who were enrolled in the Centre through the year was 161.2 days, representing an average of 38.9 days absent. Female students had a lower average number of absences than male students. Male students had an average of 40.3 days absent and female students an average of 34.8 for the year. The mode classification is shown to be 20 - 29 days absent by each type of student and therefore by the population.

Adult students had good reasons to be absent frequently. Work hour changes, shift-work, transportation and family responsibilities were often found to be reasons for continued absences.

When the chi-square test was applied, no significant difference was found among the three types of students with respect to the distribution of absences. The null hypothesis was accepted at the .01 level of significance.¹

Withdrawals from the Centre

Of all participants who originally registered with the school, 26.1

¹ Table VI, p. 30.

TABLE VII

CHRONOLOGICAL RECORD OF STUDENT WITHDRAWALS FROM KING EDWARD CENTRE,
DAY PROGRAM, 1962 - 1963

	Interrupted	Senior Matriculation	Grade XII	Total	Total by Percentage
September	16	25	8	49	17.3
October	23	53	14	36) 54) 90*	12.7) 19.0) 31.7**
November	9	19		28	9.9
December	1	9		10	3.5
January	4	23	2	29	10.2
February	12	15	1	28	9.8
March	4	10	1	15	5.3
April	5	7	2	14	4.9
May	7	9	1	17	6.0
June	2	2		4	1.4
Totals	83	172	29	284	100.0

* Withdrawn in September except for return of textbooks: 36.

** Withdrawn in September except for return of textbooks: 12.7%

per cent withdrew from the Centre before the end of the school year. Of these students, 30.0 per cent withdrew before paying fees or before the end of the first month of tuition.¹ These withdrawals are not included in the data analysed because of the lack of information about them.

Of the total withdrawals from the Centre, 62.3 per cent were in the 15 - 19 year age category.² The mean age of the students who withdrew from the interrupted program was 22.3 years with an age range from 18-49; from the senior matriculation program, 19.2 years with an age range of 17 - 39; and from the grade XII program, 20.6 years ranging in age from 18 - 54.

The differences between the proportion of withdrawals and the proportion of June enrolment according to the three types of program was tested by the chi-square test, and is significant at the .01 level of confidence.³ The interrupted students withdrew in greater proportion than senior matriculation or grade XII students.⁴ The senior matriculation students were retained by the Centre to a greater extent than either the interrupted students or the grade XII students.

Withdrawals from Courses

Almost 45 per cent of all students remaining in the Centre for the school year withdrew from one or more courses.⁵ The program in which the students were originally registered was retained by 447 or 55.5 per cent of the students. Female students in senior matriculation and grade XII

1 Table VIII, p. 34

2 Table VII, p. 32

3 Table X, p. 35

4 Table IX, p. 35

5 Table XI, p. 37

TABLE VIII

WITHDRAWALS FROM KING EDWARD CENTRE, DAY PROGRAM
1962-1963, BY AGE AND SEX

Age	Grade XII			Senior Matriculation			Interrupted			Grand Total	Per cent
	M	F	T	M	F	T	M	F	T		
50 - 54		1	1							1	.4
45 - 49		1	1					1	1	2	.7
40 - 44							1		1	1	.4
35 - 39				1	1	2	1		1	3	1.0
30 - 34				3	1	4	2	2	4	8	2.8
25 - 29	1	1	2	6		6	9		9	17	6.0
20 - 24	1		1	19	3	22	27	1	28	51	17.9
15 - 19	16	3	19	103	23	126	25	7	32	177	62.3
Unclassified			5	10	2	12	4	3	7	24	8.5
Totals	18	6	29	142	30	172	69	14	83	284	100.0

M: Male, F: Female, T: Total

TABLE IX

WITHDRAWALS FROM KING EDWARD CENTRE, 1962-1963

	Interrupted Program	Senior Matriculation	Grade XII Program	Total
Withdrawals	83	172	29	284
Remainder	138	604	63	805
Total Registered	221	776	92	1,089
Percentage of Withdrawals to Total in Program	37.6	22.2	31.5	26.1

TABLE X

PROPORTION OF WITHDRAWALS BY
TYPES OF PROGRAM, 1962-1963. CHI-SQUARE TEST

	Percentage, Total Withdrawals fo	Percentage, June Enrolment fe	fo-fe	(fo-fe) ²	$\frac{(fo-fe)^2}{fe}$
Interrupted	29.2	17.1	12.1	146.41	8.562
Senior Matriculation	60.6	75.0	-14.4	207.36	2.764
Grade XII	10.2	7.9	2.3	5.29	.669
Totals	100.0	100.0			11.995*

* Chi-square: 9.21, df: 2.

Test Results: Significant at .01 level of confidence.

programs dropped a greater percentage of one or more courses than the male students of those programs. Of the senior matriculation students, 51.2 per cent of the females dropped one or more courses, whereas 49.5 per cent of the males dropped one or more. There was a similar small difference in the proportion of females and males dropping one or more courses in the grade XII group. Only 40.0 per cent of the females on the interrupted program dropped one or more subjects, and 42.5 per cent of the males in this group dropped one or more. It would appear that proportionately more senior matriculation students dropped courses than either the interrupted or grade XII groups.

