CANADIAN THESES

THÈSES CANADIENNES

NOTICE

The quality of this microfiche is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Previously copyrighted materials (journal articles, published tests, etc.) are not filmed.

AVIS

La qualité de cette microfiche dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

Les documents qui font déjà l'objet d'un droit d'auteur (articles de revue, examens publiés, etc.) ne sont pas microfilmés.

THIS DISSERTATION
HAS BEEN MICROFILMED
EXACTLY AS RECEIVED

LA THÈSE A ÉTÉ
MICROFILMÉE TELLE QUE
NOUS L'AVONS REÇUE

Canada

National Library
of Canada

Bibliothèque nationale
du Canada

**CANADIAN THESES
ON MICROFICHE**

*THÈSES CANADIENNES
SUR MICROFICHE*

NAME OF AUTHOR/*NOM DE L'AUTEUR*___ Timothy Boon-Hin Ang

TITLE OF THESIS/*TITRE DE LA THÈSE* ___ Screening Students for Teacher Education: An

Exploratory Study

UNIVERSITY/*UNIVERSITÉ* ___ Simon Fraser University

DEGREE FOR WHICH THESIS WAS PRESENTED
GRADE POUR LEQUEL CETTE THÈSE FUT PRÉSENTÉE ___ Master of Arts (Education)

YEAR THIS DEGREE CONFERRED/*ANNÉE D'OBTENTION DE CE DEGRÉ* ___ 1982

NAME OF SUPERVISOR/*NOM DU DIRECTEUR DE THÈSE* ___ Dr. Ronald Marx

DATED/*DATE* __ 30th Nov. 1982 ___ SIGNED/*SIGNÉ* __

PERMANENT ADDRESS/*RÉSIDENCE FIXÉ* ___

NL-91 (11-73)

SCREENING STUDENTS FOR TEACHER EDUCATION:

AN EXPLORATORY STUDY

by

Timothy Boon-Hin Ang

B.A., Simon Fraser University, 1979

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS (EDUCATION)

in the

FACULTY OF EDUCATION

© Timothy B.H. Ang 1982

SIMON FRASER UNIVERSITY

December 1982

Title of Thesis/Project/Extended Essay

SCREENING STUDENTS FOR TEACHER EDUCATION: An Exploratory Study

_____

_____

_____

Author: _____

      (signature)

Timothy Boon-Hin Ang

     (name)

30ᵗʰ Nov 1982

    (date)

APPROVAL

Name: Timothy Boon-Hin Ang

Degree: Master of Arts (Education)

Title of Thesis: Screening Students for Teacher Education:
                   An Exploratory Study

Examining Committee

   Chairman: Jack Martin

                   Ronald Marx
                   Senior Supervisor

                   Janet Kendall
                   Associate Professor

                   Stan Shapson
                   Associate Professor

                   Thomas J. O'Shea
                   Assistant Professor
                   Faculty of Education
                   Simon Fraser University
                   External Examiner

                   Date approved   November 30, 1982

ABSTRACT

In recent years, the demand for quality control in teacher education has burgeoned. Emphasis on screening applicants for teacher education programs has been fuelled by three recent developments. First, there is a generally diminishing market for teachers because of falling enrollments in many schools. Second, there is an increasing demand for greater accountability from teachers. Lastly, recent developments in teacher effectiveness research have provided the tools for evaluating teaching performance. This is important since quality control is predicated upon the ability to make pertinent distinctions among individuals.

The purpose of this study is: a) to review three approaches in making admission decisions; and b) to evaluate the relationships among 11 predictors and two criterion measures of teaching performance. The study is aimed at developing a prototype screening device for further validation.

The participants in the study were 79 teacher trainees admitted to the Professional Development Program at Simon Fraser University in the spring of 1981. Eleven predictor variables based on biographical data were evaluated: sex, age, teaching grade level desired, highest degree earned, number of university credits completed, grade point average, major classification of previous work experience, level of responsibility of previous experience, length of experience, previous work experience with children/adults, and score on the Test of Standard Written English.

Using a proper linear approach to admissions decision-making, the relationships among these eleven predictors were compared with two measures of teaching practice by faculty and school supervisors. Regression analyses yielded three statistically reliable predictors, namely sex, age, and grade point average. These predictors, however, account only for a small percentage of the variance in ratings, the maximum being 24%. The results indicated that female students received a higher rating on teaching practice, and that older students and those with higher grade point averages were found to be more successful.

The results are discussed in relation to other findings in the literature, with a focus on conceptual and methodological problems associated studies of this nature. Several recommendations for methodological improvements are proposed.

Without the assistance and encouragement I received from many
persons, this study wuld not have been completed. I would like to
express my appreciation to my Supervisory Committee for their
guidance in the development of my thesis: Dr. Ron Marx, my senior
supervisor; Dr. Janet Kendall; and Dr. Stan Shapson. I would
particularly like to thank Ron, who demonstrated incredible
endurance, charity, and much wisdom in his supervision.

Without access to the data, I would have been unable to
undertake this study. Consequently, I am indebted to all the
Faculty and School Associates in the Professional Development
Program for their kind assistance. The willing student participants
and administrative staff in the PDP must also be acknowledged.

I would also like to thank Dr. Phil Winne for his assistance
with the data analysis; and Ms. Margaret Williams, Graduate Secretary,
for ensuring that I was properly registered each term.

To my parents and wife, I would like to acknowledge their
continued encouragement and emotional support which was vital to the
completion of this project.

Finally, I wish to acknowledge the generous financial
assistance I received in the course of my research;: a grant from
the Joint Board for Teacher Educaton, British Columbia; and a
university research stipend.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Then it will be our duty to select, if we can, natures which are fitted for the task of guarding the city?

It will.

And the selection will be no easy matter, I said; but we must be brave and do our best?

We must.

—— Plato, The Republic

CHAPTER 1

INTRODUCTION

Increasingly, the enterprise of educating teachers in North America has become the subject of close scrutiny and criticism (e.g., Conant, 1963; Pedersen, 1973; Reisler, 1981). James B. Conant's (1963) report on the education of American teachers aroused so much interest and discussion that it headed the best seller list of American non-fiction for several weeks. More recently, the Canadian Society for the Study of Education (1978) devoted its fifth Yearbook to concerns in teacher education in Canada.

Of the issues associated with teacher education, quality control is one that stands out prominently. Over the years, it has received considerable attention (e.g., McGregor Commission, 1978; National Education Association, National Commission on Teacher Education and Professional Standards, 1963). The McGregor Commission, for example, reviewed the education and training of teachers in British Columbia and, in one of its recommendations, suggested that more rigorous admissions procedures be implemented to ensure high standards of teaching.

The McGregor Commission was not alone in its opinion that more stringent admissions requirements are needed to ensure that graduates are well prepared for the demands of teaching. Watts (1974) claimed that teacher education institutions are admitting and graduating too many below-average students. He stressed that it was time to change the emphasis in teacher education from quantity to quality.

In an attempt to retrace the current focus on quality control in teacher education, Schalock (1979) recounted three recent developments. The first is a general oversupply of teachers in the labour market. Zsigmond (1976) projected that enrolments of school age children between the ages of 5-17 will decline in the eighties, and they are not expected to peak again till the end of the century. In the United States, a similar demographic trend exists (National Centre for Education Statistics, 1980) and this will in turn affect the demand for teachers.

With the oversupply of teachers in the labour market, it is expected that school districts will probably be more selective in their hiring practices. Consequently, teacher education institutions will also be pressured to limit their enrolments, and this in turn suggests that they will have to be more discriminating in their selection of applicants.

The second development idenitified by Schalock is the recent emphasis on accountability. In national and state-wide evaluation studies, the National Centre for Educational Statistics (1976) and Wirtz (1977) have reported a decline in pupil achievement in the United States. Evaluation data such as these have led to a strong demand for greater accountability from teachers as a professional group and from teacher education institutions, which are responsible for their professional preparation.

In a recent survey of students' perception of teacher competence in Vancouver, British Columbia, Pynn (1980) noted that many pupils did not perceive their teachers as competent professionals. Doubts concerning quality control have not only been

expressed by disenchanted pupils and parents, but teachers themselves are also experiencing a period of self-examination. They are aware that there is an ever present need to maintain high standards for entry and practice to enhance their professional status and credibility. As early as 1968, the Commission on Education of the British Columbia Teachers' Federation (B.C.T.F.) acknowledged the need for quality control and called for more stringent selection procedures. Unfortunately, their suggestion could not be heeded then as there was a critical shortage of teachers. During that time, the overriding concern of teacher education institutions was to provide an adequate supply of teachers. However, the labour situation has since changed, and with the current surplus of teachers in the market, the demand for greater professional accountability has intensified.

The final development which Schalock identified concerns recent findings from research in teacher effectiveness which strongly supports the view that some teachers are more effective than others in achieving desired learning outcomes (e.g., Brophy, 1973; Berliner and Tikunoff, 1976; Dunkin and Biddle, 1974; Good and Grouws, 1977; Veldman and Brophy, 1974). There is some indication that their effectiveness is related to the teacher's planning, interaction, and classroom management skills. In the light of these advances in teacher effectiveness research, Schalock claims that the identification of teacher behaviors related to achievement allows for a discrimination of effective teachers and in turn makes quality control possible.

The present exploratory research study investigates procedures for screening applicants for teacher education programs. The term "screening" should not be confused with "selection". In making this distinction, Arnold, Denemak, Nelly, Robinson and Sagan (1977) indicated that the selection process consists of a number of phases. Screening makes up the first phase of the selecton process. The other phases include admittance to student teaching, completion of training program, recommendation for certification, hiring, recommendation for job renewal, recommendation for continuing certification, and, lastly, recommendation for tenure or promotion. As such, screening procedures are a subset of the whole selection process. Screening identifies potentially successful teachers for teacher education programs. As such, screening activities are a significant area of responsibility borne by teacher education institutions. They are expected to maintain the standard of professional practice.

Most screening studies reported in the literature have focussed on the influence of individual characteristics on subsequent academic or professional success. Examples of these characteristics include biographical characteristics (e.g., age, ethnic origin, and sex); personality profiles (e.g., introversion-extroversion and dogmatism); intellectual or academic potential (e.g., intelligence test scores, grades, or aptitude test scores); and work experience. Regardless of predictors employed, any screening effort has as its goal the accurate prediction of subsequent success. Thus, the crux of the problem lies in the ability to make accurate predictions about applicants to teacher education programs, and the need for

systematic research in this area remains undiminished. If teacher education institutions are assigned the 'gate-keeping' task, then there is a need to do it responsibly. The rejection of a candidate who might otherwise have been accepted may have moral and legal implications. However, the failure to make discriminations between potential successful and unsuccessful candidates has its pitfalls as well.

To summarize, some people have potential of being more successful and better able to benefit from teacher education than others. It is the task for teacher educators to identify them. To do so, they need to seek an accurate means of predicting. A well-developed screening device is clearly needed for the task.

CHAPTER II

REVIEW OF LITERATURE

The goals of the literature review are threefold: (1) to describe and compare three main approaches employed in admissions decision-making as they relate to the screening of applicants for teacher education programs; (2) to delineate and assess various predictors employed in the screening process in the light of empirical findings; and (3) to examine the criterion problem in the prediction of teaching success.

Three Approaches in Admissions Decision-Making

Before discussing the three approaches in admissions decision-making, it is important to appreciate the three assumptions that underlie any selection effort. The first assumption acknowledges that there is considerable variability among individuals in terms of ability, interest, aptitude, personality traits and other characteristics. The second assumes that some of these are related to performance at work. The third assumption states that selection is only a relevant concern when there are more applicants than places available. If the pool of applicants is smaller than the places available, any attempt to select becomes redundant since selection implies choice and, in turn exclusion.

The goal of screening, as the first phase of the selection process, is to identify potentially successful teachers for training. To do this, it capitalizes on individual differences in order to select only those individuals who possess the greatest amount of some characteristic, or combination of characteristics, that is related to professional success (Cascio, 1978).

All of this presumes, of course, that relationships between certain characteristics and job success exist and are stable. The problem that plagues most decision-makers, however, is that of identifying those characteristics related to job success. For the decision-maker faced with the onerous task of having to decide what characteristics are to be considered and whom to admit, the issue is primarily one of prediction and its accuracy since the decision may need to be justified. Therefore any procedure employed to screen a pool of applicants needs to be able to discriminate the potentially successful from those who are likely to fail. To the extent that these inferences about future success are accurate, the screening procedure is said to possess predictive validity. Thus, the greater the validity, the more accurate the predictions will be. For the decision-maker, it is crucial that any screening device employed should possess a high predictive validity for its absence would undermine its utility.

In the ensuing section, three main approaches to admissions decision-making are explored with the goal of identifying their strengths and weaknesses. This review substantiates why the approach employed in this present study is appropriate. All three approaches discussed share similar concerns about measurement accuracy and predictive validity.

The clinical approach. This approach is characterized as an individualized prediction system. Its use in personnel selection is widespread and also well documented in the personnel literature (Cascio, 1978; Dunnette, 1966; Korman, 1971). The basic procedure in this approach include: (1) a set of measurements taken from

applicants (such measurements might consist of test data, biographical information, etc.); (2) some judge or decision-maker examines the sets of predictor information in some way for each individual; and (3) the judge comes to an overall judgement about the applicant's admissibility (Korman, 1971).

A more detailed description of the process involved in the clinical approach has been offered by Goldman (1971). Building from earlier descriptions by McArthur (1954) and Super (1957), his description can be seen as an attempt to delineate the stages involved in decision-making. According to Goldman, the crux of the process lies in the building up of a model or picture of the person. In the literature such models have been referred to as a "hypothetical person" (Pepinsky and Pepinsky, 1954), a "clinical construct" (McArthur, 1954), a "conception of a person" (Meehl. 1954) and a "picture of his client" (Super, 1957). Some details of this process are depicted in Figure 1.

The process begins with the accumulation of data about the applicant. These data might comprise information about intellectual ability from test scores or other measures of academic performance, personality characteristics, interests, and previous work experience.

