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UNIVERSITY OF ALBERTA

The Predictive Validity of the Cosmetology Student Aptitude Test: Marvel Trade and Business College's Hairstyling and Esthetics Program

by

Darlene M. Sand

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

IN

COUNSELLING PSYCHOLOGY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

SPRING 1990

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ISBN 0-315-60346-1

Abstract

This descriptive, retrospective study is based on data obtained from a subject pool of 1162 students who were enrolled at the Marvel Trade and Business College, within the college's Hairstyling and Esthetics program, for the years of 1982 through 1987, inclusive. Marvel is a private vocational school located in Edmonton, Alberta. The primary focus of this research was to determine the predictive validity of the Cosmetology Student Aptitude Test (CSAT) in terms of determining those candidates for admission who would be successful in completion of the Hairstyling and Esthetics program. The CSAT is used as a prescreening instrument and is given to all applicants possessing less than a grade 10 level of formal education. In order to receive a "pass" on this instrument, the applicant must obtain a minimum grade of 70%.

Results of the study indicated that, while the CSAT proved unsuccessful as a predictive measure for success in Marvel's beautician program, it did, however, demonstrate utility in terms of predicting student attrition from the program, both self-selected and Marvel-imposed withdrawals. While low positive correlations were demonstrated between the predictor and final theory and practical exams, showing coefficients of .30 and .21 respectively, when pooled to determine the CSAT's ability to predict "success" in the overall program - 70% on each of the two final exams, the positive correlation found was deemed to be negligible, at a positive correlation coefficient of .06, and therefore to be of little practical value.

Sources of educational funding demonstrated a significant relationship to successful completion of the Beautician program, with those funded by outside sources - government agencies - showing a statistically higher rate of drop-out.

Predictive validity studies into vocational education, in general, are sparse, and within the area of Beautician programs they are virtually nonexistent. Practices and standards of education within vocational domains are under siege from government funding agencies, industry, and the consumer. Increasingly, institutions of education are called upon to demonstrate accountability and credibility within their procedures and standards of conduct in their service to the public.

This study presents a brief historical perspective on vocational education and the challenges it faces in the future. A cursory view of predictive validity studies is offered before the predictive validy of the CSAT is addressed. A number of recommendations result from the study, including the need for stricter attention to applicant qualifications and academic preparation, a standardized entrance exam, and further research in the areas of private vocational schools.

Acknowledgements

The time and advice extended by my thesis supervisor Dr. George Fitzsimmons is appreciated. The author also wishes to extend appreciation to the following people for both their expertise and willingness to assist with this final product:

- committee members Dr. Peter Calder and Dr. Clarence Preitz, of the University of Alberta,
- Glen Wilcox for his assistance with the data collection,
- Henrietta Komarnisky and Norm Gibault of Marvel Trade and Business College,
- Dr. Andy Hendry, Private Vocational Schools Director for the Province of Alberta,
- Wayne Nixon of the Alberta Apprenticeship and Trade Certification Branch,
- Jean Sprague of the Alberta Students Finance Board,
- the support staff, Rina and Vanessa, in the Department of Educational Research Services at the University of Alberta, and
- a special extension of gratitude to Philomena McKenzie, for both her invaluable assistance and good natured guidance, without which this thesis would have remained but a concept.

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Chapter 1

In the Fall of 1987, the Department of Educational Psychology at the University of Alberta, Edmonton, Alberta, was approached by the principals of the Marvel School of Hair Design. They requested that an independent study be conducted on the predictive validity of the Cosmetology Student Aptitude Test (CSAT) in terms of its ability to determine those students who would be successful in the school's Hairstyling and Esthetics program. To be "successful" a student had to achieve a minimum grade of 70% on each of Marvel's final exams - a theory exam and a practical exam. The cutting score used on the CSAT was, likewise, 70%. Marvel's admissions personnel advised that those individuals who achieved less than 70% were denied entry to the program. Although not all applicants to the Hairstyling and Esthetics program were required to write this battery, those applicants who had achieved less than a grade 10 level of formal education were obliged to do so. The impetus for such an empirical enquiry was borne of government funding agencies questioning Marvel's screening procedures.

The CSAT was first published by the Milady Publishing Corporation, New York, in 1966, and has been used by Marvel for the past fifteen years. Both the CSAT's general usage throughout the Beautician industry in North America and its norming and standardization data are unknown, as is knowledge of any similar

studies designed to assess its predictive validity for successful completion of a Beautician program. Hence, the statistical validity and reliability of the CSAT remain unknown. It does, however, appear to possess face validity. Efforts to obtain norming data proved to be unfruitful, as did attempts to receive permission to append a copy of the CSAT to this thesis. This battery, therefore, is assumed to be untested and, statistically unproven.

In pioneering a study of this nature it is necessary to lay a comprehensive foundation for the many issues that will evolve from this singular empirical question. To achieve such a global understanding of the issues that impinge upon the predictive validity of the CSAT, it is necessary to offer a cursory inclusion of general trade legislation in Alberta, of the legislation that guides the Beautician trade, more specifically, and an understanding of recent changes to the licensing procedures for private vocational schools within the province of Alberta. These aims have been accomplished in this Chapter by noting the various provincial acts, rules, and regulations currently guiding trades, in general, and Beauticians in particular. Detailed consideration of these government documents may be found in Chapter 2. One Act, the Private Vocational Schools Act/Private Vocational Schools Regulation (Alberta Regulation 110/80, including Alberta Regulation 352/88), is particularly germane to Marvel's case. It is for this reason that this Act has been given detailed consideration within this introduction. Other considerations

of import, such as student funding and job placement within the Beautician industry, are, likewise, given considerable attention within the introduction.

The extrinsic aim of most vocational research is to garner political support and federal and provincial funding (Oakes, 1986). Research in vocational education is fueled by a wide range of economic, education, social, geographic, and political factors that ebb and flow with changes in the political environment as well as within the everchanging aspects of the occupational niches that constitute the job marketplace at both a societal level and a more global scope. Given the public scrutiny and demands for accountability, vocational educators are forced to cast a critical eye toward their internal practices of conduct in servicing their clientele - their student bodies. The aim of self-scrutiny of this nature is to define, clarify, and reconceptualize the meaning of their roles as vocational educators within a rapidly changing social and industrial milieu. As indicated by Wolansky and Passmore (1984), "In a free enterprise economy, the federal government has less control and provides fewer interventions in the deployment of the workforce" (p. 27). Both industry and the global marketplace orchestrate the fluctuations within the job markets, as occupational niches close, others open, others update, and still others expand their scope of expertise, all designed to capture an increasing market share within the world's trading arenas.

Predictive validity studies within the areas of vocational education are exceedingly sparse. Such studies within the Beautician industry are virtually nonexistent. As the demand for government funding of education both within the private and the public sectors continues to soar, there is an increasing demand for measures of quality control within those institutions so funded. Further, to secure continued public funding of their students, the private vocational school agencies are increasingly under pressure from government funding institutions to demonstrate that their students are adequately prepared to assume job roles within the marketplace.

It is the above state of affairs that has served as the impetus that has moved private vocational school operators to look to their own standards of practice, in an effort to assure both continued funding for their students and continued existence of their businesses and marketplaces. They are beginning to incorporate objective measures of competence in terms of demonstrating that they produce an economically sound investment in return for monies funded to their students. It is a priori to their continued operations that private vocational institutions demonstrate that they do, in fact, produce an educated graduate, one prepared to assume job roles for which they have been trained, job roles demanded by the marketplace and by the consumer served by that industry. It is in light of such external demands that the private vocational sector is increasingly attempting to incorporate objective measures of assessment within their student

selection procedures. The primary end-point within such procedures is to increase the accuracy of the selection process through the use of sound prescreening measures.

In order to limit government intervention into the policies and procedures of private vocational school operators, the clientele educated by these institutions, who for the most part receive public monies to finance their education, must be objectively assessed by an instrument that exhibits with both valid and reliable predictions for success in the educational program offered. These operators must take steps to incorporate viable measures by which to assess their quality standards. Thus, it is not only in the best interests of these operators to institute their own objective instruments for assessing their quality of education, but it behooves them to do so in the name of survival.

Throughout North America, recommendations for increased utilization of community-based educational experiences are occurring by way of a private-public sector collaborative effort aimed at achieving the goals and outcomes of field-based education that will reflect the changing demands of our times. Learning within vocational institutions must reflect not only vocational curricula, but there is an increasing need for such programs to reflect academic expertise in addition to vocational aptitude. The world marketplace has dictated that in order to remain competitive, in order to survive, North

America's labor force is in need of superlative knowledge in the fields of science, math, computer technology, and academic excellence in general.

Trade Certification

As with any particularistic field of study, there exist certain terms that are peculiar to the specialized interests of both researchers and those involved on a daily basis with the work aligned to a specific discipline. In dealing with the topic of this study, it is necessary that certain terms be clarified as to their meaning. By so doing, the definitions included will provide a common platform of understanding when these terms are used in conjunction with the parameters of this research project.

Pertinent Definitions

Designated trade - a trade designated by the Lieutenant Governor in Council as one to which the Manpower Act, 1976, and its regulations applies. A designated trade may be classified as either a proficiency trade or a qualification trade.

Proficiency trade - a trade designated under the Manpower Development Act, 1980, as one where certification is compulsory in order to practice as a trade. This stipulation was introduced as a

means of protecting the interests of public safety and welfare.

Qualification trade - a trade designated under the Manpower Development Act, 1980, as one where certification is voluntary.

Apprentice - a person who is at least 16 years of age, and who enters into a contract of apprenticeship in accordance with Part 3 under which he is to receive from or through his employer instruction and continuous employment based on the amount of work available in a designated trade (Manpower Development Act, 1980). The contract for apprenticeship must be signed by the apprentice, the employer, and the Apprenticeship and Trade Certification Branch of the Department of Manpower.

Journeyman - a fully qualified tradesman who has satisfied all of the requirements for the particular trade, as set forth in the Manpower and Development Act, 1980, including the General Regulations and the specific trade regulations. A journeyman is licensed to practice his/her particular trade within the province of Alberta.

Vocation - any employment, trade, calling or pursuit designated by the regulations as a vocation (Private Vocational Schools Act, 1983).

The provincial acts, rules, and regulations currently governing the practices of trades within the province of Alberta are

the Apprenticeship and Trade Certification Act, the Department of Career Development and Employment Act (Statutes of Alberta, 1983, Chapter 13.3), the Manpower Development Act and General Regulations (Alberta Regulation 43/77, including Alberta Regulation 245/88), and the Manpower Development Act (Revised Statutes of Alberta 1980, Chapter M-3). These Acts combine to embue the provincial government with the power to designate, regulate, and withdraw "trade" status within the province of Alberta.

While the Department of Career Development and Employment Act, Manpower Development Act and General Regulations, and Manpower Development Act all serve to legislate over trades in Alberta, there are individual, trade-specific regulations that govern the practices and conduct of a particular trade and its associated members. Further, where a "designated trade" status has been embued upon the occupational practices of a group, the Alberta Career Development and Employment, Apprenticeship and Trade Certification Board, details the form and substance of the trade's course content, both theoretical and practical, that will be offered to a trade's apprentices.

Beautician Trade

The Alberta regulations that govern the training and certification of Beauticians have changed a number of times during the past years. Most recently, as of 1984, all candidates must possess at

least 1400 hours of practical experience - apprenticeship - in addition to their technical training, pursuant to Alberta Regulation 422/83. Previously, the requirements were either a 1400 hour technical training program or a 3600 hour program of practical job experience. Hence, prior to 1984, all Journeyman Beautician candidates, qualified by either of the above routes, took common proficiency examinations - theory and practical, as were administered by the Apprenticeship Board.

Post-1984, the Beautician Trade Regulation stipulated two courses of approach to certification as a Beautician, with both focusing toward the status of Journeyman Beautician. One course of action required the trainee to apprentice for two 1400 hour periods, followed by a 10 week technical training period. Secondly, a trainee may take a 1400 hour technical/vocational training program and be awarded a 1400 hour reduction in the apprenticeship time required. Both courses of action terminate with apprenticeship examinations - theory and practical, which must be written prior to the granting of journeyman certificates. While it remains possible for those working within the trade for a minimum of three years to challenge the Journeyman Beautician proficiency examinations, this method of certification is actively discouraged due to its violation of the proficiency trade laws. These laws require that all practitioners within a trade be either a journeyman or a registered apprentice (Alberta Manpower Development Act, 1980). This stance was taken as a

means of ensuring public protection and general safety, through the standardization of education and required levels of proficiency across all members practicing within the trade.

Private Vocational Schools Licensure

The current status of private vocational school licensing within the province of Alberta adds much urgency to the issues highlighted within the opening statements of this writing, substantiating the mandatory nature of the issues surrounding the need for accurate prescreening instruments for private vocational operators seeking continued licensure. As of 1989 there were 106 private vocational schools in Alberta. Of these 106 facilities, 23 were offering Barber/Beautician training programs. The practices of these institutions are governed under the Private Vocational Schools Act (Revised Statutes of Alberta, 1980, Chapter P-17) and the Private Vocational Schools Act, Private Vocational Schools Regulation (Alberta Regulation 110/80).

Private Vocational Schools Act/Private Vocational Schools Regulation (Alberta Regulation 110/80, including Alberta Regulation 352/88)

In Alberta, as of December 1, 1988, the Private Vocational

Schools Act, under the auspices of the Director of Private Vocational Schools, instituted major changes in the licensure of private vocational schools within the province. As of that date, the licensure of proprietary vocational schools took one of two forms, with a Class A or a Class B license replacing the previous omnibus licensing practices. For all practical purposes, the key issue that differentiates between these two license forms lies within the sources of funding made available to students enrolled within a private vocational school holding a Class A license versus a Class B license. In the former instance, students were eligible for funding sources from Canada Student Loan and Alberta Student Loan agencies, whereas for students enrolled in a private vocational school holding a Class B license, only Canada Student Loans are made available to the students.

All privately owned vocational schools in operation up to and including November 30, 1988, were, by fiat, granted a Class A licensure status, to be reviewed and renewed within one year from the date of its being issued. Thereafter, all license renewals are to occur two years from the anniversary date of the original receipt of licensure. The Act further specifies that any new applications for licensure will, where approved, be provided with a Class B license pending verification of Class A standards of operation upon application for license renewal. Thus, only an operator who holds a Class A or a Class B license may apply for a Class A license or a

renewal of a Class A license.

> 4(2) An application for a Class A license or a renewal of a Class A license to operate a school or provide correspondence courses shall be accompanied by . . .
>
> > (c) evidence satisfactory to the Director that the student loan default rate of the school is acceptable to the Student Finance Board under the Students Finance Act,
> >
> > (d) evidence satisfactory to the Director that the student retention rate of the school is acceptable;
> >
> > (e) evidence satisfactory to the Director that the employment placement rate for graduates of the school is acceptable, and
> >
> > (f) evidence satisfactory to the Director that the school is financially sound.

The stipulations under which an applicant may be granted a Class B license are detailed within the Act. For detailed consideration of these specifications, the reader is referred to Section 4(1) of the Act.

The above alterations to the Act were instituted as of December 1, 1988 in response to demands from the public and students for a more effective system of licensing private vocational schools and as a means of ensuring qualitative as well as quantitative controls over such institutions. Further, these measures were viewed as necessary controls, designed to reduce the high costs of financing students enrolled in private vocational schools. A Public Review

report from the Office of the Deputy Minister for Advanced Education, obtained from the Director of Private Vocational Schools, states that

> The changes to the Student Finance regulations would provide that a student registered in a program of studies that is authorized under a Class A license would be eligible to be considered for Canada Student Loans, Alberta Student Loans, Maintenance Grants and Alberta Educational Opportunity Equalization Grants. Consistent with the low student debt loads of vocational school students, Supplemental Assistance Grants would be replaced by increasing loan and remission benefits. A student registered in a program of studies that is authorized under a Class B license would be eligible for Canada Student Loans only. Current regulations governing the awarding of loan remission will not change. (Public Review, 1988, p. 2)

The Act provides that any changes to the original conditions under which a Class A license was granted must be reported to the Director of Private Vocational Schools, in order to receive sanction to institute such changes. Operators of private vocational schools are required to place performance/security bonds, to a maximum amount of $100,000, with a qualified bonding agency within the province, with the bond to be deposited in the name of the Minister of Advanced Education. The Act also moves to legislate over the proprietor's business practices in terms of tuition paybacks, advertising practices, contract terminations, contract form, and general business conduct in light of the handling of student contracts with the agency, age restrictions, student/instructor ratios, and rules of conduct regarding instruction and client matters. Excluded from consideration within this Act are the following:

(a) a private college under the Colleges Act:

(b) a private college incorporated under the Religious Societies' Land Act, the Societies Act or a private Act of the Legislature;

(c) schools that offer only courses or programs that are less than 20 hours in duration or for which less than $200 tuition is charged;

(d) schools that offer only courses or programs that are the subject of grants under

(i) section 6 of Schedule 1 of the Vocational Training Grants, Donations and Loans Regulation (Alberta Regulation 315/83) under the Department of Career Development and Employment Act, or

(ii) Schedule 4 of the Advanced Education Grant Regulation (Alberta Regulation 316/83) under the Department of Advanced Education Act;

(e) schools that offer courses or programs that, in the opinion of the Director, are intended or advertised solely for the self-improvement of an individual;

(f) driver training schools licensed by the Department of Transportation:

(g) schools that offer only courses or programs in life skills or basic job readiness training (Section 3).

The amended Regulations of this Act, enacted on December 1, 1988, that hold the greatest significance for purposes of this study are those that address retention rates, placement rates, and student loan default rates. A memorandum directed "To All Existing School Owners and Operators (of Private Vocational Schools)", obtained from the Director of Private Vocational Schools within the province of Alberta, details the considerations subsumed by two of these amendments - retention rates and placement rates. Principle 2 of the memorandum stipulates that

> Private Vocational Schools Administration will establish acceptable Retention and Placement rates. Initially, schools will be expected to retain at least seventy percent (70%) of the students they enroll. Also, it is expected that seventy percent (70%) of those who graduate from a program will find employment in a position related to their training. These rates will be reviewed regularly and adjusted as necessary.

The student retention rate is defined as the percentage of students who graduate from a course or program, and the graduate placement rate as the percentage of graduates who find employment in a training-related position. This latter consideration holds implications for the student loan default rate, for it is assumed that the pay back of loans will, out of necessity, have to be preceded by the graduate obtaining a job.

In view of these new amendments to the Act, there are concomitant responsibilities to both the schools and the Private Vocational Schools division of Alberta Advanced Education. In keeping with these added demands for accountability, the Director of Private Vocational Schools, by way of the above memorandum, has detailed both the schools' responsibilities and the Private Vocational Schools Administration's responsibilities. The memorandum has specified that the school responsibilities will be as follows:

> 1. At the beginning of the course. List the student's name and the student's start date . . . (with) a copy sent to the Private Vocational Schools Administration within 30 days of the beginning of the class. Students who withdrew within the 30 days must be included.
>
> 2. At the end of the course. The school should record the student's retention status. . . . Do not send this to

Private Vocational Schools Administration until the annual reporting date.

3. Three months after the end of the course. The school should record the graduate's employment status and required employer information. . . . Submit on the annual reporting date.

4. Schools will report combined retention and placement records once annually to Private Vocational Schools Administration.

The retention status of students is to be designated through the use of a code

C = Continuing as a student on the reporting date
G = Graduated
X = Completed but did not graduate
TA = Terminated, less than 10% complete
TB = Terminated, 11 to 50% complete
TC = Terminated, more than 50% complete

Note: Add a (1) to indicate termination by the school.
Add a (2) to indicate self termination.

The placement status of graduates is likewise designated through the use of a code

F = Full-time training related employment
P = Part-time training related employment
N = Non-training related employment
A = Not employed, seeking employment
H = Enrolled in further training
S = Not employed, not seeking employment
U = Unable to locate graduate.

Maintaining such records will necessitate the school developing some method whereby it may continue to keep track of its graduates. Both student phone numbers and graduate's employer phone numbers are requested, to permit periodic verification of the information given to the Private Vocational Schools Administration. Duties of the Private Vocational Schools Administration in conjunction with the annual reports will be

1. . . . (to) calculate the overall Student Retention Rate and Placement Rate for each school and program and provide this information to the school on an annual basis.

2. If Retention Rates or Placement Rates or both are found to be unacceptably low, the school will be advised and given the opportunity to take corrective action within a specific period of time.

3. The Private Vocational Schools Administration will periodically undertake a survey of graduates and employers to verify the information reported. Reports of verification surveys will be provided to the school.

It is on the basis of these annual reports, submitted to the Director of Private Vocational Schools, that the proprietary organization will earn the privilege of obtaining a Class A status, a privilege that must be earned through judicious attention to their internal teaching practices, course content, student selection/admission criteria, student retention rates, job placement rates, and default rates.

Alberta Students Finance Board

As of December 1, 1988, all students attending a private vocational school in possession of a Class B license were eligible for funding from the Canada Student Loan only, and were advanced the sum of $105.00 per week for the tenure of their program. Those students attending a Class A facility, and whose program was equal to or exceeded four semesters, were eligible for a combination of federal and provincial loans totaling $4,300.00 and supplemental assistance grants totaling $2,500.00 per academic year, summing to a total

allowable funding of $6,800.00 per year. This latter figure represents the maximum funding afforded to students who satisfactorily meet the means testing regimen put forth by the Alberta Students Finance Board, including its capacity as an acting agent for the disbursement of Canada Student Loan funds. Any student pursuing a postsecondary program of less than four semesters, likewise attending a Class A private vocational school, was eligible for only the loan portion of the combined federal and provincial student loan programs. Programs of less than four semesters in duration do not qualify for the supplmental assistance grants. This change was implemented to place a greater onus on the individual student to honor his/her indebtedness for loans incurred on behalf of his/her education. Thus, for a course of studies in a Class A facility, where the program is equal to or exceeds four semesters, the qualifying student will receive $6,800.00 per academic year, whereas, for programs of less than four semesters, $4,300.00 per academic year is awarded. In those cases where the student is also a single parent, in addition to the $6,800.00, he/she is also eligible for a maximum maintenance grant of $6,000.00 per academic year, in addition to the combined contributions of the federal and provincial governments. Hence, a single-parent student may be advanced a total of $12,800.00 per academic year where he/she is both attending a Class A school and is in a program that is equal to or exceeds four semesters.