The average number of courses dropped varied in each program group. The interrupted program student withdrew from 1.37 courses, the senior matriculation student withdrew from 1.09 courses and the grade XII student withdrew from 1.54 courses. The "t" test for significant differences was applied to the difference between the means of each type of student, and indicated that the null hypothesis is upheld only between the interrupted program group and the partial program group. The application of the "t" test resulted in a significant difference at the .01 level of confidence between the senior matriculation student and the interrupted and partial students. The number of course withdrawals, therefore, distinguishes between the senior matriculation student and the interrupted and grade XII students.

At the time of withdrawal, many of the students who dropped subjects in the day program registered for correspondence or evening classes or continued their preparation for examinations by private study.

TABLE XI

WITHDRAWALS FROM COURSES, 1962-1963

Courses Deleted	Interrupted			Senior Matriculation			Grade XII			Grand Total	Per cent
	M	F	T	M	F	T	M	F	T		
0	65	14	79	223	106	329	29	10	39	447	55.5
1	35	8	43	142	38	180	9	6	15	238	29.6
2	10	1	11	57	41	71	5		5	87	10.8
3	2	2	4	17		17	3	1	4	25	3.1
4	1		1	3	4	7				8	1.0
Totals:	113	25	138	442	162	604	46	17	63	805	100.0
Withdrawals 1-4 Courses	48	11	59	219	83	275	17	7	24	358	
Percentage	42.5	40.0	42.7	49.5	51.2	45.5	37.0	41.2	38.1	44.5	

M: Male, F: Female, T: Total

Intelligence Quotients

A frequency distribution was made to compare the intelligence quotients of students in the three types of programs,¹ since students in public high schools in the City of Vancouver are tested for a scholastic aptitude in the ninth grade. The test used is the Otis Quick-Scoring Gamma Test of Mental Ability. In cases where other mental ability tests were used, an equivalency table supplied by the Vancouver School Board Department of Research equated the scores to the Otis scores used in this survey. Scores were not used if there was any doubt that they were not equivalent to the Otis scores, therefore, 126 or 15.6 per cent of the enrollees were rejected from this phase of the study.

Whereas 47.8 per cent of the I.Q. scores are 110 or better, 14.3 per cent of the students for whom Otis intelligence quotients are recorded have scores below 100, and 11.9 per cent of the students have a rating higher than 120. The largest group of students were recorded in the 100-109 category.

¹ Table XII, p. 39.

TABLE XII

FREQUENCIES OF INTELLIGENCE QUOTIENTS FROM PREVIOUS SCHOOL RECORDS
DAY PROGRAM PARTICIPANTS, 1962-1963

Classification on Otis Gamma Scale*	Interrupted			Senior Matriculation			Grade XII			Grand Total	Per cent
	M	F	T	M	F	T	M	F	T		
130 and up				3	2	5				5	.6
120 - 129	3	2	5	42	27	69	2		2	76	9.5
110 - 119	11	4	15	156	54	210	13	6	19	244	30.3
100 - 109	32	4	36	151	56	207	8	6	14	257	31.9
90 - 99	19	6	25	38	7	45	12	2	14	84	10.4
80 - 89	7		7	5		5	1		1	13	1.6
Unclassified	41	9	50	47	16	63	10	3	13	126	15.7
Totals	113	25	138	442	162	604	46	17	63	805	100.0

*Scored on Otis Quick Scoring Gamma Tests administered by the Vancouver School Board. Intelligence quotients recorded by private schools prior to entry into the public school system were translated into equivalent Otis scores.

M: Male, F: Female, T: Total.

TABLE XIII

COMPARISON OF INTELLIGENCE QUOTIENTS BY TYPES OF PROGRAMS,
CONTINGENCY TABLE FOR THE CHI-SQUARE TEST--NULL HYPOTHESIS

Intelligence Quotients	Interrupted fo (fe)	Senior Matriculation fo (fe)	Grade XII fo (fe)	fo (fe)	$\frac{(fo - fe)^2}{fe}$
110 - 140	20 (41.70)	284 (259.33)	21 (23.97)	325 (325)	11.29 2.35 .38
100 - 109	36 (32.98)	207 (205.07)	14 (19.95)	257 (257)	.28 .02 1.29
80 - 99	31 (12.32)	50 (76.60)	15 (7.08)	96 (96)	28.32 9.24 8.86
Totals	87 (87)	541 (541)	50 (50)	678 (678)	62.03*

fo: observed frequencies, fe: expected frequencies.

* Chi-square equals 13.3, df equals 4.

Test results: Significant difference at .01 level of confidence.

TABLE XIV

SIGNIFICANCE OF INTELLIGENCE QUOTIENTS
BETWEEN EACH TYPE OF STUDENT, NULL HYPOTHESIS

Between Groups:	"t"	Degrees of Freedom (N - 2)	"t" is Significant at the .01 Confidence Level at:*
Interrupted Program and Senior Matriculation Program	5.44	610	2.33
Senior Matriculation Program and Grade XII Program	2.71	580	2.33
Grade XII Program and Interrupted Program	1.34	126	2.33
Population: Males and Females	1.84	666	2.33

* Probability points of the t-distribution (single-sided) Davies, O.L., Statistical Method in Research and Production, Hafner, New York, 1957, p. 366.