Datum 1 ⟶ Inference A

Datum 2 ⟶ Inference A modified

Datum 3 ⟶ Inference B ⟶ Hypothesis 1)
))
) Dynamic
)
Hypothesis 2)) Model
) of the
))
Hypothesis 3)) person

Further data and
further inferences
to check on and
elaborate hypothesis

IDEAL
MODEL

Accept
Applicant

Reject
Applicant
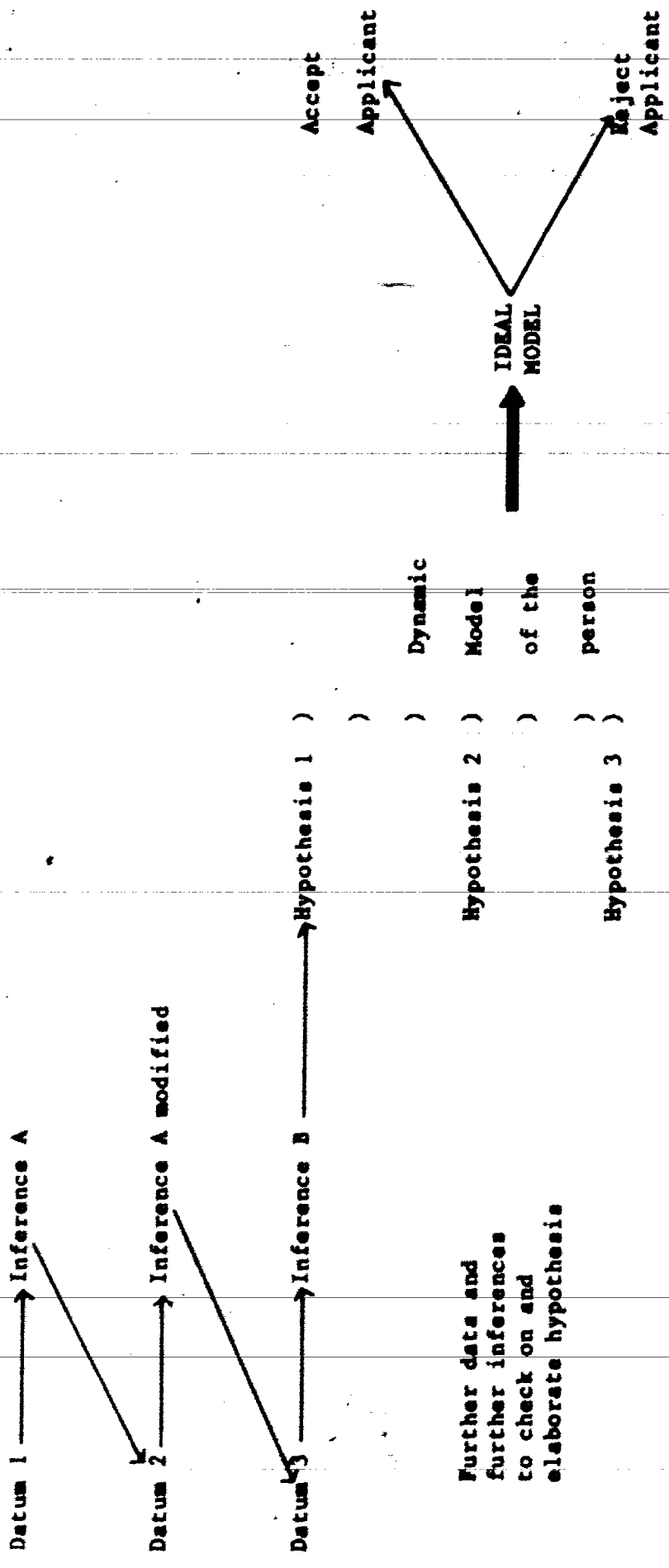
Figure 1 Schematic Representation of the Clinical Approach

(adapted from Goldman, 1971)

From individual data, inferences are then made about the person. These inferences are then compared with other inferences from other data. Compatible ones are retained while others are either modified or rejected. From these inferences, hypotheses are formed. Again, each hypothesis is tested for consistency with other hypotheses. Those found compatible are kept while others are modified or discarded. When pieced together, these hypotheses yield a composite model of the applicant.

Once the judge has derived a model of the applicant, the next step lies in deciding whether to admit or reject the applicant. It should be noted that such a decision is based on the judge's conception of the applicant; this is distinguished from the "real" person.

In order to make a decision about each applicant, the judge needs to rely upon some criteria on which to base his/her judgement. A careful examination of these criteria will reveal an idealized concept of the teacher or student-teacher. In other words, each judge carries in his/her mind some notion of who will be a "successful" teacher and the decision, one way or other, is predicated on this ideal. Valid or not, these idealized conceptions govern most admissions decisions in the clinical approach.

Stern, Stein, and Bloom (1956) have speculated that a likely source which judges may draw to cast their ideal models is from discussions with other faculty members about what kind of applicant is most likely to succeed in the program or the profession. Judges may also derive their ideal models from findings in the research literature, particularly studies which have indicated valid

predictors of successful teaching performance. For example, if empirical findings suggest that previous work experience with children is a significant factor related to teaching success, the judge may employ this as a criterion in his/her future admissions decisions by favoring applicants with such experiences.

Regardless of the origin of the information, judges construct their model of the ideal applicant or teacher in the same manner to that of the individual model. The model-building process for constructing the applicant and the contrasting ideal does not differ significantly. It is apparent that both are tainted with a great deal of subjectivity.

What has been described as the clinical approach is merely a theoretical artifact. In practice, strict adherence to this description rarely occurs. Although some hybrid of this approach is frequently employed in admissions decision-making, few studies have reported them in the literature. Most surveys, like Haberman's (1972) and Carpenter's (1973), have focussed only on the criteria used without any discussion on how they are employed in the decision-making process.

To summarize, the clinical approach is set apart from other approaches in its dependence on the human judge to infer and deduce from available data to decide whether to admit or reject an applicant. Furthermore, instead of combining predictors according to some systematic procedure determined by prior research and applied consistently to all applicants, the clinical approach is characterized by a great deal of subjectivity.

The proper linear regression approach. Unlike the clinical approach in admissions decision-making, the proper linear regression approach adopts a mechanical method of combining information about an applicant. Dawes (1979) defined a proper linear model as one in which the weights given to predictor variables are chosen in such a way as to optimize the relationship between the predictor and the criterion. This means that information about the individual is placed into a mathematical equation to yield a composite score. Such a score describes the degree of relationship between a number of applicant characteristics (or predictors) and some measure of success (or criterion).

The mathematical equation used to predict each applicant's probability of success is derived in several ways (e.g., Borg and Gall, 1979). For example, multiple regression is a major statistical technique which enables the decision-maker to forecast each applicant's criterion status based on predictor information (Cascio, 1978). More specifically, the multiple regression equation combines information from several predictors of a single criterion measure of success. For example, age, grade point average, and a score on the Scholastic Achievement Test can be used to predict outcomes on a single criterion measure such as subsequent grades obtained in a teacher education program.

In the case where two or more criterion measures are employed, such as grades obtained in the program and supervisor ratings, then canonical correlation techniques, another set of mathematical procedures, are used. Canonical correlation is similar to multiple regression in that it allows the decision-maker to combine several

predictors to make a prediction of an applicant's probability of success. It differs only in that multiple measures of success can now be employed in one statistical algorithm.

Both multiple regression and canonical correlation techniques allow decision-makers to determine the relative weights of the various predictors. For example, age may be weighted less than GPA in the equation. Those predictor variables that are more heavily weighted contribute more to the prediction equation. Contrasted with the clinical approach where the weighting for each of the predictors may vary from judge to judge and between applicants, weightings in the proper linear regression are empirically derived and applied to all applicants consistently.

The proper linear regression approach allows a determination of relative weights of each predictor on one or more criterion measures. However, this does not shed light on how these predictors and criterion measures are derived in the first place. Cascio (1978), Korman (1971), and Sayles and Strauss (1981) have documented some procedures used to develop and validate prediction equations. An example of one approach (Cascio, 1978) is illustrated in Figure 2.

According to Cascio, the first procedure entails a job analysis which concerns itself with the content of the job or the tasks involved, working conditions, and responsibilities.

```
                        ┌─────────────────┐
                        │   Job analysis  │
                        └─────────────────┘
         ┌────────────────┐        ┌────────────────┐
         │   Criterion    │        │   Predictor    │
         │   selection    │        │   selection    │
         └────────────────┘        └────────────────┘

    ┌────────────────┐              ┌────────────────┐
    │ Measure status │              │ Measure status │
    │  on criterion  │              │  on predictor  │
    └────────────────┘              └────────────────┘

                ┌─────────────────────┐
                │       Assess         │
                │  predictor/criterion │
                │     relationship     │
                └─────────────────────┘

         Yes        ◇ Is         ◇        No
                   relationship
                     strong?

  ┌────────────────┐              ┌────────────┐
  │  Tentatively   │              │  Reject    │
  │ accept predictor│             │ predictor  │
  └────────────────┘              └────────────┘

  ┌──────────────────────┐        ┌────────────┐
  │ Cross validate on new │       │  Select a  │
  │ sample; periodically  │       │ different  │
  │ check validity thereafter│    │ predictor  │
  └──────────────────────┘        └────────────┘

        ( End )
```
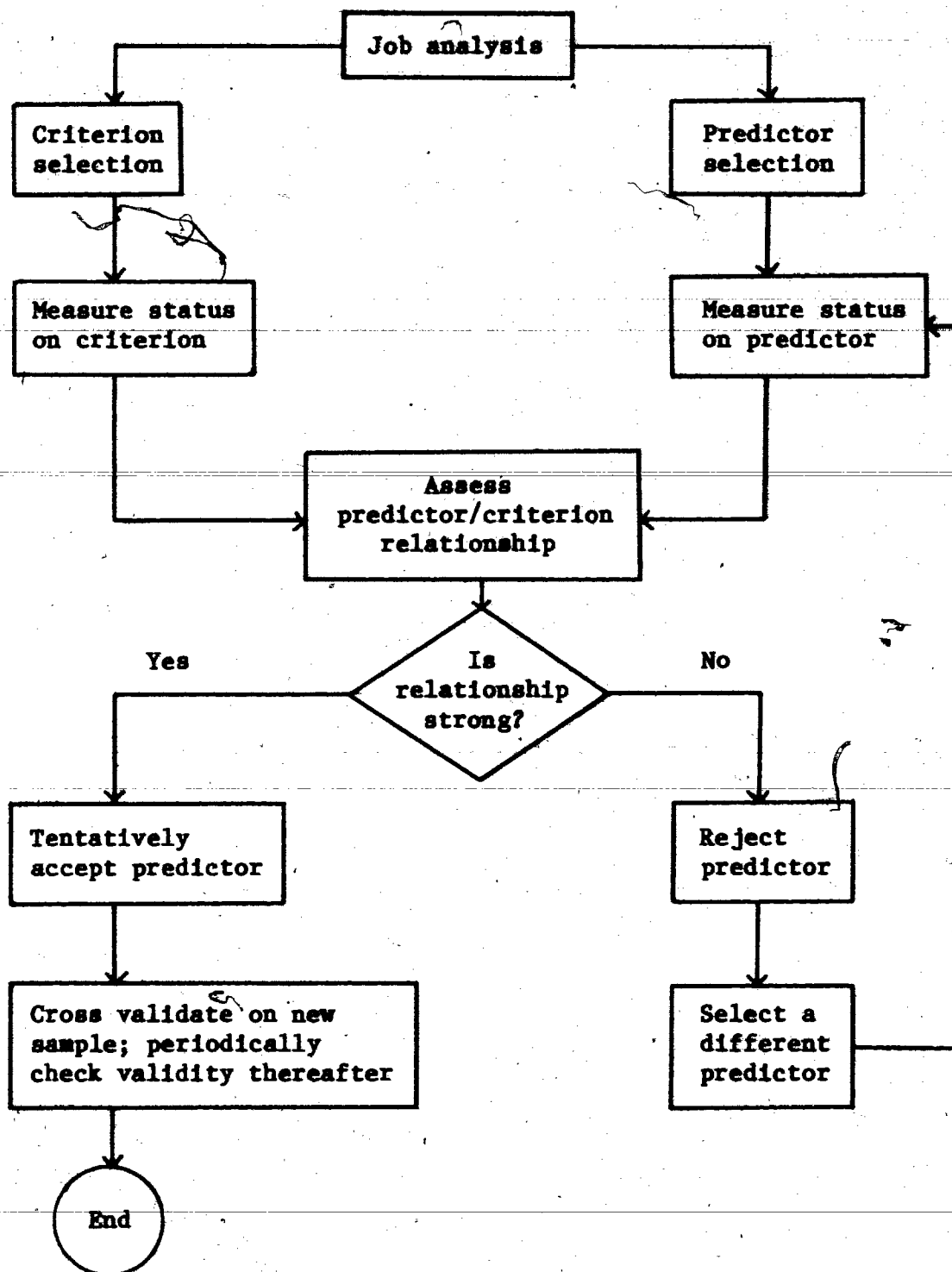
Figure 2 Illustration of a proper linear approach

(adapted from Cascio, 1979)

The second element, called specification, entails an examination of the experiences, education, and skills an applicant must bring to the job. It should be noted that job analysis tends to be more closely related to hiring decisions in a personnel management function. It tends to be less rigorously adhered to in screening teacher education applicants, though it is not irrelevant. In fact, it would be interesting to perform this exercise to determine if a teacher's job analysis is uniform across school districts. It may well turn out that certain tasks considered important in one school district may be less important in another.

To perform a job analysis, usually questionnaires, interviews, and observations are employed. For example, a researcher interested in analyzing a teacher's job can interview or survey a sample of teachers asking them to specify all the tasks performed in their jobs, the types of responsibilities, and working conditions. Alternatively, other supervisory personnel, like principals, school administrators, and teacher educators can also be interviewed or surveyed.

Once the job analysis is performed, a set of criteria needs to be selected to evaluate the individual's performance on the tasks identified in the job analysis. It is important that the criteria have high measurement validity and reliability (Cronbach, 1970). In teacher education, the criteria typically employed include one or more measures of teaching success. In this case, the student's performance level may be expressed as a grade on the practicum and other related coursework. Some institutions use other competency measures. For example, at the College of Education of the

University of Georgia, a teacher performance assessment measure is utilized (Capie, Johnson, Anderson, Elliot, and Okey, 1979). Known as the Teacher Performance Assessment Instrument (TPAI), it consists of five separate rating scales, each measuring different domains of a teacher's competence.

At the same time that criteria are being selected in the proper linear approach, predictors are also selected. Predictors may include measures of aptitude, ability, interest, personality, academic performace, and other biographical variables, like age, sex, and previous work experience. These predictors are selected after completing the job analysis. Once selected, measures of these predictors are obtained from applicants. If tests (e.g., aptitude measures) are to be used, they will be administered at this point in the process.

The next procedure involves measuring each student-teacher on criterion measures. This may occur at one or several points, after the student has completed some parts of the training program, at the end of the program, or even some time after completing it. The decision regarding the time when such data are to be collected rests on the institution's policy and resources.

When both predictor and criterion measures are available, their relationships are assessed statistically. The statistical procedures used to analyze the relationships may include multiple regression or canonical correlation. As mentioned earlier, these will yield regression weights which can subsequently be used to compute the best-guess prediction for other samples of applicants.

Finally, in order to ascertain the validity of the equation, it has to be cross validatd. This procedure consists simply of using the equation to select from another sample of applicants and its results are then compared with the earlier sample (Dunnette,1966). If the relationships between the predictor and criterion variables are consistent, the equation can be validly used as a sceening device for only then is it deemed to have predictive validity.

To summarize, the proper linear approach basically adopts a mechanical approach to selection. The predictors and criteria are both developed empirically and applied consistently to a pool of applicants.

Improper linear approach. Dawes (1979) describes this approach as one relatively similar to the proper linear approach. Both the proper and improper approaches are mechanical in their application, they both rely on a statistical regression model. The latter is distinguished from the former in that it does not employ optimal weights. Instead, one of two types of weighting procedures is used. The first type assigns all predictors an equal weight and is known as unit weighting. The second type, known as "boot-strapping", determines the weight of each predictor in the equation on some other basis (e.g., by judges, as in the clinical approach, intuition). Although the predictors and weights employed may be derived in the same manner as that of the clinical approach, "boot-strapping" is distinguished from the clinical approach in its uniform application of predictors and their weights. Each applicant's data are then inserted into the linear equation and a composite score is derived. This score provides an index of the

relationship between the predictors and criteria. For example, if judges decide that grade point average, age, and length of work experience are predictors of successful teaching performance, these will then be weighted either by unit weighting or by "boot-strapping." All predictors and their respective weights will then be expressed in an equation and all applicants will have their status assessed mechanically by this formula.