Once monies have been advanced to a student by participating lending institutions, the Government of Alberta pays the interest payments on the loans. This practice is carried out for the duration of the program, and includes a six-month period of grace upon completion of the course of studies at which time the financial responsibility for loan pay back falls to the student. A further benefit advanced to students enrolled in a Class A private vocational school takes the form of a remissions program, wherein the province, on behalf of the student, will pay 40% of the loans that exceed $1,000.00 for each year of the program. In this way, a student applying for consideration under the remissions' program will, effectively, lower his/her overall indebtedness to the lending institution.

Default Rate

Information provided by the Director of Program Development for the Alberta Students Finance Board indicated that, for the academic year of 1988-1989, the Alberta Students Finance Board assisted 54,800 students who were attending educational institutions across the province, for a total dollar value of $220 million. Of those students, 6,500 were enrolled in private vocational schools, representing a funding volume of $28 million. During that academic year, the default rate on loan pay backs within the public sector institutions of education stood at 17%, whereas within private sector institutions, this figure is doubled, representing a 34% default

rate. This considerable disparity between the two sectors tends to suggest that placement, or employability of graduates from private vocational schools, has been less satisfactory than that found within public sector, graduate populations.

The default rate, as monitored by the Students Finance Board, requires two years to make itself known. It is calculated on the basis of the dollar value of loans extended and due for repayment versus the claim expenditures for students in payment default on their loans. Where a student goes into default, it is the province who assumes the responsibility for repaying the lending institution on behalf of the delinquent borrower, and then attempts to collect monies directly from the student.

Addressed earlier in this section, one of the provisions that a proprietor of a private vocational school must meet in order to obtain, or to retain, a Class A license, was an "acceptable default rate". The term "acceptable" was carefully selected by the Students Finance Board for primarily two reasons. First, this term allows for flexibility in the determination of what rate they deem to be "acceptable" and provides for the reflection of trends within the job market - accepting that payment of loans is contingent on the procurement of a job within the field for which one was trained.

Secondly, the wording of the provision permits "acceptable" to be defined in terms of relevancy to the time of assessment - the private sector default rate versus the public sector default rate.

Research conducted by the Alberta Students Finance Board has determined that default rates are not necessarily related to the level of debt incurred by a particular student, but more often indicative of the level of study engaged in by the student. Students remaining in postsecondary education for longer periods of time tend, overall, to honor their indebtedness to the lending institutions who have financed their education. Thus, students who remain in postsecondary education for longer programs tend to exhibit lower default rates. This particular issue is dramatically illustrated in the contents of Table 1.1, the information in which was provided by Ms. J. Sprague, the Director of Program Development for the Alberta Students Finance Board. Note that as the length of the program a student is involved in increases, the student default rate declines. Thus, there is an inverse relationship between the length of the educational program, and the monies owing, and the default rate.

Table 1.1

Length of Program Studies and Associated Defaults for the Fiscal Year of 1987 to 1988

Program Length in Years	Defaults Per Year of Study					
	1	2	3	4	5	Total
1	2588					2588
2	533	517				1070
3	73	81	122			276
4	186	183	175	345		869
5+	3	3	3	4	19	32
Total/Year	3403	784	300	349	19	4855

Once an institution of postsecondary education has been deemed to possess an unacceptable default rate, the Alberta Students Finance Board will, in writing, advise the offending agency of their situation, while simultaneously offering their services toward mutual resolution of the excessive default rate. The Alberta Students Finance Board make available to postsecondary institutions, personnel who will go into the facility and meet with administrative staff of

the school, and provide assistance and suggestions for measures that may be taken to bring their default rates within "acceptable limits". Such services tend to remove the adversarial stance often assumed between government agencies and the private sector business owner. It is hoped that such a collaborative effort will benefit both the operations of the private vocational schools and the lending institutions that finance student education within such facilities, through the lowering of default rates and, consequently, the continued operation of the private sector vocational schools.

Empirical enquiry into aspects of a student's background and/or present circumstance that may increase his/her tendency to default on student loans is sparse. This situation holds true for both Canada and the United States. Although representing an issue of both national and provincial concern, in terms of increasing government debt loads at both the federal and provincial levels, student loan default rates continue to rise, and the research needed to eke out those factors that make a student a poor loan risk remain on the periphery of research interest.

One study conducted by Greene (1989) indicated that, in the U.S., the Stafford Student Loan Program currently lends out $11.3 billion to students pursuing postsecondary education. Further, as of the federal fiscal year for 1980, the American federal government paid $239 million in default claims, a figure that is projected to rise to

$1.5 billion for the 1989 federal fiscal year. Yet, in the U.S., as in Canada, this remains a poorly researched area.

A study conducted by Wilms et al., (cited in Greene, 1989), through use of a canonical discriminant function analysis, determined that program completion/graduation exerted the strongest positive relationship with repayment of student loans. The second major finding was that black students were more inclined to default, and, finally, the higher a student's income, the greater the probability that the student loan would be repayed. These researchers further noted that noncitizens were more inclined to repay their loans than were citizens, and high school graduates were more likely to repay their indebtedness than were high school drop-outs. They also noted that students enrolled in community colleges and nonvocational programs were more likely to default.

Greene (1989), in an effort to delineate those student attributes that may be aligned with a greater propensity to default on student loans, used a sample of 161 students from the University of North Carolina at Greensboro, and selected for analysis six student attributes - graduation, race, income, grade point average, the amount of grant aid received, and the amount of scholarship aid received. These elements she subjected to statistical analysis using the Tobit model.

The Tobit model is a model of analysis that combines elements of both the Probit model and regression analysis. Greene's ultimate aim in analyzing student loan default rates was " . . . . to measure not only the change in the probability that a default occurs, . . . also to assess the impact on the default amount . . . " (p. 63).

> The Tobit model is used where the dependent variable is an unobserved variable, that is, one that is observed only when it is positive and otherwise appears to be zero. When considering student loan default, the dependent variable is such a latent variable. In the Tobit model, loan default can be viewed as an index variable that gives each individual's propensity to default. This propensity is observed only when a default occurs; otherwise it is zero. (Greene, 1989, p. 64)

Because the Tobit model treats all borrowers as though they belong to a single population that is influenced by common factors, the independent, or exogenous variables, are treated as acting on all borrowers. Therefore, particularly high levels of these factors yield higher index values, indicating a higher likelihood that a default will occur. For a detailed discussion of the mathematical and statistical nuances of the Tobit model, the reader is referred to Greene (1989).

Findings forthcoming from Greene's (1989) study indicated graduation imposed a strong negative influence on individual default rates. Moreover, a number of personal attributes were found to be associated with higher loan paybacks - perseverance, dedication, and

ability. It seems that those very elements that motivate a student toward graduation, likewise motivate him/her to repay student loans. Overall, Greene's study suggested that the following factors tend to influence default rates in a negative direction, that is, decreasing the default:

(a) On average, as income rises by $10.000, the default amount falls by $30,

(b) As a student's GPA rises by 1.0, the default amount falls by $47 at the mean, and

(c) A one-point rise in the GPA lowers the probability of default by only 3.3%.

Before dealing with those aspects that were associated with a positive influence on the default rates, it is important to note that, in Greene's (1989) study, the term "race" referred to black students as opposed to those of European or Asian descent. Fifty-six percent of the sample consisted of black students. When Greene (1989) looked to those factors that were associated with an increase in defaults this researcher found that the following factors were the strongest indicators for default:

(a) A 3.1% increase in the probability of default was noted if the student was black, increasing the default amount by $97,

(b) The default amount for a black student will be $44 higher than a nonblack student at the mean, and

(c) As grant aid or scholarship aid, based on need, increases by $1,000, the default amount will increase by $11 and $36, respectively.

In sum, Greene (1989) advises the use of the Tobit model as a method for identifying student characteristics that are associated with high probabilities of default before the loans become due and payable. "The Tobit model can also be used by loan program administrators to predict dollar losses to defaults from a given loan portfolio of borrowers, thereby enabling administrators to prepare to meet these costs" (p. 67). Greene further suggests some guidelines that may usurp the overwhelming financial burden imposed upon government lending agencies due to rising default rates:

(a) identifying borrowers with potentially high probabilities of default,

(b) helping them meet the demands of their programs and facilitating completion,

(c) giving these students counselling on the difficulties they may face in meeting debt burdens, and

(d) providng them with training in job-seeking skills. (p. 61)

Drop-Out Rate

While the cost to the public purse in terms of drop-out rates is an important consideration in addressing the need for valid and reliable predictive measures, it is an issue that remains unresearched. The Students Finance Board views this issue as being unaccessible to empirical scrutiny due to the various combinations and permutations that financial assistance may assume in individual cases. Hence, it is an area that has not been addressed.

The Private Vocational Schools Act/Private Vocational Schools Regulation (Alberta Regulation 110/80, including Alberta Regulation 352/88) mandates private vocational schools to follow a specified agenda of tuition pay backs when a student withdraws from a course of studies prior to its completion. The Regulations specify that a

> 11(2) . . . person who has entered into the contract with a school is liable to the school according to the following:
>
> (a) when 1% to 10% of the course has been delivered in a contract period, the person is liable for 25% of the tuition fee that would be payable for the contract period;
>
> (b) when 11% to 50% of the course has been delivered in a contract period, the person is liable for 60% of the tuition fee that would be payable for the contract period;
>
> (c) when more than 50% of the course has been delivered in a contract period, the person is liable for 100% of the tuition fee that would be payable for the contract period. (Section 11[2])

It may be reasonably assumed that those students withdrawing from a program do so without the benefit of some form of paid endeavour to pursue. Hence, monies paid on behalf of the student up to the time of dropping from a program become, for the most part, unretrievable funds. While the most recent default rate of 34% among students attending private vocational institutions is 200% that of the public sector default rate, this figure includes students who have withdrawn from a course of studies prior to its completion, as well as those failing to honour their debts upon completion of a program of

studies. Although this is both an important and worthy area of research, the cost to the public purse, per student drop-out, remains unknown.

Job Placement

The most current source of information on the availability of job opportunities within the Beautician trade comes from Employment and Immigration Canada (1987b). This source suggests that both the employment trends and projected demand for barbers and hairdressers, and others in related occupations, such as estheticians, for 1987 to 1995, inclusive, are as follows:

	Employment			Average Annual Growth Rate (%)		
	1981	1986	1995	1971-81	1981-86	1987-95
Beautician Trade	101,200	121,400	134,600	1.7	3.7	0.9
Other (p. 240).				3.2	1.1	1.3

A total of 38,400 positions are anticipated for barbers and hairdressers practicing in Canada for the time period of 1987 to 1995, of which, 9,500 represent new job openings. The remaining 28,900 are classified as replacement openings (p. 240).

Employment and Immigration Canada (1987b) indicates that,

within the province of Alberta, 8.7% of those employed in the Beautician trade were so employed within this province as of 1981 (p. 240). Based on the total projected positions within this job marketplace, one may predict that, for the time period of 1987 to 1995, there will be approximately 3,350 job-related positions for Beauticians within the province of Alberta.

Figures available from the Alberta Apprenticeship and Trade Certification Branch of Canada Manpower indicate that, as of January 1, 1989, of the 1,006 individuals who had completed their Beautician training through both public and private sector vocational institutions, only 102 had procured apprenticeship contracts, moving them toward obtaining their Journeyman Beautician certificates. The remaining 904 vocational school graduates within the province, having completed their training, had not yet secured contracts for apprenticeship. Thus, of the latter group, it is unknown both how many are unemployed and how many will be unable to secure jobs within the Beautician industry.

It would appear that the area of placement is poorly researched. Although there are some sporadic indications attesting to empirical discourse occurring within the Beautician trade, little is known about the actual placement of graduates from Beautician programs within the industry for which they were trained. Nonetheless, based on the employment trends indicated by Employment and Immigration

Canada (1987b), for the years 1987 to 1995, jobs within the Beautician trade appear to be on the decline, the reasons for which constitute yet another area for empirical enquiry. However, in consideration of the data at hand, it becomes apparent that private vocational schools, whose program offerings include Beauticians' training programs, will have to adjust their enrollments so as to reflect these changing trends. Any occupation must be dealt with in terms of its existence as an open system, and, as such, it is only through meticulous attention to job market feedback that the training institutions will be better able to adjust job-market candidates in closer reflection of the demand for workers so educated.

Summary

The incorporation of retention rates, placement rates, and default rates into the legislation that guides the granting of Class A status to a private vocational school highlights the significance of research endeavors within the area of proprietary vocational education, making imperative the search for an accurate assessment measure that may be included within admissions procedures. Without attention to such matters, private vocational schools will witness their own demise, for it becomes virtually impossible for such an institution to survive on the basis of student funding that is limited to that afforded by Canada Student Loan. In essence, the latest changes to the Private Vocational Schools Act mandate that all private

vocational schools within the province of Alberta must strive to achieve a Class A status if they wish to remain viable. It is in this way that the Provincial Government has imposed its authority upon privately owned vocational organizations, in an effort to both increase its own credibility in the eyes of the taxpayer and increase the credibility and accountability of private vocational education in its service to the public.

The Beautician trade in Alberta is legislated by the Beautician Trade Regulation and the Apprenticeship Training/Beautician Program. In addition to the statutes contained within the above Government publications, those certified as Beauticians are further governed by the Regulations contained within the Department of Career Development and Employment Act, the Manpower Development and General Regulations, and the Manpower Development Act. To the extent that these Acts legislate over the qualifications and certification of Beauticians within the province of Alberta, they likewise impinge upon the activities conducted within private vocational schools offering a Beautician program. Further to the impact of these Regulations, collectively, the private vocational schools must also align their practices with the dictates of the Private Vocational Schools Act of Alberta 1980 and the Private Vocational Schools Act/Private Vocational Schools Regulation.

In terms of the proprietor who owns a vocational school, the Acts that guide his/her business practices have been legislated to both protect the public from incompetent trades people and to protect the student of vocational education from unscrupulous entrepreneurs. Government intervention of this nature takes the form of a reactionary move, done on the basis of public input and public demands for Government agencies to protect their best interests.

Chapter 2

RELATED LITERATURE

This section commences with a detailed account of the provincial acts, rules, and regulations that currently govern the trades in Alberta, as a general consideration, as well as those specific to the Beautician trade. These are included to afford the reader an understanding of the extent to which Government is involved in the regulation of trade members, trade content, and the review of trade status within the Province of Alberta. Further, such inclusion will offer some understanding as to how the Government legislates in the name of protection to the consumer. The following is not to be considered an exhaustive list of pertinent legislation, but rather serves to highlight the more salient issues for purposes of this study.

Trade Certification

Department of Career Development and Employment Act (1987)

The Department of Career Development and Employment Act specifies the duties of the Minister and Department of Career Development and Employment. The different sections and subsections of this Act indicate the structure that the various boards, committees, and councils, designated as required by the Minister, will assume.

The Minister has the power to ". . . establish, provide for or operate any programs and services relating to career development and employment that the Minister considers necessary or desirable, . . . " (Section 9[a]). Essentially, the Minister is vested with the power to create and to delete the trade status of a group of workers who practice a shared occupational endeavour.

Manpower Development Act and General Regulations (1988)

The Manpower Development Act and General Regulations specify the conditions under which an occupational niche may become a designated trade. In order to be indentured as a trade, the following conditions must be met:

> 4(1) Where the Minister has referred to the Board (the Alberta Apprenticeship and Trade Certification Board), for report, a petition requesting designation . . . the Board shall without being limited thereby in its deliberations, establish that
>
> > (a) the majority of employers and the majority of employees support the petition:
> >
> > (b) the occupation is clearly identified and commonly recognized throughout the industry as a trade and does not concentrate on the requirements of one company;
> >
> > (c) the trade has the potential to generate a continuing flow of apprentices in numbers adequate to sustain an economically viable program:
> >
> > (d) there is a need for technical training courses to supplement job experience in order to develop skilled workers:

(e) it is feasible to provide the technical training requirements in an institutional setting;

(f) suitable persons engaged in the trade are willing to serve on Apprenticeship Committees on a continuing basis;

(g) the depth of technical knowledge required and the range of skills encompassed are adequate to qualify the occupation as a trade:

(h) entrance requirements for the program will not constitute an unnecessary barrier to those seeking entry to the trade;

(i) the general requirements for equipment and supplies to carry out the training program are realistic in budgetary terms;

(j) as shown by a description of the trade, there will not be major overlap or alignment with trades previously designated;

(k) the program required is of sufficient scope and depth to require technical training courses of not less than 150 hours in total and work experience of not less than 3,500 hours;

(l) the program will not require more than four calendar years to complete, inclusive of technical training courses and work experience.

(2) The Board may request that the Director arrange a survey of the trade concerned and submit a recommendation based on its findings.

(3) The Board, after hearing the presentations by employers and employees, or holding public meetings, or both, and considering the Director's recommendations shall

(a) recommend to the Minister that the trade be designated, or

(b) recommend to the Minister that the trade not be designated. (Section 4[1])

Further, the Act specifies that anyone wishing to become a member of a designated trade

(a) is the full age of 16 years;

(b) has or can meet the educational qualifications prescribed in the trade regulations, and

(c) is employed in the trade by an employer eligible to enter into a contract, and willing to provide supervision and training for an apprentice. (Section 5[1])

Included within the Act and regulations are specifications that detail a code of conduct for both apprentices and employers. The proficiency standards that must be adhered to by each trade, and its respective members, are detailed under separate, trade specific, government publications, a collaborative effort between the Alberta Career Development and Employment Apprenticeship and Trade Certification Board and trade representatives. Once a trade status has been assigned, it then falls to the Director of Apprenticeship and Trade Certification to arrange for the necessary technical training courses. In this way the standardization of trade-related duties and functions, competent practice, and safe delivery of services to the public are ensured.

Manpower Development Act (1980)

Upon the Lieutenant Governor in Council specifying an occupational body as a designated trade, the Minister, under the authority vested in his/her office by the Manpower Development Act, has the power to regulate

> (a) the criteria to be considered by the Board when reviewing petitions for designation of trades:
>
> (b) the procedures necessary for the administration of the certification program;
>
> (c) any fees payable to the Government . . . ;
>
> (d) examinations:
>
> (e) eligibility of Alberta apprenticeship graduates with Certificates of Completion of Apprenticeship or of other persons to receive a Certificate of Proficiency without examination:
>
> (f) any matter which by virtue of its consistent inclusion in all regulations pertaining to particular designated trades has become common to all designated trades. (Section 45[1])

Where apprenticeship and certification of proficiency are mandatory, the state of affairs found within the proficiency trades such as that of Beautician, pursuant to Section 23 of the Act, the Minister of Career Development and Employment also possesses the authority to make regulations

> (a) providing for the appointment of examination committees;
>
> (b) providing that specified certificates issued with respect to a designated trade by any other body or person are Certificates of Proficiency . . . :
>
> (c) prescribing the period of validity of the Certificates of Proficiency;
>
> (d) providing for
>
> (i) the periodic renewal of Certificates of Proficiency,
>
> (ii) the issuance of appropriate classes of Certificates of Proficiency,

(iii) the issuance of Certificates of Proficiency without examination to holders of certificates issued under the laws of any other province when it considers certificates as being equivalent to Certificates of Proficiency . . . , and

(iv) reciprocal certification agreements between Alberta and other provinces respecting trades designated ...

(e) establishing the eligibility of tradesmen to be examined;

(f) providing for recognition of programs of training other than apprenticeship training in a designated trade when that trade is not also designated. (Section 45[2])

In terms of assuring adequate theoretical and practical knowledge prior to the granting of a Certificate of Proficiency, the Alberta Apprenticeship and Trade Certification Board, upon the recommendations of the Provincial Apprenticeship Committee or the examination committee of a designated trade, has the authority to specify

(a) the nature, scope and extent of examination,

(b) the standards of achievement to be attained by persons on examination before the issuance of Certificates of Proficiency, and

(c) the conditions for issuance of Certificates of Proficiency for that trade. (Section 45[3])

In order to ensure adherence with the provisions contained within this Act, the Executive Director of Apprenticeship and Trade Certification, or his/her designate, has the authority to

(a) enter any place at any reasonable time for the purpose of performing any duty assigned to him under the authority of this Part;

(b) require an employer to disclose

(i) payroll records,

(ii) job classifications,

(iii) the kind of work, or

(iv) the qualifications,

of any of his employees who are or may be working in a designated trade (Section 16).

The Manpower Development Act and General Regulations specifies that, in order to assume a "designated trade" status, the members of a trade must be willing to serve on Apprenticeship Committees on a continuing basis. It is this body that assumes the responsibility for making recommendations to the Alberta Apprenticeship and Trade Certification Board on matters with respect to

(a) any matters pertaining to apprenticeship or other trade training and certification . . . , and

(b) trade regulations for the designated trade for which it was appointed. (Section 14[a])

Further, the committee's duties are to include

(a) review the training programs and certification requirements of the trade for which it was appointed and make recommendations to the Director for any revisions needed to maintain relevance and effectiveness:

(b) develop and approve policies of accreditation where training programs in the educational system, armed forces or other occupational preparation systems can be shown to meet

the skill and knowledge requirements of a specific apprenticeship program. (Sections 14[b] and 14[c])

Beautician Trade

Beautician Trade Regulation (1983)

The Beautician Trade Regulation (Alberta Regulation 422/83) is an appendix to the Manpower Development Act, and designates the term of "beautician" to mean

> (a) . . . a person who performs any or all of the following operations with respect to the scalp, neck and face of persons:
>
> (i) cutting and trimming of the hair by any means:
>
> (ii) waving and curling of the hair by any means;
>
> (iii) coloring of the hair by any means:
>
> (iv) facial and scalp massage. (Section 1[1])

In the United States, the term that designates trade members that perform the above duties is that of "cosmetologist".