The I. Q. means of each group are shown to range from 102.02 to 110.22.¹ The mean of the total group of 679 for whom I. Q. scores were available is 108.65. Female students have a mean score 2.21 points higher than the male students at the Centre, and in each group female students have a higher mean I. Q. than male students.²

The null hypothesis was rejected when the chi-square test for independence of relationship was applied to the distribution of intelligence

1 Table XV, p. 42

2 Ibid.

TABLE XV

MEANS OF STUDENTS' SCORES IN EACH PROGRAM BY
TOTAL AND BY SEX FOR FINAL ACHIEVEMENT
INTELLIGENCE QUOTIENT AND GRADE-POINT AVERAGE

1. Interrupted Program:

	Final Achieve- ment Percentage	Intelligence Quotients	Grade-point Average
Total	48.18	102.02	3.91
Male	47.17	101.33	3.82
Female	53.62	105.40	4.33

2. Senior Matriculation Program:

Total	54.89	110.22	4.15
Male	53.52	109.86	4.10
Female	58.64	111.34	4.57

3. Partial (Grade XII) Program:

Total	47.50	105.42	3.55
Male	46.87	104.94	3.65
Female	51.96	106.64	3.40

4. Total of the Three Groups (Population):

Total	53.26	108.65	4.12
Male	52.19	108.24	4.03
Female	57.46	110.45	4.46

quotients of the three types of students on the 1962 - 1963 program.¹ Because a significant difference was found among the three distributions of intelligence quotients, the data were tested again by the "t" test. Results were found to be significant at the .01 level of confidence only when the intelligence quotients of the interrupted program student and the senior matriculation program student were compared.² When the "t" test was applied to the difference of the means of the I. Q.s of the senior matriculation and the grade XII students, the grade XII and the interrupted students, and to the means by sex, there were no significant differences at the .01 level of confidence.

Grade-point Averages

The level of performance established by continuing education participants in similar academic courses prior to enrolling at King Edward Centre is shown in Table XVI. Each person's high school record was examined when available and the average grade earned in the last year of high school was recorded. An average grade-point level of achievement in grade XI or XII for academic subjects was determined for 731 students of the 805 in the universe.³

The grade-point range included 46.6 per cent of the students in a C grade achievement or higher.⁴ Fewer than 1 per cent had achieved at an E level before leaving high school, but 12.7 per cent had achieved in only a D grade-point range.⁵ The interrupted student had only 15 per

1 Table XIII, p. 40.

2 Table XIV, p. 41.

3 Table XVI, p. 44.

4 Ibid.

5 Ibid.

TABLE XVI

GRADE-POINT AVERAGE ACHIEVEMENT FOR THE EDUCATIONAL YEAR
PRIOR TO ENROLMENT AT KING EDWARD CENTRE, 1962-1963

Grade-point*	Interrupted			Senior Matriculation			Grade XII			Grand Total	Per cent
	M	F	T	M	F	T	M	F	T		
A : 7				2		2				2	.25
B : 6	4	1	5	11	15	26				31	3.85
C+ : 5	12	4	16	48	35	83	3		3	102	12.67
C : 4	25	5	30	148	50	198	9	3	12	240	29.81
C- : 3	28	5	33	149	39	188	21	6	27	248	30.81
D : 2	18	3	21	57	9	66	10	5	15	102	12.67
E : 1	3		3	3		3				6	.75
Unclassified	23	7	30	24	14	38	3	3	6	74	9.19
Totals	113	25	138	442	162	604	46	17	63	805	100.00

M: Male, F: Female, T: Total

*Grade-point range includes any value plus or minus .5 from a grade-point.

cent of its group in the D classification, but the grade XII group included 24 per cent of its number in this range. Among the total group 48.7 per cent of the students had achieved C- or lower letter grade average when they entered the Centre.

The chi-square test for the significance of independence of relationships was applied to the frequency distribution, and the difference was shown to be significant.¹ The null hypothesis that there is no significant difference in the grade-point averages of the three types of programs is rejected and the relationship of types of programs and past performance based on grade-point averages of a previous year are considered to be independent. Since the three types of programs are independent of one another with respect to performance in high school, the characteristics which differentiate a "B" from a "C" student in high school are evidently still operable to differentiate among students in the three kinds of programs offered at King Edward Centre.

In view of this significant difference of letter grade distributions further tests of significance were made by the "t" test and the results show that the grade-point averages were significantly different at the .01 level only between senior matriculation students and the grade XII program students.² The "t" test showed no significant differences at the .01 level of confidence when the grade-point averages were compared between the interrupted program and senior matriculation program; between the interrupted program and the grade XII program; or between the population by sex.