In general, the improper linear approach appears less rigorous statistically as compared with the proper linear approach. This may stem from the fact that the relationship between the predictor and criterion is not empirical. As such, the improper linear approach can best be described as a formalized clinical model.

Predictors employed in the improper linear approach can be derived in a number of ways. As in the proper linear approach, they can be derived from a formal job analysis. Alternatively, they can also come from a consensus among judges, as in the clinical approach. This approach is improper essentially because the predictors and their respective weights are not empirically derived. Regardless of how they are derived, they are applied consistently to screen all applicants in a mechanical manner. This is what makes it a linear approach as this is done through a mathematical equation.

In a sense, the improper linear approach can be viewed as a compromise between the more "human" clinical approach and the more "mechanical" proper linear approach. Although improper models have been developed for selection purposes for more than a decade, a literature search failed to identify any screening studies for teacher education that adopt this approach.

A comparison of three approaches. In summary, the clinical approach relies upon a clinician to combine all the information about an applicant and then compare it with an ideal model of the teacher. The ideal conception is acquired informally, as opposed to empirically. Based on this comparison, a decision about the applicant is made. In the proper linear approach, the model of the ideal teacher is empirically derived and information about the applicant is compared mechanically. Thus, a human judge is not needed to evaluate each applicant separately, as in the clinical approach. In the improper linear approach, either the characteristics desired are weighted equally or a judge will develop an ideal as in the clinical approach. In the latter case, however, this ideal will be consistently used to evaluate other applicants. This means that only the model of the judge is used and, once the model is developed, the judge's presence will no longer be required. In this respect, it shares some commonality with the proper linear approach in that both rely on a statistical equation applied mechanically.

In a comprehensive review of the literature comparing clinical versus proper linear prediction, Meehl (1954) found that the latter has consistently proven superior. Similar findings are well documented in the literature by Goldberg (1965), Gough (1962), and Sawyer (1966). Hirschberg and Itkin (1978) claimed that in no study of clinical judgement has a decision-maker outperformed decisions made through the linear approach.

In a classic study by Sarbin (1942), five counselors made predictions of honor-point ratios from a sample of 162 freshmen. The data available to the counselors included: a preliminary interviewer's notes, results from the Strong Vocational Interest Blank, scores on a four-variable structured personality inventory, an eight page biographical form completed by the students, scores on several other aptitude tests, and a personal interview. A clerk, using the proper linear regression approach, was only given information about the students' high school percentile rank and college aptitude test. The clerk was instructed to insert the values of the two predictor variables into a two-variable regression equation which had been developed from an earlier sample. The criterion measures were honor-point ration calculated at the end of the first quarter. The results of this study indicated that though the clinicians had more information about each student, the "linear predictions" made by the clerk were superior to those of the clinicians.

In comparing the improper linear and clinical approaches in the forecasting of graduate school success, Wiggins and Kohen (1971) found the improper approach to be superior. In their study, 98 psychology graduate students at University of Illinois were asked to predict first year grade point averages based on 110 applicant profiles containing ten predictors which include: Graduate Record Examination (GRE) verbal; GRE - quantitative; GRE - advanced test in psychology; cumulative undergraduate grade point average; ratings of their undergraduate colleges; mean peer ratings for need achievement extroversion, and anxiety; self ratings on consciousness; and the

sex of the applicant. The judges' predictions were made on an 11-point scale ranging from a 3.0 GPA to 5.0 GPA in steps of 0.2, and for each of the 98 students, an improper linear model was developed. The results of the study indicated that the improper linear regression equations generally outperformed the judges themselves. In other words, each judge's regression model outperformed his or her own clinical judgement. Other comparisons by Goldberg (1970) and Dawes (1974) yield similar conclusions.

A search of the literature failed to find any comparative studies of the proper versus the improper linear approaches which employs "boot-strapping" procedure. However, studies by Lawshe and Schucker (1959), Trattner (1963), and Wesman and Bennett (1959) have demonstrated that improper approaches using unit weighting, where all predictors are weighted by 1.0, does just as well as proper linear approaches using optimal weights.

In an attempt to explain why the linear approaches surpass the clinical approaches in prediction studies, Dawes (1979) explained that the human judge knows what to look for but is poor at integrating the information found. Dunnette (1966) reiterates this view when he said that accurate clinical prediction requires greater skill than prediction based on the linear approaches. He reasons that the clinician must know all about the predictors, the special circumstances, if any, for which they are better used which is no small order. It is because of the human judge's limited capacity to integrate much information to make sound predictions that Goldberg (1965) and Little and Schnerdman (1959) noted that the human judge's model performs better than the judge himself or herself.

It should be noted that the linear approaches are not entirely independent of the human judges' influence. In the first place, it is the human judge who first decides what predictors and criteria to use in developing the most efficient linear equation. However, linear approaches have been found to be more efficient in processing complex information for decision-making. There are several guidelines for selecting which approach to adopt in admissions decision-making. Both linear approaches are more economical in terms of time and resources when the applicant pool is large. With these approaches, a clerk can easily insert each applicant's predictor scores into an equation developed and validated from previous samples. This will save the decision-maker (clinician) considerable time and the institutions a great deal of money.

In the case of the proper versus the improper linear approaches, Goldman (1971) suggested that in situations where criterion information is lacking, the improper approaches are equally useful and accurate. It is not possible to discuss all the subtleties in adopting either of these approaches. However, several should be noted. First, concern with accuracy is important, for it is the cornerstone of any screening effort. Second, the resources available should also determine which approach to use. For example, it would probably be less expensive to adopt an improper model than a proper one. To develop empirically valid predictors with their relative weights would entail much time and expense. Third, consideration should also be given to the availability and nature of the predictor and criterion variables. Finally, the context of prediction cannot be understated in deciding which approach to

employ. Of all these, accuracy is probably the most important concern to the decision-maker since he or she will be held accountable.

To summarize, the review of three approaches in predictor identification and admissions decision-making reveals two important points. They are:

a) the systematic and standardized application of predictors across applicants is a more valid approach to the individualized, more subjective, clinical approach;

b) the linear approaches are more economical, in terms of manpower and time.

A more detailed discussion of the various statistical techniques in the linear approaches can be found in Kerlinger and Pedhazur (1973) and Lord and Novick (1968).

Criteria for Admission to Teacher Education Programs

In the previous section, three approaches to admissions decision-making were discussed and compared. It is the purpose of this section of the literature review to delineate the various predictors employed in most screening procedures and to discuss some related empirical findings.

In a comprehensive survey of the various criteria employed by 386 colleges of education in United States, Haberman (1972) identified thirteen key criteria frequently used in varying combinations. These are listed in Table 1. From the survey, it is apparent that college grades, English proficiency, and speech skills are the premium criteria for admission to many teacher education programs.

TABLE I

Commonly Used Admission Criteria and the
Number of Institutions Employing Then in the United States
(Haberman, 1972)

Criteria	Number of Institutions
1. College grades	344
2. English proficiency	238
3. Speech proficiency	237
4. Academic reference	205
5. Direct experience with children/youth	172
6. References	164
7. Direct interviews	161
8. Physical examinations	158
9. "Why I want to teach" statements	128
10. Personality/attitude tests	84
11. High school grades	59
12. Police record	31
13. Loyalty oath	16

Note: Total number of institutions surveyed = 386.
        Institutions used multiple criteria.

In other surveys, Brubaker and Patton (1975), Inflow (1960), Leonardson (1977), Numney, Fiala and Lewis (1963), and Yevak and Corlin (1972), also found grade point average in the first two years of college as the most frequently used screening variable. The majority of these institutions surveyed also indicated that other secondary criteria were employed in their screening process.

While it is apparent that most institutions employ one or more predictors in their decision-making, Leonardson (1977) found that these were often used without evidence to indicate that they are related to teacher effectiveness. Similar concerns have also been raised by the Study Commission on Undergraduate Education and the Education of Teachers, University of Nebraska (1973). While most institutions acknowledge the need to discriminate amongst applicants, few have resolved the key issue of what measures of "who should teach" to use. In this section, some of the literature related to the various predictors used in screening will be reviewed.

Grade point average (GPA). Most surveys of admission criteria employed by teacher education institutions reveal that GPA is the major criterion used (e.g., Study Commission on Undergraduate Education and the Education of Teachers, University of Nebraska, 1973). However, research on the predictive validity of university GPA has not generated impressive results.

In a study involving 170 secondary student-teachers, James and Dumas (1976) attempted to test the relationship between academic success, as measured by college GPA, and success in student teaching, as measured by six teacher effectiveness ratings. The results were that GPA was significantly correlated with ratings on

teacher effectiveness. In another study, Cornett (1969) also found a positive relationship between GPA and principals' ratings for first year secondary teachers.

Contrary to these findings, a study by Dravland (1974) showed that GPA was a poor predictor of student teaching grades. However, the results of the study indicated a high correlation between admission and termination GPAs.

Although the validity of GPA as a predictor of teaching success has not been universally demonstrated, there is some consensus that it is an important predictor. Generally, most studies have found GPA to be correlated with some measure of teaching success (Ayers and Rohr, 1974: Greene, 1977: Twa and Greene, 1980). The correlations, however, are not strong, though they have been found to be statistically reliable (Elliott, 1971: Schalock, 1979). Another observation by James and Dumas (1976) was that students with lower GPAs tended to be eliminated from the sample. As a result, the relationships between the predictor and criterion variables were further weakened. This attenuation results from the restricted range in the sample after attrition. For example, if GPAs are high, exceeding 2.90 on a four point scale, the relationship diminishes. It may be that GPA does not serve as a good predictor when it exceeds a certain level. Greene (1977) has also discovered that when used exclusively, GPA is a poor predictor of teaching success. Despite all these findings in the literature, there is indication that GPA can be useful in predicting teaching success.

English proficiency. Proficiency in English has always been assumed to be an essential aspect of professional communication for teachers. For this reason, most colleges surveyed have indicated that it is used as an important criterion in the screening of applicants for teacher education programs. Bedford (1972) reported that a measure of written English proficiency yields some predictive value of successful teaching. In contrast, Cortis (1968) found this variable to be of little value in the identification of successful teachers. Though some conflicting findings exist in the literature, it stands to reason that English proficiency facilitates instruction. However, it would be a mistake to assume that all persons proficient in the language would make successful teachers. Thus, like GPA, it should not be employed as an exclusive screening device. In general, few studies have been undertaken in this area, and more research is necessary before the relationship between English proficiency and some measure of teaching success can be firmly established.

References. Another frequently used screening device in teacher selection involves acquiring information about applicants from sources familiar with them. Former teachers, pastors, friends, and other persons who know the applicants well may be asked to comment on their suitability for teaching.

Unlike the application form and the interview which are self-perceptions about what the applicant has achieved in the past, references and recommendations rely on the opinions of others to evaluate the applicant's achievements. Generally, four types of information are obtained through references: employment and

educational history; evaluation of the applicant's character and personality; evaluation of previous academic or job performance; and, in the case of those holding a position, willingness to rehire.

Although the rationale for acquiring these references is sound, many are skeptical of their usefulness. McCormick and Ilgen (1980) specified four conditions under which references may prove useful: (1) the referee must have had adequate opportunity to observe the individual in relevant situations (i.e. job related ones); (2) the referee must be competent to make necessary assessments and evaluation; (3) referees must be willing to give a frank opinion from the assessments and evaluations; (4) they must express their opinions so that the recipient interprets them as intended.

The absence of any of these factors will threaten the validity of the reference. Perhaps one of the biggest problems is that references rarely include unfavorable information as referees fail to give their honest opinions. This may be due to their reluctance to jeopardize another person's future. As such, references tend to provide little discrimination among applicants in general and do not prove useful in admissions decision-making.

To overcome some of the deficiencies found in most conventional letters of reference, some decision-makers have resorted to the use of structured questionnaires that solicit more specific information. However, research on their usefulness has not been encouraging. A study by Mosel and Goheen (1958) reported data based on the Employment Recommendation Questionnaire (ERQ). They found that the correlations were low between mean ratings of individuals on five factors, including occupational ability, character, reputation, and performance.

Another study by Browning (1968) reported equally disappointing results for rating of 508 candidates for teaching positions and subsequent evaluations of their teaching performance. The overal correlation was 0.13.

Thus, although the rationale for using references in admissions decision-making is sound , its practice poses numerous problems, and findings do not support its validity. In reviewing its usefulness, Schultz (1973) warned that much of the information derived is misleading and should be used with caution.

Interviews. The admissions interview is another mechanism frequently employed in screening applicants for teacher education programs. It performs two vital functions. The interview fills gaps from other information gathering devices (Tucker and Rowe, 1977) and can be used to evaluate factors which can only be assessed through personal interaction (Cascio, 1978). Basically, the interview is used as an adjunct or secondary screening device, and is rarely used exclusively. For example, Webster (1959) examined the effects of information recorded on the application form, and the order of information and appearance on the final interview results. He found that unless an applicant was accepted on both appearance and information from the application form, the chances of being accepted on the interview was about one in ten. Furthermore, 92 percent of those rejected were denied admission on pre-interview factors. However, acceptance on the basis of the application form and appearance led to only an 82 percent final acceptance rate. He concluded that this is some indication of the interview being a way of identifying negative information. Webster's findings have been further validated by Maysfield and Carlson (1966).

Bedford (1972), however, found the interview to be a strong predictor of teaching success. Although the results of his study are promising, few studies lend further support to such a view. In fact, findings concerning the use of the selection interview have been disappointing. Weiss and Dawes (1960) claim that there is a great deal of distortion of information obtained through the interview. Subsequently, decisions made on the basis of the interview tend to be invalid and prove unreliable. Ghiselli and Brown (1955) have identified three possible sources of distortion, and they lie with the interviewer, applicant, and interview procedure.

The first source of distortion lies with the interviewer. Since the results of the interview are a direct function of the interviewer's competence, objectivity, personality, and values, this is an important variable to consider. One aspect of interviewer variability was highlighted in Webster's (1959) study. He found that judgements made by two or more interviewers examining the same applicant differed markedly. Although it has been argued that training may help interviewers deal with such problems, it is unlikely that these discrepancies can be eradicated.

Apart from the interviewer, the applicant also poses another source of error in the interview. For example, a change in his or her moods will tend to be reflected in corresponding changes in behavior. As such, the interview may not give the interviewer an opportunity to derive a fair sampling of the interviewee's behavior. Instead, some information may be distorted and influence the outcome of the interview.

The third source of distortion lies in the interview process. Unless this is standardized to some extent, its variation may influence the outcomes. Dudycha (1941) and Schultz (1973) have even suggested that all interviews be structured. A key characteristic of a typical structured interview is the provision for a systematic rating of the applicant on various factors. These are then applied to all applicants. Testing this in a simulated context, Schwab and Heneman (1969) found that structured interviews increased interview reliability. Unfortunately, the question of validity has yet to be resolved with satisfaction.

To summarize, there is no clear support for the use of interviews in selection. In fact, after a thorough review of the literature, Webster (1959) found that the validity of predictions made by interviewers tended to differ markedly from one to another. Furthermore, predictions made on the basis of the interview were no better than those made by actuarial methods. Despite these findings, interviews continue to be popular with admissions officers. But until support is forthcoming, the usefulness of interviews remains in doubt.