The Regulations further specify that in order to access the trade, applicants must be at least 16 years of age plus provide evidence of a minimum of grade 10 education or its equivalent. Further, after completing his/her training period, the applicant must obtain a grade of not less than 70% on his/her apprenticeship examinations, both theory and practical, in order to be certified as a Beautician. Exceptions to the above provisions are noted within the

Regulations.

In order to qualify to write an examination for a Certificate of Proficiency, the applicant must present to the Director of Apprenticeship and Trade Certification, documentation that verifies that the applicant

> (a) holds a certificate equivalent to an Alberta Certificate of Proficiency issued by a provincial authority outside Alberta,
>
> (b) has at least 3 years acceptable work experience in the trade, or
>
> (c) is the holder of a subsisting Alberta Certificate of Proficiency as a Barber, issued pursuant to the regulations under the Act for the trade of a Barber. (Section 12[1])

Temporary Certificates may be awarded at the Director's discretion when an applicant for examination can show that he/she has complied with section 12, when the Director approves the applicant for examination under section 12, and when the applicant has attained a mark of not less than 70% on the examinations prescribed by the Alberta Apprenticeship and Trade Certification Board (Section 13[1]). Section 4 of the Beautician Trade Regulation specifies that the term of apprenticeship shall consist of two periods (Subsection 1), with each period consisting of not less than 1400 hours of on-the-job training exclusive of the time spent attending a technical training course as prescribed by the Trade Certification Board (Subsection 2).

Apprenticeship Training/Beautician Program

The Alberta Career Development and Employment, Apprenticeship and Trade Certification Board, in consultation with the Provincial Apprenticeship Committee, whose constituent members are both practicing and certified as Beauticians within the province of Alberta, has compiled and published a detailed training manual for the Beautician trade within Alberta. The publication details the teaching practices and course content that is to be afforded all Beautician program students within non-university, post-secondary vocational institution programs across the province. This manual includes, but is not limited to, trade theory and practical knowledge and application, as well as safety regulations and the various government statutes that guide the business practices of the Beautician trade. Specifications for standards of practice have been laid down within this manual for the purposes of assuring protection of the public from both inadequate and incompetent levels of performance from individuals employed within the Beautician trade.

Private Vocational Schools Licensure

Private Vocational Schools Act (Revised Statutes of Alberta 1980, Chapter P-17)

This Act designates the term "school" to mean ". . . a facility used for the purpose of providing instruction or training in

a vocation and includes a facility out of which correspondence courses are provided" (Section 1[h]). Hence, a vocational school is one that offers instruction or training in any occupational endeavor that has achieved the status of "designated trade", as per the Alphabetical Index of Occupational Titles in Volume 1 of the Canadian Classification and Dictionary of Occupations 1971.

The Private Vocational Schools Act provides for the formation of a five-member Private Vocational Schools Advisory Council, appointed by the Minister of Advanced Education. It falls to the Council to review appeals, where a license has been denied, suspended or revoked, and to investigate complaints launched against a proprietor who is in violation of the Private Vocational Schools Act. License renewals, enabling continued operation of a private vocational school, are obtained from the Director of Private Vocational Schools, and are renewed every two years, on the anniversary date of the original license issuance. The specifications that must be met in order to qualify for a license renewal are contained within the Private Vocational Schools Act, Revised Statutes of Alberta 1980, Chapter P-17.

The Act provides for the appointment of an inspector who is afforded carte blanche access, during regular business hours, to a private vocational agency, wherein an "agent" is defined as " . . . a person who solicits or arranges to sell or sells instruction or

training in a vocation" (Section 1[a]), in order to inspect the agent's documents, books, and/or records. The inspector is also mandated the authority to observe the private vocational school's proceedings in terms of the instruction or training provided its students. Any interference with the inspector's execution of his/her duties results in the Director of Private Vocational Schools making application to the Court of Queen's Bench for an order restraining the agent from exercising such prevention or interference. Should an inspector find violations as to the rules of business practice, as provided for under the provisions of the Act, he/she has the authority to, in writing, order the licensee to take corrective measures within a prescribed period of time. Failure to comply with such orders will result in the agent's license being revoked or suspended by the Director of Private Vocational Schools. The appeal process for an agent found to be in contravention of the Private Vocational Schools Act is detailed within the Act. Section 24 of the Act provides that

> A person who contravenes this Act, the regulations, a licence or a stop order is guilty of an offence and liable to a fine of not more than $2000, and in the case of a continuing offence, to a further fine of not more than $500 for each day or part of a day during which the offence continues after the first day.

Under the jurisdiction of the Act, the Lieutenant Governor in Council - the Private Vocational Schools Advisory Council - is given the authority to make regulations

(a) designating any employment, trade, calling or pursuit or any class of them as a vocation;

(b) governing the licensing of persons under this Act;

(c) prescribing licence fees payable under this Act;

(d) prescribing security to be given to the Government by a licensee;

(e) governing the forfeiture of security provided by the licensee and the distribution of the proceeds of security that is forfeited;

(f) governing the filing of returns with the Director;

(g) governing the soliciting or advertising, as the case may be, by a licensee;

(h) governing the enrollment of persons in schools or correspondence courses:

(i) governing fees that may be charged for instruction or training provided in schools or by correspondence courses:

(j) governing the handling of money paid by persons to licensees under this Act for instruction or training in a vocation and the return of that money or a portion of it if the instruction or training is not completed or if the licensee's licence is cancelled, suspended or not renewed:

(k) governing facilities used as schools;

(l) governing the operation of schools:

(m) governing the provision of correspondence courses:

(n) governing the instruction or training that may be offered by a licensee;

(o) governing the qualification of instructors providing instruction or training in a vocation;

(p) governing books, accounts and records to be maintained by a licensee and the disposition of those books, accounts or records;

(q) governing examinations given to persons receiving instruction or training in a vocation;

(r) governing certificates, diplomas or documents that may be issued to persons who are receiving or have completed instruction or training in a vocation;

(s) exempting schools, correspondence courses or vocations from the operation of this Act or a part of it. (Section 26)

Exempted from the provisions of this Act are

(a) the board of a university under the Universities Act,

(b) the board of a public college under the Colleges Act,

(b.1) the board of a technical institute under the Technical Institutes Act,

(c) the governors of the Banff Centre for Continuing Education,

(d) a provincially administered institution as defined in the Department of Advanced Education Act,

(e) a school or correspondence course operated or provided by the Government of Alberta, the Government of Canada or the government of another province, . . .

(g) a school or correspondence course operated or provided by an employer for his employees,

(h) a school or correspondence course operated or provided by an association of employers for the employees of its members,

(i) a school or correspondence course operated or provided by a trade union defined in the Labour Relations Act for its members, or

(j) a school, correspondence course or vocation or class of them exempted by the regulations. (Section 2)

It is within the provisions of this Act that the formation and duties of administrative bodies are established, including the guidelines for the execution of those duties as specified by the Act. Legislation pertaining more specifically to the rules for licensure of

private vocational schools in the province of Alberta are laid out in the Private Vocational Schools Act/Private Schools Regulation.

In the main, the references to follow represent American research into the topic at hand. In general, the Canadian situation parallels that of the United States in terms of the crises being faced by vocational educators and vocational education. Hence, any qualifications and exceptions that may punctuate the scenario in Canada as somehow different are absent. The private vocational school industry in Canada is, likewise, in a state of flux, and is borne of similar impinging forces as will be enunciated for the American case.

Vocational Education

Historical Perspective

Impetus for the development of vocational education programs was seeded by the manual training movement of the 1880's (Oakes, 1986), in response to a growing demand for skilled workers within industry. North America's economic base had shifted from the Agricultural Era to the Industrial Era, Taylorism had been firmly rooted within the industrial arena. The motto became "one man for one job". Work roles became highly specialized and fractioned. These were deemed the basic elements that would increase worker productivity. In response to the increasing demands of an industrial

job market in need of prepared workers, secondary education sought to add balance to their education program offerings by introducing vocational curricula that would parallel the academic programs.

Once incorporated within the educational matrix of North America's school systems, vocational education became established as an area of political interest, an answer for the increasing number of "special needs" students (Sathre, 1987) who required more direct access to basic job-skills education. Thus, vocational education became an avenue whereby the economically disadvantaged, the handicapped, the drop outs, and the "at-risk" students could access training for the job skills demanded by a mass-production society. This afforded these groups with the means to economic productivity and, at the same time, alleviated the social woes associated with unemployment. As the societal mosaic changed, as minority needs became majority requests for political action, the arena of vocational education was expanded to service the needs of: adults requiring training or retraining, single parents, homemakers reentering the workforce, and criminal offenders in need of job-related skills (Sathre, 1987). Hence, the vocational education movement became embued with the sense that economic returns would accrue when human capital was invested in, by increasing both economic and human production through training.

Current evidence suggests that the typical vocational

student is one with significantly lower basic skill proficiencies due to a lack of emphasis on the basic academic aspects of education (Lotto, 1986). Further, there seems to be little doubt that vocational education does not contribute to upward social mobility as had been originally contended by the movement's supporters (Oakes, 1986).

Present

Vocational programs have not fared as well as the founding organizers had intended. Not only have they failed to afford greater equality for the poor and minority groups to increased education and employment, but they have likewise failed the marketplace for which its clientele was designed to serve. Moreover, vocational education denied students access to a broad range of occupational choices due to its narrow and specific focus (Lotto, 1986).

There is a growing criticism within the industrial sectors (Schill, 1985) that vocational education students would be more employable had they been afforded better preparation in terms of "other areas" (Buck and Barrick, 1987), such as increased readiness to assume responsibility, self-discipline, the ability to learn and to problem solve, and so on. "It appears that vocational education is less likely to have an impact on student values and attitudes than it is to attract, a priori, a group of students with similar values and

attitudes" (Lotto, 1986, p. 43). Increasingly, secondary level, vocational educators are being pressured to focus more and more on the basics - reading, writing, communication, and more effective computing skills (Phelps and Hughes, 1986). Today, vocational education students require the common core basics as well as job-specific skills (Pritz, 1988). There is an urgent need to fuse vocational and academic education in a complementary fashion, so as to prepare the consumers of vocational education for a rapidly changing industrial marketplace. "A vocational education system based in and bound by the agricultural/industrial model of the early 1900's will not be able to meet the educational needs of the emerging information society" (Asche, 1986, p. 1). There is a growing demand for the consummate employee, one with decision-making and higher order skills as well as basic academic competencies, skills required to survive within an increasingly technological society. Job specificity has been replaced by an emphasis on transferable skill, worker flexibility, and worker ingenuity. There is no merit, in both human and financial terms, to teach skills that may be outdated in five years. Many working youths are in low paying, dead-end service jobs, while employers are searching for trained workers for higher-paying jobs (Sathre, 1987).

North America's competitive position within the global market lies within the productivity, education, and skill level of its workforce (Shoemaker, 1987). Today's job market is a shifting kaleidoscopic image of new occupations, new skill requirements,

increased competition, plant closures, new management styles, displaced workers, and upgrading of occupational skills (Fielden, 1987 and Wolansky and Passmore, 1984). The rapidly changing demands for a workforce that possesses increasing expertise and flexibility, skill proficiency, plus academic excellence, begs the question, "Has the term 'vocational' outlived its usefulness or is it especially relevant, given the present conditions of work in our society?" (Phelps and Hughes, 1986, p. 67).

It may be argued that the issues addressed above, in particular the need for academic upgrading of vocational training programs, holds only oblique relevance for the Beautician trade, due to its relative isolation from the technocracy of the Information Age, and its associated global marketplace. However, in challenging such claims it must be borne in mind that the 21st Century will be earmarked by worker flexibility and mobility, as the employed pursue as many as three or four separate, and often unrelated, career paths in their working lifetimes. Job markets open and close, and only the diversified will survive in a work-world of changing demands.

The diversification of all vocational programs, in terms of increasing attention to academic proficiency, will assure greater flexibility, and the opportunity for increased mobility for the vocationally trained, freeing them to seek out occupational niches as they open. No longer caught within lower-level job echelons, the

result of a lack of basic academic skills, the vocationally trained will be freed to pursue a wider array of vocational programs. Minimum requirement entrants to a vocational niche, lacking academic proficiency, will become the vocationally-trained unemployables following changes in life circumstances and/or job market requirements.

For those who would argue that the Beautician trade falls within the purview of the service industries and is, therefore, a mere tangential consideration regarding the issues that surround the need for academic upgrading of Canadian vocational students and workers in general, it is important to consider job placement rates. The present market situation within the trade of Beautician in Alberta is on the decline, according to management personnel at both Marvel and Canada Manpower. It appears that, for the present, Alberta's need for Beauticians has been satiated. Hence, the issue of academic upgrading within this trade remains an important consideration for purposes of affording a wider scope of training options and job opportunities for those who would seek to either enter the Beautician industry or leave it to seek employment and/or training in some other vocational calling. Therefore, academic upgrading remains an issue that is very much germane to the situation within the Beautician trade as it faces changing demands as well as increased pressure to better serve its student populations, and, consequently, their service to the public.

Future

In light of employers' demands for entry-level workers with basic mathematics, science, and communication skills in conjunction with problem-solving skills, decision-making skills, and an ability to apply academic concepts to specific tasks, basic academic skill proficiency is rapidly becoming the sine quo non for entry into vocational education programs. The requirements for entry into such programs are rapidly approaching those demanded of students in college preparatory courses. Pritz (1988) indicates that, in the United States, 62% of students completing vocational education programs will go on to college. Hence, the need for all students to acquire a basic level of academic competence becomes an imperative, regardless of the curriculum's initial intended focus.

Vocational Education Research

A major new thrust is taking place in terms of vocational education. Increasingly, vocational education is falling within the purview of institutions lying outside of the public school system, expanding their domains so as to incorporate vocational education programs. This movement has been given incentive through government funding agencies offering tax incentives, or wage subsidy programs, in an effort to assure retraining of workers with obsolete skills (Asche, 1986). Private consumers seeking upgrading are also receiving

government loans to pursue upgrading within public and proprietary institutions who tailor their educational programs to meet the needs of circumscribed market niches, such as within the training of bar tenders, barbers, aestheticians, cosmetologists, and so on (Asche, 1986). Asche (1986) suggests that these changes in funding trends as well as employment patterns may bring to an end some of the high-cost, low-enrollment vocational programs. Increasingly, funding is being shifted away from secondary programs to postsecondary programs and to adult retraining programs (Sathre, 1987).

One of the major incentives for research within the vocational education practices has evolved from the political need to justify program expenditures. Where public funding becomes assigned to proprietary establishments, the demand for accountability to outside funding agencies increases. Current estimates of private sector training costs within the United States are from $30 to $50 billion annually, and are expected to rise sharply as attempts to remain abreast of the everchanging economic and industrial trends continue (Lloyd, 1987). Vocational education has become big business, a business that is kept alive, in part, through public funding of both public and private institutions.

"The dual development of successful vocational education and job training efforts has resulted in the largest governance issue ever to face vocational education" (Gentry, 1987, p. 47). Federal and

provincial funding agencies are becoming increasingly integrated within the decision-making processes of vocational education institutions as well as job training programs. This trend is resulting in a move toward government control, due to the funding issues, as well as a consolidation of vocational education and job-training programs, leading to a level of involvement that verges on government control of private industry within the vocational education sector. Proprietary vocational education institutions are likewise dependent upon government funding either directly, in support of the programs that they offer, or indirectly, by way of government funding of their students. This sets up a dilemma for the entrepreneur. On the one hand he/she wishes to operate independent of government interference, and yet on the other hand is dependent on the government for funding in one way or the other.

The ultimate goal for proprietary agencies is toward discouraging government institutions from attempting to control their organizations and yet, at the same time, to develop a cooperative working relationship between government funding agencies, education, and private industry. "At the same time, institutions must recognize that increased cooperation and support from the government will expand the need for improved communication, accountability and responsiveness to marketplace needs" (Gentry, 1987, p. 48). Increased government monitoring of educational practices within vocational institutions is the nation's way of indicating how vital an area this field of study

is becoming, due to the vital role and impact that vocational education assumes within the society (Barnes, 1988). Boyd (1987) suggests that " . . . cross-national research shows that a delicate balance in public policy must be struck if there is to be parity between public and private schools and equality of opportunity as well as excellence and choice in education" (p. 183).

In rising to the challenges currently facing the field of vocational education, researchers have mounted a massive campaign toward deduction of the empirical answers to some hard core questions. Seeking to justify their own existence, vocational institutions, both public and private, have opened their files, their curricula, and their teaching credentials, in an effort to both meet the challenges of the 21st Century and to survive into that era.

Research into vocational education has aligned with basic research into how to strategically approach the questions posed by policy makers (Chelimsky, 1987, Ertel and Neveu, 1987, Glassman, 1987, and Gogan, 1985), methods of evaluating existing programs (Blank, 1987, and Murphy, 1983), student assessment in terms of competency based assessment and course completion (Koodoo, Rompoue, and Didyk, 1984, Meyer, 1987, Sproles, Cox, and Sproles, 1987, and Taylor and Clayton, 1986), and job market distribution and redistribution of occupations (Fletcher, 1986, Gradwell, 1986, Kolde, 1985, and Venner and Hickey, 1985). These topics represent but a meager sampling of

the multiplicity of questions that research is posing to vocational educators. However, despite the unanimous claims that vocational education students are increasingly expected to attain a level of academic expertise that parallels their university bound counterparts, and regardless of the limits placed upon available positions within any educational program, vocational education research into predictive validity aligned with the determination of student ability to successfully complete such programs has been virtually ignored. Yet with so many lower entry positions being obliterated by the current changes within the occupational sectors, the issue of predictive validity within vocational admission procedures is a topic whose time has come.

Predictive Validity

Thorough analysis of the debates that surround the issue of predictive validity and admissions testing, the adequacies and inadequacies, is beyond the scope of this writing, and has been satisfactorily dealt with elsewhere (Gottfredson and Crouse, 1986, Hunter, 1986, Lin, 1982, Skakun and King, 1980, and Slack and Porter, 1980). Regardless of whether this form of student selection is viewed as objective, fair, or worthy of the time and expense it consumes, it is a practice that is being taken up by an increasing number of institutions and researchers. Admissions officers, burdened with selecting those candidates with the highest possibility of success in

an academic program, are faced with the ominous task of selecting those that will be accepted and those who must be rejected. As long as available spaces within a program are limited, some standard format will be adopted by an institution, designed to elucidate the most able candidates from those with lesser chances of success.

While applicants to postsecondary academic programs have been subjected to the close scrutiny of psychometricians for decades, students pursuing the vocational education stream have wafted in and out of their chosen programs as space would permit. Academic excellence was not the raison d'etre for such programs. But times are changing. Academic excellence is no longer reserved for the intelligentia, earmarking them for the upper level, higher earning occupations. Academic excellence is becoming a matter of national survival, in economic trade, standard of living, and societal terms. Ergo, the spectre of admissions testing, of predictive validity, is beginning to invade the borders and boundaries of vocational education. Not only is this to assure that the workforce possesses literacy skills beyond the basic 3-Rs, but it is a matter of survival for students enrolled in vocational education programs in general, and the continued existence of proprietary institutions of vocational education in particular. As private and public organizations charged with educating the workforce continue to look to the government for funding and licensure, it behooves them to incorporate objective measures that will speak to their credibility, standards of practice,

and quality of education.

Andrew and Hecht (cited in Halpin, Sigmon, and Halpin, 1983) define a standard as the pass-fail level in a particular test. Popham (cited in Halpin et al., 1983) considers the word "standard" as referring to a performance measure that is deemed adequate for some specific application or purpose. Synonyms for standards of performance are cut-off scores, cutting scores, passing scores, levels of minimal competence, and criterion scores (Halpin et al, 1983). These authors indicate that judgmental methods of standard setting tend, in the main, to be arbitrary processes. Nonetheless, " . . . when multiple judgmental standard-setting procedures are utilized by different groups concurrently, stability across raters can be achieved and decisions can be made in a relatively judicious manner" (p. 194).

A multiple method paradigm was found to be superior even when the groups of applicants appeared to differ in their own levels on the competence being measured. Paolillo (1982) found that multiple measured variables are more useful, statistically, in screening applicants for Master of Business Administration programs. The combination of grade point average, scores on the Graduate Management Aptitude Test, and full or part-time attendance in a program, served to increase the accuracy of the predictions. As the consistency with which standards are set is increased, so too is the validity of the decisions based upon the standards. Nonetheless, Shepard (cited in

Halpin et al., 1983) charges that no standard-setting procedure has yet been illuminated that affords a "true" standard.

Scored biographical data have been found to yield highly valid predictions of job performance and turnover (Drakeley, Herriot, and Jones, 1988). Super (cited in Drakeley et al., 1988) suggests that the degree of success experienced by an individual in the major tasks of his/her life during their younger years predicts performance at work when they are adults. Hence, biographical data may reflect both opportunity and achievements or affiliations that will combine to determine subsequent performance. The key elements for success within job performance, according to the study done by Drakeley et al (1988), appear to align with an orientation toward science as opposed to the arts, a stable home background, and experience with uniformed youth activities, such as cadets, Boy Scouts, Brownies, Girl Guides, and so on. The presence of these factors within an applicant's background tended to predict the absence of withdrawal from a program due to a lack of commitment to it. Watkins (1986) found that background characteristics and learning processes contributed to the prediction of grade point averages. These aspects were

> (a) the overall strength of motivation . . ., (b) anxiety over possible failure, (c) not over-emphasizing pragmatic reasons for studying, (d) the tendency to start looking for an overall conception of their learning tasks, and (e) not being quick to jump to conclusions. (p. 202)

Despite the charges that psychometric batteries are prejudicial to

minority groups, a study conducted by McCornack (1983) found that the Scholastic Aptitude Test was very similar across both minority and non-minority groups.