1 Table XVII, p. 46.

2 Table XVIII, p. 47.

TABLE XVII

COMPARISONS OF GRADE-POINT AVERAGE AND TYPES OF PROGRAMS
CONTINGENCY TABLE FOR THE CHI-SQUARE TEST,
NULL HYPOTHESIS

Grade - Point	Interrupted fo (fe)	Senior Matriculation fo (fe)	Grade XII fo (fe)	fo (fe)	$\frac{(fo - fe)^2}{fe}$
5, 6, 7	21 (19.95)	111 (104.53)	3 (10.53)	135 (135)	.06 .40 5.38
4	30 (35.46)	198 (185.83)	12 (18.71)	240 (240)	.84 .80 2.41
3	33 (36.63)	188 (192.02)	27 (19.34)	248 (248)	.36 .08 3.03
1, 2	24 (15.96)	69 (83.62)	15 (8.42)	108 (108)	4.05 2.56 5.14
Totals	108 (108)	566 (566)	57 (57)	731 (731)	25.11*

fo: observed frequencies, fe: expected frequencies

*Chi-square equals 16.8, df equals 6.

Test results: significant difference at .01 level of confidence.

TABLE XVIII

SIGNIFICANCE OF GRADE-POINT AVERAGES
BETWEEN EACH TYPE OF STUDENT, NULL HYPOTHESIS

Between Groups:	"t"	Degrees of Freedom (N - 2)	"t" is Significant at the .01 Confidence Level at:
Interrupted Program and Senior Matriculation Program	.31	662	2.33
Senior Matriculation Program, and Grade XII Program	2.73	559	2.33
Grade XII Program and Interrupted Program	1.23	140	2.33
Population: Males and Females	.49	701	2.33

Final Achievement

Every student who completed an academic course had to write a government examination to obtain a final achievement rating. All scores were recorded, averaged, and classified.¹

If 54 per cent is considered to be a passing mark and approximately equivalent to a C- grade-point standard, then 51.1 per cent of all students achieved less than a C- on final achievement as shown in Table XIX; however, in the grade-point distribution it was found that only 48.6 per cent achieved C- or less. It appears that 17.7 per

¹ Table XIX, p. 48.

² Table XVI, p. 44.

TABLE XIX

FINAL ACHIEVEMENT PERCENTAGES DISTRIBUTION BY
TYPES OF PROGRAM, 1962-1963

Percentage	Interrupted			Senior Matriculation			Grade XII			Grand Total
	M	F	T	M	F	T	M	F	T	
90 - 95		1	1		1	1				2
85 - 89					1	1				1
80 - 84		2	2		2	2				4
75 - 79	1		1	10	6	16	1		1	18
70 - 74	5	1	6	25	16	41	1	1	2	49
65 - 69	3	2	5	39	19	58	1	1	2	65
60 - 64	10	2	12	57	31	88	4	3	7	107
55 - 59	19	3	22	76	33	109	6	1	7	138
50 - 54	10	3	13	64	23	87	6	3	9	109
45 - 49	16	2	18	62	17	79	6	4	10	107
40 - 44	14	3	17	51	8	59	10	3	13	89
35 - 39	10	3	13	30	1	31	5		5	49
30 - 34	8	1	9	7	2	9	4	1	5	23
25 - 29	2	1	3	6	1	7				10
20 - 24	7		7	3		3				10
15 - 19	1		1				1		1	2
10 - 14	1		1							1
5 - 9	1		1							1
Unclassified	5	1	6	12	1	13	1		1	20
Totals	113	25	138	442	162	604	46	17	63	805

M: Male, F: Female, T: Total

cent of the students achieved at least 65 per cent on the final examinations, and if 65 per cent is considered the equivalent of C+ grade-point letter grade, it was found that 18.6 per cent of the students were achieving at this level at the beginning of the school year.

The interrupted and grade XII groups wrote the junior matriculation examination, and it would appear that the grade XII group did not achieve as many high scores or as many low scores as the interrupted group. The number of successes over 54 per cent achievement in the interrupted group was 37.1 per cent and in the grade XII group, 30.6 per cent. At the lower end of the scale, 26.5 per cent of the interrupted students had an average score of under 40, whereas only 17.7 per cent of the grade XII students had average scores below 40.

The senior matriculation distribution of final achievement results forms a different pattern. This group had 53.5 per cent of its number achieve over 54 per cent on their examinations, and only 8.5 per cent of the senior matriculation students had average scores of under 40. The senior matriculation group had 20.1 per cent of its group with a final achievement of 65 or higher, but the interrupted group had only 11.4 per cent and the grade XII group only 8.1 per cent.

Final achievement data were tested first by the chi-square test and there was a significant difference at the .01 level of confidence.¹ The "t" test was then applied to the data in order to differentiate among the three types of students. The results of the "t" tests showed significant differences at the .01 level of confidence² in the final achievement between the interrupted program and the senior matriculation students; between the senior matriculation students and grade XII students; and

1 Table XX, p. 50.

2 Table XXI, p. 51.

TABLE XX

COMPARISON OF FINAL ACHIEVEMENT, 1962-1963 BY
TYPES OF PROGRAM FOR THE CHI-SQUARE TEST--NULL HYPOTHESIS

Percentage Classification	Interrupted fo (fe)	Senior Matriculation fo (fe)	Grade XII fo (fe)	fo (fe)	$\frac{(fo - fe)^2}{fe}$
65 - 100	15 (23.37)	119 (104.65)	5 (10.98)	139 (139)	3.02 1.97 3.26
60 - 64	12 (17.99)	88 (80.56)	7 (8.45)	107 (107)	1.99 .69 .25
55 - 59	22 (23.21)	109 (103.89)	7 (10.90)	138 (138)	.06 2.51 1.40
50 - 54	13 (18.33)	87 (82.06)	9 (8.61)	109 (109)	1.55 .30 .02
45 - 49	18 (17.99)	79 (80.56)	10 (8.45)	107 (107)	.00 .03 .25
40 - 44	17 (14.97)	59 (67.00)	13 (7.03)	89 (89)	.28 .96 5.07
0 - 39	35 (16.14)	50 (72.28)	11 (7.58)	96 (96)	22.04 6.87 1.54
Totals	132 (132)	591 (591)	62 (62)	785 (785)	54.06*

*Chi-square equals 24.7, df equals 12.

