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AN ANALYSIS OF FACTORS CONTRIBUTING TO  
THE PREDICTION OF TEACHER EDUCATION CANDIDATES  
PERFORMANCE ON THE EXAMINATION FOR THE  
CERTIFICATION OF EDUCATORS IN TEXAS (ExCET)

DISSERTATION

Presented in Partial Fulfillment of the Requirements for  
the Degree Doctor of Education in the Graduate School  
of Texas Southern University

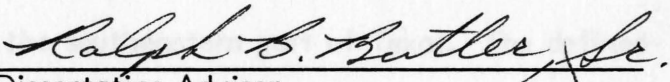
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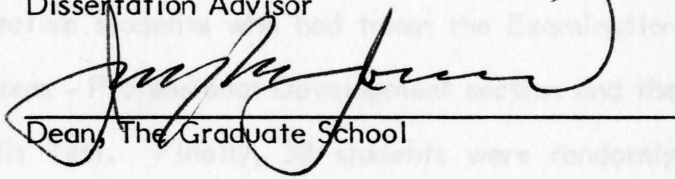
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Texas Southern University

1990

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ascertained from the use of these instruments, it can be concluded that the predictability of the total scores of the prospective teachers' academic performance, as well as the grade-point average, is a function of the students' total ExCET. Additional variables, such as the Instructional Planning and Curriculum dimension, to the Assessment and Evaluation dimension, to the Instructional Methodology and Classroom Management dimension, and to the Principles of Education dimension, are also related to the students' total ExCET scores. Finally, it can be concluded that any attempt to predict the students' total ExCET scores should be based on the students' reading scores and grade point averages. Finally, it can be concluded that the independent and joint effect of the

The purpose of this study was to examine the extent of the relationships as well as the predictive validity of such selected variables as reading skills scores, writing skills scores, mathematics skills scores, grade-point averages, age, and sex to the prediction of academic performances of prospective teachers on the Examination for the Certification of Educators in Texas (ExCET). The multiple correlation regression analysis and stepwise multiple regression methods were used for data analysis.

Data were collected from records of students enrolled in a Teacher Education program at a four-year institution in the southeastern part of Texas. The defined population consisted of 159 prospective students who had taken the Examination for Certification of Educators in Texas - Professional Development section and the Teacher Education Academic Skills Test. Finally, 59 students were randomly selected from the target population in this investigation. Based on the results

ascertained from the use of these instruments, it can be concluded that the predictability of the total scores of the prospective teachers' academic performance, as measured by the ExCET, should involve the use of grade-point average. This notion is reinforced by the ability of the grade-point average variable to explain and/or account for 40% of the variance in students' total ExCET. Additionally, this variable contributed significantly to the Instructional Planning and Curriculum dimension, to the Assessment and Evaluation dimension, to the Instructional Methodology and Classroom Management dimension, and to the Principles of Education dimension of the ExCET. Moreover, it can be concluded that any attempt to predict the Instructional Planning and Curriculum section of the ExCET should be based on the knowledge of students' reading scores and grade point averages. Finally, it can be concluded that the independent and joint effect of the variables age, sex, mathematics scores, reading scores, and writing scores should not be included in a predictive model to assess the performance of prospective teachers on the ExCET. A knowledge of the predictability power of the aforementioned variables can enhance the accuracy of measuring students' academic performance on the ExCET.

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Likewise, the writer is extremely grateful to her husband, Mr. Lorrie Alexander, Sr., and their delightful daughter, Miss Sybil Necho Alexander, for their untiring patience, their support, and their genuine understanding. Sincere thanks go to other family members and friends who, in their way, gave continuous words of encouragement. Finally, the writer is indebted to the many administrators and staff members of the Texas Southern Library.

## DEDICATION

## INTRODUCTION

I wish to dedicate this dissertation to my mother, Mrs. Olida Dumas Duncan, to my father, the late Reverend John Seymour Duncan, and to my uncle, the late Attorney Overton C. Jefferson, who never ceased to encourage me and who facilitated my total growth as both a special person and as a dedicated professional.

For instance, in 1961, the state of Texas passed Senate Bill 50. This bill (1) provided for the development and administration of examinations for teachers in all areas in which certification is granted and (2) mandated tests for all individuals seeking initial certification and/or additional certification or endorsement.<sup>2</sup> From this bill, the National Evaluation Systems, Inc. of Amherst, Massachusetts, developed and implemented a state test for persons entering the field of education in Texas. The state test was entitled the "Examination for the Certification of Educators in Texas (ExCE.T)."

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<sup>1</sup> Lawrence M. Ruder, What's Happening in Teacher Testing, An Analysis of State Teacher Testing Practices Documents. U.S. Government Printing Office, Washington, D.C., August 1987.

<sup>2</sup> Elizabeth W. Gots, Early Childhood Elementary Essential Elements Texas Style (ERIC Document Reproduction Service, ED 291 522 March 1986), 1-4.