Psychological measures used to assess general and scholastic abilities are, in the main, aimed at assessing fluid intelligence, and therefore are felt to be prejudicial toward older students (Zeidner, 1987). Zeidner (1987) concluded that alternate measures of selection should be employed for the assessment of older student candidates. Alternate selection criteria, in general, must be tailored for selection amongst older student applicants. Thus, due to their reliance on general reasoning or fluid ability, psychometric instruments are inappropriate for prediction of criterion in relationship to the older student's scholastic achievement (Zeidner, 1987). Youngblood and Martin (1982) found that, despite the restriction in range of the predictor and criterion values imposed by stringent standards within selection procedures used by educational institutions, " . . . a parsimonious model of an admissions officer's decision process yielded consistent validity evidence across distinct samples of performance measures" (p. 1160). Hence, while the use of a single predictive measure is increasingly under attack, a consensus appears to be accruing to the use of multiple assessment measures in the selection of candidates for admission to various programs, vocational as well as academic.

The American College Test and the Scholastic Aptitude Test are suggested as being more usefully predictive of traditional students than with special admissions or high-risk students (Rounds and Andersen, 1985). Roueche and Archer (cited in Rounds and Andersen, 1985) charge that high school grade point averages are of questionable merit in determining an applicant's admissability to a program. They suggest that high school grade point averages are often influenced by grade inflation and social promotion. Meritocracy is being replaced by politicking and astute attention to the power hierarchy within institutions of higher education. The socially naive do not receive a chance at the gold ring. (See Linn [1982] for a more complete discussion of the politics of admissions selection procedures.)

Regardless of the political issues that surround the practices and procedures used for prediction, it is a practice that is increasingly being adopted into the decision making processes faced by admissions officers throughout North American institutions of education as well as within industry at large. The consensus appears to be rallying behind a multiple approach paradigm versus the "one best predictive measure". Skakun and King (1980) indicate that models used for prediction fall to one of two approaches - the normative approach or the absolute standard. The normative approach uses a set passing score that lies a specified distance from the mean of the scores in standard deviation units. The second method, the absolute

standard, sets a passing score at a fixed percentage. Both normative and absolute standard approaches have been criticized for their arbitrariness (see Skakun and King, 1980).

A common problem within prediction paradigms, regardless of the method chosen, is that of selection effects. This remains a problem even in the case involving only a single predictor (Linn and Dunbar, 1982). The selection of a single variable can lower predictive validity for that variable within the selected group, resulting in an attentuated correlation that would not have been lowered had the achieved scores from the total applicant population been available. Not only does the applicant self-selection impact upon the correlation found, tending to lower it, but administrative selection further dilutes the correlation (Linn and Dunbar, 1982).

Linn and Dunbar (1982) recommend the use of multivariate correlation measures as a means of obtaining predictive validity estimates for a total applicant group. By so doing, it is possible to obtain the validities that will provide an appropriate indication of the predictive power of the admission measures. Further, these authors suggest that correlations obtained following corrections for range restriction, both ceiling and floor effects, should be viewed as approximations. The most prudent tack to take is to both consider and report each observed validity for the selected group as well as the corrected estimates for the total applicant group.

Dagenais (1984) charges that, for the most part, the selection process validation studies found within the research literature tend to focus on multiple regression models that present with major limitations. A fraction of the admitted population is completely ignored - those who drop out of a program during the course of a year. These are not considered within the data analyses, and yet much information about this subgroup is highly relevant to the issues surrounding predictive validity. Through the use of a Probit Model (Dagenais, 1984), the information from drop-out cases can be retained. Dagenais (1984) further indicates that test results are not purely measures of academic performance, but are also indicators of a willingness to persevere in a program. This researcher further indicates the superiority of the Probit Model, as a predictive instrument, over the utility of the linear regression models currently employed for the purposes of prediction.

Linear Regression Models

Linear regression analyses attempt the prediction of one variable, usually the dependent variable, from another variable, usually the independent variable. A regression line is used to depict the predicted relationship between the dependent and the independent variables, with the prediction variable represented by Y, and the predicted variable as X. The formula for a straight line is

$$\hat{Y} = a_{yx} + b_{yx}(X)$$

where: $\hat{Y}$ = the predicted variable
X = the predictor variable
a_{yx} = the value of Y when X = 0 (the Y-intercept)
b_{yx} = the slope of the line relating X and Y (b-coefficient).

Both X and Y represent variables whose values will change from person to person and a_{yx} and b_{yx} are constants for a given data set. For each unit change in X will be a corresponding magnitude of change in the Y value. Thus, the regression of Y on X is represented by b_{yx}. However, the regression equation is asymmetrical because it is possible to regress X on the Y axis also.

The use of this method to measure academic success, based on a dichotomous variable, such as "success" or "failure" in a program, is fraught with difficulties. The following hypotheses usually accompany the rationale behind the use of linear regression models:

$$E(u_i) = 0$$

$$V(u_i) = \sigma^2 (i = 1 \ldots, N)$$

> As long as the expression $X_i B$ contains a constant term, the first hypothesis: $E(u_i) = 0$, is clearly not restrictive. On the other hand, unless the admissible values of the elements of the vector B are restricted, the linear model given by (the above) equation is unsatisfactory because it allows probability values above 1 or less than 0 . . . As the linear regression model is generally used without restriction on the values of the elements of the vector B, it frequently happens that the estimate of probability of success is greater than 1 or less than 0 for certain observations . . . . (Dagenais, 1984, pp. 630-631)

Renee Neely (cited in Dagenais, 1984), aware of the problem

presented with information loss due to drop-outs, proposed that the criterion for success within a program be based on whether a student was successful in obtaining his/her degree, creating a dichotomous variable - degree obtained or degree not obtained - on which to base one's decisions regarding admission limits and the selection of potential candidates. The creation of dichotomous variables therefore nullified the possibility of using a linear regression model, a model that uses, at the very least, quasi-interval data. Hence, Neely proposed the use of a Probit Model, one that uses a qualitative response paradigm, based on a normal distribution of Z-scores.

The Probit Model

The Probit Model is a statistical paradigm that lends itself to the analysis of quantal, or "all-or-none" responses (Hewlett and Plackett, 1979). Thus, a probit model is one that deals with qualitative data, aligned with probabilities. It is for this reason that the term "probit" is used, meaning Probability units.

> In the simple regression procedure . . . , a straight-forward method of calculating a line is possible because each point on the plot is taken to have the same weight, i.e. to carry the same amount of information. In a probit plot, on the other hand, points carry different weights, and weights must be taken into account for calculating the line. The weight depends on n, the number of subjects in the group, and on a quantity called the weighting coefficient . . . . (Hewlett and Plackett, 1979, p.22)

The weighting coefficients are obtained through the use of a table,

such as that illustrated by Hewlett and Plackett (1979) on page 24 of their monograph. Thus, while the majority of multiple regression models use a student's academic performance as the dependent variable, with the independent variable taking the form of the results of admissions tests, previous academic performance, interview results, and so on, the Probit Model converts past academic records to a normalized distribution, uses the arithmetical average for admissions tests, and permits the retention of information available on drop-out candidates as well as those "otherwise" leaving a program.

Through the use of the Probit Model, Dagenais' study indicated that

> The coefficients of T and Z have a positive sign showing that the probability that a candidate admitted to the second year increases as the test results increase or as the Z score improves. It, therefore, appears that the information provided by the two variables is relatively different and information would be lost if only one of them was considered (p. 635).

Overall, Dagenais (1984) concluded that, theoretically, ". . . the Probit Model is far more appropriate than the linear regression model for analyzing dichotomous dependent variables" (p. 638). While the differences between the two models are negligible for the middle-range values of probability estimates, the estimated differences become important for extreme values. The Probit Model,

therefore, reduces considerably the discrepancies between the probability estimates obtained from the two alternative models.

Summary

In view of the rapid changes occurring both within North American society as a whole and within the global arenas of trade and commerce, and as the basic requirements for admission to postsecondary education in general continue to increase, measures for candidate selection are becoming an obligatory aspect of the application process. While postsecondary public institutions for vocational education continue to implement selection procedures, private sector establishments are inceasingly under pressure from without to follow suit.

The issues surrounding the predictive validity of prescreening instruments within the Beautician industry have not been addressed before in terms of any form of systematic research. With increasing public monies being assigned to students engaged in education within both public and private educational agencies, there is an increasing need for the private educational institutions to incorporate objective measures of quality control. By so doing, private concerns avoid total government involvement in their operating procedures, as well as ensure their continued existence through the public funding of their student populations, through the

implementation of in-house accountability measures.

The use of a prescreening measure that is neither valid nor reliable in its ability to predict success within a Beautician program becomes a poor measure upon which to base an organization's accountability as it lobbies for the public funding of its student population. What is required is an instrument that will produce accurate predictions of success. The battery currently under study, and one that has been used by Marvel for the past fifteen years, appears nowhere within the Mental Measurements Yearbook.

Although Dagenais (1984) suggests that the use of the Probit Model is superior to the linear-regression model, with particular emphasis on the extreme cases of student academic performance, in this instance, the Probit Model is not amenable to the parameters contained within this study. While Dagenais (1984) suggests the conversion of prior academic records to Z scores as reasonable indicators for academic success, and that admissions tests, using the arithmetic mean, serve as guides to determine student perseverence in a program of studies, these variables elude this present research for two reasons. In the first instance, of the 1162 subjects upon whom information was available, only 250 volunteered official academic transcripts - few of which were complete. Secondly, only 171 subjects were required to write the admission test - the CSAT. Hence, the Probit Model is not suitable for analysis of the data contained

herein.

Problem

The primary questions used to guide this investigation surround the use of the CSAT, and are as follows:

1. Does the CSAT predict the criterion of "success" in the Beautician program conducted at Marvel?

2. Does the CSAT predict potential drop-out candidates that are admitted to the program?

3. Is there any relationship between the grades obtained on the CSAT and those obtained on the Marvel final theory and practical exams?

4. Is there any relationship between the source of funding and program completion within the entire subject pool?

Rationale

Where an organization's credibility and accountability in terms of its business practices falls under question from outside government agencies, the need for a valid and reliable predictive

measure for success becomes both apparent and imperative.

Significance

The significance of research of this nature is of vital importance for reasons stated throughout this writing. The entire industry of private vocational education is under attack from many different factions within society, not the least of which is that launched by government funding agencies in charge of the public purse. Increasingly, the public is demanding accountability from government agencies whose sole purpose for being is the disbursement of tax dollars. Thus, where the government's credibility becomes scrutinized by its supporters, the taxpayers, the government imposes stricter operational and accountability standards upon both private and public agencies receiving public funding, either in direct support of the programs offered or by financing of their student populations.

Chapter 3

METHODS AND PROCEDURES

Background

The Marvel Trade and Business College is a privately owned organization with facilities in Edmonton, Calgary, and Red Deer, all located within the province of Alberta. The Edmonton facility has the capacity to admit approximately 200 students into its Hairstyling and Esthetics program annually. Successful candidates, upon satisfactory completion of the Apprenticeship Board exams, become certified as Journeyman Beauticians within the province of Alberta. The data obtained for this retrospective study were extracted from student files for the years of 1982 through 1987, inclusive. In total, 1162 student files were accessed and the required information extracted, coded, and subjected to analysis by the SPSS-X statistical program, using the 2.2 version of the software package. Data collected was based on year of course completion, sex, date of birth, level of formal education, source of funding, date of course completion, whether the student terminated prior to course completion, CSAT mark (where written), final Marvel theory grade (where written), final Marvel practical grade (where written), and selected academic subjects (where available).

Out of the 1162 student files accessed, 766 were found to have obtained some form of government funding. Thus, 66.7% of the student population attending Marvel over the years of 1982 through, and inclusive of, 1987, were financed entirely through some form of government financial support by way of the Students Finance Board, including Canada Student Loan and Alberta Student Loan, Canada Manpower, Alberta Vocational Training, and/or a combination of various provincial government grants.

In order to adequately address the issues posed by this study it was necessary to garner information from the Director of Private Vocational Schools in Alberta, Dr. A. Hendry: the Director of Registration and Certification of the Alberta Apprenticeship Board, Mr. W. Nixon: and the Director of Program Development for the Alberta Students Finance Board, Ms J. Sprague. These parties were met with, the purpose of the research outlined, and the necessary information obtained. At no time was the forthcoming information pertinent to Marvel's case as a specific instance. All data gathered related to the general state-of-affairs for private vocational schools in Alberta, for certification of trades, with emphasis on that of Beautician, and student funding within the public and private sectors. Confidentiality, in deference to Marvel's study, was maintained and safeguarded.

Collection of Data

Student files for the years of 1982 through, and inclusive of 1987 were obtained from Marvel, with data collection completed by March of 1988. The information from each file was transcribed onto 40-line by 80-column data sheets, with one line devoted to the information from each student. The information so obtained was recorded as per Appendix 1, page 182.

Data were collected on a total subject pool of 1162 students who had attended Marvel's Hairstyling and Esthetics program for the six year period noted above. The total pool was made up of enrolments for the following years: 1982 = 189 students, 1983 = 195 students, 1984 = 215 students, 1985 = 224 students, 1986 = 169 students, and 1987 = 170 students. In all cases the noted year is the year in which the student either completed or terminated the Marvel 1400 hour instruction program. For columns one through 30, virtually all data were available. However, information pertinent to the selected high school courses was sparse.

Of the total subject pool of 1162, only 250 students, or 21.5%, submitted some form of official indication from the Department of Education as to their level of formal learning prior to admission to Marvel's program. Of those submitting transcripts, the vast majority were incomplete, indicating only partial results, such as

only grade 12 marks or only grade 11 marks, and so on. The Marvel final theory exam was written by 828 students, and the final practical exam by 831 students. A total of 822 students wrote both the final practical exam and the final theory exam. Of those 822 students, 778 were successful in completing Marvel's program. "Success" is defined as obtaining a minimum grade of 70% on each of the two final exams. Five percent of the students who completed the course received failing grades in the final theory and/or the final practical exams.

Of the 1162 students admitted to the Hairstyling and Esthetics program at Marvel over a six year period, 171 were required to write the CSAT because their formal education levels were less than grade 10. The school policy stated that an applicant had to achieve a cut-off score of 70% on this battery to gain admission to the program. Scores for the 171 applicants who wrote this battery of tests ranged from a low of 36% to a high of 87%. All applicants who wrote the CSAT were subsequently admitted to the program.

Analysis of Data

In April of 1988 all data obtained on the grid sheets were keypunched into the University of Alberta IBM/MTS mainframe computer by staff employed through the Division of Educational Research at the Faculty of Education. Following perusal of a data printout for

obvious errors, such as 13 months indicated for a calendar year, the data was corrected as indicated and then accepted as accurate, reflecting the data collected from Marvel's student files.

Measures

Cosmetology Student Aptitude Test. The CSAT consists of three sections. Part I is a personal interview and rating sheet that requests biographical data, health history, work history, personal preferences, and contains space for interviewer comments regarding the suitability of the applicant for the program. Part II is headed "General Intelligence Test", and consists of 40 questions - 15 under "Vocabulary", 15 under "Word Series", and 10 under "Word Associations". The final section, Part III, is listed as "Artistic Aptitude and Manual Dexterity", and contains 15 items aligned with "Personal Preference", 15 with "Line Perception", 15 with "Color Perception", and 15 with "Figure Perception". The cut-off score on the predictor is 70%.

Beautician Competence. On both the final Beautician theory exam and the Beautician practical exam set by Marvel, the student must obtain a minimum competence level of 70% before the student is considered to have achieved a level of "success" in the Beautician program.

Funding. All data available from the 1162 student files on sources of funding were extracted and coded. Dichotomous scales were then constructed wherein a designator of "0" was assigned to all students who either provided their own monies to finance their education and/or were subsidized, either in whole or in part, by relatives. For those students receiving government funding to pay for their education, a designator of "1" was assigned.

Attrition. Students who completed the Beautician program were given a designator of "0", while those dropping from the program prior to completion were assigned a "1". These designators were applied to the entire student pool.

Data within the 171 files on students who had taken the CSAT were coded in terms of students who remained to program completion, coded as "0", and those who terminated, either through personal choice or upon request of the institution, coded as "1". In relating pass or failure on the CSAT as being indicative of program completion or withdrawal, a dichotomous scale was established that specified "fail" as "1" and "pass" as "2".

Success of Prediction. An analysis of the 171 CSAT scores was conducted on the relationship between failing the CSAT and failing the program, each of which was designated by the number "1". Likewise, a designator of "2" was used to indicate successful

attainment of 70% on the CSAT, as well as on the practical exam and the theory exam - indicating "success" within the program.

Sex. A dichotomous scale for the sex of the 1162 students was established, using a "1" to denote the males and a "2" to indicate the females.

Level of Formal Education. All students achieving a formal level of education that was less than the 10th grade were designated by the number "1". All those indicating a grade level of 10 or greater were designated by the number "2". This scale was followed for the entire subject pool, 1162 students.

Design and Procedure

Data collection was conducted over an eight month period, overlapping between the years of 1987 and 1988. In total, data were obtained on 1162 admissions to Marvel's Beautician program. From the total admissions, 171 admissions had been required to write the CSAT. The design of this study follows the nonexperimental, correlational paradigm, and was chosen as a means of determining the relationship between the criterion measure and the predictor variables of interest within this research.

Pearson Product-Moment correlations were conducted between the CSAT scores relative to the scores obtained on the theory exam, the practical exam, and "success" in the program - defined as obtaining a minimum score of 70% on each of the final exams. In addition to the Pearson Product-Moment correlations, the data analysis included descriptive statistics, cross-tabulations, Chi-square analyses, and multiple step-wise regressions. For the various forms of statistical analyses used throughout this study, an alpha level of .05 was established as a baseline for determining statistical signficance.

Chapter 4

DATA ANALYSES AND RESULTS

In analyzing the date from this study it is important to set out certain limitations. A distinct lack of attention to the individual final exams will be found, in terms of specific reference to the grades obtained on these tests. Because program "success" serves as the more global concern of this research, any consideration aligned with the specific theory and practical exams, and their respective grades, is cursory. The main thrust of the analysis will align with two major concerns for the researcher, those of "success" and "termination".

It will be noted that, for the students attending Marvel's Hairstyling and Esthetics program for the years of 1982 through 1987, inclusive, 97% of those completing the course were "successful", as defined by achieving a minimum level of competence of 70% on each of the final exams, while 26% of the student population either left the program prior to its completion through personal choice or were asked to leave at the request of Marvel personnel. It therefore appears that, for Marvel, and consequently for purposes of this study, the greater issue is one of "termination", not one of "success". Further, as dropout increases, so too the propensity toward defaulting on

student loans.

This section will commence with a series of descriptive statistics that describe the student sample used for this study. In the spirit of maintaining the initial purpose of this study, the first aspect that will be analyzed is the Cosmetology Student Aptitude Test, following which a number of student attributes will be assessed in terms of their relationship to success and premature withdrawal from the Hairstyling and Esthetics course offered by Marvel. In order to avoid complete disregard for the results obtained on the theory and practical exams, a multiple step-wise regression was done to determine what student attributes may be considered as exerting a significant impact on grades obtained on each of these tests.

To facilitate the extraction of information required to answer the questions posed in the initial stages of this study, a number of crosstabulations, with their associated Chi-square analyses, were utilized. Pearson correlation coefficients were also drawn on in an endeavor to identify any significant elements that may be considered when determining what student(s) possesses the greatest chance of success and the least propensity toward premature withdrawal or expulsion from Marvel's program.

Descriptive Statistics

Student Population Attributes

Data were obtained on 1162 students who either completed or terminated their training during the six years, from 1982 to 1987 inclusive, in Marvel's Hairstyling and Esthetics program. Appendix 2, p. 184, illustrates the number of students distributed over this six year period. Of those that comprised the subject pool used for this study, 171 students were required to write the Cosmetology Student Aptitude Test (CSAT), with marks available on only 170 of the protocols.

Over the six year time frame encompassed by this data set, of the 1162 students registered, there were 853 who completed the program. Of the 295 students who exited from the program prior to completion, 13 transferred from Marvel's Edmonton school to either attend another school in the Marvel chain either in Red Deer or in Calgary or some other vocational school to continue their Beautician's training. The status of one subject was not available. Due to the low percentage of transfers, 1%, the data from these were disregarded in consideration of the "terminations". Appendix 3, p. 185, depicts the status of 1161 students who exited the program over for the six year period under review.

In consideration of the information contained within Appendix 3, it is important to indicate that completion of the program does not designate "success" in the program. It simply indicates those students admitted to the program who completed the required 1400 hours of training at Marvel. To be a success, the student must achieve a minimum grade of 70% on each of Marvel's final theory and practical exams. Thus, of the 1161 students admitted to the program, 73% remained to complete their course of studies, the remaining 26% left prior to completing the program, either through personal choice or at the request of Marvel's teaching personnel.

Age. For the years of 1982 to 1987, inclusive, the mean age for the students enrolled within Marvel's Hairstyling and Esthetics program was 22.15 years (see Appendix 4, p. 186). Of the 1162 students who attended Marvel during this six-year period, age data were available for 1157. The age of the students ranged from 16 to 50 years, with 56% between the ages of 16 and 20, 75% of the student population ranged from 16 years to 23 years, inclusive. Students who were either 18 or 19 years of age accounted for 21% and 19%, respectively, of the 1157 students on whom the necessary data was available. It appears that Marvel's main student population consisted of individuals who pursue a Beautician's training course immediately upon exiting from high school.

Education. As illustrated by the information contained in Appendix 5, p. 188, the mean education indicated by students attending Marvel from 1982 through 1987 was that of 11.21 years of formal education which ranged from grade 6 to grade 13. However, 57% of the subject pool, 1150, had indicated a grade level of 12, which also served as the median grade as well as the mode for this data set. It appears that, while the specified level of education is a grade 10 entry level into the Beautician trade, overall, the applicants to Marvel's program have, apparently, achieved educational levels beyond the basic minimum standard established for entry. This finding is corroborated by the indication that 19% of those admitted to Marvel's program indicated a formal education of grade 10, and 73% specifying grades 11 through 13. The remaining 8% had obtained educational levels that were less than grade 10.