Test results: significant difference at .01 level of confidence.

TABLE XXI

SIGNIFICANCE OF FINAL ACHIEVEMENT
BETWEEN EACH TYPE OF STUDENT, NULL HYPOTHESIS

Between Groups:	"t"	Degrees of Freedom (N - 2)	"t" is Significant at the .01 Confidence Level at:
Interrupted Program and Senior Matriculation Program	3.39	662	2.33
Senior Matriculation Program and Grade XII Program	3.75	647	2.33
Grade XII Program and Interrupted Program	.22	192	2.33
Population: Males and Females	2.51	616	2.33
Senior Matriculation Program: Males and Females	3.45	587	2.33
Interrupted Program: Males and Females	.96	76	2.39
Grade XII Program: Males and Females	.95	59	2.39

between males and females in the senior matriculation program and in the total population. Three "t" tests applied to final achievement data resulted in no significant difference at the .01 level of confidence between grade XII and interrupted programs or between the sexes of the interrupted program and the grade XII program.

Correlation of Final Achievement, Intelligence Quotients and Grade-point Averages

The final achievement percentage, intelligence quotients and grade-point average were correlated and the coefficient of correlation was computed for the total population and by sex for each type of program. The Pearson "r" did not reveal a very close association between the factors tested.¹ The coefficients associated with the senior matriculation group were found to be significant at the .01 level of confidence.

The highest "r" of .51 showed a substantial correlation between final achievement and grade-point average. There was only a negligible degree of correlation when the intelligence quotients were compared with final achievement and grade-point averages, and a marked drop in "r" in all the other paired factors which were tested.

The same factors of the universe were tested, and although significant at the .01 level of confidence, the coefficients did not indicate strong relationships.² The coefficient of correlation was .48 for the whole population when final achievement and grade-point average were compared,³ but "r" was calculated to be only .21 in the comparison of final achievement and intelligence quotients. It would seem that grade-point

1 Table XXII, p. 53.

2 Table XXIII, p. 53.

3 Ibid.

TABLE XXII

CORRELATION COEFFICIENTS--THREE TYPES OF STUDENTS
FINAL ACHIEVEMENT, INTELLIGENCE QUOTIENTS, GRADE-POINT AVERAGES

Types of Student	Final Achievement and Intelligence Quotients, "r"	Final Achievement and Grade-point Average, "r"	Intelligence Quotient and Grade-point Average, "r"
Interrupted N: 81	.15	.19	.04
Senior Matriculation N: 529	.21*	.51*	.28*
Grade XII N: 48	.28**	.04	.23

* Significant at .01 level of confidence.

** Significant at .05 level of confidence.

TABLE XXIII

CORRELATION COEFFICIENTS--POPULATION. FINAL
ACHIEVEMENT, INTELLIGENCE QUOTIENTS, GRADE-POINT AVERAGES, N: 658

Final Achievement and Intelligence Quotients	Final Achievement and Grade-point Averages	Intelligence Quotients and Grade-point Averages
.21*	.48*	.34*

* Significant at .01 level of confidence.

averages of King Edward students are a better indication of success than intelligence quotients. The calculation of "r" between intelligence quotients and grade-point averages also indicated a low degree of correlation.¹ This evidence may indicate that secondary school achievement is more closely related to intelligence quotients than is post-secondary school achievement. Furthermore, there may be other factors which bear upon the outcome of achievement in a post-secondary institution than those tested here.

Upon comparing the final achievement, intelligence quotients and grade-point average of the sexes in each group, "r" was found to be significant at the .01 level of confidence only in the senior matriculation group.² The coefficient of correlation did not prove to be significant at the .01 level in either the interrupted group or the grade XII group with but one exception. The correlation between the final achievement and intelligence quotient was .40 and significant at the .01 level of confidence in the male interrupted group.

The correlation test for "r" was also applied to the final achievement and the number of days absent. The coefficient was found to be -.32 and significant at .01 level of confidence. It would seem to indicate an inverse correlation and that a fewer number of days absent is related to higher achievement scores. Absenteeism when correlated with intelligence quotients was found to have no relationship. The coefficient was -.05 and not significant at the .05 level of confidence.

1 Ibid.

2 Tables XXIV, XXV, p.55.

TABLE XXIV

CORRELATION COEFFICIENTS--FEMALES OF THREE TYPES OF STUDENTS,
FINAL ACHIEVEMENT, INTELLIGENCE QUOTIENTS, GRADE-POINT AVERAGES

Types of Student	Final Achievement and Intelligence Quotients, "r"	Final Achievement and Grade-point Average, "r"	Intelligence Quotient and Grade-point Average, "r"
Interrupted N: 13	.18	.28	.35
Senior Matriculation N: 140	.32*	.56*	.50*
Grade XII N: 11	.41	.19	.21

* Significant at .01 level of confidence.