Biographical data. Biographical data from applicants can include a wide variety of information about individuals and their backgrounds. Typically, such data would pertain to the applicant's age, sex, place of birth, family background, number of siblings in the family, education, ethnic identity, marital status, work history, and interests. Biographical data are usually obtained directly from applicants on application forms. Although most biographical data are factual, some may tap attitudes, feelings, and values.

Recent studies (Dunnette and Borman, 1979; Scott and Borman, 1967) have demonstrated that information obtained from application blanks can be used to predict job performance successfully. Furthermore, Toukmanian (1978) has suggested that the data obtained can be equally useful for the selection of teacher trainees from applicants.

Some support for the usefulness of biographical data is derived from a study by Ducharme (1970). Using first year elementary school teachers at Southwestern Louisiana University, he found some biographical data to yield predictive validity. In another study, Toukmanian (1978) found that biographical data obtained on an inventory were related to academic and practice teaching performance. Other studies in the literature have reported the use of biographical data to predict complex criteria like research creativity (Ellison and Taylor, 1962); job turnover in unskilled labour (Scott and Borman, 1967); successful medical practitioners (Loughmiller, Ellison, Taylor, and Price, 1973); and employee theft forecasting (Rosenbaum, 1976).

In contrast to interviews, which can be biased, biographical data on applicaton forms are less likely to be falsified or misunderstood as they can be verified (Owens and Henry, 1966). To increase its accuracy, it has been suggested that only historical and verifiable experiences, events, or circumstances be used. When properly cross-validated, England (1971) found that 95% of the studies indicated that biographical variables were significantly predictive of criterion status.

To summarize, the review of literature on the usefulness of biographical data has some promise for the screening of applicants to teacher education programs. Since such data are so easily available to admissions decision-makers, their predictive validity certainly merits further examination. It would also be a cost effective approach on which to base a screening system.

Personality. Traditionally, the approach taken in most studies of teacher selection presupposed that effective teachers possessed certain personality traits. The research in this area has been voluminous. Nearly 20 years ago, Getzels and Jackson (1963) reviewed the literature and compiled a list of 800 references. Upon examining the literature, they concluded that despite the volume of research, significant results were not forthcoming.

Although some claim that there is a correspondence between personality traits and teaching success (Ayers and Rohr, 1974; Wevers, 1977), others (e.g., Borich, 1977) acknowledge that only a few personality constructs have been identified.

In a study by Twa and Greene (1980), 150 students enrolled in the first year of a teacher education program at the University of Lethbridge over four semesters were given a series of tests which included three personality measures. They found a moderate relationship between personality and teaching success, measured by the California Personality Inventory and the Minnesota Teacher Attitude Inventory (MTAI) and student teaching grade.

However, other studies (e.g., Scott and Brinkley, 1960) found that the MTAI had neither predictive nor concurrent validity. If this is in fact the case, one should view Twa and Greene's finding with caution.

Much controvesy surrounds the efficacy of personality variables in prediction, and results are rarely conclusive. For this reason, Borich (1977) explains that few personality constructs have been developed to describe teacher characteristics in the classroom. Thus, until more valid and reliable personality measures are available, prediction with these variables should be discouraged.

Previous experience with children and adults. Since teaching involves working with children or youth, experience in such work is another likely predictor of success in teaching. Little research has been conducted to examine this relationship. Initial findings by Ducharme (1970) support the hypothesis that previous experience does not have a bearing on teaching performance. He found, for example, that previous experience with children was an equally good predictor of teaching (as rated by principals) as was performance in student teaching in first and second year teachers. However, more evidence is needed to confirm this finding. Since few studies have been conducted in this area, it will be interesting to explore empirically the utility of this predictor variable.

The Criterion Problem

One of the most serious issues that confronts the decision-maker wishing to implement a screening procedure is the lack of an appropriate and reliable way to assess complex teaching performance. This criterion problem, as it is called, plagues most prediction studies. Without agreement as to the menaing of effective teaching, it would be difficult to identify and validate predictors for admissions decision-making.

Although a uniform and universally accepted set of criteria for teacher evaluation is not available, some approaches to measuring teacher effectiveness have been identified. Mitzel (1960) conceptualized three types of measures. They are: (1) presage criteria; (2) process criteria; and (3) product criteria.

Using presage criteria, teacher effectiveness is ascertained by measuring teacher characteristics prior to actual teaching. Two examples of such criteria are scores on intelligence tests and measures of a teacher's knowledge as indicated on grades obtained in teacher education programs. Since measures of teacher effectiveness have often been criticised on the grounds that they only measure knowledge, they do not necessarily enhance student learning outcomes.

Process criteria refer to the relationship between teacher and student behaviors as manifested and observed in the classroom. At present, there are a multitude of instruments designed to measure these process variables. Two sourcebooks for these measures have been compiled by Borich and Madden (1977) and Simon and Boyer (1970). From the plethora of instruments, it is possible to identify two classes of measures for process variables. The first consists of administrator or peer group observations and ratings. These are frequently used and involve having school or college supervisors, peers, or administrators judge one's teaching performance. Their judgement can be based upon a rating scale for teacher effectiveness, such as the Teacher Performance Assessment Instrument (Capie, Johnson, Anderson, Elliot and Okey, 1979). This comprehensive assessment device measures the teacher's preparation, use of materials, classroom procedures, interpersonal skills, and professional conduct.

A second class of measures involves pupil observations and ratings of teacher performance. In this case, the pupils, or consumers, of the actual instruction rate the teacher. Examples of such process measures are the Purdue Rating Scale for Instruction (Remmers and Elliott, 1960) and the Purdue Teacher Evaluation Scale (Bently and Starry, 1970).

It should be noted that most process measures tend to be highly structured. Most are in the form of rating scales. Typically, these scales would assess teachers on their planning skills, the effective use of materials, classroom management, communication skills (such as questioning or probing skills) and knowledge of their subject matter. However, some process measures can also be less structured. For example, assessments can be made in more global terms and reported in the form of anecdotal comments. Many principals report in this manner.

The third approach in the measurement of teacher effectiveness involves product criteria. Product criteria refer to changes produced in pupils. The literature also refers to these pupil outcomes as pupil-growth or student gains. These are measured in two ways. The first is by examination on standardized tests. Essentially, the procedure involves the administration of a standardized test in the relevant subject taught. Using the test - retest method, improvement of pupil scores are then used as an index of teacher effectiveness. Although this procedure is frequently used, Glass (1974) has criticised the procedure on a number of grounds: the irrelevance of many items in the test; the nonrandom

assignment of pupils to classes; the unreliability of the improvement index; and the high administration costs.

The second way to measure pupil-gains is by teaching performance tests. This involves having the teacher provide a lesson on a topic and then measuring teacher effectiveness by noting how well pupils perform on an achievement test.

In the opinion of a number of researchers and teacher educators (e.g., McNeil and Popham, 1973; Schalock, 1971) pupil product criteria are more indicative of teacher effectiveness than presage or process variables. On the other hand, some researchers (e.g., Soar, 1973) have voiced a number of concerns with this opinion. Among the concerns raised are: (1) the adequacy of measures for assessing a broad range of pupil outcomes in different subject-matter areas and different educational levels; (2) measurement and statistical problems, like regression and ceiling effects; and differences in learning aptitude amongst pupils.

Despite the lack of general agreement to what constitutes good teaching, Rosenshine and Furst (1971) have reviewed many studies on teacher effectiveness and have gleaned from them eleven teacher variables that have shown promising relationships to pupil gains. The are:

1. Clarity of teacher's presentation

2. Teacher's ability to use a variety of methods and skills

3. Teacher's enthusiasm expressed during classroom presentation

4. Teacher's task-oriented behavior

5. Material covered related to criterion measure of pupil performance

6. Use of pupil's ideas

7. Use of structuring comments

8. Type of questions asked

9. Teacher's probing response

10. Varying levels of difficulty in materials to pupils' ability.

To summarize, the criterion problem is an immense obstacle for someone seeking to develop and validate a screening procedure. Until a valid definition and measure of good teaching is found acceptable, the task will remain unfinished.

Summary of Literature Review

It is apparent that the task of developing and validating a screening device for admission to teacher education programs is a highly complex one. It is also fraught with many difficulties and much controversy. The complex process can be conceptualized as a number of phases.

To begin with, the decision-maker will have to determine what kind of approach is to be employed. In other words, he or she will have to either adopt a clinical, proper linear, or improper linear approach. To do this he or she will have to consider the findings in the research literature and the resources available.

Once the approach is decided, it is necessary to identify valid predictors that are related to teaching performance. The manner in which this is accomplished will depend largely upon the selection approach adopted. Valid predictors can be identified from the literature and those that indicate promise can be used.

In addition to the identification of predictors, the decision-maker will need to adopt a measure of teaching success. The literature gives little indication of an ideal measure. In fact, the research on teacher effectiveness is still seeking to determine what constitutes good teaching.

The next phase will involve identifying relationships between predictor and criterion variables. In the linear approaches, this relationship is represented by a linear equation. The equation will need to be cross-validated on another sample to ensure that there is evidence in support of its use.

Purpose of the Present Study

The purpose of the present study is to identify some characteristics related to teacher success in a sample of students enrolled in a pre-service teacher education program. This is an important phase of research in the development of a valid screening apparatus. It also represents an area of research where there is much disagreement.

The limited scope of this study is necessary as the task of developing and validating a screening device is a massive one. To attempt the entire task is clearly beyond the scope of a single study. As such, this study will not seek to ascertain which decision-making approach is superior or ideal for admissions purposes. Since the literature indicates that both linear approaches are viable, this study will adopt the more popular proper linear approach.

The predictors to be studied will be limited to GPA, biographical data, and English proficiency, as measured by a standardized test. The reasons for this decision stem from the literature review, which identifies them as the most promising and easily available. It also seems expedient to begin any study with data most easily available, and most admissions officers will have these data on hand.

Since none of the measures of teaching success has gained universal approval, this study employs a criterion measure that includes teacher variables which were deemed most promising in an extensive survey by Rosenshine and Furst (1971). Finally, the general procedures of this study follow closely those employed in most prediction studies.

CHAPTER III

METHOD

Description of Sample and Teacher Education Program

The sample was composed of all 84 student-teachers admitted to the Professional Development Program (PDP) for the spring semester, 1981, at Simon Fraser University. Students in this semester are admitted after a minimum of two years of undergraduate studies. These 84 student (65 female, 19 male) were selected from 237 applicants largely on the basis of their academic background and grade point average. The method of their selection was akin to the clinical approach discussed, and GPA was used as a major criterion. Applicants who failed to make the minimum GPA requirement of 2.50 on a 4.00 scale were rejected. However, exceptions were made and these were determined through an interview. The disproportion in sex ratio is characteristic of the program and does not reflect sampling bias in this semester.

The program is twelve months (three semesters) in duration. During the three semesters, all students must complete two teaching practica of six and twelve weeks, respectively. The initial practicum of six weeks (Education 401) occurs during the first semester, and it is complemented by six weeks of instruction in education theory and practice (Education 402). The program operates on a differentiated staffing model, and during the initial practicum student-teachers are supervised and evaluated by their school associates (a more detailed description of the Professional Development Program at Simon Fraser University, 1981, is included in Appendix A).

Predictor Variables

The 11 predictor variables used in this study were: sex, age, grade level desired (i.e. an indication by applicant stating preference in grade level), highest degree earned, number of undergraduate credit hours, grade point average (GPA), major work classification of past employment, experience with children and adults, and a score on the Test of Standard Written English (TSWE). Except for the TSWE, all the predictor information was obtained from student's application forms (see Appendix B).

These predictors were selected for several reasons. First, the biographical data are most accessible, and so it seems reasonable that a search for valid predictors should begin with information which is normally available in admissions files. Second, the use of such data is economical. Finally, the TSWE was included as an additional predictor because of the relative importance of language competence to classroom communication. The selection of these predictors adheres to the principle that the search for predictors should begin with what is already available. If these prove valid, then there is no need to enlarge the pool of predictors since it may not yield incremental utility. A description of each of the predictor variables in the study follows:

Sex. Each student's sex was noted from the application form. Females were coded 0 and males coded 1.

Age. Each student's age in years was calculated from the first day of the semester, January 12, 1981.

Grade level desired. The grade level desired was indicated by each student on the application form as follows: primary (K - grade 3), intermediate (grade 4 - 7), and secondary (grade 8 - 12). They were coded 1, 2, and 3, respectively.

Highest degree earned. This included a bachelor's degree, any post-bachelor's work, a master's or doctorate degree in any field prior to admission into the program. These were coded 1, 2, 3, and 4, respectively. Persons without a degree were assigned a code of 0, which was assigned to those students admitted after a minimum of two years of undergraduate work.

Number of post-secondary credits. This included the number of credit hours completed prior to admission and was computed from transcripts in the student's file. Only credits transferable to Simon Fraser University (SFU) were included in the computation. In the case of students who have transferred from universities that operate on a yearly rather than semester system, an equivalent number of credits were computed (e.g., one academic year was equated with 30 credit hours). At Simon Fraser University all bachelor degree programs require a minimum of 120 credit hours for graduation.

Grade point average. These were computed from students' transcripts. In the case of students from other institutions where grades are used, all grades were converted to SFU equivalents on a four-point scale (A = 4, B = 3, C = 2, D = 1, and F = 0). Conversion tables are included in Appendix C.

Major work classification. This was a classification of the longest job held by the student. The classification is based on the Canadian Classification and Dictionary of Occupations Guide (1980).

A list of all major work classifications is also provided in a section of Appendix D. For example, an applicant who has held two previous jobs, one as a recreation leader/supervisor for a year and another as a clerk for six months, would have had the job held longest (i.e. recreation leader/supervisor) coded.

Level of responsibility. On the application form, students were asked to describe their previous work experiences. Levels of responsibility for this experience was coded on a three point scale: low levels of responsibility are assigned a code of 1, medium levels of responsibility a 2, and high levels of responsibility received a code of 3. For example, a volunteer aide in a school received a code of 1, a paid teacher's aide is considered to have a moderate level of responsibility and therefore received a code of 2, while a substitute teacher received a code of 3. A chart outlining these levels of responsiblity is included as Appendix E.

Length of experience. For students who had been employed in either a full or part-time position, the length of their work experience was computed in months. Each month consisting of 148 hours of work. For example, suppose an applicant indicated having had three previous jobs for periods of three, five, and eighteen months. If the first job was full-time, she would have 444 hours (148X2). For her second job, if it was part-time consisting of 20 hours a week, she would be credited with 400 hours (5 months x 4 = 20 weeks; 20 weeks x 20 hours @ week = 400 hours). Thus, the total number of hours accumulated for the first two jobs will total 844 hours or approximately 5.7 months. Add this to the final full-time job of 18 months, the applicant would have approximately 24 months of experience.

Experience with children or adults. This predictor reflected previous work experience with children or adults. It was coded on a binary system: yes (1) or no (0). This measure was added because many students had various work experiences related to teaching. In coding the major work classification variable, only the occupation which the student held longest was recorded. Thus, a student who worked for two years as a construction worker and six months as a camp counselor would have the former job coded for major work classification, but would still be coded 'yes' for previous experience with children. This procedure provided a separate predictor variable regarding the student's prior work experience with children or adults that was independent of major work classification, level of responsibility, and length of experience.