While the literature indicates that academic background is a reasonably sound indicator for the determination of postsecondary, academic success, Mavel personnel appear to have accepted, on faith alone, the academic credentials purported by its student population. As the data in Appendix 6, p. 189, illustrates, few official transcripts were either requested or submitted as part of the admissions procedures practiced by Marvel to verify claims of educational attainment.

As previously indicated, of the 1162 student files accessed

for this study, only 250 students submitted any form of official record regarding their academic standing at the time of application to Marvel's Hairstyling and Esthetics program, this represented 21.5% of the student pool. Of that 250, none of the transcripts reviewed were completed in terms of either grades or subjects completed. Thus, where a student indicated that grade 12 was completed in school, only a partial transcript was made available perhaps with only partial grade 12 marks and the courses completed, deleting any indication of marks for grades 10 and 11. Overall, where transcripts were made available, only partial information was indicated, submitting partial grade standings re grade 10 or grade 11 or grade 12.

Due to the above state of affairs, although of significant import, thorough analysis of academic standing, as relevant to "success" in Marvel's program, was made impossible due to the inconsistent and sporadic nature of the available data. An illustrative point may be forwarded from the data contained within Appendix 6. Of the 653 students indicating that they possessed a grade 12 level of formal education, official transcripts were submitted for only the following grade 12 subjects:

English 30/33 = 62 cases, Math 30/33 = 62 cases,
Biology 30 = 43 cases, Chemistry 30 = 30 cases, and
Beauty Culture 32 = 37 cases.

A further problem related to the education issue was, what appeared to be, the students' interpretations of a question that appeared on the questionnaire filled out by applicants regarding the "highest grade completed". Comparing available transcripts with student responses to this question illustrated that, in most cases, the students' responses were better aligned with the question, "the highest grade attended". A number of the students who presented completion of only five or ten credits for a particular grade reported completing that grade level. It appears that Marvel's admissions' personnel failed to request any official transcript from Alberta Education to verify the educational statuses indicated by their student populations, and took as good faith what was indicated by the student with this aspect of the admission procedure.

Sex. Of the 1162 students attending Marvel for the years of 1982 through 1987, 136 were males and 1025 students were female, with the sex designation missing for one case. Thus, approximately 88% of the student population enrolled in Marvel's Hairstyling and Esthetics course were female, suggesting that the Beautician trade remains largely a female occupation.

Appendix 7, p. 190, illustrates the enrolment trends at Marvel based on a student's year of entry into the program. Once again, when one looks at the sex of admitted students, over the years of entry covered by the crosstabulation, it becomes apparent that

males tend to be under represented within the Beautician Trade. A Chi-square analysis of the data indicated that no trend toward more males entering into the trade was noted.

Academic Performance at Marvel Profiled

The 1162 stubjects that comprise the data set for this study include 853 students who completed Marvel's 1400 hour training program, 13 students who transferred out of Marvel's Edmonton facility, and 295 students who terminated their courses of study prior to completion, either voluntarily or at the request of Marvel's personnel. On one item the status of the subject was not indicated. Of the 853 students who completed the 1400 hour program, 828 wrote Marvel's final theory exam and 831 wrote the final practical exam. The students who were "successful" in Marvel's program - those who obtained 70% on each of the final exams - totaled 825. Thus, of the 1162 students admitted to Marvel's Hairstyling and Esthetics program 73% completed the required training period, 71% were successful, 26% terminated, and 2% either failed one or both of the final exams or did not write them. Nonetheless, of the 73% or 853 students who completed Marvel's program, 825, or 97%, were "successful" in passing both exit examinations.

Although 171 students were required to write the CSAT, grades were available on only 170 of the protocols. One of the

entrance exams found was neither completed by the entrant nor graded by Marvel. While the number of students writing the CSAT represents only 15% of the enrollment at Marvel for this six year period, it is important to interject caveats when considering the academic qualifications of students applying for admission to this school. Although Marvel's stated policy regarding the use of the CSAT indicated that all students with less than a grade 10 were required to write the entrance exam, in practice its use appeared to be rather arbitrary. It was found from the review of the records that this battery was written by students who possessed both less than and greater than a grade 10 education. Further, there were those cases where a student was admitted to the program with both less than a grade 10 education and without the necessity of both writing and passing the entrance exam. Although Marvel stated that a 70% must be achieved on the CSAT before a student was admitted to their program, it was noted that all students who wrote this battery were subsequently admitted, even though the grades ranged from 36% to 88%.

Appendix 8, p. 191, details the academic standing of those students who wrote the CSAT. It should be noted that 25% of the population writing the entrance exam actually possessed less than a grade 10, while the remaining 126 students, or 75% of the popoulation that wrote the CSAT, had grade levels that were either equal to or exceeded grade 10. Further perusal of the data illustrated that 44 students - 42 with less than grade 10 and 2 without educational

levels specified - were admitted to the program without benefit of writing the CSAT, 76% of these possessing a grade 9 education (see Appendix 9, p. 192).

Final theory grades profiled. A total of 838 students wrote Marvel's final theory exam, with grades ranging from a low of 39% to a high of 99%. Marvel's cut-off score of 70% was achieved by 9% of the 828 students writing the final theory exam, representing a cumulative percent of 13% for the 78 students. The remaining 718 students, or 87% of this data set, achieved scores that were in excess of the cutting score. The overall mean was 78.76% (see Appendix 10, p. 193), with a median score of 79% and a modal score of 70%.

Final practical grades profiled. Out of the enrolment total of 1162 students, 831, or 71.5%, wrote Marvel's final practical exam. The mean on the practical exam was slightly lower than that found on the theory exam, at 76.23% (see Appendix 11, p. 196). Both the median and mode on this data set were at the 76% level, representing a slightly lower level than was found for the theory exam.

Scores on the CSAT Profiled. Of the 170 data sets available on the students' performances on the CSAT, a total of 5% achieved the

cut-off score of 70%, a point in the distribution that represented 51% of the 170 students writing this battery. While the mean was 70.13%, there was considerable discrepancy between scores, with a standard deviation of 10.45, as illustrated by Appendix 12, p. 199. While the median was 70%, the modal score was 65%. The scores on this instrument ranged from a low of 36% to a high of 88%. All students writing the CSAT were subsequently admitted to Marvel's Hairstyling and Esthetics program.

Funding Sources.

In order to assess a student's source(s) of funding for his/her education at Marvel, five categories were created - self, relatives, Students Finance Board (SFB), Manpower and Alberta Vocational Training (AVT), and other forms of government funding such as Northwest Territories educational grants ("other"). Appendix 13, p. 202, details the frequency with which these sources were utilized. Further analysis of the data indicated that there were a number of cases wherein funding was drawn from more than one source (see Appendix 14, p. 203). By far, the major source of funding was that that was garnered from the Alberta Students Finance Board, representing approximately 37% of the student population, those whose sole form of financial assistance was based on provincial student

loans. Strictly government sources of funding accounted for 49% of the student population, with the Students Finance Board at 37%, and Manpower and AVT, and SFB and Manpower and/or AVT accounting for 8% and 4%, respectively. Overall, 773 students, or 67% relied, in the main, on monies from public sources, while 382, or 33% of the student population, pursued their education on the basis of private funding sources - self and/or relatives, including spouses (see Appendix 15, p. 204). Only 21% of the 1162 students financed their own education, as per Appendix 13, p. 202.

Summary

The average student who attended Marvel's Hairstyling and Esthetics course for the years of 1982 to 1987, inclusive, was 22 years of age, had a grade 11 education, was female, and had her postsecondary education financed mainly through outside sources, most likely the Alberta Students Finance Board. Her performance on Marvel's final theory and final practical exams would result in an average mark of 79% on the former exam, and 76% on the latter. Overall, the average Marvel student was a female who left high school prior to graduation, pursuing some form of employment for three or four years prior to entering into Marvel's Hairstyling and Esthetics program.

While the proposed use for the CSAT was to screen for

"success" among those students who indicated a grade level of less than 10, in application its use was both inconsistent and sporadic. Of the 171 students who were required to complete this battery, had guidelines been adhered to, only 43 would have been required to take this exam. Moreover, 44 students, with specified educational levels either missing or less than grade 10, were admitted without writing the entrance exam. While 79 students, or 46% of those writing the entrance exam, obtained less than 70% on the CSAT, all were subsequently admitted to the program.

Of the 853 students who completed the 1400 hour Hairstyling and Esthetics program at Marvel, 97% were found to have been "successful", having obtained a minimum of 70% on each of Marvel's final exams, the theory exam and the practical exam. Although 1162 students were enrolled at Marvel for the years of 1982 to 1987, inclusive, 20% opted out of the program prior to its completion, and 6% left the program upon the request of Marvel personnel. Overall, Marvel experienced a retention rate of 74%, resulting in a withdrawal rate of 26%. The placement rate and the default rates remain unknown. These represent areas for further study.

The Cosmetology Student Aptitude Test

Predictive Validity

Program Success. A crosstabulation of the CSAT's ability to predict "success" - a grade of 70% on each the final practical exam and the final theory exam - in Marvel's Hairstyling and Esthetics program proved to be rather disappointing. As illustrated by Table 4.1, the results of the Chi-squre analysis were not statistically significant. Thus, no significant relationship between passing the CSAT - obtaining a minimum grade of 70% - and being successful in Marvel's program was found. While the point-biserial correlation coefficient between overall success in the program and passing the CSAT was +.06, its statistical significance exceeded that of .05, indicating that there was no significant relationship between the pass/fail scores obtained on the CSAT and the pass/fail results on each of the final exams. Although the Pearson correlation coefficients between the CSAT and the final theory exam and between the CSAT and the final practical exam were +.30 ($p = .001$) and +.21 ($p = <.05$), respectively, these correlations were deemed to be weak and therefore of little practical signficance.

Table 4.1

Crosstabulation of CSAT Results by Program Success

Frequency / Expected Value / Row % / Column %		Program Success: Fail	Program Success: Pass	Row Totals
CSAT	Fail	5	33	38
		3.3	34.7	36.9%
		13.2%	86.2%	
		55.6%	35.1%	
CSAT	Pass	4	61	65
		5.7	59.3	63.1%
		6.2%	93.8%	
		44.4%	64.9%	
Column Totals		9	94	103
		8.7%	91.3%	100%

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F. < 5
0.728	1	0.394	3.32	1 of 4 (25%)

Program Termination. In view of the above weak findings regarding the CSAT's ability to differentiate between candidates who will be successful in Marvel's program and those who will not be successful, it was decided to pursue the predictive validity of the CSAT from a different perspective. Dagenais (1984) had determined that the instrument this researcher was testing - an entrance exam -

proved to be a better indicator of perseverance in an academic program, as opposed to an indicator of success or failure in that program. In order to determine the CSAT's ability to predict those students who would eventually withdraw from the program prior to its completion, both self-selected and Marvel-imposed terminations, a crosstabulation was performed (see Table 4.2). When "pass" or "fail" on the CSAT was crosstabulated with program completion and termination, it was found that, of the 79 students who achieved a grade below 70% on the CSAT, 41 terminated their studies prior to completion. This compares to the 91 students who passed the CSAT, 24 of which terminated. According to the results of the Chi-square analysis, the difference between these two groups was signficant at a level of .001.

Table 4.2

Crosstabulation of CSAT Results by Program Completion and Termination

Frequency Expected Value Row % Column %		Program Completion	Termination	Row Totals
CSAT	Fail	38	41	79
		48.8	30.2	46.5%
		48.1%	51.9%	
		36.2%	63.1%	

Table continues

Table 4.2 Continued

Crosstabulation of CSAT Results by Program Completion and Termination

Frequency Expected Value Row % Column %	Program Completion	Termination	Row Totals
Pass	67	24	91
	56.2	34.8	53.5%
	73.6%	26.4%	
	63.8%	36.9%	
Column Totals	105	65	170
	61.8%	38.2%	100%

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F. $<$ 5
10.611	1	0.001	30.206	None

CSAT Scores Relative to Age

In order to determine if there was a significant relationship between a student's performance on the CSAT and his/her age, a Pearson correlation coefficient was computed. This analysis indicated that a negligible, negative correlation existed between a

student's age and the scores obtained of the CSAT, suggesting that younger students receive higher grades on the CSAT. However, the practical significance of a correlation coefficient of -.13 (p = .05) is extremely dubious. Thus, in practice, such a finding offers nothing in terms of providing any information that may result in increased information for the accurate prediction of those students who will do well on the CSAT, and, subsequently, within Marvel's program.

CSAT Scores Relative to Education

A weak, positive correlation coefficient of .21 (p = <.01) was noted when the scores obtained on the CSAT were compared with the examinee's level of formal education, indicating that the higher the entrant's education, the higher the grade obtained on the CSAT. However, once again the practicality of such a finding comes into question. It is doubtful that knowing an applicant's educational level would, in any way, suggest at what point one may anticipate finding the CSAT score.

CSAT Cut-Off Scores

The finding that a score of 70% or greater was not significantly related to successful completion of Marvel's program, sparked a search for a cut-off score that demonstrated with a higher

potential for discrimination between those candidates who would be successful in their studies and those who would not be successful. As Table 4.3 illustrates, when considering cutting scores that range from 40% to 80%, a score of 70% is found to be the most desirable. It is at this level that, although 33 students who would have succeeded in the program would be denied admission, so too would 41 applicants who would eventually leave the program prematurely.

As the cutting score increases, as per Table 4.3, so too do the numbers who would be denied admission and yet would have been successful had they been allowed into the program. Likewise, the numbers of those who would be denied admission and would eventually terminate is similarly greater. Lowering the cut-off score below that of 70% would decrease the number of potentially successful candidates that would be denied admission, however, the number denied that would eventually withdraw would exceed the potentially successful candidates. At a percentile of 75%, the potentially successful denials would closely approximate the potential withdrawals that were denied admission - 54 for the former, and 50 for the latter. It was noted that a cut-off score of 70% would result in successful completion for 93.8% of those admitted, and eventual termination for 26% of those granted admission into the program. In sum, had a cut-off score of 70% been adhered to by Marvel, 53.5% of the 170 students writing the exam, or 91 students, would have been admitted, with 67% of those being successful.

Table 4.3

Cut-Off Scores for the CSAT

	Denied admission and would have		Passed CSAT and were admitted	
CSAT Cutting Score	Succeeded	Terminated	Succeeded	Terminated
40%	0	3	91.3%	37.1%
45%	2	6	91.1%	36.4%
50%	2	7	91.1%	36.0%
55%	3	10	91.0%	35.0%
60%	5	12	91.8%	34.9%
65%	12	16	91.1%	34.8%
70%	33	41	93.8%	26.4%
75%	54	50	95.2%	25.9%
80%	71	55	92.0%	28.6%

When crosstabulations of the CSAT scores by termination and the CSAT scores by success were done, and each subjected to a Chi-square analysis, it was found that, once again, 70% was found to be the most satisfactory cut-off score. In Table 4.4 it will be noted that at a cut-off of 61% to 70%, approximately 56% of those writing the CSAT were successful, with 44% terminating. As the cut-off score is increased, the completion rate likewise increases and the withdrawal rate decreases. Conversely, lowering the cut-off score on the CSAT resulted in lower completion rates and higher withdrawal rates. For example, at a score of less than 50% on the CSAT, 22% completed and 79% withdrew from the program. For the students who achieved a score of 51% to 60%, it was found that 40% completed and 60% withdrew. Beyond the 70% cut-off score, withdrawals increase minimally - see the 71% to 80% range and the 81% to 99% category found in Table 4.4. In sum, there is a statistically significant relationship ($p = <.01$) between the score achieved on the CSAT and premature termination from the program.

Table 4.4

Crosstabulation of CSAT Scores by Termination

Frequency Expected Value Row % Column %	Completed	Terminated	Row Totals
CSAT Scores ≤ 50%	2	7	9
	5.6	3.4	5.3%
	22.2%	77.8%	
	1.9%	10.8%	
51% - 60%	4	6	10
	6.2	3.8	5.9%
	40.0%	60.0%	
	3.8%	9.2%	
61% - 70%	38	30	68
	42.0	26.0	
	55.9%	44.1%	40.0%
	36.2%	46.2%	
71% - 80%	41	15	56
	34.6	21.4	32.9%
	73.2%	26.8%	
	39.0%	23.1%	

Table continues

Table 4.4 Continued

Crosstabulation of CSAT Scores by Termination

Frequency Expected Value Row % Column %	Completed	Terminated	Row Totals
CSAT Score 81% - 99%	20	7	27
	16.7	10.3	15.9%
	74.1%	25.9%	
	19.0%	10.8%	
Column Totals	105 61.8%	65 38.2%	170 100%

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F. < 5
13.80200	4	0.0080	3.441	10 (20.0%)

When the cut-off scores were looked to in terms of "success", the results were not statistically significant, exceeding .05. Hence, once again, the results obtained on the CSAT fail to be significantly related to successful completion of Marvel's program. It therefore appears that, of the 103 students who wrote the CSAT and were successful in the program, there was no relationship between the scores achieved on the entrance exam and successful completion of Marvel's Hairstyling and Esthetics program.

Summary

Although Marvel used the CSAT as a screening instrument to identify those students who would be "successful" in the Hairstyling and Esthetics program, the results herein indicated that no significant relationship existed between passing and failing the CSAT and successful completion of the course. However, when the CSAT was looked to in terms of determining those students who would eventually leave the program prior to its completion, it was found that the pass/fail results on the CSAT related significantly to the eventual completion/termination of the course of studies. Although weak, positive correlations were noted between the CSAT results and a student's age and level of formal education, the practical aspects of these findings remain, likewise, weak and, therefore, are deemed to hold little merit in terms of application.

An analysis that attempted to determine a more satisfactory cut-off score than was noted with the 70% cutting score, resulted in the conclusion that 70% remains the most useful as a minimum competence score. At this demonstrated level of competence, although 33 students who would have been successful would be denied admission, so too would 41 applicants who would eventually withdraw from the program. Further, a cutting score of 70% affords a 93.8% success rate, and a 26.4% withdrawal rate. Decreasing the cut-off score, although denying admission to fewer potentially successful candidates,

also denies admission to a larger number of students who would fail to complete their course of studies. Above 70%, a larger number of potentially successful students would be denied admission. The conclusion, therefore, was that, for the population with which this study deals, a CSAT cut-off score of 70% appears to represent the best score for discriminating with this rather weak predictive instrument.

Across all levels of grades obtained on the CSAT, it was found that completions were less than anticipated, and terminations higher than would be anticipated, when the CSAT grades were at the 70% level or less. When CSAT scores were equal to or exceeded 71%, completions were higher than expected and terminations lower. When the same ranges of scores obtained on the CSAT were compared to successful completion of Marvel's program, statistical significance was not achieved.

Student Attributes Relative to "Success" and "Termination"

An attempt was made to determine the existence of any student attributes, such as age or level of formal education upon entry into Marvel's program, that would in some way exert a significant impact upon a subject's performance, in terms of successfully completing Marvel's Hairstyling and Esthetics program. In order to facilitate such an analysis, the data was considered under the following categories - sex, age, education, and sourses of

funding.

Sex

Completion Trends. In order to determine whether males or females were more apt to complete Marvel's program after gaining admission, a crosstabulation between sex and completion was done for the years of 1982 through 1987. The Chi-square analysis indicated that, of the 852 students who completed the program for the six-year time frame, neither males nor females were more inclined to persevere with the Beautician's course ($p = > .05$).

Termination. When a crosstabulation was conducted to establish whether one sex was more apt to prematurely terminate their education at Marvel, it was found that males, overall, tended to either self-terminate or to leave at the request of Marvel personnel, significantly more often than did their female counterparts. The mode of termination most often used by the males was that of leaving the program of their own volition, representing 29% of the male terminations, with 9% of the terminations being invoked by Marvel. These figures for the females were 19% and 5%, respectively. These findings were significant at a level of $<.01$ (see Table 4.5).

Table 4.5

Crosstabulation of Sex by Termination

Frequency Expected Value Row % Column %	Termination Completion	Self	Marvel	Row Totals
Males	83	39	12	134
	99.6	26.8	7.6	11.7%
	61.9%	29.1%	9.0%	
	9.7%	17.0%	18.5%	
Females	770	191	53	1014
	753.4	203.2	57.4	88.3%
	75.9%	18.8%	5.2%	
	90.3%	83.0%	81.5%	
Column Totals	853	230	65	1148
	74.4%	20.0%	5.7%	100%

x2	D.F.	Sig.	Min. E.F.	Cells with E.F. < 5
12.255	2	0.002	7.587	None

Success. Of the 830 students who successfully completed Marvel's Hairstyling and Esthetics program, both males and females were equally weighted. There was no statistically significant

difference for either males or females in passing Marvel's final theory exam and final practical exam.

Age.

The ages of the students attending at Marvel for the years of 1982 through 1987, inclusive, ranged from 16 years to 50 years, rounded to the nearest whole year. The age categories that made up the largest portions of the student population were those of 18 years (248), representing 21% of the population, 19 years (225), or 19% of the student body, and 20 years (109), a portion that represented 9% of Marvel's enrolment for this period of time. The mean age for this population was 22.15 years. The impact of age upon a student's performance at Marvel was considered from a number of different perspectives.

Termination. When the level of education was controlled for grades 9 or less, there was no significant difference between the four age ranges - less than or equal to 17 years, 18 to 24 years, 25 to 34 years and 35 years or older - in terms of prematurely terminating their education at Marvel. When the level of formal education was controlled, for grades 10 or greater, once again there were no significant findings for the four age ranges. It was also found that, even when the level of formal education was not controlled for, there still was no significant relationship between age and

termination from the program.

The above results tend to suggest that, at least for the students attending Marvel's Hairstyling and Esthetics program for the years of 1982 to 1987, inclusive, there was no significant relationship between age and termination. Thus, for this particular data set, no age group was found to be more apt to prematurely terminate their course of studies at Marvel than was any other age group.