TABLE XXV

CORRELATION COEFFICIENTS--MALES OF THREE TYPES OF STUDENTS,
FINAL ACHIEVEMENT, INTELLIGENCE QUOTIENTS, GRADE-POINT AVERAGES

Types of Student	Final Achievement and Intelligence Quotients, "r"	Final Achievement and Grade-point Average, "r"	Intelligence Quotient and Grade-point Average, "r"
Interrupted N: 68	.40*	.18	-.04
Senior Matriculation N: 389	.16*	.46*	.19*
Grade XII N: 37	.22	.03	.29

* Significant at .01 level of confidence.

A very low "r" was found between final achievement and number of courses dropped during the year. The coefficient was $-.16$ and significant at the $.01$ level of confidence, and would suggest that the higher the mean final achievement the fewer the number of courses dropped during the year. Thus, it would seem that students with a higher final achievement did not reduce their course load to any great extent. It may also be that students who previously had poor marks registered for too heavy a course load and dropped courses in order to maintain a satisfactory standard.

CHAPTER IV

SUMMARY OF THE THREE TYPES OF PARTICIPANTS

The Interrupted Program Student

Interrupted program students have a mean age of 19.38 years and are older than other groups because a regulation of the Department of Education affects the age at which individuals are admitted to the program, and this was found to be an independent factor when the chi-square test was applied, and the difference in ages of the interrupted group, the senior matriculation group and the grade XII group was found to be significant at the .01 level of confidence.

Interrupted students were recorded as having better attendance habits than either the senior matriculation or the grade XII students; however, when the chi-square test was applied, there was no significant difference at the .01 level of confidence among the three types of students.

Withdrawals from the Centre by interrupted students amounted to 37.6 per cent of the participants of that program. The proportion of interrupted students who withdrew was 6.1 per cent greater than the proportion of grade XII students and 15.4 per cent greater than the proportion of senior matriculation students who withdrew from their programs.¹

The mean number of courses dropped by the interrupted student during the year was 1.37, and one or more courses were dropped by 42.7 per cent of the interrupted group.² When the chi-square test was applied to the

1 Table IX, p. 35.

2 Table XI, p. 37.

number of courses dropped by each group, the difference was not significant at the .01 level of confidence when the interrupted group was compared with the grade XII group, but the difference was found significant at the .01 level when the interrupted group was compared with the senior matriculation group.

The grade-point average of the interrupted students is higher than that found among grade XII students but lower than that of senior matriculation students, however, the "t" test showed no significant difference at the .01 level of confidence among the three. In their final year in high school the interrupted group could not be distinguished apparently in grade-point average from the two other groups of students.

The interrupted student has the lowest mean I. Q. of the three groups, but the difference is significant at the .01 level of confidence only when the interrupted group is compared with the senior matriculation group.

The difference in final achievement between the interrupted group and the grade XII students was .68 per cent.¹ When the "t" test was applied² the difference was not significant at the .01 level of confidence. The difference of 6.71 per cent in final achievement of the interrupted group and the senior matriculation group was found to be significant at the .01 level of confidence.

When the final achievement and I. Q. of the interrupted students were correlated, the "Pearson r" was computed to be very low and not significant at the .05 level of confidence.³ When the I. Q. and grade-

1 Table XV, p. 42.

2 Table XXI, p. 51

3 Table XXII, p. 52.

point average were correlated, the relationship expressed by "r" was .04 and not significant at the .05 level. It seems apparent that final achievement is more closely related to I. Q. than to grade-point averages among the interrupted students. The co-efficient "r" was calculated as .40 and significant at the .01 level when final achievement and intelligence quotients were correlated for male interrupted students, but calculated as .18 for females and not significant at the .01 level of confidence.

The Senior Matriculation Student

The senior matriculation group has an average age of 18.8 years, which was significantly different from the other two groups at the .01 level.

Thirty per cent of the senior matriculation group were absent over fifty days, but this was not a significant difference at the .01 level of confidence when compared with absences in the three types of programs.

A smaller proportion of senior matriculation participants withdrew from the Centre than either the interrupted or the grade XII participants. Most withdrawals occurred in September; however, 22.2 per cent of the senior matriculation students who registered withdrew during the year. Sixty-one per cent of the population who withdrew were senior matriculation students, even though the group represented 75 per cent of the total enrolment in June.

The mean number of courses dropped by the senior matriculation student is 1.09. One or more courses were dropped during the year by 45.5 per cent of the group and the senior matriculation group dropped

1 Ibid.

2 Table X, p. 35.

proportionately more courses than the interrupted or grade XII students.¹ When the "t" test was applied to the difference between the means of each group it was found significant at the .01 level of confidence with both the interrupted and the grade XII groups. Thus, it seems that withdrawal from courses is a characteristic which distinguishes senior matriculation students from interrupted or grade XII groups.