Test of Standard Written English (TSWE). This test was used to measure students' English proficiency. The TSWE (Education Testing Service, 1974) contains 50 multiple-choice questions and takes 30 minutes to administer. The purpose of the test is to measure each student's ability to recognize standard written English, the kind of English found in most college texts and courses. This indirect measure of writing ability has correlated highly with direct measures (such as twenty-minute essays) and has been found to be a valid and reliable instrument for assessing a person's knowledge of written English (Breland and Brancher, 1977). A number of scores can be obtained from the TSWE. The test manual and self-scoring sheet suggest using a scale with a range from 20 to 60, that can be converted to a percentile score. To derive the raw score, the publisher recommends using the formula:

Derived Raw Score = number of items correct - (number of items wrong)/4. This formula contains a correction for guessing. The derived raw score was then coded for data analyses.

To clarify, the practice of making a correction for guessing is prevalent among test publishers (e.g., the College Entrance Examination Board). It rests on the logic that on all items in a standardized test, the test-taker will have knowledge to answer some items correctly and others he or she may not. In the latter case, the individual has a chance of picking the right response by guessing. The probability that the guess will be correct is estimated as a fraction of the number of incorrect options. That amount is removed to obtain the derived raw score. With the TSWE, each item has four choice responses and therefore the number of wrong items is divided by four.

Although the correction formula appears reasonable in eliminating gains from guessing, many psychometricians would dispute such a practice on the grounds that most individuals have some notion of the right answer to the items guessed on. Thus, guessing is more than pure chance as reflected on the correction equation. Anyone who guesses despite the correction is more likely to gain from it.

Cronbach (1970) suggests that systematic advantages can be eliminated if all test-takers are directed to guess when unsure of the right response. Alternatively, strict instructions to refrain from guessing before the test commences have also been found useful. It should be noted that the correction procedure employed to score the TSWE was in accordance with the publisher's instructions.

Criterion Measures

An evaluation form (see Appendix F) was developed and used to obtain a criterion measure of the students' performance in the initial six week practicum (i.e. Education 401). The student evaluation form normally used to assess students for this course is anecdotal in nature and not readily quantifiable. As such, another form was designed to investigate raters' (school associate and faculty associate) evaluations of their student-teachers' level of preparation in terms of both theory (ideas and principles) and practice (classroom performance). School associates are classroom teachers who serve as sponsors for student teachers. Faculty associates are also teachers, but they have been seconded from school districts to work as full-time supervisors of student teachers.

The 36 items on the evaluation instrument consisted of statements about a teacher's responsibilities. Each one described some aspect of a teacher's role. Both faculty and school associates were asked to rate each item in three ways: the level of importance of the item in relation to their student's overall responsibilities; their student's level of preparation in terms of ideas and principles (theory); and their student's level of preparation in terms of competence in the classroom (practice). The level of importance scale was related to general program planning rather than to student performance. Thus it is not included in any subsequent analyses.

On all 36 items, a 5 point rating scale was used, where 5 = very high level, 4 = high level, 3 = moderate, 2 = low level, and 1 = very low level.

The items for the questionnaire were generated from three sources: the goals and objectives of the PDP (as expressed on the program evaluation form, the research literature on teacher effectiveness (e.g., Rosenshine and Furst, 1971), and the criteria commonly emphasized in the supervision and evaluation of PDP students (as found on the PDP evaluation instrument of student-teacher performance for Education 401).

The first draft of the questionnaire contained 40 items. This was later revised, with many items rephrased, following a trial run with six faculty associates. Revisions were also made on the basis of feedback from faculty members and program personnel.

Procedures

In the first week of the Spring 1981 semester, the TSWE was administered to all students admitted to the program. The administration conformed to the standardized procedures outlined in the TSWE manual and was completed in one group administration for all students.

Twelve weeks later, at the end of the term, it was arranged that the criterion measure be completed by both the school and faculty associates. The evaluation forms for school associates were delivered to their respective schools by a courier. Enclosed instructions requested that they were to be collected by the courier. They were given ten days to complete their evaluations.

Faculty associates' forms were placed in their personal mail boxes on campus, and they were given two weeks to return them.

CHAPTER IV

RESULTS

In this section, the results of the study are reported. First, descriptive statistics for the sample are reported, followed by presentation of intercorrelations among the predictor and criterion variables included in the study.

Usable data were returned for 79 of 84 students who were in the initial sample. Five students withdrew from the program voluntarily. Of the five who quit, four were females and one male. As a consequence, their criterion data were not available. However, there were additional missing data on some variables for the remaining sample; intercorrelations and regression analyses were calculated on the largest data set possible for a particular analysis. Sample sizes are reported in all relevant tables. Two people did not write the TSWE. The missing data for these two cases were replaced by the mean score based on all other students who wrote the test. Three students did not state a preference for grade level desired and these missing data were not replaced.

Some criterion data were also missing. For eight students, a faculty associate omitted to rate them on their levels of preparation and practice (i.e. FA Principles and FA Practice). Other missing data were also found on evaluations by school associates. In dealing with the missing data, a guideline was used. Missing data on one or several items were replaced with item means. However, when items on the entire scale of 36 items were missing mean values were not derived as replacement.

Descriptive Statistics

Sex. There were 61 females and 18 males in the final sample.

Age. The average age of students was 25 years (see Table 2). The age distribution was slightly skewed. The oldest student was 49 years old, but 90% of the sample was between 20 - 30 years of age.

Grade level desired. Twenty-six students (32.9%) expressed a desire to teach in the primary grades, 24 students (30.4%) in the intermediate grades, and 26 (32.9%) in the secondary grades. Three students omitted to state a preference.

Highest degree earned. Fifty-two students (65.8%) did not have a university degree, 23 (29.1%) had a bachelor's degree, and 4 students (5.1%) had some post-bachelor's education. No one had a post graduate degree.

Number of post-secondary credits. As seen in Table 2, students had completed an average of 94 credit hours, which is equivalent to about three years of full-time undergraduate study. As in the case of age, the distribution is somewhat skewed with the maximum number of post-secondary units completed being 150.

Grade point average. The average on this variable was 3.05 (see Table 2). Ninety per cent of the sample had a grade point average above 2.50, and 57% above 3.00. For the academic year 1980/81, the average GPA for students enrolled in lower-level coursework (i.e. first two years of college work) in the Faculty of Education, SFU, was 2.82 (SFU Factbook, December 1981). Thus as a group, the sample in the study was fairly successful, at least as indicated by previous college and university grades.

Table 2

Descriptive Statistics for Age, Number of Post-secondary Credits, Grade Point Average

Length of Experience, and TSWE Scores

Variable	n	Mean	S.D.	Minimum	Median	Maximum
Age in years	79	25.04	5.11	20.00	23.46	46.00
Post-secondary Credits	79	93.95	29.73	54.00	104.67	150.00
Grade Point Average	79	3.05	0.38	2.00	3.10	3.69
Length of Experience (in months)	79	33.90	48.45	1.00	21.00	301.00
TSWE Score (max = 50)	77	35.49	8.11	14.50	36.25	48.75

Major work classification.   Table 3 shows the six categories

used for this variable and the number of students in each.   By far

the greatest percentage of students (68.3%) had experience in

occupations related to teaching (categories 1 and 2).

Level of responsibility.   According to the system used to code

this variable (Appendix B), 6 students (7.6%) had occupations with

low responsibility, 44 (55.7%) had jobs with medium responsibility,

and 27 had highly responsible jobs.   Data were not available for two

students (2.5%).

Level of experience.   The average working experience of

students was 33.9 months (see Table 2).   However, there were two

students with considerable work experience (243 and 301 months

respectively), thus increasing the mean in relation to the median.

The majority of students had moderate amounts of work experience,

with 29 (39.7%) having a year or less and 71 (89.9%) having five

years or less.

Experience with children or adults.   Sixty-one students

(77.28%) had experience of this nature and 17 (21.5%) had not.   The

data for one student (1.3%) could not be coded.

Test of Standard Written English (TSWE).   The mean score on

this test was 35.5 (see Table 2).   The scores on this test were

somewhat skewed negatively; five cases were beyond two standard

deviations above the mean.   The scores ranged from a percentile rank

of 13 up to 97.   In comparison to the standardization sample for

this test, these students scored much higher, the median percentile

rank for this group being 82.

Table 3

Major Work Classifications

	Category	n	Percent
1.	Science engineering, religion and teaching	31	39.2
2.	Health, arts, sports and recreation	23	29.1
3.	Clerical	10	12.7
4.	Sales	6	7.6
5.	Service	4	5.1
6.	Farming	2	2.5
	No data available	3	3.8

Intercorrelations Among Predictor Variables

The intercorrelations among all the predictor variables are reported in Table 4. Also included are sample sizes for each correlation and the means and standard deviations for each variable. Two-tailed t-tests were employed to determine which of the correlations differed from zero at p .05 and p .01 alpha levels.

The correlations between age and highest degree earned (.23), level of responsibility (.30), and length of experience (.62) are expected since older students are likely to have completed more academic work, have more work experience, and shoulder more responsibility on the job.

The correlations between grade level desired and highest degree earned (.35), and number of credits (.59) reflects the Professional Development Program's policy that secondary teachers have a bachelor's degree or be able to complete it during their year in PDP.

The reliable relationship between highest degree earned and number of post-secondary credits (.68) is only logical. The same is true for the TSWE and grade point average (.39).

The remaining correlations that are statistically reliable can be understood from the view that if one has a higher educational level, he or she is likely to have more responsibility (.36) and those with more credits are likely to be older and have more experience (.23).

Table 4

Intercorrelations among Predictor Variables

Variable	N	S.D.	1	2	3	4	5	6	7	8	9	10
							Intercorrelations[a]					
1. Sex	0.23	0.42		79	76	79	79	79	79	79	78	79
2. Age	25.04	5.11	.08		76	79	79	79	79	79	78	79
3. Grade Level Desired	2.00	0.83	.20	.13		76	76	76	76	76	75	76
4. Highest Degree	0.39	0.59	.05	.23*	.35*		79	79	79	79	78	79
5. Number of Credits	93.95	29.73	.19	.19	.59**	.68**		79	79	79	78	79
6. Grade Point Average	3.05	0.38	-.18	-.05	-.07	-.13	-.17		79	79	78	79
7. Experience Responsibility	2.23	0.69	.05	.30**	.06	.36**	.17	.08		79	78	79
8. Experience Length	33.90	48.45	.07	.62**	.18	.06	.23*	-.11	-.16		78	79
9. Experience Children/Adult	0.78	0.42	-.17	-.02	-.17	-.02	-.10	.12	-.02	.06		78
10. TSWE	35.49	8.11	-.17	.13	.00	.08	-.02	.39**	.03	.11	.28*	

[a]Sample sizes for each correlation are above the diagonal, correlation are below.

* p< .05, two tailed test

** p< .01, two tailed test

55

Intercorrelations Among Criterion Variables

Table 5 reports the intercorrelations, means, and standard deviations for four criterion variables. There were very high intercorrelations among the principles and practice variables within raters, particularly for school associates (p< .01).

The school and faculty associates had a clearer agreement on the practice variable (r = .60) than on the principles variable (r = .39). There are four intercorrelations between the practice variables and the principles variations. The first intercorrelation is between the faculty associate practice variable and principles variable (r = .76). The next is faculty associate principles variable with the school associate practice variable (r = .48). The third is between faculty associate practice variable and school associate principles variable (r = .59). The final intercorrelation is between school associate practice and principles variables (r = .87).

There are four intercorrelations between practice and principles variables, two between and two within faculty and school associates. These correlations are called discriminant validity coefficients. If the two groups of raters were able to discriminate principles from practice, then these should be lower than the convergent validity coefficients. The latter refer to two correlations. The first between faculty associate practice and school associate practice. The second between the faculty associate principles and school associate principles. The results indicate that the convergent validity coefficient for practice was higher than

Table 5

Intercorrelations among the Criterion Variables

	Variable	M	S.D.	1	2	3	4
1.	FA Principles	3.62	.52	(.96)[b]	71	66	66
2.	FA Practice	3.26	.53	.76	(.95)[b]	70	70
3.	SA Principles	3.53	.48	.39	.59	(.96)[b]	70
4.	SA Practice	3.32	.52	.48	.60	.87	(.94)[b]

[a]Sample sizes for each correlation are above the diagonal, correlations are below.

All correlations are statistically reliable at p .01, two tailed test.

[b]Alpha coefficients are in the diagonal.

the two discriminant validity coefficients. According to Allen and Yen (1979), when this happens, method bias is present. Ideally, the validities of within-trait (i.e. practice and practice variables) should be higher than across-trait variables (practice and principles). However, this is not true of the convergent validity coefficient for principles. The results indicate that the raters were more consistent when rating the practice variable, but tended to confuse preparation with practice ratings.

Relationships among Predictor and Criterion Variables

The correlations among the predictor and criterion variables are shown in Table 6. As can be observed, only sex was reliably correlated with each of the two school associate ratings. Age, grade point average, and length of work experience were reliably related to the faculty associate principles variable. Sex, age, grade level desired, grade point average, and length of work experience all had statistically reliable correlations with faculty associate ratings of practice.

Table 7 shows results of four stepwise multiple regression analyses using the ten variables listed in Table 6 as predictors of the four respective criterion variables as listed in Table 5. Major work classification was not included in this analysis because it was a nominal variable. That is, there is no underlying dimension to the categories of work that would allow one to designate a "high" or a "low" end of the scale. The data for this variable were analyzed separately and are discussed later. Only those predictors that had a statistically significant regression weight of $p < .05$ are included in Table 7.

Table 6

Intercorrelations among Predictor and Criterion Variables

Predictor	FA Principles	FA Practice	SA Principles	SA Practice
1. Sex	-.14	-.34**	-.43**	-.30**
2. Age	-.36**	-.33**	.00	-.09
3. Grade Level Desired	-.17	-.26*	.02	.09
4. Highest Degree	-.20	-.08	.10	.03
5. Number of Credits	-.19	-.15	-.02	-.12
6. Grade Point Average	.27*	.25*	.11	.17
7. Experience: Responsibility	-.03	-.24*	-.06	-.05
8. Experience: Length	-.27*	-.24*	-.02	-.06
9. Experience: Children/ Adults	.05	.10	-.04	-.08
10. TSWE	.00	.07	.14	.13

* $p < .05$, two tailed test

** $p < .01$, two tailed test

Table 7

Regression Results

Criterion Variable	Predictor	B	β	F	R	Increase in R^2	Total R^2
FA Principles (n=68)	Age	−.03	−.34	9.60**	.359	.129	
	Grade Point Average	.33	.25	4.88**	.436	.061	
(Constant = 3.47)							.190
FA Practice (n=75)	Sex	−.35	−.29	6.95**	.336	.113	
	Age	−.03	−.30	8.10**	.452	.091	
	Grade Point Average	.26	.18	3.04*	.487	.033	
(Constant = 3.33)							.237
SA Principles (n=67)	Sex	−.48	−.43	14.42**	.426	.182	
(Constant = 3.64)							.182
SA Practice (n=67)	Sex	−.37	−.30	6.25*	.296	.088	
(Constant = 3.41)							.088

* $p < .05$

** $p < .01$

Note: B is the raw regression coefficient; β is the standardized regression coefficient; F is the statistical test for the regression coefficient; R is the multiple correlation between the predictor and the criterion; Increase in R^2 is the percentage of variance shared between individual predictors and the criterion; Total R^2 is the percentage of variance in the criterion associated with all predictors in the equation.