Success. In order to determine if there was any statistically significant relationship between a student's age and his/her success in Marvel's program, a series of crosstabulations were done, both controlling for education for grades 9 or less and grades 10 or greater, and without consideration for the levels of formal education obtained by the students. In all cases the relationship between success and age were found to lack statistical significance, exceeding the .05 level of probability. Hence, for the student population with which this study deals, there was no significant relationship between age and success.

Marvel Final Theory and Final Practical Exams. When the four age categories were considered in terms of performance on each of the final theory and final practical exams offered at Marvel, it was found that, once again, age was not significantly related to whether a

student would pass or fail these exams. In both instances, the level of significance exceeds that of .05.

Overall, no significant relationship was found to exist between either age and success in Marvel's program or between age and passing or failing the final theory exam and the final practical exam written at Marvel upon completion of the Hairstyling and Esthetics program. Further, age was not found to be a significant factor in discriminating between those students who would terminate Marvel's program prior to its completion and those who would remain for the tenure of the course.

Education

At the postsecondary level of education, much of the application process focuses on high school levels of academic achievement. Increasingly, institutions of higher learning view one's academic performance at the high school level as a reasonable indicator of how one will perform in a postsecondary program. Although not the only measure used for admission to a program, academic performance serves as an important consideration in the decision process that leads up to a student being accepted or rejected for a particular program.

The difficulties that will be faced in discerning the

significance that secondary education played in Marvel's Hairstyling and Esthetics program have been addressed in earlier sections of this writing - educational levels were accepted on faith, most students tended to indicate the grade last attended versus the last grade completed, official transcripts that were available were both sporadic and incomplete, and, for the vast majority of the student population attending at Marvel for the years of 1982 through 1987, inclusive, both courses taken and grades obtained were missing. Nonetheless, accepting on faith the credibility of the documentation found within the students' files, education was assessed for its relevance in a number of aspects of this study.

Final Theory Exam. When the 828 students who wrote the final theory exam were grouped into two categories, those possessing less than a grade 10 and those possessing a grade level of 10 or greater, no significant relationship was found between one's level of secondary education and passing or failing Marvel's final theory exam.

When the relationship between education and the performance on the theory exam was found to lack statistical significance, it was decided to take another look at the data, this time controlling for age. In order to achieve this, the population with which this issue deals, was divided into four age categories - equal to and less than 17 years of age, 18 to 24 years of age, 25 to 34 years of age, and 35

years of age and older. However, none of these crosstabulations were found to be statistically significant indicating that no significant relationship existed between the level of formal education and performance on the final theory exam.

Final Practical Exam. The 840 students who wrote the final practical exam at Marvel were divided into two different grade categories - those with less than grade 10 and those with grade 10 or greater. A crosstabulation was then done using the level of formal education and the fail or pass performance on the practical exam. The forthcoming results proved to be nonsignificant, demonstrating no statistical relationship between one's level of formal education and one's performance on the practical exam.

In order to determine if the lack of significance was due to age differences as well as or as opposed to education differences, the subject pool for this data set was divided into four age groups - those that were 17 years of age or younger, students that were 18 to 25 years of age, students that were 25 to 34 years of age, and those that were 35 years of age or older. The results of these crosstabulations were similar to those found in respect of the theory exam. None of the age groups proved to result in statistically significant findings. Once again, on the basis of the student files available through Marvel, the level of formal education upon entry into the program appears to have little impact on the final results of

the practical exam. This holds true even when age is controlled for.

Success. It will be recalled that, for purposes of this study, "success" has been defined as obtaining a minimum grade of 70% on each of Marvel's final theory and final practical exams. In order to determine how one's level of formal education may impact upon one's performance in terms of successfully completing Marvel's Hairstyling and Esthetics program, the 825 students that were successful in the course were divided into two categories on the basis of their indicated educational status upon entry into the program - those possessing less than a grade 10 and those possessing an education of grade 10 or greater. As illustrated by the contents of Table 4.6, when grade 10 was used as the cut-off, the minimum educational requirement mandated by the Beautician Trade Regulation (Alberta Regulation 422/83), the relationship between education and success was not statistically significant. However, when grade 11 was used as the cut-off grade, the relationship between education and successful completion of Marvel's program, was found to be significant at a level of less than .01, as illustrated by the contents of Table 4.7.

Table 4.6

Crosstabulation of Entry Levels of Education (Grade 10) by Success

Frequency Expected Value Row % Column %		Fail	Pass	Row Totals
Grade	<10	4	39	43
		2.3	40.7	5.2%
		9.3%	90.7%	
		9.1%	5.0%	
	≥ 10	40	742	782
		41.7	740.3	94.8%
		5.1%	94.9%	
		90.9%	95.0%	
Column		44	781	825
Totals		5.3%	94.7%	100%

$\chi 2$	D.F.	Sig.	Min. E.F.	Cells with E.F. <5
0.708	1	0.400	2.293	1 of 4 (25.0%)

Table 4.7

Crosstabulation of Entry Levels of Education (Grade 11) by Success

Frequency Expected Value Row % Column %		Fail	Pass	Row Totals
Grade	<11	17	156	173
		9.2	163.8	21.0%
		9.8%	90.2%	
		38.6%	20.0%	
	≥11	27	625	652
		34.8	617.2	79.0%
		4.1%	95.9%	
		61.4%	80.0%	
Column Totals		44	781	825
		5.3%	94.7%	100%

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.< 5
7.664	1	0.006	9.227	None

The results of these findings tend to suggest that, where attempting to discern an applicant's chances of success in Marvel's program, based on his/her level of formal education upon application

for entry, that a minimum educational requirement of grade 11 would increase the applicant's chances of being successful in the course. The present minimum requirement of grade 10 does not appear to be adequate to the task, in terms of screening for those students who will successfully complete Marvel's Hairstyling and Esthetics program. The results apparent in Table 4.7 tend to suggest that, at least for the student population that attended Marvel for the years of 1982 to 1987, inclusive, a cut-off grade of 11 was significantly related to a higher measure of success in the Hairstyling and Esthetics program offered by Marvel, than was found using a cut-off of Grade 10.

Termination. To determine if education was related to premature withdrawal from Marvel's program, both self-selected and Marvel-imposed terminations, the entire subject pool was grouped into two categories - those with less than grade 10 and those possessing grade 10 and greater. Of the 1162 students that comprised the subject pool, relevant data was missing on 23 cases. When education was crosstabulated with termination, it was found that there was an inverse relationship between educational levels and the numbers who terminated the program. It may be noted from the data in Table 4.8 that, as educational levels increase, the number of anticipated withdrawals, from both sources, decline significantly, with statistical significance at a level that is less than .001.

Table 4.8

Crosstabulation of Entry Levels of Education (Grade 10) by Termination

Frequency Expected Value Row % Column %		Completed	Terminated	Row Totals
Grade	<10	44	44	88
		65.4	22.6	7.7%
		50.0%	50.0%	
		5.2%	15.0%	
	≥10	802	249	1051
		780.6	270.4	92.3%
		76.3%	23.7%	
		94.8%	85.0%	
Column Totals		846	293	1139
		74.3%	25.7%	100%

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F.<5
28.053	1	0.000	22.637	None

In total, of the 1139 students on whom the required information was available, 25.7%, or 26%, exited from the program prior to its completion, with 74.3%, or 74%, completing the course. Of the 1051 students who were within the grade 10 or greater category,

24% were either asked to leave the program or left it of their own volition. Significantly, a greater number of the 88 students who had less than grade 10 were either asked to leave the program or voluntarily opted out of it. This latter group accounted for a termination rate of 50%.

When the cut-off grade was raised to grade 11, the relationship between termination and level of education remains statistically significant at less than .001. However, by increasing the minimum requirement to grade 11, the percentage that will complete the program tends to increase, shifting from 50% for a grade 10 cut-off, as per Table 4.8, to a 58% completion rate, using a grade 11 cut-off as per Table 4.9.

Table 4.9

Crosstabulation of Entry Levels of Education (Grade 11) by Termination

Frequency Expected Value Row % Column %		Completed	Terminated	Row Totals
Grade	<11	178	128	306
		227.3	78.7	26.9%
		58.2%	41.8%	
		21.0%	43.7%	

Table continues

Table 4.9 Continued

Crosstabulation of Entry Levels of Education (Grade 11) by Termination

Frequency Expected Value Row % Column %		Completed	Terminated	Row Totals
	11	668	165	833
		618.7	214.3	
		80.2%	19.8%	
		79.0%	56.3%	
Column Totals		846	293	1139
		74.3%	25.7%	100%

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F. <5
55.656	1	0.000	78.716	None

As illustrated by the information in Table 4.10, at a grade level of 12 or greater, there is a significant ($p = <.0001$) discrimination between those who complete and those who will withdraw from the course. At a level of grade 11 or less, significantly fewer students complete and significantly more terminate. For the grade 12 and greater group, significantly more complete than would be anticipated as well as fewer withdrawing. Overall, for the group possessing grade 11 or less, 27% opted out of the program and 11% were

expelled, with the grade 12 and greater group presenting with 15% and 1%, respectively. Overall, as education increases, the tendancy toward termination decreases.

Table 4.10

Crosstabulation of Entry Levels of Education (Grade 12) by Termination

Frequency Expected Value Row % Column %		Grade 11	Grade 12	Row Totals
Status	Completed	303	542	845
		363.4	481.6	74.3%
		35.9%	64.1%	
		62.0%	83.6%	
	Self	131	97	228
	Terminated	98.1	129.9	20.1%
		57.5%	42.5%	
		26.8%	15.0%	
	Marvel	55	9	64
	Imposed	27.5	36.5	5.6%
		85.9%	14.1%	
		11.2%	1.4%	

Table continues

Table 4.10 Continued

Crosstabulation of Entry Levels of Education (Grade 12) by Termination

Frequency Expected Value Row % Column %	Grade 11	Grade 12	Row Totals
Column	489	648	1137
Totals	43.0%	57.0%	100%

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F. <5
85.16205	2	0.0000	27.525	None

High School Subjects. Although the information available from official transcripts, attesting to a student's academic qualifications, was both sporadic and inconsistent, it was attempted to determine what academic subjects were important to a student's performance on Marvel's final practical and final theory exams. In order to determine the relationship between high school subjects and passing each of the final exams, Pearson correlation coefficients were determined between both the theory and practical exams and high school subjects indicated by those students who were admitted to Marvel's Hairstyling and Esthetics program.

Table 4.11 describes the statistical profile for high school subjects and the final theory exam and the final practical exam. As illustrated by the information contained in Table 4.11, the high school subjects that appeared to possess signficant correlations with the results of the theory exam were English 10/13 (r=.2964), Math

10/13/15 (r=.1395), Biology 10 (r=.4037), Chemistry 10 (r=.4409), Science 11 (r=.3220), Social Studies 10 (r= .3634), English 20/23 (r=.3850), Biology 20 (r=.5281), English 30/33 (r= .1855), Math 30/33 (r=.3094), Biology 30 (r=.5244), and Chemistry 30 (r=.6052).

When considering the strength of the correlations found between the theory exam and the high school subjects possessed by a student, as depicted in Table 4.12, it is important to be aware of the small number of data sets with which these correlations deal. Greater credence would have been placed on these findings had there been more information available for analysis. It is, nonetheless, possible that, given a larger data set, both the strength of the correlations and the significance therein would have presented a stronger picture of the importance of academic course work taken in high school and the results obtained on the theory exam. As the data stands, the correlations that show the greatest promise are those that exist between the results obtained on the theory exam and Biology 10 (r=.4037), Chemistry 10 (r=.4409), Biology 20 (r=.5281), Biology 30 (r=.5244) and Chemistry 30 (r=.6052). Overall, the sciences taken in high school are significantly related to the final theory exam grades.

Table 4.11

Descriptive Statistics For High School Subjects and Theory and Practical Exams

Variable	Cases	Mean	S.D.
English 10/13	192	59.9896	10.0860
Math 10/13/15	189	58.7989	13.0670
Biology 10	113	55.5221	11.5659
Chemistry 10	86	53.8488	14.7652
Science 11	77	58.8312	12.9852
Social Studies 10	179	57.0559	11.2593
Beauty Culture 12	53	66.7170	10.9516
English 20/23	175	59.8971	9.6359
Math 20/23/25	122	59.5574	11.4553
Biology 20	74	58.0541	13.2374
Chemistry 20	20	60.8837	14.6665
Beauty Culture 22	43	68.6512	8.6654
English 30/33	145	60.1517	9.1737
Math 30/33	62	57.1774	11.4197
Biology 30	43	59.9070	11.9798
Chemistry 30	30	54.3000	17.9158
Beauty Culture 30	37	69.9189	11.9754
Theory	828	78.7597	7.4258
Practical	831	76.2250	5.9013

Table 4.12

Pearson Correlation Coefficients Between High School Subjects and the Theory and Practical Exams

High School Subjects	Theory	Practical
English 10/13	.2964 (151) p=.000	.0674 (151) p=.205
Math 10/13/15	.1395 (146) p=.047	.0190 (146) p=.410
Biology 10	.4037 (93) p=.000	.0549 (92) p=.302
Chemistry 10	.4409 (72) p=.000	.1521 (92) p=.101
Science 11	.3220 (57) p=.007	.0593 (57) p=.331
Social Studies 10	.3634 (142) p=.000	.0453 (142) p=.296
Beauty Culture 12	-.0852 (46) p=.287	.1733 (46) p=.125
English 20/23	.3850 (141) p=.000	-.0014 (141) p.493
Math 20/23/25	.0569 (104) p=.283	.1099 (103) p=.135

Table continues

Table 4.12 Continued

Pearson Correlation Coefficients Between High School Subjects and the Theory and Practical Exams

High School Subjects	Theory	Practical
Biology 20	.5281 (62) p=.000	.1118 (62) p=.194
Chemistry 20	.2396 (39) p=.071	-.0036 (39) p=.491
Beauty Culture 22	-.0483 (38) p=.387	.2154 (38) p=.097
English 30/33	.1855 (117) p=.023	.0133 (117) p=.443
Math 30/33	.3094 (50) p=.023	.1767 (50) p=.443
Biology 30	.5244 (34) p=.001	-.0656 (34) p=.356
Chemistry 30	.6052 (23) p=.001	.0224 (23) p=.460
Beauty Culture 32	-.1536 (31) p=.205	-.0228 (31) p=.451

(Coefficient / (Cases) / 1-Tailed Sig)

" . " is printed if a coefficient cannot be computed

When the relationship between the practical exam and high school subjects was considered, significant relationships were not found. It therefore appears that, within this subject pool, the courses taken in high school bear little importance to the final results of the practical exam. This is, nonetheless, an important consideration and, given a larger data set, one that may result in quite different findings. It is, however, possible that one's performance on a practical exam relies more heavily on both one's finger dexterity and innate artistic eye, as well as eye-hand coordination, than it does one's academic ability. Further, the results of a student's practical exam tend to contain a large subjective element when judging both the mechancial and esthetic aspects of plying one's talents upon a client.

Sources of Funding

In order to determine if a significant relationship existed between a student's source of funding and completion of the Hairstyling and Esthetics program, a crosstabulation was conducted wherein the population with which this issue deals was divided into two overall categories - private funding sources and public/government funding sources. A Chi-square analysis of the data, as per Table 4.13 illustrated that a statistically significant ($p = < .001$) relationship existed between the source of funding and consequent termination, with those students procuring private funding completing their course of

studies significantly more often than did their publicly funded counterparts.

Table 4.13

Crosstabulation of Funding Sources by Termination

Frequency / Expected Value / Row % / Column %		Program: Completion	Termination	Row Totals
Funding Sources	Self &/or Relatives	310	72	382
		283.8	98.2	33.3%
		81.2%	18.8%	
		36.3%	24.4%	
	Government	543	223	766
		569.2	196.8	66.7%
		70.9%	29.1%	
		63.7%	75.6%	
Column Totals		853	295	1148
		74.3%	25.7%	100%

x2	D.F.	Sig.	Min. E.F.	Cells with Min. E.F. < 5
13.53145	1	0.0002	98.162	None

When the data was further refined to reflect those that invested a portion of their own, and/or family monies into their

education, as well as considering private funding versus public funding, the relationship between funding sources and program completion held true. As Table 4.14 illustrates, where funding was from private sources only - self and/or relatives, as well as when personal funds were utilized in combination with public financial assistance, the completion rate was significantly higher (p = .0001) than that found where financial aid was provided solely by government agencies. It therefore appears that, on the basis of this analysis, those who rely exclusively on outside funding are more inclined to either withdraw from the course of their own choice or to leave at the request of Marvel personnel. Where funding was garnered from personal sources and/or one's relatives, in combination with government funding, it was found that these students tended to complete their course of studies more often than would be anticipated.

Table 4.14

Crosstabulation of Termination by Public and/or Private

Funding Sources		Funding Sources			
Frequency Expected Value Row % Column %		Self &/or Relatives	Public	Self & SFB Relatives & SFB	Row Totals
Status	Completed	307	360	143	810
		284.8	390.0	135.3	75.1%
		37.9%	44.4%	17.7%	
		81.0%	69.4%	79.4%	
Status	Self	65	120	27	212
	Terminated	74.5	102.1	35.4	19.7%
		30.7%	56.6%	12.7%	
		17.2%	23.1%	15.0%	
	Marvel	7	39	10	56
	Terminated	19.7	27.0	9.4	5.2%
		12.5%	69.6%	17.9%	
		1.8%	7.5%	5.6%	
Column		379	519	180	1078
Totals		35.2%	48.1%	16.7%	100%

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F. < 5
24.44298	4	0.0001	9.351	None

A crosstabulation that was conducted to determine if there was any relationship between funding sources and a student's level of education, the Chi-square analysis, as per Table 4.15, illustrates that significantly ($p = < .001$) more government funding is utilized by students who possess grade 11 or less, with approximately 55% going to this group, and 44% going to students with grade 12 or greater. Too, those students with grade 12 or greater tend to supply more of their own monies for educational purposes, representing 65% of the grade 12 or greater population, and 35% of the grade 11 or less sample. When financed by a combination of sources - self and government or relatives and government - each group is at approximately 17%.

Table 4.15

Crosstabulation of Funding Sources by Education

Frequency Expected Value Row % Column %		Grade 11	Grade 12	Row Totals
Funding	Self &/or	132	248	380
Sources	Relatives	160.5	219.5	35.1%
		34.7%	65.3%	
		28.9%	39.7%	

Table continues

Table 4.15 Continued

Crosstabulation of Funding Sources by Education

Frequency / Expected Value / Row % / Column %	Grade 11	Grade 12	Row Totals
Government	249	273	522
	220.5	301.5	48.2%
	47.7%	52.3%	
	54.5%	43.7%	
Self/Relatives & Government	76	104	180
	76.0	104.0	16.6%
	42.2%	57.8%	
	16.6%	16.6%	
Column Totals	457	625	1082
	42.2%	57.8%	100%

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F. < 5
15.14972	2	0.0005	76.026	None

Summary

A number of student attributes were analyzed in order to determine what, if any, attributes exert a significant impact on success in Marvel's Hairstyling and Esthetics program. A student's

sex was found to bear no significant impact on whether he/she would complete the program. However, it was noted that males tend to withdraw from the program more often than do females, more often by personal choice than by expulsion. The significance of this relationship held true for both Marvel-imposed and self-selected terminations. Whether a student was male or female was not related to successful completion of the program. There was no significant difference between the sexes when "success" was considered.

When age was considered, no significant relationship was noted between termination and age, included in this was controlling for levels of formal education. Further, age was not found to be a significant factor when successful completion of the program was analyzed. This finding held true even when levels of formal education were controlled for. An analysis of age as it may or may not relate to a student's performance on the final practical and final theory exams, was not found to be statistically signficant.

Analysis of educational levels upon entry into Marvel's program illustrated that, on both, the pass/fail results achieved on the theory and practical exams were not significantly related to the educational level attained by the examinee. It was further found that, using a minimum educational requirement of grade 10, there was no significant relationship between a student's secondary education and subsequent "success" in the program. However, when a minimum

requirement of grade 11 was used, a signficant relationship between secondary education and successful completion of the Hairstyling and Esthetics program was found. When education levels and termination were analyzed, significant results were noted. It was found that students with less than a grade 10 level of formal education were more apt to leave the program prematurely or to be asked to leave. When a grade level of 11 was used, significantly more students were found to complete the program.

An analysis of high school subjects taken and how they relate to grades obtained on each of the final theory and practical exams, illustrated that statistically significant correlations exist between the results of the theory exam and high school sciences. Most particularly, the strongest correlations were found to exist between the theory exam marks and Biology 10, Chemistry 10, Biology 20, Biology 30, and Chemistry 30. No statistically signficant correlations were found between high school courses and the results of the final practical exam.

The source(s) of financial assistance was found to exert a significant impact on whether a student would complete the course of studies at Marvel. Where funding had been garnered strictly from government sources, the termination rate was higher than would be anticipated. It therefore appears that, where a student has invested all or part of his/her monies into his/her postsecondary education,

either solely or in combination with funding from relatives and/or the Students Finance Board, the chances that the program will be completed increases significantly. The highest rate of termination was noted to occur among those students who had financed their program at Marvel entirely through government funding agencies, the most common of which being the Students Finance Board. It was also found that students who have obtained grade 11 or less, tended, overall, to utilize more government sources to finance their education. For the grade 12 and over students, an increasing number tend to finance their program from private sources - self and/or relatives.

Multiple Stepwise Regression Analysis: Student Attributes and Performance on Marvel Final Exams

Final Theory Exam

Table 4.16 illustrates the correlation coefficients for a multiple stepwise regression computed using the Marvel final theory exam marks as the dependent variable. The independent variables selected for this analysis were student age, grade, sex and scores obtained on the entry exam. It was found that, within this data set, higher grades on the theory exam were associated with increasing CSAT scores, increasing levels of formal education, and with older students. Therefore, older students with higher levels of education and higher scores on the CSAT tend, overall, to perform better on the

final theory exam. The required information was available on 101 students.