The grade-point average of the senior matriculation group was found to have a significant difference at the .01 level of confidence.² When the "t" test was applied to the difference of the means of the grade-point averages of the senior matriculation and interrupted groups it was not significant at the .01 level of confidence. The senior matriculation group appears to have entered the Centre with no significant difference in grade-point averages when compared with the interrupted group, but there was a significant difference in grade-point averages when compared with the grade XII group.³

Senior matriculation students are an independent group with respect to I.Q., and when the "t" test was applied, the differences in I. Q. were significant at the .01 level of confidence when they were compared with the interrupted and grade XII groups.⁴ I. Q.s may be considered a distinguishing characteristic of the senior matriculation group on the basis of the "t" test results.⁵

Final achievement differentiates a senior matriculation student from both interrupted program and grade XII program students. Upon applying

1 Table XI, p. 37.

2 Table XVII, p. 46.

3 Table XVIII, p. 47.

4 Table XIII, p. 40.

5 Table XIV, p. 41.

the "t" test, the difference between the means of final achievement percentages was found to be significant at the .01 level of confidence. It appears that senior matriculation students can be expected to have a higher average final achievement than those students pursuing courses in the other two programs. Within the senior matriculation program the final achievement averages of the males and females were tested by the "t" test, and the results showed a significant difference at the .01 level of confidence.¹

The correlation of the factors I. Q., grade-point average and final achievement within the senior matriculation group appeared to have stronger relationships than within the other two groups.² The three relationships tested were significant at the .01 level of confidence, and it appears that grade-point averages are better indicators of final achievement than I. Q. among the senior matriculation participants.

The Grade XII Student

Investigation has shown that the grade XII student can be distinguished from the senior matriculation student more readily than from the interrupted student with respect to most of the factors tested. With respect to age, the grade XII student is more like the senior matriculation student than the interrupted student, however, in this respect the difference in the distributions of ages was found to be significant at the .01 level.³ The ages of the grade XII student are most representative of the population distribution of the Centre.⁴

1 Table XXI, p. 51.

2 Table XXII, p. 53.

3 Table IV, p. 27.

4 Ibid.

The grade XII group is indistinguishable from the interrupted and senior matriculation groups with regard to absenteeism. When the chi-square test was applied, the difference of the distribution of absences among the three types of students was not significant at the .01 level of confidence.¹ The incidence of absenteeism is common to all groups and is not a distinguishable characteristic of the grade XII students.

In terms of withdrawals from the Centre the grade XII group falls between the interrupted program students and the senior matriculation students.² Thirty-one per cent of the grade XII group withdrew, but only 10 per cent of the total withdrawals were grade XII students.³ A marked increase in withdrawals occurred in this group after mid-term examinations which did not occur in the other groups.

The number of withdrawals from courses by the grade XII group was found not significant at the .01 level of confidence. A smaller proportion of grade XIIs dropped courses than each of the other two groups. Thirty-eight per cent in the grade XII group withdrew from one to four courses compared with 44 per cent in the population.

Grade-point averages were found to be a significant characteristic at the .01 level of confidence when the grade XII group was compared with the senior matriculation group. When the "t" test was applied the difference was not significant with the interrupted group, but was significant with the senior matriculation group at the same level of confidence.

1 Table VI, p. 30.

2 Table IX, p. 35.

3 Table X, p. 35.

Grade XII students are apt to have I. Q.s that are similar to those of the interrupted students, but not to those of the senior matriculation students. When the chi-square test was applied to the data, there was a significant difference at the .01 level of confidence among the participants of the three types of programs. When the "t" test was applied to the I. Q. data of the grade XII and the senior matriculation group, the difference was significant at the .01 level of confidence.

The differences in final achievement of the grade XII group was significant at the .01 level of confidence. When the "t" test was applied to final achievement of the grade XII student and the interrupted student, the difference was found not to be significant at the .01 level of confidence, but when the "t" test was applied to the grade XII group and the senior matriculation group the difference between the means was significant at the .01 level of confidence. It was established that there was no relationship between the grade XIIs and the senior matriculation group with respect to final achievement, but similar standards of achievement might be expected from interrupted students and grade XII students.

When final achievement, intelligence quotient and grade-point average were correlated, no significance was found between all pairs of these factors in the grade XII group. There was a tendency to show a greater relationship between final achievement and intelligence quotient than between final achievement and grade-point averages, which is a reversal of the strong relationship of these factors in the senior matriculation group. It would seem that the grade-point averages of

the grade XII students had little or no relationship to final achievement which might be indicative of a greater degree of success to be experienced by grade XII students at the Centre than that experienced in their final high school year. Further testing would be required to substantiate this indication.¹

¹ Table XXII, p. 53.

CHAPTER V

CONCLUSION

Participants in a continuing educational program have come from school, from the labour force and from home. From such sources they are likely to have characteristics which distinguish them within an adult institution. The characteristics which have been tested and analysed in this study are measurable factors reflecting previous educational experience in an attempt to discover whether post-secondary students in the three programs can be differentiated by one or more educational measurements.

Factors which describe the student were tested among the three types of students, only to find inconclusive evidence to support a set of distinguishing characteristics which set apart each student group according to program. No one factor tested accounts for the differences in performance of an adult student. Factors outside the students' institutional experience may well have a greater bearing than any characteristic tested here.