The results of these regression analyses are not always very
encouraging with respect to using this set of predictor variables in
the screening process for the SFU Professional Development Program.
In only two of the four equations, only one predictor (grade point
average) provides a usable variable for screening purposes. On the
faculty associate principles criterion, age (R^2 = .129) and GPA
(R^2 = .061) account for 19% of the total variance. For the
faculty associate practice variable, GPA only contributes 3.3% to
the total variance (Total R^2 = .237).

Four one-way analyses of variance were used to investigate the
association between major work classification and the four criterion
variables. In each case, major work classification was the
independent variable with six levels (corresponding to the
categories listed in Table 4). The four criterion variables served
as dependent variables. In each analysis, the F ratio was less than
one, thus indicating that there were no reliable relationships
between type of prior work experience, as measured by major work
experience, and success in the first semester of the teacher
education program, as measured by school and faculty associate
ratings.

Chapter V

Discussion

This section discusses the results of the study in relation to other findings in the literature. It highlights some of the conceptual and methodological difficulties encountered in the study and makes recommendations for future research.

Summary and Discussion of Major Findings

Of the eleven predictor variables considered in this study, only three -- sex, age, and grade point average -- were reliably related to any of the four criterion variables. Of the three, only grade point average could be used in the future to screen applicants. To employ age or sex as predictors may lead to many legal disputes over discrimination, and many institutions may not be prepared to deal with the subsequent courtroom battles which may be long drawn and expensive.

This leaves grade point average as the only usable variable for screening. However, the results indicate that it only accounts for 3 - 6 percent of the variance on faculty ratings. Even this figure tends to be exaggerated due to problems of shrinkage associated with multiple regression procedures. To estimate the precise extent of shrinkage will necessitate a cross validation study to be performed. The finding that a modest, but reliable, relationship exists between GPA and teaching success is in accord with the results from those in the literature (e.g., Cornett, 1969; James and Dumas, 1976; Twa and Greene, 1980).

Although only three of the predictors have been shown to be reliably related to some of the four measures of teaching success, it would be useful to further analyze the intercorrelations between predictors. Some of the statistically reliable correlations in Table 4 simply reflect the fact that these indices measure logically related variables (e.g., highest degree earned and number of post-secondary credit hours).

The absence of a statistically reliable relationship between the TSWE and teaching success supports the findings by Cortis (1968). Several reasons can be hypothesized. It should be noted that the sample employed in this study had already been screened. This may limit the range of variation among students. Another consideration needs to be taken into account. The measures of teacher success (criterion variables) employed in this study were more performance and less knowledge oriented. Since the TSWE measured written English which is a more knowledge oriented domain not measured in the rating scales, it may account for the absence of a statistically reliable relationship.

The results in Table 4 indicated a reliable relationship between the TSWE and GPA (r=.39). This means that a portion of what the TSWE measures is also measured by GPA. This finding supports the earlier comment that the criterion measures failed to tap more academic domains, but were more concerned with classroom performance. Perhaps, correlations would have been higher if the criterion variables measured student teacher written communication also (i.e., lesson plans, etc.).

It was mentioned earlier that students in the sample had already been screened prior to admission. This may account for the reliable correlations between grade level desired with highest degree earned and number of undergraduate credits. It accounts for the program policy that secondary school student teachers should have their degree before entering PDP or complete it in their year in PDP.

The lack of a reliable relationship between experience with children/adults and teaching success in this study is similar to results in Ducharme's study (1970). One tends to expect some reliable relationship between these two variables. Perhaps, the lack of such calls for a finer distinction between the mere presence or absence of such experience and the quality of that experience.

The remaining correlations that are statistically reliable reflect the trend that older students tend to have had more life experiences (e.g., relationships between age and job responsibility, age and length of work experience).

The failure to find reliable relationships between highest degree earned, number of credits, and teaching success as measured by the four ratings is further indication that it may not be the number of credits earned but the quality of work that counts. This may explain why previous studies in the literature have not used these two predictors in research.

Conceptual and Methodological Problems

Having examined and compared the results of this study with others in the literature, the ensuing discussion highlights some of the conceptual and methodological difficulties encountered in the

study. This discussion is organized as follows: sample; criterion measures and their correlations; and procedures.

Sample. The study reported here involved a group of 84 students already admitted to Simon Fraser University's Professional Development Program (PDP) from 237 applicants. Thus, before the prediction equations were calculated, screening procedures had already been applied to select these students into the program. In general, academic background and grade point average were the major criteria used in the selection. Letters of reference and evidence of previous work experience was also considered.

Further screening may have occurred through the process of self selection when five student withdrew voluntarily from the program. These sampling problems may be one reason why attempts to identify useful predictors in this study have been frustrated. From the review of literature on linear approaches in admissions decision-making, Cascio (1978) noted that in order to identify valid predictors, all applicants ideally should be admitted. Such a procedure would ensure a heterogenous sample. The fact that the study was unable to identify more reliable predictors of teaching success is undoubtedly related to the restriction in range of the sample group. In relating this observation to other research findings, it does highlight an important methodological flaw. Like the present study, most other studies reviewed only use subjects who have already been admitted to teacher programs (e.g., Belcastro, 1975; Elliott, 1971) and, in some cases, subjects who have already graduated from teacher education programs (e.g., Toukmanian, 1978). Since such pre-selection on previous criteria restricts the sample range, it violates an important principle in selection research. This practice may have influenced the outcome of previous research.

It may explain some of the dismal findings in the literature. Yet to admit all applicants, which is ideal, would pose serious problems for administrators. It is obvious that not all can be admitted because it would strain the resource available in teacher training programs. Although solutions to this problem are not at hand, future researchers would do well to address it.

Criterion measures and their intercorrelations. The results indicate that raters were more consistent when rating the practice variable, but tended to confuse principles with practice ratings. Such a confusion may stem from three sources. First, the two variables may not measure different domains. The high correlations across-variables tend to support this view. Because of this, discrimination between variables becomes difficult and suffers from method bias (Allen and Yen, 1979). If the principle and practice constructs are not distinct, raters would be confused. This appears to have been the case.

Secondly, the raters' confusion may also have stemmed from their unfamiliarity with the instrument. To overcome such problems, Burnett (1975) recommends that raters receive some prior training to eliminate some of the confusion and make raters more familiar with the instrument. For this study, however, it was not possible to assemble together all personnel involved for training sessions, particularly since school associates were scattered in schools all over Vancouver.

The third source of confusion may be motivational in nature. Not all personnel involved in the ratings were convinced of the value of the study. As such, not all were co-operative. For

example, one school associate absolutely refused to complete the rating scale. There were others who did so reluctantly. The literature on testing and measurement clearly states that the motivational aspect is an important one in any measurement (Cronbach, 1970). This motivational problem was reflected in the loss of some criterion data. Feedback from raters indicated that they were not comfortable with the use of rating scales since then current PDP evaluations consisted of anecdotal comments on teaching practice. Furthermore, some school associates refused to complete the rating scales as a matter of principle since they did not believe in student-teacher evaluation or in the efficacy of rating scales. Some reasons offered were that these scales failed to respect the student as an individual, which is basically a question of values. There were others who were uncooperative in reaction to dissatisfaction with the program. All of these reasons may help explain the delayed returns of evaluation forms and the loss of some data. It may also raise doubts over their validity. Clearly, this is a problem of implementation, one that plagues all evaluation research. In this study, it may have helped had all personnel been involved in the development of the criterion. Perhaps then, there would have been less resistance.

Ideally, a job or task analysis involving all personnel responsible for the administration and execution of the PDP, as suggested in the literature review by Strauss (1980), would be useful. It would help establish some consensus about teaching tasks, program goals, and corresponding criterion measures. In other words, if there is agreement over what teachers should do, it will make the task of identifying good teaching more feasible. Unfortunately, such consensus is not forthcoming.

Two further limitations of the dependent variables must be acknowledged in this discussion. First, school and faculty associates were asked to rate students' teaching performance only after the first semester (twelve weeks) after their admission to their program. This brief period does not allow school and faculty associates much opportunity to be better acquainted with the student or his/her performance. Second, additional and more long-range information about students would have been valuable, such as grades in theory and practice courses taken during their second semester in the program, or ratings by principals or supervisors during the first year of teaching.

Procedures. In retrospect, several procedures could have been improved in the present study. First, coding was performed by a single research assistant. There was no reliability check for coding errors. Due to the manpower problems, it was not possible to recheck all coding. Ideally, it would have been proper to do. However, only a small sample (n=3+) was rechecked for reliability in coding and no errors were found.

Second, although the evaluation forms were distributed to all raters, not all were returned within the stipulated two weeks. This time period was enforced to discourage raters from discussing the ratings among themselves which would contaminate the data. Because of the delay in returns, it is likely that some may have discussed their assessment with colleagues. Consequently, some of the criterion data may have been contaminated. Ideally, all ratings should be done independently to ensure that one rater's assessment does not influence another's. In the present study, it is possible that the data are contaminated, although its extent cannot be ascertained.

Conclusion

This study sought to determine if some biographical data, found mostly on application forms can be used reliably to predict teaching success. The results of the study have not been promising. Only three predictors -- GPA, age, and sex -- have been found to be reliably correlated with some of the criterion measures in this sample. Furthermore, the only variable that carries policy implications, namely GPA, accounts for 6% of the variance.

Despite the generally unpromising results, the search for valid, reliable predictors for screening applicants for teacher education programs must continue. This is an important task for researchers, as one would not want to commit the education of our young to incompetent teachers who have not been properly selected by teacher education institutions.

Professional Development Program

PROGRAM DESIGN:

The Professional Development (P.D.P.) at Simon Fraser University is a twelve month (three semester) teacher education program. Students obtain practical experience for six months in school classrooms and spend six months studying through university courses and seminars. Upon successful completion of the program, students are recommended to the Ministry of Education for a British Columbia Teaching Certificate.

During the three semesters, students complete the following four-stage program:

Education 401: Introduction to Classroom Teaching

A half-semester of classroom experience during which a team of student teachers works with a School Associate and a Faculty Associate.* Student teachers observe, teach and participate in school routines and programs.

Education 402: Studies of Educational Theory and Practice

A half-semester of campus study during which a student teacher examines and integrates knowledge gained from the classroom experience. This phase of the first semester includes seminars, curriculum workshops and study groups.

Education 405: Teaching Semester

A semester of classroom experience during which a student teacher is assigned to a classroom that reflects his/her choice of grade level and special interest areas. The School Associate and Faculty Associate support and supervise the student through this extended classroom experience.*

Education 404: Semester on Campus

A semester of academic courses during which students select courses offered by the Faculty of Education and other departments of the university to build on strengths and eliminate deficiencies in their preparation for teaching. Course programming in this semester is designed to ensure that professional, academic and certification requirements are satisfied.

The structure of many teacher education programs frequently separates rather than blends the theoretical and practical elements of teaching. The Faculty of Education has addressed this problem by operating a differentiated staffing model*, by engaging the students in a practical classroom experience at the beginning of their program (Education 401) and by including an extended classroom experience (Education 405).

Beginning the program with a period of classroom experience (Education 401) has advantages:
1. Students experience the role of teacher immediately and, perhaps, decide not to teach before investing more time and money.
2. The likelihood is increased that theoretical discussions will be related to classroom practice.

The extended classroom experience (Education 405) has advantages:
1. Many things that a student teacher needs to learn are best learned in schools.
2. Suggestions for teaching can be tested and evaluated immediately.
3. Faculty members can share responsibility for instruction with classroom teachers (School Associates) and Faculty Associates.
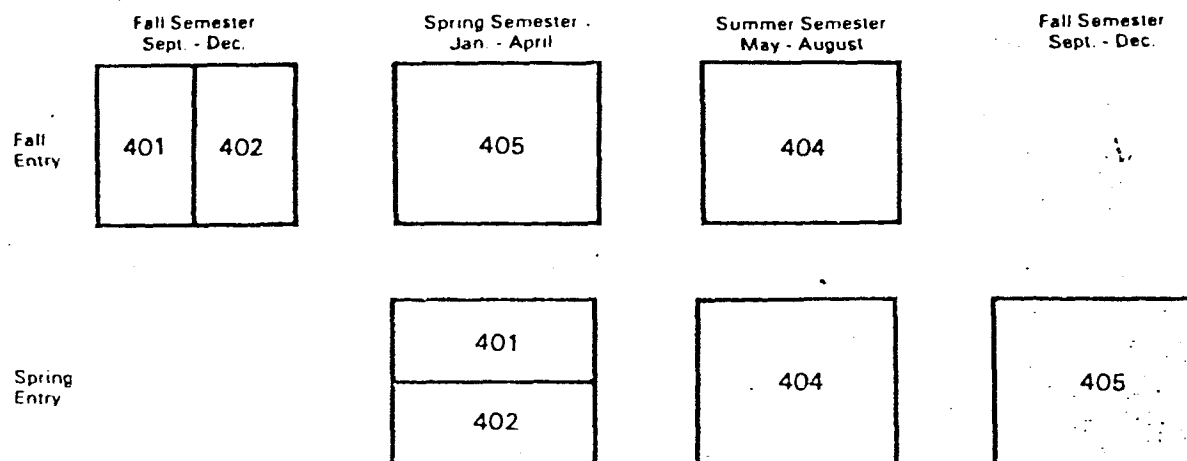
*The Faculty of Education operates on a differentiated staffing model. In addition to faculty members (professors), experienced teachers (Faculty Associates and School Associates) assume various roles in the program. Faculty Associates are classroom teachers who are seconded to Simon Fraser University for a nine month appointment. School Associates are the sponsor teachers in whose classrooms student-teachers undertake Education 401 and 405.

CAMPUS AND INTERIOR PROGRAMS:

There are two main options open to students, the Campus Program and the Interior Programs.
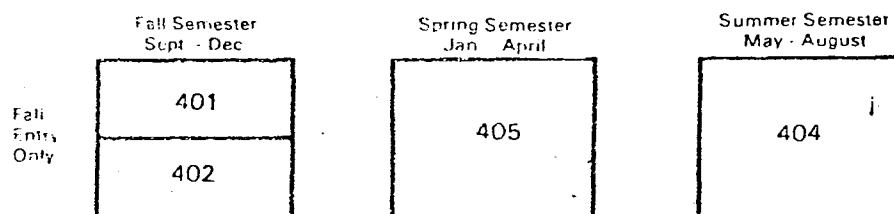
1. Campus Program

The campus-based program has two intakes of students to P.D.P. each year; a September (Fall) and January (Spring) intake. The sequence of professional studies and activities is arranged as follows:

	Fall Semester Sept. - Dec.	Spring Semester Jan. - April	Summer Semester May - August	Fall Semester Sept. - Dec.
Fall Entry	401 · 402	405	404	
Spring Entry		401 / 402	404	405

Alternative programs may be available for some students applying for the campus-based program. These alternatives generally are offered in the Spring semester and they integrate Education 401 and 402 (as is the case with the interior programs - see following section). Information about the current Lower Mainland Alternative Programs is available separately.