Table 4.16

Multiple Regression Correlation Matrix for Dependent Variable: Marvel Final Theory Exam

Variable	Mean	Standard Deviation
Sex	1.861	.374
Grade	10.644	1.262
Entry Exam	72.237	8.791
Theory Exam	78.059	7.048
Age	24.975	7.607

N of cases = 101

Correlation, 1-Tailed Sig:

	Sex	Grade	Entry	Theory	Age
Sex	1.000 .999	.000 .499	- .124 .108	- .127 .102	.048 .315
Grade	.000 .499	1.000 .999	.203 .021	.271 .003	- .054 .295
Entry	- .124 .108	.203 .021	1.000 .999	.317 .001	- .112 .132
Theory	- .127 .102	.271 .003	.317 .001	1.000 .999	.149 .069
Age	.048 .315	- .054 .296	- .112 .132	.149 .069	1.000 .999

The results of the analysis, depicted in Table 4.17, indicate that there were three variables that exerted a significant relationship to grades obtained on the final theory exam. In order of magnitude, these three variables were the marks received on the CSAT, the level of formal education, and the age of the examinee. The combination of these three variables yielded a multiple R of .427. All three of these independent variables correlated positively with the results of the theory exam. The adjusted R square value for this multiple regression was 0.15668, indicating that approximately 15.67% of the variance in Marvel's final theory marks is explained by variations in these three student attributes, or independent variables.

Table 4.17

Results of Multiple Stepwise Regression for Dependent Variable: Theory Exam

Step Number	Variables Entered	Multiple R	Multiple R Square	Adjusted R Square	Adjusted R Square Change	Sig. F Change
			Descriptive Statistics in Table 4.30			
1	Entry	.31669	.10029	.09120	.10029	.0013
2	Grade	.38068	.14492	.12747	.04463	.0259
3	Age	.42659	.18198	.15668	.03706	.0386

Final Practical Exam

The multiple regression analysis for Marvel's final practical exam is contained within Table 4.18. The three independent variables that related significantly to the results obtained on the practical exam were those of age, sex, and entry, in order of appearance. While age and sex correlated positively with the practical exam, the results obtained on the entrance exam - the CSAT - were found to correlate negatively with the grades obtained on the practical exam. In terms of performance on the practical exam, this analysis tends to suggest that higher grades on the practical exam are associated with older, female students who received low marks on the entrance exam, based on an N of 102.

Table 4.18

Multiple Regression Correlation Matrix for Dependent Variable: Marvel Final Practical Exam

Variable	Mean	Standard Deviation
Sex	1.863	.346
Grade	10.627	1.266
Entry Exam	72.225	8.770
Practical Exam	75.402	6.672
Age	24.909	7.598

Table continues

Table 4.18 Continued

Multiple Regression Correlation Matrix for Dependent Variable:

Marvel Final Practical Exam

N of cases = 102

Correlation, 1-Tailed Sig:

	Sex	Grade	Entry	Practical	Age
Sex	1.000	- .005	- .127	- .216	.045
	.999	.481	.102	.015	.328
Grade	- .005	1.000	.210	.081	.042
	.481	.999	.017	.209	.337
Entry	- .127	.210	1.000	.190	-.105
	.102	.017	.999	.028	.146
Practical	- .216	.081	.190	1.000	.265
	.015	.209	.028	.999	.001
Age	.045	- .042	- .105	.265	1.000
	.328	.337	.146	.004	.999

The combination of age, sex, and entry resulted in a rounded, multiple R value of 0.400 (see Table 4.19). The adjusted R square value for these three independent variables was 0.13392, indicating that 13.40% of the variance in the practical exam grades may be accounted for by the variance in a student's age, sex, and performance on the CSAT.

Table 4.19

Results of Multiple Stepwise Regression for Dependent Variable: Practical Exam

			Descriptive Statistics in Table 4.32			
Step Number	Variables Entered	Multiple R	Multiple R Square	Adjusted R Square	Adjusted R Square Change	Sig. F Change
1	Age	.26525	.07036	.06106	.07036	.0071
2	Sex	.34993	.12245	.10473	.05209	.0172
3	Entry	.39956	.15965	.13392	.03719	.0399

Summary

Although certain attributes were found to yield significant correlations with the results obtained by an examinee on Marvel's final theory and practical exams, age, grade, and sex in the former case, and entry, grade, and age in the latter, the adjusted R square values were negligible. While approximately 16% of the variance on the theory exam, and 13% of the variance on the practical exam, may be accounted for by variations in these student attributes, the practical significance of such information is wanting. It is nonetheless possible that, given a larger sample, the final results would have been stronger. It does, however, remain doubtful that even with a larger sampling of student attribute variables, based on the current format for student files maintained by Marvel, that the final results would afford any greater utility than was found herein.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

This research project was initiated on the basis of a request from the personnel at Marvel Trade and Business College, the impetus for which was born of government funding agencies questioning the student screening practices utilized by Marvel. The primary focus, upon point of entry into the study, was to determine the predictive validity of the Cosmetology Student Aptitude Test (CSAT), in terms of its ability to differentiate between potentially "successful" applicants to Marvel's Hairstyling and Esthetics program and those who held lesser chances for success in the course. Hence, this chapter will deal with the issues surrounding the current use of this instrument by Marvel. Having dealt with the primary purpose of this enquiry, other important elements, discovered serendipitously, will likewise be addressed. The concluding portion will detail a number of recommendations, not all of which align exclusively with the current screening practices engaged in by Marvel.

While Marvel personnel had indicated that their primary concern in requesting this investigation was the successful completion of the student population admitted to their vocational training program for Beauticians, analysis of the data illustrated that Marvel's success rate for the six year period covered by this study,

was 97%. It therefore becomes apparent that, for the vast majority of students who complete the program, the chances of being successful are very high. However, in consideration of the new guidelines put forward by the Private Vocational Schools Act, the greater issue for Marvel is that of retention. While the retention rate specified by the Act, in order for a proprietor to maintain a Class A license, is 70%, Marvel's retention rate over the years covered by this research was 74%, resulting in a termination rate of 26%. This, then, becomes the greater issue of concern.

In addressing the issues to follow, it must be borne in mind that the ultimate goal of this study was to delineate a number of recommendations that would assist Marvel to both better serve their student population and to lower the termination rate. By closer attention to termination rates, it may reasonably be anticipated that student loan defaults will likewise decline. This latter aspect will also be better served through closer attention to student intake quotas, orchestrated in an effort to provide a closer alignment between Beautician graduates and the job prospects for these graduates.

In Chapter 1, four questions were formulated in order to serve as guides for the conduct of this study:

1. Does the CSAT predict the criterion of "success" in the

Beautician program conducted at Marvel?

2. Does the CSAT predict potential drop-out candidates that are admitted to the program?

3. Is there any relationship between grades obtained on the CSAT and those obtained on the Marvel final theory and practical exams?

4. Is there any relationship between the source(s) of funding and program completion within the entire subject pool?

The following sections have been set out as a means of supplying both the required answers to these querries as well as some unanticipated findings. In keeping with the initial purpose of this study, the issues that surround the use of the CSAT will be addressed first.

The Cosmetology Student Aptitude Test

Prior to dealing with the statistical analyses of the data that deals with the CSAT, there are a number of caveats that must be placed upon the findings that follow. In the first instance, Marvel's use of the CSAT appeared to be somewhat arbitrary. Thus, although specifying only those with less than a grade 10 were required to write

the CSAT, in practice, it was found that the students writing the exam spanned across all grade levels, with 44 students who should have been required to write the entrance exam omitted from the necessity of doing so. This does not amount to randomization, which would have increased the strength of the findings, but rather suggests that some other element was at work.

While the CSAT was found to be significantly related to student termination, it is quite possible that, based on the manner with which this battery was used, the admissions personnel at Marvel may have sensed that a prospective applicant would prove to be a poor risk and hence requested that he/she write the entrance exam. Why the 70% cut-off score on the CSAT was not adhered to is unknown. Nonetheless, in essence, the finding that the entrance exam, for scores of less than 70% in particular, was significantly related to later withdrawal or explusion from the program, may serve only as a verification of the admission officer's intuition. Too, the sample was small. It is possible that, given a larger sample, the results forthcoming would have presented a stronger case for the continued use of the CSAT as a measure for potential success in the Beautician program, using it as a measure for potential termination, or disbanding its use altogether.

Another issue that may have impacted upon the results, tending to weaken them, is that, although all 170 students writing the

CSAT were subsequently admitted to the program, despite obtaining scores that ranged from 36% to 88%, those students with scores below 70% tended to either drop-out or to be expelled from the program. Thus, the correlation coefficients found between the CSAT and "success", as well as between the entrance exam and the theory and practical exams, may have been attenuated due to a restriction in the range of scores that were used for purposes of analysis. The tendency for students within the lower percentile ranges to leave the program prematurely may have created a ceiling effect. This phenomenon would tend to further decrease the number of data points in the sample, resulting in a lesser correlation than would have been found had the entire pool of subjects writing the CSAT been available for analysis. In sum, the correlations found between the CSAT and "success", and between the CSAT and each of the final exams, may have been spuriously low. Although 170 data points were available for analysis, only the top 30% of the data pool met the above criteria - were "successful", wrote the final practical exam and/or the final theory exam, in terms of achieving scores of 70% or greater. However, none of the correlations found were of such magnitude, ranging from "negligible" to "weak", that correction for range restriction would have sufficiently altered their strength and rendered them as useful in terms of using the correlations as guides for student selection.

Finally, no information was available that would indicate how or whether the CSAT had been normed or standardized. Its general

usage within the Beautician industry throughout North America is, likewise, unknown.

One issue that aligns with all studies dealing with the predictive validity of a measure purported to be a predictor, is the reliability and validity of the criterion measure. In this study the criterion measure is "success" in Marvel's Hairstyling and Esthetics program. For purposes of this study, "success" was defined in terms of obtaining a minimum grade of 70% on each of Marvel's final exams, the theory exam and the practical exam. Because the reliability and validity of the predictor is contingent on the statistical soundness of the criterion measure(s), it is important to assess both the reliability and validity of the criterion measure(s). Although this aspect is beyond the scope of the present design, it is one that warrants mention.

The above issues remain the property of future researchers, as they lie outside of the parameters of this research paradigm. However, for purposes of the analysis herein, the results to follow are those that achieved statistical significance, and therefore, those that merit expanded commentary.

Predictive Validity

Although the results obtained on the CSAT were not found to

be significantly (p = > .05) related to the successful completion of Marvel's Hairstyling and Esthetics program (see Table 4.1), they were found to be significantly related (p = .001) to whether or not a student completed his/her course of study (see Table 4.2).

Correlation Coefficients

Point biserial correlations indicated that, while no significant correlation (r = .06, p = > .05) existed between the CSAT and "success" in the Beautician program offered by Marvel, when applied to the final exams, individually, the results were statistically stronger. Although statistical significance was demonstrated to exist between the Pearson product moment correlations of the CSAT and the theory exam, with a positive coefficient of .30 (p = .001), and the CSAT and the practical exam, with a positive coefficient of .21 (p = < .05), one must question whether correlation coefficients of this magnitude offer any practical significance (Gottfredson and Crouse, 1986) in terms of prediction.

It is doubtful that the CSAT would survive further critical scrutiny of its merits in terms of being a predictive measure against the criterion of "successful" program completion. However, in keeping with the caveats stipulated at the beginning of this section, any investigations pursuant to this study must account for both a correction for range restriction as well as for attenuation (Dagenais,

1984, Linn and Dunbar, 1982, and Skakun and King, 1980). Due to those students within the lower percentile ranges dropping from the program, a ceiling effect may have resulted, wherein only the top 30% of the sample was considered. The result of which may have tended to attenuate the true correlations, lowering them to an unknown degree.

Summary

The findings regarding the CSAT, tend to lend support to the study conducted by Dagenais (1984), who, after assessing the information contained within the marks obtained on the entrance exam and those achieved in secondary school education G.P.A.'s, found that each contained its own form of information that is important to the screening process. In terms of the level of competence displayed in the results achieved on entrance exams, Dagenais concluded that the grades obtained tended, overall, to serve as better indicators of perseverance with a program of studies, than they did academic and/or intellectual acumen. The findings from this study tend to lend support to Dagenais' findings regarding a prospective candidate's individual initiative. There is reasonable support from this study to suggest that the CSAT tends to be a stronger measure of perseverance, and possibly commitment and motivation, than it does a gauge for either academic ability or secondary school grade-equivalence. Hence, Marvel's use of the CSAT as a measure of academic achievement, for students with less than a grade 10 level of formal education, appears

to be a misapplication of this battery.

There is a major difficulty in applying the CSAT. The author's(s') original intent in its construction is unknown. Based on its title, it appears that the CSAT was designed to test aptitude for the Beautician trade, not academic achievement/equivalence. Overall, it appears that the CSAT, as a basic entrance requirement for all prospective candidates to Marvel's Hairstyling and Esthetics program, may prove to be a useful tool for purposes of delineating those students who will persevere with the program and those who will be less inclined to do so. A cutting-score of 70% appears to be adequate to this particular task. To view it as a valid predictor of "success" appears to be misdirected, on the strength of the analysis herein.

Overall, the results of the multiple stepwise regression analyses yielded negligible information in terms of using the CSAT scores, along with selected student attributes - sex, age and levels of formal education, as reasonable indicators of the grades achieved on the final theory exam and the final practical exam. While it was noted that a student's score on the CSAT, age, and level of formal education accounted for 16% of the variance found on the final theory exam, and that age, sex and grades obtained on the CSAT accounted for 13% of the variance found in the results of the final practical exam, the utility of such findings remains dubious.

Student Attributes

When dealing with the issues that surround those attributes that a student brings with him/her into the educational setting, there is a danger of engaging in discriminatory practices, wherein a student's age and sex, for example, may be unfairly used against the applicant within the decision process used by an admissions officer. However, charged with the responsibility of paring down applicant numbers to match with available space quotas, and with the task of differentiating between those applicants possessing reasonable chances of successful completion of the Hairstyling and Esthetics program offered by Marvel and those with lesser potential for achievement, such information may serve to guide the decision process when dealing with borderline cases.

In addressing the more global aspects of this study, those of "success" and termination as they relate to student attributes, the first issue to be dealt with is the determination of what, given the present state of Marvel's admission practices, may be deduced from available student attributes that may be viewed as aligning with successful completion of Marvel's program. Secondly, and of greater importance for Marvel's particular use, is that of retention/termination and its relationship to selected student attributes. The final element to be addressed will be that of the sources of funding and how they relate to both successful completion

of the program and premature exit from the program.

Success

Within the subject pool used for this particular aspect of the analysis, no statistically significant relationships were noted between "success" or scores on each of the final exams and a student's sex, age, and level of formal education upon entry into Marvel's program. When individual school subjects were analyzed for significance in terms of the results obtained on each of the final exams, only the high school sciences were found to achieve statistical significance relative to the final theory marks. No signifcant findings were noted to exist between the high school courses taken and the results of the final practical exam. Although the relationship between "success" and the level of education, using grade 10 as a cut-off, was not found to be significant, when a grade 11 cut-off was established, there was a significant relationship between the entrant's level of formal education and successful program completion.

Termination

Although it was found that, within this subject pool, there was no relationship between termination and an applicant's age, males were found to terminate their course of studies significantly more often than were females. Further, it was noted that using grade cut-off levels of grades 10, 11, and 12, resulted in significant

findings between one's level of formal education upon entry into Marvel's program and subsequent termination from the program. As the cut-off grade increased, a decline in the number of terminations was noted to a significant degree.

Source(s) of Funding

An important aspect for both purposes of this study and the more global issue of government funding, was found to exist between the source(s) of funding procured by a student and the subsequent termination status of that student. To the extent that one will accept that drop-out rates are closely wedded to student loan default rates, this becomes a crucial aspect of the findings herein.

It was found that as the source of government funding increases so too do the numbers of students who terminate from Marvel's program. Conversely, where government funding is utilized in combination with private sources of funding, the rate of termination declines. In addition, it was noted that as the level of education increases, the number of students using exclusively government funds declines. This is particularly so for those students who have achieved a level of formal education that is equal to or exceeds grade 12.

Summary

The student attribute that merits the closest scrutiny for purposes of candidate selection into Marvel's Hairstyling and Esthetics program is that of the educational level achieved by prospective candidates for admission to the program. Marvel's guideline used a grade 10 cut-off for the educational standard for admission, a guideline that is in keeping with the minimum education mandated by the Beautician Trade Regulation (Alberta Regulation 422/83), as an appendix to the Manpower Development Act. However, the analyses herein, as they address the issues of education as related to both "success" and termination, tend to suggest that a grade 10 level of education is inadequate in terms of assuring both successful course completion and remaining in the program for its tenure. This study has delineated a number of issues that warrant serious consideration when considering the levels of education demanded by the Beautician trade in general, and by Marvel in particular.

In the first instance, a cut-off of grade 10 lacks any statistically significant relationship to successful completion of Marvel's program. A minimum educational requirement of grade 11, on the strength of the findings herein, appears to be more adequate to the task of predicting "success" within the course. Further, it was soundly demonstrated that, as educational levels increase, the tendency to either opt out of the program or to be asked to leave

declines as a function of the level of formal education attained by the student(s). While secondary school work holds little significant import for the ultimate results of the final practical exam, the high school sciences appear to be important elements in terms of the final results of the theory exam.

While it is neither reasonable nor prudent for Marvel's admissions personnel to discriminate between students on the basis of how they intend to finance their education, it is worthy of note that, as education increases, the amount of government funding decreases, as does the tendency to exit form the program prematurely. Further, to the extent that increased private funding is significantly related to increased completion and increased educational levels, using a cut-off of grade 12 would decrease the financial burden to government funding agencies, with particular emphasis on the Alberta Students Finance Board, in dealing with loan defaults, a portion of which is the result of students leaving a program prior to its completion and being, consequently, unemployed and/or unemployable.

Recommendations

The end-point of any empirical enquiry is to delineate those aspects of its findings that may have either added to an existing body of knowledge or to elucidate areas that warrant further scientific scrutiny. On the basis of findings forthcoming from this research

project, a number of recommendations have been formulated, recommendations pertinent, specifically, to Marvel's particular case as well as suggestions for the Apprenticeship and Trade Certification Board and the Alberta Students Finance Board.

Marvel Trade and Business College

The Cosmetology Student Aptitude Test. Marvel's present way of viewing the CSAT results appears to be in error. There was nothing forthcoming from this study that would suggest that this battery is a predictive measure for "success" in the Hairstyling and Esthetics program. There is, however, reasonable evidence to suggest that the CSAT serves as an adequate measure of perseverance in the program. It is, therefore, suggested that Marvel continue to use the CSAT, but that they reframe both the way in which they consider the results obtained on the battery and their present method of applying it. The recommendations that apply to the usage of the CSAT are as follows:

1. Continue to use the CSAT, requiring all applicants to write this entrance exam. Specifiy, and adhere to, a minimum competence level of 70%.

2. Use the results of the CSAT as a gauge for potential drop-out, not for potential "success", bearing in mind that as the score achieved on the entrance exam falls

below 70%, the number of students who have terminated increases.

Education. The majority of the significant elements found, that dealt with "success" and termination, revolved around an applicant's level of formal education upon entry into the program. The results of this study suggest that a minimum grade requirement of grade 10 is both inadequate for purposes of increasing a student's chances of success in Marvel's program and of increasing retention rates. Students with less than Grade 10 tend to demonstrate with a 50% termination rate (see Table 4.8) from Marvel's program. As the educational level increases, the rate of termination decreases - less than Grade 11, 44% termination (see Table 4.9); Grade 11 or greater, 20% termination (see Table 4.9): and Grade 12 or greater, 16% termination (see Table 4.10). It is therefore recommended that the following guidelines be given serious consideration.

1. It is important that the admissions personnel at Marvel insist on receiving official high school transcripts to verify a student's claim to academic preparation. These should accompany a student's application for admission into the Hairstyling and Esthetics program. Although this stipulation is laid out in the Beautician Trade Regulation (Alberta Regulation 422/83), specifying that

an applicant must provide "evidence" of a minimum grade 10 education, only 22% of the subjects in this study provided Marvel with any form of official transcription as to their indicated levels of academic proficiency.

2. Increase the minimum level of education for entry into the Beautician program to grade 11, at least. This level of education is significantly related to an increase in successful completion of the course, as well as being significantly associated with increased retention rates.

3. Review of high school transcripts should emphasize the sciences, as these appear to be important factors in the final theory exam grades. Beauty Culture courses, across all grade levels, were not found to be significantly related to the final exam results, neither the final theory exam nor the final practical exam.

4. To assess an applicant for grade equivalence, where he/she possess less than a grade 11, for example, have the candidate write the Canadian Achievement Test or some other scholastic test for academic preparation. The CSAT does not appear to measure either academic

preparation/equivalence or scholastic ability. Rather, this battery appears to be a better indicator of perseverance.

An alternative to increasing the basic education requirement for entry into Marvel's program is one that would require a co-operative liason between Marvel and the Director of Private Vocational Schools. Because students possessing less than a Grade 10 exhibited a 50% chance of termination and those with less than Grade 11, a 44% likelihood, one option may be to institute a one month probationary period for students with less than a Grade 10 education. Upon completion of the probationary period, each student's record would be reviewed by Marvel personnel as to the student's suitability for permanent acceptance into the program.

In order to achieve successful implementation of such a plan, it would be necessary to approach the Director of Private Vocational Schools, requesting that he/she waive the inclusion of these "at risk" students, who exit the program within the first 30 day period of course commencement. Presently, private vocational schools must include within their retention rate calculations, all students who terminate within the first 30 days of course commencement as well as those students who terminate at any time during the tenure of the program. To facilitate such a waiver, it would be necessary for the

private vocational school to identify students considered to be "at risk" of termination - those with less than a Grade 10 education.