According to the hypothesis stated in Chapter I, there are significant differences among the three groups of students with respect to selected educational characteristics. In the testing of this hypothesis, the following results have been obtained:

1. There is a significant difference in ages among the participants in the three types of programs.
2. There is no significant differences in the number of absences among the participants of the three types of programs.

3. There is a significant difference in the ratio of withdrawals among the participants of the three types of programs.
4. There is a significant difference in the number of courses dropped among the participants of the three types of programs.
5. There is a significant difference in the intelligence quotients among the participants of the three types of programs.
6. There is a significant difference in the students' level of achievement in the final high school year as expressed by a grade-point average of academic subjects among participants in the three types of programs.
7. There is a significant difference in the final achievement as expressed by a mean percentage of achievement on the examinations which were set by the Department of Education among the participants in the three types of programs.

Tests for correlation of the three factors which were thought would supply the most useful information revealed only limited relationships. The relationship between final achievement and grade-point averages was more noticeable than a final achievement and I. Q. relationship.¹ It is probable that a greater degree of reliability in predicting success on final examinations can be attributed to grade-point averages than to intelligence quotients at the time of registration at the Centre. When the types of program were considered separately only the senior matriculation group was found to be significant at the .01 level of confidence. Within the two smaller groups of students--interrupted and grade XII--the three factors correlated were found to have a coefficient of correla-

1 Table XXIII, p. 53.

tion which was negligible and in all but one instance not significant at the .05 level of confidence.¹

In terms of the factors tested and the educational programs studied the following results were found significant at the .01 level of confidence:²

1. The age of student groups is significant. Each of the three groups are independent and may be assumed to have different age distributions.
2. The grade-point average of the student is significant when senior matriculation students and grade XII students are compared.
3. The intelligence quotient of the student is significant when senior matriculation students and interrupted students are compared.
4. The final achievement of the student is significant when senior matriculation students and interrupted students are compared.
5. The final achievement of the student is significant when senior matriculation students and grade XII students are compared.
6. The final achievement of the student is significant when senior matriculation students are compared by sex.
7. The number of courses dropped by the student is significant when senior matriculation and interrupted students are compared.

1 Ibid.

2 Table XXVI, p. 68.

TABLE XXVI

DIFFERENCES FOUND SIGNIFICANT IN TESTS OF HYPOTHESIS

Student Characteristic	Interrupted	Senior Matriculation			Grade XII
		M	F	T	
Age	1			1	1
Number of Courses Dropped	7			7 8	8
Intelligence Quotients	3			3	
Grade-point Averages				2	2
Final Achievement	4	6	6	4 5	5

Figures refer to the statements on page 67, and indicate which programs have a significant difference according to the factor tested.

M: Male, F: Female, T: Total.

8. The number of courses dropped by the student is significant¹ when senior matriculation and grade XII students are compared.

In terms of the factors tested and the education programs studied the following results were found not significant at the .01 level of confidence:¹

1. The absenteeism of any of the three groups of students seems to have no significance in distinguishing the students taking separate programs of study.

¹ Table XXVII, p. 69.

TABLE XXVII

DIFFERENCES FOUND NOT SIGNIFICANT IN TESTS OF HYPOTHESIS

Student Characteristic	Interrupted			Grade XII			Population Male and Female
	M	F	T	M	F	T	
Absenteeism		1	1			1	
Number of Courses Dropped			12			12	
Grade-point Averages		2 3	2			3	4
Intelligence Quotient		5	6			5 6	7
Final Achievement		10	8	11	11	8	9

Figures refer to the statements on page 68, and indicate which programs have no significant difference according to the factor tested.

M: Male, F: Female, T: Total.

2. Grade-point averages apparently have no significance in distinguishing interrupted students from senior matriculation students.
3. Grade-point averages apparently have no significance in distinguishing grade XII students from interrupted students.
4. Grade-point averages apparently have no significance in distinguishing the males and the females of the Centre's population.
5. The intelligence quotient appears to be of no significant

influence when senior matriculation and grade XII students are compared.

6. The intelligence quotients appear to have no significant influence when grade XII and interrupted students are compared.
7. The intelligence quotients appear to be of no significant importance when distinguishing males and females of the population of the Centre.
8. The final achievement of the student appears not to be significant when grade XII and interrupted students are compared.
9. The final achievement of the student appears not to be significant when distinguishing the males and females of the population of the Centre.
10. The final achievement of the student appears not to be significant when the males and females of the interrupted group are compared.
11. The final achievement of the student appears not to be significant when the males and females of the grade XII group are compared.
12. The number of courses dropped appears not to be significant when grade XII and interrupted students are compared.

The factors available for statistical analysis do not completely account for the differences among the students. Motivation, attitude, maturity, marital status and work experience are factors in the educational situation which were not examined in this study of post-secondary

students. Much thought should be given to the criterion of success as it is measured in adult institutions.

The factors studied in this report distinguish the three types of participants only when certain comparisons are formulated. Further research is required to describe the kinds of students at this Centre in terms of intangible factors such as motivation and maturity.

Characteristics of students which pertain to success as measured by final achievement are not wholly indicative of the distinctiveness of adult students.

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