2. Interior Programs

Simon Fraser University has developed a number of off-campus programs to serve communities in the interior of the province generally in districts in which a regional college is located. Students spend the first two semesters (8 months) off campus at one of the small interior sites and then return for the third semester on campus (Education 404). The program offered at interior sites is academically and professionally equivalent to the campus program while it differs (a) in the sequencing of Education 401 and 402, (b) in the close liaison with the community; and (c) in that there is normally only a Fall intake of students.

	Fall Semester Sept - Dec	Spring Semester Jan April	Summer Semester May - August
Fall Entry Only	401 / 402	405	404

Information about the current P.D.P. interior sites is available separately.

ACADEMIC PREPARATION PRIOR TO APPLYING TO P.D.P.:

Elementary Grades

Students who wish to teach pupils in elementary grades are eligible for admission to P.D.P. after they have attained 60 semester hours (two years) of academic credit. Appropriate academic preparation includes subject areas such as English (Composition and Reading), Social Studies (Geography and History), Mathematics and General Science. Since elementary teachers in B.C. are expected to perform as generalists, a broad academic preparation is advisable.

Secondary Grades

Students who wish to teach pupils in secondary grades should apply on the basis of a completed appropriate Bachelor's degree or be in an academic position that will ensure completion of a degree program within the P.D.P. itself (i.e. during Education 404). It would be advisable to have fulfilled the requirements of either a teachable 'major subject' (a subject taught in the current secondary school curriculum) or two teachable minors.

APPLICATION TO THE PROFESSIONAL DEVELOPMENT PROGRAM:

1. Application to the P.D.P. must be made well in advance of the date on which the student plans to commence the program. The responsibility for submitting required transcripts and references rests with the applicant. An application is not considered until it is supported by all necessary documents.

2. All students who wish to apply to P.D.P. must be admissible to Simon Fraser University before their application for admission to P.D.P. will be considered. Students enrolled at S.F.U. make separate application to the P.D.P. A declaration of a Bachelor of Education degree as a student's goal will not automatically ensure acceptance to P.D.P.

3. Because the number of applicants normally exceeds the number of spaces in the program, students are selected by the Admissions Committee of the Faculty of Education.

PAGE 1 OF APPLICATION FOR ADMISSION

S.F.U. Student No. (if known) _____	Semester You Are Applying for:	Fall	Spring	19___

Surname	Given Names	Title M

Former Name:

Mailing Address:

Number-Street	City-Province	Postal Code

Telephone: Home _____	Business_____ or Message_____	Report address changes to P D P Faculty of Education S F U 291-3620 AND Registrar s Office (in writing or phone 291-3224)

Check Grade Level You Wish to Teach:

PRIMARY 1-3 ☐   INTERMEDIATE 4-7 ☐   SECONDARY 8-10 ☐

If Grades 8-10 Indicate Teachable Subject: _____

Special Teaching Interests: _____ (e.g., Art. Music. P.E.)

PLEASE CHECK BOX A. B. OR C BELOW TO INDICATE YOUR **FIRST CHOICE** OF PROGRAM LOCATION FOR EDUCATION 401 & 402 PLEASE INDICATE YOUR **SECOND CHOICE** UNDER D BELOW.

A   Main Campus Program ☐

If you checked main campus. indicate 1st, 2nd and 3rd selections of school placement during Education 401.

Abbotsford ☐	Burnaby ☐	Coquitlam ☐	Delta ☐	Langley ☐	Vancouver ☐
West Van. ☐	Maple Ridge ☐	New West. ☐	North Van. ☐	Richmond ☐	Surrey

B. Lower Mainland Alternative Program ☐

Please specify centre _____

C. Interior B.C. Program ☐

Please specify site

1st Choice of site: _____   2nd Choice of site: _____

D. If we are unable to accommodate your first choice for Education 401/402, do you have a second choice?

Yes ☐   If yes. please specify choice: _____

No ☐

Comment on any other factors which would assist us to provide you with a satisfactory school placement.		Automobile available for daily travel Yes ☐ No ☐
Date of Birth: Mo. ☐ Day ☐ Yr. ☐	Primary Language? Other Languages spoken?	Arrival Date in Canada
Do you have any physical limitations? (Describe)	Are you in good health?	Are you willing to take a medical examination?

ACADEMIC WORK SINCE LEAVING HIGH SCHOOL (INCL. SFU) PLEASE OUTLINE BELOW:				
INSTITUTION	LOCATION	ENTERED	LEFT	LEVEL

PROVIDE DETAILS OF WORK EXPERIENCE BELOW.
(See note concerning Work Experience on instructions page).
Include part-time, full-time, paid or voluntary work in the following broad areas:

— Teaching (e.g., Substitute Teacher, Adult Educator, Teacher Aide)
— Human/Social Services (e.g., Social Worker, Counsellor, Nurse)
— Recreation (e.g., Program Director, Coach, Camp Counsellor)
— Administration/Management (e.g., Staff Training, Personnel)

Work experience **must be verified** by not more than three Reference Forms submitted by your referee(s).

SUMMARY OF WORK EXPERIENCE

Date of Service	Full or Part-time	No. of Months	No. of Hours/ Week	Position	Employer Organization
1.					

Brief job description (duties and responsibilities) _____

_____

_____

Date of Service	Full or Part-time	No. of Months	No. of Hours/ Week	Position	Employer Organization
2.					

Brief job description (duties and responsibilities) _____

_____

_____

Date of Service	Full or Part-time	No. of Months	No. of Hours/ Week	Position	Employer Organization
3.					

Brief job description (duties and responsibilities) _____

_____

_____

_____

_____

Attach extra sheets in the same format if necessary.

List any special skills (e.g., Music, Photography, Sports) and include copies of special certificates: _____

_____

_____

I hereby certify that all statements on this application are true and complete.

_____   _____
SIGNATURE   DATE

APPENDIX C-1

Concersion Table for Percentages to S.F.U. Grades

Percentage	S.F.U. G.P.A.
86-100%	4.0
83.75%	3.9
82.50%	3.8
81.25%	3.7
80.00%	3.6
78.75%	3.5
77.50%	3.4
76.25%	3.3
75.00%	3.2
73.75%	3.1
72.50%	3.0
71.25%	2.9
70.00%	2.8
68.75%	2.7
67.50%	2.6
66.25%	2.5
65.00%	2.4
63.75%	2.3
62.50%	2.2
61.25%	2.1
60.00%	2.0
55.00%	1.5
50.00%	1.0
less than 50% - F or	0.0

APPENDIX C-2

Conversion Table for Grades to SFU Percentages

Grade	SFU Percentage
A	86 – 100
B	73 – 85
C	60 – 72
D	50 – 59
F	49 and below

APPENDIX D

Major Work Classification Codes

		CCDO Code
1.	Science, engineering, religion and teaching	
	Occupations in natural sciences, engineering and mathematics	21
	Occupations in social science and related fields	23
	Occupations in religion	25
	Teaching and related occupations	27
2.	Health, arts, sports and recreation	
	Occupations in medicine and health	31
	Artistic, literacy, performing arts, and related occupations	33
	Occupations in sport and recreation	37
3.	Clerical	
	Clerical and related occupations	41
4.	Sales	
	Sales occupations	51
5.	Service	
	Service occupations	61
6.	Farming	
	Farming, horticulture, and animal-husbandry occupations	71

From:

Manpower and Immigration Canada: Canadian Classification and Dictionary of Occupations (Vol. 1). Ottawa: Information Canada, 1971.

APPENDIX E

Levels of Responsibility

CATEGORIES	LEVEL I Direct Responsibility	LEVEL II Assistant - High Responsibility	LEVEL III Assistant - Low Responsibility
1. TEACHING	- teacher of alternate or independent school with letter of permission - substitute teacher - certified daycare teacher	- teacher aide in a classroom or daycare center - teaching assistant - university level	- home daycare (other than babysitting) - learning assistant - library assistant
2. HUMAN & SOCIAL	- certified childcare worker, social worker, nurse, therapist, policeman - psychiatric program director - minister in charge of a congregation	- trained nursing aide; field or youth worker; parole officer	- volunteer work such as Crisis Center, Big Brothers, Junior League
3. RECREATION	- director of a camp parks board, community school - co-ordinator of arts	- camp consellor, coach, community-school worker, docent	- helper with coaching or any other level 2 work
4. MANAGEMENT & ADMINISTRATION	- direct management or administration of personnel	- work with personnel such as staff training and interviewing	- not applicable

SIMON FRASER UNIVERSITY

MEMORANDUM

To School Associates	From Stan Shapson
PDP Educ 401/402	Director, PDP
Subject Supplementary Student Evaluations	Date April 8th, 1981

I am enclosing copies of the supplementary Evaluation forms for your completion. You are asked to complete one for each student under your supervision during the weeks of April 10 - 24.

These evaluations are solely for our PDP Admissions Research and your responses will be kept confidential. Similar evaluations have also been completed by the students and faculty associates. If you find it helpful, you may choose to use the evaluation form as a focal point for feedback and discussion between respective students and faculty associates. However, all evaluations are only for our research and will not be placed on the student's permanent record.

Each evaluation will take approximately 30 minutes to complete. Please complete them independently before discussing it with the student and faculty associate.

Please be reminded that you need only complete the column LEVEL OF IMPORTANCE for all items for the first student you evaluate. It is assumed that your response to similar items on the next form will not differ for this column.

When you have completed all evaluations, place them in the enclosed envelope. The envelop will be picked up by Timothy Ang the following week after the 24th of April.

Thank you for your assistance.

FACULTY OF EDUCATION PROFESSIONAL DEVELOPMENT PROGRAM

401/402 SUPPLEMENTARY EVALUATION

Student's Name:
....

Your Name:
....

Throughout the past semester, the student has been involved in a variety of activities in Education 401/402 introducing him/her to the ideas, principles and practice of the teaching profession, in order to prepare him/her for an extended classroom teaching experience. This questionnaire asks you to rate his/her LEVEL OF PREPARATION for the 405 practicum.

Below you will find a list of statements about a teacher's responsibilities. Each statement describes some aspect of a teacher's role. Please rate each item in three ways:

LEVEL OF IMPORTANCE -- How important you think the area is in relation to a teacher's overall professional responsibilities.

LEVEL OF PREPARATION--IDEAS OR PRINCIPLES: How well the student understands the ideas or principles involved. By these we mean information about educational foundations, principles, theory, issues, techniques, or psychological theory.

LEVEL OF PREPARATION--PRACTICE: How competent the student is to practice in the classroom. Please base this on the student's present level of performance.

Please use the following scale for each area:

5 = very high level; 4 = high level; 3 = moderate level;
2 = low level; 1 = very low level.

Rate each statement three times, by placing a number rating in each of the three boxes to the right of the statement.

EXAMPLE

	LEVEL OF IMPORTANCE	LEVEL OF PREPARATION --IDEAS OR PRINCIPLES	LEVEL OF PREPARATION --PRACTICE
	an important area in teaching	understand the ideas or principles	competent in the classroom
Organize extra-curricular activities.	1	3	3

Explanation: This rater thought that extra-curricular activities have a low level of importance. He felt the student understood the ideas and principles in this area at a moderate level, and demonstrated a moderate level of competence in practice.

SCALE: 5 = very high; 4 = high; 3 = moderate; 2 = low; 1 = very low

Rate each statement three times, by placing a number in each of the three boxes to the right of the statement.	LEVEL OF IMPORTANCE	LEVEL OF PREPARATION -- IDEAS OR PRINCIPLES	LEVEL OF PREPARATION -- PRACTICE
1. Contribute to positive school climate.	☐	☐	☐
2. Use pupil ideas in classroom activities and discussions.	☐	☐	☐
3. Establish clear expectations for classroom behavior.	☐	☐	☐
4. Use a variety of resources and materials.	☐	☐	☐
5. Develop rapport with class and individual pupils.	☐	☐	☐
6. Help pupils become self-directed and independent.	☐	☐	☐
7. Understand legal and professional responsibilities.	☐	☐	☐
8. Use a variety of informal and formal methods to evaluate pupil progress.	☐	☐	☐
9. Demonstrate resourcefulness and flexibility in solving classroom problems.	☐	☐	☐
10. Use pupil feedback to modify instruction.	☐	☐	☐
11. Define instructional goals in terms of pupil learning outcomes.	☐	☐	☐

SCALE: 5 = very high; 4 = high; 3 = moderate; 2 = low; 1 = very low

Rate each statement three times, by placing a number in each of the three boxes to the right of the statement.	LEVEL OF IMPORTANCE	LEVEL OF PREPARATION -- IDEAS OR PRINCIPLES	LEVEL OF PREPARATION -- PRACTICE
12. Initiate activities to meet personal and professional goals.	☐	☐	☐
13. Select learning experiences appropriate to pupils' needs, abilities, and interest.	☐	☐	☐
14. Use a variety of diagnostic methods to assess needs.	☐	☐	☐
15. Use appropriate questioning techniques.	☐	☐	☐
16. Be familiar with curriculum goals and objectives.	☐	☐	☐
17. Develop strategies to deal with individual differences in in the classroom.	☐	☐	☐
18. Establish and maintain high levels of task orientation in the classroom.	☐	☐	☐
19. Evaluate classroom programs to plan for improvement.	☐	☐	☐
20. Develop and implement classroom activities which link or involve several curriculum areas.	☐	☐	☐
21. Maintain fairness in dealing with pupil behavior.	☐	☐	☐

SCALE: 5 = very high; 4. = high; 3 = moderate; 2 = low; 1 = very low

Rate each statement three times, by placing a number in each of the three boxes to the right of the statement.	LEVEL OF IMPORTANCE	LEVEL OF PREPARATION -- IDEAS OR PRINCIPLES	LEVEL OF PREPARATION -- PRACTICE
22. Design teaching units to achieve specific curriculum goals.	☐	☐	☐
23. Foster group cooperation and support in the classroom.	☐	☐	☐
24. Set goals for personal and professional growth.	☐	☐	☐
25. Identify individual differences in pupils' abilities, needs, and learning styles.	☐	☐	☐
26. Use constructive criticism from others to improve teaching performance.	☐	☐	☐
27. Assess pupil progress in terms of learning objectives and individual development.	☐	☐	☐
28. Assist pupils in developing positive self-concepts.	☐	☐	☐
29. Design lessons or activities to achieve specific learning objectives.	☐	☐	☐
30. Plan for pupil participation in learning experiences.	☐	☐	☐
31. Work cooperatively with others in school and community.	☐	☐	☐

SCALE: 5 = very high; 4 = high; 3 = moderate; 2 = low; 1 = very low

Rate each statement three times, by placing a number in each of the three boxes to the right of the statement.	LEVEL OF IMPORTANCE	LEVEL OF PREPARATION -- IDEAS OR PRINCIPLES	LEVEL OF PREPARATION -- PRACTICE
32. Monitors own teaching performance to plan for improvement.	☐	☐	☐
33. Recognize and adapt programs to differing community and cultural needs.	☐	☐	☐
34. Use a variety of instructional strategies appropriate to curriculum areas at a specific level of instruction.	☐	☐	☐
35. Plan activities and experiences logically and sequentially.	☐	☐	☐
36. Give pupils appropriate feedback on performance.	☐	☐	☐

REFERENCES

Allen, M. J., & Yen, W. M. Introduction to measurement theory.

    Monterey, Calif.: Brooks/Cole, 1979.