Applicant Screening. The current screening practices utilized by Marvel appear to be inadequate in terms of safeguarding against premature course termination. In order to assist with the alleviation of this problem it is suggested that the screening process include the following:

1. An emphasis on biographical data. In particular, attention to an applicant's job history, where applicable, and information regarding youth groups, hobbies, and other forms of structured activity that the candidate may have been involved in.

2. Obtain letters of character reference from teachers and/or past employers, organization leaders, or some other responsible individual.

3. The issues contained within this section become crucial where a student will finance his/her program through government funding agencies. It is important to counsel the "at risk" student regarding the financial indebtedness and obligations that he/she is about to incur, prior to admitting the applicant to the program.

4. Higher student loan default rates are noted among high school drop-outs (Greene, 1989). It is important to both counsel such candidates for admission and to attend closely to their progress throughout the program of studies, offering special assistance as it may be required.

5. On the strength of the findings herein, it would appear prudent for Marvel to request that all prospective students

   (a) submit official high school transcripts,

   (b) write the CSAT,

   (c) complete a battery of measures that assess motiviation and perseverance,

   (d) supply at least three character references, and

   (e) give biographical data that includes work history, clubs and youth organizations belonged to, a letter of intent from the student should he/she be admitted to the program, and a written

acknowledgement of their indebtedness to any and all lending institutions, focused on an awareness of the seriousness involved in taking on such an encumbrance.

6. For the mature students, greater discretion on the part of the admissions officer is both encouraged and warranted.

7. Increase awareness of the job market, both current and projected, through liaisons with government agencies that monitor availability of occupational openings within various vocational sectors.

8. Align student intake numbers to more closely reflect the demand for Beauticians within the community.

9. When a student either leaves or is asked to leave the program prior to its completion, code the reason for leaving as well as specifying the reason for leaving. This would facilitate both record keeping as well as future study. For example, code health reasons as 1, conduct problems as 2, moving away from Edmonton as 3, and so on.

In sum, in keeping with the findings of other researchers

who have found that biographical data serves as an important aspect of the applicant screening process (Greene, 1989, Halpin et al, 1983, and Drakeley et al, 1988), it is suggested that Marvel's admissions personnel use a multiple method paradigm for student candidate selection, as recommended by such authors as Paolillo (1982), Drakeley et al (1988), Zeidner (1987), Youngblood and Martin (1982), and Linn and Dunbar (1982). Thus, through judicious attention to the use of the CSAT scores, academic records or the results of scholastic equivalence exams, and a detailed biographical background analysis of the applicants, Marvels' success rate may reasonably be anticipated to increase and their drop-out rate to decline. With increased success rates, decreased drop-out rates, and meticulous attention to the job placement opportunities available to Beautician graduates, it may be safely assumed that the student loan default rates will also show a decline.

Apprenticeship and Trade Certification Board

The many issues addressed in this study consistently indicate that a significant relationship exists between an applicant's level of formal education and his/her subsequent success in Marvel's Hairstyling and Esthetics program, as well as the premature withdrawal from such a course of study. While it is unknown how this state-of-affairs may hold within other vocational education institutions, it, nonetheless, would appear to be a prudent measure to

increase the required academic preparation for entry into the Beautician trade to that of grade 11 or its equivalent. Alternatively, a Beautician program that included a one month probationary period for "at risk" students, those possessing less than grade 10, may be considered as an option to increasing the educational requirement. Choosing this latter option may serve to usurp the necessity of legislating an increase in the basic educational requirement for entry into Beautician programs. Further, the latter choice would serve to keep this trade option open to a greater number of candidates, bearing in mind that, within the parameters of this study, 50% of Marvel's admissions who possessed less than grade 10 were successful in completing the program by achieving a minimum grade of 70% on each, the final theory exam and the final practical exam.

While Section 4(1)(h) of the Manpower Development Act and General Regulations stipulates the ". . . entrance requirements for the program will not constitute an unnecessary barrier to those seeking entry to the trade", the results of this study tend to suggest that a minimum academic requirement of grade 11 is not "an unnecessary barrier". Throughout the analyses contained herein it has been consistently demonstrated that, within Marvel's program, increased entry-level education was statistically significant in its

relationship to higher success rates within the program, as well as to lower drop-out rates. Although the state-of-affairs for Beautician programs in general is unknown, it, nonetheless, appears that academic preparation prior to entry into a vocational program is soon to equal that of college entrance reuqirements, as noted in Pritz (1988). This speculation is increasingly becoming more tenable in view of escalating employer demands for a better educated vocational workforce, one that possesses higher academic competence (Schill, 1985, Buck and Barrick, 1987, Phelp and Hughes, 1986, Asche, 1986, Sathre, 1987, and Shoemaker, 1987).

In order to assist vocational schools, in general, a liaison should be established between school administrators and Canada Manpower, one who is charged with the responsibility of assisting the vocational schools with the setting of student quotas for their various programs, so as to more accurately reflect job-market opportunities. By so doing, this would assist in the alleviation of the growing student loan default rates, as well as the problems incumbent upon preparing individuals for jobs that are not available to them following successful completion of both their studies and trade licensure.

To operate in isolation, without regard for the absorption of qualified, vocationally trained workers into a waiting job market becomes a tragic waste, in both the capital invested in training

programs and the flagrant waste of human potential. To the extent that it will be acknowledged that the problems currently faced by vocational education, in general, are problems whose solutions lie in an orchestrated effort between a number of government agencies as well as the vocational institutions themselves, is the extent to which a dialogue will be established between all parties involved in the difficulties currently faced by vocational education.

Alberta Students Finance Board

Throughout this study it has been consistently demonstrated that a significant relationship exists between an applicant's level of formal education and program completion. It is on this basis that it is suggested that the Students Finance Board create a dialogue with the Apprenticeship and Trade Certification Board. The end-point of which is to either have entry-level educational requirements increased to grade 11 or to negotiate that a probationary period be instituted within Beautician training programs. This latter aspect would faciliate program exit or expulsion for those students who have either erred in their choice or have proven to be unsuitable candidates for permanent admission. The inclusion of a specified trial period may be anticipated to reduce the cost-per-drop-out. This is based on the projection that the majority of the course terminations would be anticipated to occur during the one month probationary period.

Other findings of interest to the Students Finance Board were also noted. It was found that, at least for the students attending at Marvel for the years of 1982 to 1987, inclusive, educational levels of grade 12 or greater were significantly related to both lower drop-out rates and lower utilization of public funding for purposes of financing education. Students who had attained grade 12 or greater tended to inject more of their own and/or family monies into their postsecondary education. Moreover, it was found that, as the use of public funding sources increased, so too did the rate of withdrawal from the program. It therefore appears that, on the strength of the findings forthcoming from this study, that as private source funding increases, so too does the rate of program completion. It is for all of these foregoing reasons that a minimum entrance level of grade 12, or its equivalent, is recommended.

To the extent that the Alberta Students Finance Board was estabished to make education available to financially disadvantaged students, and to the extent that a dual responsibility of duty is incumbent upon both the lending institution(s) and the borrower, it is important to carefully screen, monitor, and counsel (Greene, 1989) the "at risk" student, as defined by Greene (1989). This recommendation is given credence on the basis of findings from Wilms et al., (cited in Greene, 1989), who determined that high school drop-outs were more inclined to default on loan payments, and, further, that program completion/graduation exerted the strongest positive relationship with

repayment of student loans.

There remain certain aspects that must be considered when determining both lending policies and the guidelines that direct the forwarding of student funding in specific cases. While the cost-per-drop-out and loan default rates continue to represent increasing encumbrances to both the government lending institutions and the taxpayer, to err on the side of increasing the debt load may, in the long run, prove to be a more prudent measure than withholding post-secondary educational funding from those students in the "at risk" category. Granting of funds to such students may offer career opportunities otherwise unavailable to them and, without which, they may become dependent upon other forms of government assistance.

While the current student loan default rate for private vocational schools is 34%, with a default rate of 17% for the public sector schools, as opposed to reflecting the quality of education inherent within these two separate factions, it is suggested that this discrepancy speaks to a difference that is largely based on admissions procedures and applicant screening measures. It may be that, overall, the private vocational schools tend to use more lenient and/or inadequate guidelines for selection, allowing for more flexibility in terms of candidate selection. Such practices, then, may be the root cause for a student loan default rate that is 200% that of the public sector vocational institutions. Hence, while the quality of

education may be comparable between these two systems of vocational education, the private sector may admit to their programs students who are at greater risk for premature withdrawal from a program of studies and, subsequently, unemployable and unable to meet financial obligations.

In consideration of the findings herein, it becomes patently clear that more research is required into the myriad of issues that surround the use of public monies to finance vocational education. It is of paramount importance that more is learned about "at risk" student borrowers. In particular, what features of their backgrounds render them poor funding risks? Having deduced these, then what may be done that will nullify the impact of these factors on default rates?

It becomes incumbent upon the Students Finance Board to launch extensive research aimed at discovering those elements of biographical data that are associated with both loan defaults and loan repayments. It is only through meticulous and considered lending policies that the default rates will be brought into line. The staggering figures projected in Greene's study (1989), suggested that, by the American federal fiscal year of 1989, the student loan default dollar volume will have soared to $1.5 billion. Yet, in both Canada and the United States, this remains an area that lies on the periphery of empirical scrutiny.

Of significant import is the cost-to-the-public-purse in terms of the dollars that are lost annually per student drop-out. It is only through further, and extensive research that needed information will be forthcoming, and it is only through the acquisition of further knowledge as to the problem's essence that the solutions may be found. As the needed answers are found, it falls to the Students Finance Board to assist the vocational schools in establishing sound admissions procedures - procedures that include pertinent biographical data in addition to the usual requirements for academic competence. There is a great need to concentrate on background features that both increase a student's chances for success and, consequently, for loan repayment.

Future Research

In view of the findings forthcoming from this research project, the need for increased empirical discourse within all aspects of vocational education, in general, and Beautician training, in particular, becomes apparent. As is the way with most research endeavours, in the process of answering empirical questions, many more are often brought to light. Thus, while this study has shed some light on a number of empirical querries, it has also served to pose a number of unanswered questions - the seeds for future research. A partial list of some of the possible topics for future investigation are itemized below.

1. What are the success rates for vocational schools, in general, that offer Beautician training programs?

2. Are the findings forthcoming from this study on Marvel's student population peculiar to Marvel or do they hold across all private vocational schools?

3. If the CSAT does not predict "success" within a Beautician program, is there a statistically sound instrument available that does so?

4. What measureable personality traits are associated with successful completion of a Beautician program?

5. In the screening process for candidate selection, are there personal interest and/or aptitude factors that are associated with being successful in a Beautician program that afford some degree of predictive validity?

6. How many Beauticians are required to fill both existing and projected job positions for the province of Alberta?

7. What factors make a student an "at risk" candidate for

government funding agencies?

8. When a student drops from a vocational program prior to its completion, what is the cost to the public?

9. Why do students leave a chosen postsecondary educational path prior to its completion?

10. Would research into academic qualifications and the results obtained on the CSAT, using the Probit model (Nagenais, 1984), serve to answer a number of unanswered questions regarding both the successes and the drop-outs, in terms of prediction?

11. Would the use of the Tobit model (Greene, 1989) assist in the assessment of "at risk" students, aiding government lending institutions to both more closely monitor student loan default rates and identify "at risk" students prior to defaulting on loan remittance?

While the above list presents but a meager representation of the many issues that require further scientific research into the field of vocational education, it does serve as both a sound starting

point and a clear delineation of some of the more salient factors involved for both private and public institutions. The pivotal issues for Marvel are those querries that align with both termination and student loan default rates. On a broader focus, empirical answers to the above questions would be of considerable assistance in student selection procedures, in the assignation of student loans, in projecting student loan default rates, in the determination of "at risk" students who will require special monitoring and counselling, and in helping private vocational institutions to more accurately set program quotas - quotas based on potential and current job-markets.

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Appendix 1

Recording of Data on 40/80 Grid Sheets

Column(s)	Information
1 - 2	year of completion
3 - 5	three digit I.D. number
6	sex
7 - 8	day of birth
9 - 10	month of birth
11 - 12	year of birth
13 - 14	level of formal education
15 - 19	source of funding
20 - 21	day of entry into the program
22 - 23	month of entry into the program
24 - 25	year of entry into the program
26 - 27	day of program completion
28 - 29	month of program completion
30	termination (Marvel or self-imposed)
31 - 32	CSAT grade (where written)
33 - 34	final Marvel theory grade (where written)
35 - 36	final Marvel practical grade (where written)
37 - 69	* high school subjects and grades obtained for selected courses (where available)

Appendix 1 Continued

Recording of Data on 40/80 Grid Sheets

Column(s)	Information

* Courses selected for recording were: English 10/13, Math 10/13/15, Biology 10, Chemistry 10, Science 11, Social Studies 10, Beauty Culture 12, English 20/23, Math 20/23/25, Biology 20, Chemistry 20, Beauty Culture 22, English 30/33, Math 30/33, Biology 30, Chemistry 30, and Beauty Culture 32.

Appendix 2

Number of Students by Year of Completion or Termination

Year	Frequency	Percent	Cumulative %
1982	189	16.3	16
1983	195	16.7	33
1984	215	18.5	52
1985	224	19.3	71
1986	169	14.5	85
1987	170	14.7	100
Total	1162		

Appendix 3

Status of Students Exiting Marvel's Program

Student Status	Frequency	Percent	Cumulative %
Completed	853	73	73
Self-Terminated	230	20	93
Marvel-Imposed	65	6	99
Transferred	13	1	100
	*1161		

* 1 case missing

Appendix 4

Age Distribution of Students

Age	Frequency	Percent	Cumulative %
16	6	1	1
17	64	6	6
18	248	21	27
19	225	19	47
20	109	9	56
21	90	8	64
22	72	6	70
23	59	5	75
24	32	3	78
25	33	3	81
26	22	2	83
27	18	2	85
28	25	2	87
29	22	2	89
30	15	1	90
31	14	1	91
32	13	1	92
33	14	1	93
34	9	1	94

Appendix continues

Appendix 4 Continued

Age Distribution of Students

Age	Frequency	Percent	Cumulative %
35	10	1	95
36	8	1	96
37	10	1	97
38	5	0	97
39	8	1	98
40	2	0	98
41	6	1	99
42	7	1	99
43	2	0	99
44	1	0	99
45	2	0	99
46	1	0	100
47	2	0	100
48	1	0	100
49	1	0	100
50	1	0	100

1157, 5 cases were missing

$\bar{x}$ = 22.15, SD = 5.82, Median = 20, Mode = 18

Appendix 5

Indicated Levels of Formal Education

Grade	Frequency	Percent	Cumulative %
6	1	0	0
7	2	0	0
8	15	1	2
9	69	6	8
10	220	19	27
11	188	16	43
12	653	57	100
13	2	0	100

1150, 12 cases were missing

$\bar{x}$ = 11.21, SD = 1.06, Median & Mode = 12

Appendix 6

Subjects on High School Transcripts Submitted to Marvel

Subject	Valid Cases	Missing Cases
English 10/13	192	970
Math 10/13/15	189	973
Biology 10	113	1049
Chemistry 10	86	1076
Science 11	77	1085
Social Studies 10	179	983
Beauty Culture 12	53	1109
English 20/23	175	987
Math 20/23/25	122	1040
Biology 20	74	1088
Chemistry 20	43	1119
Beauty Culture 22	43	1119
English 30/33	145	1017
Math 30/33	62	1100
Biology 30	43	1119
Chemistry 30	30	1132
Beauty Culture 32	37	1125

Appendix 7

Crosstabulation of Year of Entry by Sex of the Students Entering the Program

Frequency Expected Value Row % Column %	Year of Entry into Marvel's Program 1981	1982	1983	1984	1985	1986	1987	Row Totals
Males	9	27	25	21	26	14	14	136
	12.4	24.0	25.4	23.8	23.9	19.1	7.4	11.7%
	6.6%	19.9%	18.4%	15.4%	19.1%	10.3%	10.3%	
	8.5%	13.2%	11.5%	10.3%	12.7%	8.6%	22.2%	
Females	97	178	192	182	178	149	49	1025
	93.6	181.0	191.6	179.2	180.1	143.9	55.6	88.3%
	9.5%	17.4%	18.7%	17.8%	17.4%	14.5%	4.8%	
	91.5%	86.8%	88.5%	89.7%	87.3%	91.4%	77.8%	
Column Totals	106	205	217	203	204	163	63	1163
	9.1%	17.7%	18.7%	17.5%	17.6%	14.0%	5.4%	100%

χ^2	D.F.	Sig.	Min. E.F.	Cells with E.F. 5
10.337	6	0.111	7.380	None

Appendix 8

Distribution by Grade for Students Writing the CSAT

Grade	Frequency	Percent	Cumulative %
6	1	0	0
8	7	4.1	4
9	35	20.7	25
10	53	31.4	56
11	24	14.2	70
12	49	28.9	100

169, 2 cases were missing

Appendix 9

Grade Distribution for CSAT Omissions

Grade	Frequency	Percent	Cumulative %
6	1	2.4	2
7	2	4.8	7
8	7	16.7	24
9	32	76.2	100

42, 2 cases were missing

Appendix 10

Final Theory Grades for 1982 Through 1987

Grade	Frequency	Percent	Cumulative %
39	1	0	0
40	1	0	0
52	1	0	0
53	1	0	0
54	1	0	1
55	2	0	1
56	1	0	1
58	4	0	1
59	2	0	2
60	1	0	2
61	1	0	2
63	1	0	2
64	3	0	2
65	1	0	3
66	4	0	3
67	4	0	4
68	3	0	4

Appendix continues

Appendix 10 Continued

Final Theory Grades for 1982 Through 1987

Grade	Frequency	Percent	Cumulative %
70	78	9	13
71	35	4	18
72	29	4	21
73	43	5	26
74	37	4	31
75	27	3	34
76	30	4	38
77	34	4	42
78	50	6	48
79	45	5	53
80	43	5	58
81	36	4	63
82	34	4	67
83	41	5	72
84	43	5	77
85	29	4	80
86	35	4	85
87	25	3	88
88	32	4	92

Appendix continues

Appendix 10 continued
Final Theory Grades for 1982 Through 1987

Grade	Frequency	Percent	Cumulative %
89	17	2	94
90	16	2	96
91	18	2	98
92	4	0	98
93	7	1	99
94	5	1	100
95	2	0	100
99	1	0	100
	828		

$\bar{x}$ = 78.76, SD = 7.426, Median = 79, Mode = 70

Appendix 11

Final Practical Grades for 1982 Through 1987

Grade	Frequency	Percent	Cumulative %
25	1	0	0
29	1	0	0
41	1	0	0
43	1	0	0
59	1	0	1
60	3	0	1
62	1	0	1
63	2	0	1
64	2	0	2
65	2	0	2
66	1	0	2
67	2	0	2
68	4	0	3
70	49	6	9
71	41	5	13
72	66	8	21
73	68	8	30
74	69	8	38

Appendix continues

Appendix 11 Continued

Final Practical Grades for 1982 Through 1987

Grade	Frequency	Percent	Cumulative %
75	75	9	47
76	78	9	47
77	60	7	56
78	65	8	64
79	53	5	71
80	45	5	78
81	41	5	83
82	20	2	88
83	5	1	90
84	13	2	91
85	16	2	93
86	12	1	95
87	5	1	96
88	8	1	97
89	1	0	98
90	4	0	98
91	3	0	98
92	2	0	99

Appendix continues

Appendix 11 Continued

Final Practical Grades for 1982 Through 1987

Grade	Frequency	Percent	Cumulative %
93	2	0	99
94	4	0	99
96	2	0	100
97	1	0	100
99	1	0	100
	831		

$\bar{x}$ = 76.23, SD = 5.901, Median = 76, Mode = 76

Appendix 12

Distribution of CSAT Scores

Grade	Frequency	Percent	Cumulative %
36	1	1	1
37	1	1	1
39	1	1	2
40	1	1	2
41	1	1	3
42	3	1	5
49	1	1	5
51	1	1	6
52	2	1	7
53	1	1	8
55	2	1	9
58	2	1	10
59	1	1	11
60	1	1	11
61	5	3	14
62	3	2	16
64	2	1	17
65	18	11	27

Appendix continues

Appendix 12 Continued

Distribution of CSAT Scores

Grade	Frequency	Percent	Cumulative %
66	6	4	31
67	9	5	36
68	10	6	42
69	7	4	46
70	8	5	51
71	6	4	54
72	5	3	57
73	6	4	61
74	8	5	65
75	3	2	67
76	5	3	70
77	5	3	73
78	5	3	76
79	6	4	80
80	8	5	84
81	5	3	87
82	5	3	90
83	7	4	94

Appendix continues

Appendix 12 Continued

Distribution of CSAT Scores

Grade	Frequency	Percent	Cumulative %
84	3	2	96
85	3	2	98
86	2	1	99
87	1	1	99
88	1	1	100

170, 1 case missing

$\bar{x}$ = 70.13, SD = 10.45, Median = 70, Mode = 65

Appendix 13

Funding Sources Utilized by Marvel Students

Funding Sources	Freq. Yes	Freq. No.	Totals
Self	243	919	1162
	(21%)	(79%)	(100%)
Relatives	381	781	1162
	(33%)	(67%)	(100%)
Students Finance Board	634	528	1162
	(55%)	(45%)	(100%)
Manpower/AVT	141	1021	1162
	(12%)	(88%)	(100%)
Other Government	55	1107	1162
	(5%)	(95%)	(100%)

Appendix 14

Funding Source Combinations for Marvel Students

Funding Source	Frequency	Percentage
Self	138	13
Relatives	209	19
Students Finance Board	398	37
Manpower & AVT	86	8
Self & Relatives	33	3
Self & SFB	53	5
Relatives & SFB	127	12
SFB & Manpower &/or AVT	38	4
Total	1082	100%

Appendix 15

Public and Private Funding Sources

Funding Source	Freq. Yes	Freq. No.	Totals
Self &/or Relatives	382	773	1162
	(33%)	(67%)	(100%)
Government Agencies	773	389	1162
	(67%)	(33%)	(100%)