Arnold, D. S., Denemark, G., Nelly, E. R., Robinson, A., & Sagan,

    E.L. Quality control in teacher education: Some policy issues.

    Washington, D. C.: American Association of Colleges for Teacher

    Education, 1977.

Ayers, J. B., & Rohr, M. E. Relationship of selected variables to

    success in a teacher preparation program. Education and

    Psychological Measurement, 1974, 34, 933-937.

Bedford, C. Screening out weak prospective teachers. Teacher

    Education, 1972, 5, 62-73.

Bentley, R. R., & Starry, A. R. The Purdue Evaluation Scale Form A.

    Lafayette, Indiana: Purdue Research Foundation, Purdue

    University, 1970.

Berliner, D. C., & Tikunoff, W. J. California beginning teacher

    education study. Journal of Teacher Education, 1976, 27, 5-13.

Borg, N. R., & Gall, M. D. Educational research: An introduction

    (3rd Ed.). New York: Longman, 1979.

Borich, G. D. The appraisal of teaching: Concepts & process.

    Reading, Mass.: Addison-Wesley, 1977.

Borich, G. D., & Madden, S. K. Evaluating classroom instruction: A
    sourcebook of instruments. Reading, Mass.: Addison-Wesley,
    1977.

Breland, H. M. A study of college English placement and the Test of
    Standard Written English. College Entrance Examination Board,
    New York, RDR-76-77, No. 4, 1977.

Breland, H. M., & Brancher, J. L. Measuring writing ability. Paper
    presented at the American Educational Research Association,
    New York, April 1977.

Brophy, J. Stability of teacher effectiveness. American Educational
    Research Journal, 1973, 10, 245-252.

Browning, R. C. Validity of reference ratings from previous
    employers. Personnel Psychology, 1968, 21, 389-393.

Brubaker, M. A., & Patton, D. C. Selection and retention in teacher
    education: Does it exist? Teacher Education, 1975, 10, 2-8.

Canadian Classification and Dictionary of Occupations (Vol. 1).
    Manpower and Immigration Canada, Ottawa, 1971.

Capie, W., Johnson, C. E., Anderson, S. J., Elliott, C. D., & Okey,
    J. R. Teacher performance assessment project, College of
    Education, University of Georgia, Athens, 1979.

Carpenter, J. A. Survey of criteria for selection of undergraduate candidates for admission to teacher training. (Bowling Green, Ky. Western Kentucky Univ. 1973) ERIC: ED 070 758.

Cascio, W. F. Applied psychology in personnel management. Reston, Virginia: Reston Publishing Co., 1978.

Commission on Education. Involvement: The key to better schools. British Columbia Teachers' Federation, Vancouver, 1968.

Conant, J. B. The education of American teachers. New York: McGraw-Hill, 1963.

Cornett, J. Effectiveness of three selective admissions criteria in predicting performance of first year teachers. Journal of Educational Research, 1969, 63 (6), 247-250.

Cortis, G. A. Predicting student teaching performance in colleges of education. British Journal of Educational Psychology, 1968, 38, 115-122.

Cronbach, L. J. Essentials of psychological testing (3rd Ed). New York: Harper & Row, 1970.

Dawes, R. M. The robust beauty of improper linear models in decision-making. Psychological Bulletin, 1974, 81, 95-106.

Dawes, R. M., & Corrigan, B. Linear models in decision-making. Psychological Bulletin, 1974, 81, 95-106.

Dravland, V. A preliminary report on the relationship between admission G.P.A. and success in the faculty of education. Unpublished document, Faculty of Education Research Centre, University of Lethbridg, Alberta, March 1974.

Ducharme, R. J. Selected preservice factors related to success of beginning teacher. Unpublished doctoral dissertation, Louisiana State University, 1970.

Dudycha, C. J. A suggestion for interviewing for dependability based on student behavior. Journal of Applied Psychology, 1941, 25, 227-231.

Dunkin, M. J., & Biddle, B. J. The study of teaching. New York: Holt, Rinehart, and Wilson, 1974.

Dunnette, M. D. Personnel selection and placement. Monterey, Calif.: Brooks/Cole, 1966.

Dunnette, M. D., & Borman, W. C. Personnel selection and classification systems. Annual Review of Psychology, 1979, 30, 477-525.

Elliott, A. Predicting success in teaching. The Alberta Journal of Educational Research, 1971, 17, 69-76.

Ellison, R. R., & Taylor, C. W. The development and cross validation of a biographical information inventory for predicting success in science. American Psychologist, 1962, 17, 69-76.

England, G. W. Development and use of weighted application blanks
  (Rev. Ed.). Minnesota: University of Minnesota, Industrial
  Relations Center, 1971.

Gage, N. L., Leavitt, G. S., & Stone, G. C. Teachers' understanding
  of their pupils and pupils' ratings of their teachers.
  Psychological Monographs. 21 (whole No. 46), 1969.

Getzels, J. W., & Jackson, P. W. The teachers' personality and
  characteristics. In N. L. Gage (Ed.) Handbook of research on
  teaching. Chicago: Rand McNally, 1963.

Ghiselli, E. E., & Brown, C. W. Validity of aptitude tests for
  predicting trainability of workers. Personnel Psychology,
  1951, 4, 243-260.

Glass, G. V. Teacher effectiveness. In H. Walberg (Ed.) Evaluating
  educational performance. Berkeley, Calif.: McCutheon, 1974.

Goheen, H. W., & Mosel, J. N. Validity of employee recommendation
  Questionnaire II: Comparison with field investigation.
  Personnel Psychology, 1959, 12, 297-302.

Goldberg, L. R. Diagnosticians vs. diagnostic signs: The diagnosis
  of psychosis vs. neurosis from MMPI. Psychological Monographs,
  1965, 79, (9. Whole No. 602).

Goldberg, L. R. Man versus model of man: A rationale, plus some
    evidence for a method of improving on clinical inference.
    Psychological Bulletin, 1970, 73, 422-434.

Goldman, L. Using tests in counseling (2nd Ed.). New York:
    Appleton-Century-Crofts, 1971.

Good, T., & Grouws, D. Teaching effects: A process product study
    in fourth grade mathematics classrooms. Journal of Teacher
    Education, 1977, 28, 49-54.

Gough, H. G. Clinical vs. statistical prediction in psychology.
    In L. Postman (Ed.) Psychology in the making. New York: Knopf,
    1962.

Greene, M. L. A study of the relationship between criteria used to
    predict potential success in student teaching & criteria used
    predict actual success. In Student Teaching. University of
    Lethbridge, Faculty of Education Research Center, February,
    1977.

Haberman, M. Guidelines for selection of students in programs of
    teacher education. Washington, D. C., May 1972, ERIC:
    ED 063 247.

Henry, E. R. Research conference on the use of the autobiographical
    data as psychological predictors. The Richardson Foundation,
    Greensboro, N. C., 1965.

Hirschberg, N., & Itkin, S. Graduate student success in psychology.
  American Psychologist, 1978, 33, 1083-1093.

Inlow, G. M. A comparative study of student teaching practices in
  thirty-eight midwest institutions. Journal of Experimental
  Education, 1976, 44, 40-43.

Juolo, A. E. Grade inflation in higher education: What can or
  should we do? Paper presented at Annual Meeting of National
  Council on Measurement in Education, San Francisco, April
  1976. ERIC: ED 129 917.

Kerlinger, F. N. Foundations of Behavioral Research (2nd Ed.).
  Holt, Rinehart, & Winston: New York, 1973.

Korman, A. K. Industrial and Organizational psychology. Inglewood
  Cliffs, N. J.: Prentice-Hall, 1971.

Lawshe, C. H., & Schucker, R. E. The relative efficacy of a few test
  weighting methods in multiple prediction. Educational and
  Psychological Measurement, 1959, 19, 103-114.

Leonardson, G. Selection admission criteria to undergraduate
  programs. Colorado Journal of Educational Research, 1977, 16,
  24-28.

Little, K. B., & Schnerdman, E. S. Congruencies among inter-
  pretations of psychological tests and anamnestic data.
  Psychological Monographs, 1959, 73 (6), Whole No. 4761.

Lord, F. M., & Novick, M.R. Statistical theories of mental test scores. Reading, Mass.: Addison-Wesley, 1968.

Loughmiller, G. C., & Ellison, R. L., Taylor, C. W., & Price, P. B. Predicting career performance of physicians using the biographical inventory approach. Journal of Vocational Behavior, 1973, 3, 269-278.

MacJver, D. A. (Ed.) The education of teachers in Canada. Canadian Society for the Study of Education Yearbook (Vol. 5), 1978.

Maysfield, E. E., & Carlson, R. E. Selection interview decisions: First results from long-term research project. Personnel Psychology, 1966, 19, 41-53.

McArthur, C. Analyzing the clinical process. Journal of Counseling Psychology, 1954, 1, 204-208.

McArthur, C. Clinical versus actuarial prediction. In Educational Testing Service, Proceedings of the 1955 invitational conference on testing problems. Princeton, N. J., 1956.

McCormick, E. J., & Ilgen, D. R. Industrial psychology (7th Ed.). Englewood Cliffs, N. J.: Princeton-Hall, 1980.

McGregor Commission. The education and training of teachers in British Columbia, B.C. Ministry of Education, Victoria, B.C.: 1978.

McNeil, J. D., & Popham, W. J. The assessment of teaching competence. In R. Travers (Eds.) Second handbook of research on teaching. Chicago: Rand McNally, 1973.

Mitzel, H. E. Teacher effectiveness. In C. Harris (Ed.) Encylopedia of educational research (3rd Ed.), New York: McMillan, 1960.

Meehl, P. E. Clinical vs. statistical prediction. Minn.: University of Minnesota Press, 1954.

Mosel, J. N., & Goheen, H. W. The validity of the employment recommendation questionnaire in personnel selection: I. Skilled traders. Personnel Psychology, 1958, 11, 481-490.

National Center for Educational Statistics. The conditions of education, 1976. Washington, D. C.: U. S. Government Printing Office, March 1976.

National Center for Education Statistics. Projects of education statistics to 1988-89. Washington, D. C.: U. S. Government Printing Office, 1980.

National Education Association, National Commission on Teacher Education. A position paper on teacher education and professional standards. Washington, D. C.: National Education Commission, 1963.

Nunney, D. N., Fiala, F. F., & Lewis, M. G. Teacher selection in the western states. Journal of Teacher Education., 1963, 14, 417-423.

Owens, W. A., & Henry, E. R. Biographical data in industrial psychology: A review and evaluation. Greensboro, N. C.: Creativity Research Institute, Richardson Foundation, 1966.

Pedersen, K. G. The future of teacher education. Education Canada, 1973, 26-33.

Pynn, L. What students think of their teachers: A survey. Vancouver New York: Ronald Press, 1954.

Reisler, R. F. An education agenda for the eighties. Phi Delta Kappan, 1981, 52, 413-414.

Remmers, H. H., & Elliott, D. N. Manual of instruction for the Purdue Rating Scale for Instruction (Rev. Ed.). Lafayette, Indiana: Purdue Research Foundation, Purdue University, 1960.

Rosenbaum, R. W. Predictability of employee theft using weighted application blanks. Journal of Applied Psychology, 1976, 61, 94-98.

Rosenshine, B., & Furst, N. Research on teacher performance criteria. In B. Smith (Ed.) Research in teacher education: A symposium. Englewood Cliffs, N. J.: Prentice-Hall, 1971.

Sarbin, T. R. A contribution to the study of actuarial and
     individual methods of prediction. American Journal of
     Sociology, 1942, 48, 593-602.

Sawyer, J. Measurement and prediction: Clinical and statistical.
     Psychological Bulletin, 1966, 66, 178-200.

Sayles, L. R., & Strauss, G. Managing human resources (2nd Ed.).
     Englewood Cliffs, N. J.: Prentice-Hall, 1981.

Schalock, D. Research on teacher selection. In D. C. Berliner
     (Ed.) Review of Research in Education, 1979, 7, 364-417.

Schalock, D. The focus: Knowledge, teaching behavior, or the
     products? In J. Burdin & Reagan (Eds.) Performance-based
     certification of school personnel. Washington, D. C.: ERIC
     clearinghouse & The Association of Teacher Educators, 1971.

Schultz, D. Psychology and industry today. New York: McMillan, 1973.

Schultz, D. Psychology and industry today: An introduction to
     industrial and organizational pyschology (2nd Ed.). New York:
     McMillan, 1978.

Schwab, D. F., & Heneman, H. G. Relationship between interview
     structure and interview reliability in employment situations.
     Journal of Applied Psychology, 1969, 53, 214-217.

Scott, R. D., & Borman, W. C. Personnel selection and classification systems. Annual Review of Psychology, 1967, 51, 383-395.

Simon, A., & Boyer, E. G. (Eds.) Mirrors for behavior: An anthology of observation instruments. Philadelphia: Research for Better Schools, 1970.

Simon Fraser University Factbook. Office of Analytical Studies, Simon Fraser University, Burnaby, British Columbia, Dec. 1981.

Super, D. E. The preliminary appraisal in vocational counseling. Personnel and Guidance Journal, 1957, 36, 154-161.

Toukmanian, S. G. The biographical inventory approach to the selection of teacher trainees. Canadian Journal of Education, 1979, 3, 11-19.

Trattner, M. H. A comparison of three methods for assembling an aptitute test battery. Personnel Psychology, 1957, 16, 221-232.

Tucker, D. H., & Rowe, P. M. Consulting the application form prior to the interview: An essential step in the selection process. Journal of Applied Psychology, 1977, 62, 283-287.

Turner, R. L. An overview of research in teacher education. In K. Rayan (Ed.) Teacher education: The Seventy-Fourth Yearbook of the National Society for the Study of Education (Part II), Chicago: University of Chicago Press, 1975.

Twa, R. J., & Greene, M. Prediction of success in student teaching as a criterion for selection in teacher education programs. The Alberta Journal of Educational Research, 1980, 27, 1-13.

Veldman, D., & Brophy, J. Measuring teacher effects on pupil achievement. Journal of Educational Psychology, 1974, 66, 319-324.

Watts, D. Admissions standards for teacher preparatory programs: Time for a change. Phi Delta Kappan, 1974, 66, 120-122.

Webster, E. C. Decision making in the employment interview. Personnel Administration, 1959, 22, 15-22.

Weiss, D. J., & Dawes, R. V. An objective validation of factual interview data. Journal of Applied Psychology, 1960, 40, 381-385.

Wesman, A. G., & Bennett, G. K. Multiple regression versus simple addition of score in the prediction of college grades. Educational and Psychological Measurement, 1959, 19, 243-246.

Wevers, J. The effectiveness of selected personality and psychological tests and admission GPA as predictors of success in teaching. Unpublished monograph, Department of Education, University of Lethbridge, Alberta, 1977.

Wiggins, N., & Kohen, E. S. Man versus model of man revisted: The forecasting of graduate school success. Journal of Personality and Social Psychology, 1971, 19, 100-106.

Wirtz, W. Report of the advisory panel on the Scholastic Aptitude Test score decline. New York: College Entrance Examination Board, 1977.

Yevak, M. E., & Corlin, L. O. Requirements for admission to and retention in professional education programs. Journal of SPATE, 1972, 11, 2-10.

Zsigmond, Z. Population and enrolment trends: 1961-2001. Canadian Journal of Education. 1976, 1, 19-38.