## Chapter I

### INTRODUCTION

During the past decade, the issue of testing on college and university campuses has grown to the point that many academic programs, especially those in education, require that their students pass a series of examinations before entering into their major areas of studies. In addition, some colleges and universities have implemented standardized examinations that must be passed by students before they are given a degree. To compound this dilemma, many individuals and agencies involved in the pedagogical process believe that extensive testing brings about accountability.<sup>1</sup>

For instance, in 1981, the state of Texas passed Senate Bill 50. This bill (1) provided for the development and administration of examinations for teachers in all areas in which certification is granted and (2) mandated tests for all individuals seeking initial certification and/or additional certification or endorsement.<sup>2</sup> From this bill, the National Evaluation Systems, Inc. of Amherst, Massachusetts, developed and implemented a state test for persons entering the field of education in Texas. The state test was entitled the "Examination for the Certification of Educators in Texas (ExCET).

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<sup>2</sup>Elizabeth W. Gratz, Early Childhood Elementary Essential Elements Texas Style (ERIC Document Reproduction Service, ED 291 522 March 1986), 1-4.

Examinations such as the ExCET in Texas are being used for admission or matriculation purposes by college officials throughout America. However, at the present time there is no evidence of research having been conducted to identify variables that might be utilized to predict students' performance on the ExCET.

Inasmuch as the ExCET is a new instrument which assesses competencies at a minimal level and is used to measure entry-level content or pedagogical skills, the lack of empirical research may have serious implications for teacher education programs throughout the state of Texas. The academic performances of college students on examinations similar to the ExCET with regards to purpose appear to be correlated with qualitative and quantitative variables such as sex, age, grade-point average, as well as reading, English, and mathematics scores. Likewise, it can be argued that the same types of variables probably would have some predictive power with the ExCET.

The utilization of testing data by college and universities requires that both administrators and faculty members alike be concerned about how their students perform on various standardized examinations. Consequently, a knowledge of those factors which can be helpful in predicting students' performances should be identified and implemented into programs designed to prepare students to pass entry and/or exit examinations. Negative results on the part of the student clientele regarding their academic performances on these types of examinations will add to an already huge stockpile of woeful situations facing the higher education spectrum, such problems as declining enrollment and diminishing resources.<sup>3</sup>

*Sin-Yook Hong, "The Age Factor in the Prediction of Tertiary Academic Success," Higher Education Research and Development 3 (1984): 41-50.*

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<sup>3</sup>Lewis Mayhew, Surviving the 80's (San Francisco: Jossey Bass, 1979), p. xiii.  
*Predicting the Future: A Guide to the 1980s* (Spring 1984): 15-20.



Prediction studies are used for the purposes of facilitating decision-making for individuals, for testing theoretical hypotheses, and for determining the predictive validity of individual measuring instruments. For example, collegiate and university personnel are required to identify areas of study in which individual students are most likely to succeed. By the same token, educational researchers, counselors, admissions personnel, and other educators are utilizing the results of prediction studies as means for obtaining additional state and federal funding and for short-range planning for institutional advancement and effectiveness.

Several researchers have conducted prediction studies for various purposes applicable to their focus of investigation. For example, Hong studied the age and environmental factors relating to academic success. The investigator found that older students were more likely to have higher academic achievement and better study habits than were younger students.<sup>4</sup>

Taylor and Worden conducted a study to determine teacher effectiveness using the following measures: Internship Evaluation Guide (IED), The Basic Professional Studies Examination (PSE), American College Testing (ACT) and the English Language Proficiency Test (ELPT). While they found that of the four instruments the PSE was not at all predictive of performance evaluation, the Teaching Area Examination (TAE), however, was most predictive of both classroom teachers' and supervisors' evaluations. In short, they noted that one could also predict how effective a teacher would be by reviewing his/her ACT scores.<sup>5</sup> Other

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<sup>4</sup> Sun-Mook Hong, "The Age Factor in the Prediction of Tertiary Academic Success," Higher Education Research and Development 3 (1984): 61-70.

<sup>5</sup> Janet B. Taylor and Thomas W. Worden, "Knowledge Based Competence as A Predictor of Effective Classroom Practice," College Student Journal 20, no. 1 (Spring 1986): 15-20.

predictive studies have established that such independent variables as age, sex, grade-point average, writing scores, and many others can be used to predict academic success. For instance, Mestre and Garcia conducted a study to determine the relationship between grade point average, language proficiency, and performance on several mathematics tests. Relationships between grade-point average and mathematics examinations were found to be significant for the groups studied.<sup>6</sup>

To be sure, college and university administrators need to have access to valid and reliable information regarding the predictability of factors that are related to academic success. The success of students on examinations such as the ExCET will depend heavily on a number of factors. It is suggested in the literature pertaining to the academic success of college students on standardized examinations that such variables as sex, age, grade-point average, writing scores and mathematics scores have some predictive power.<sup>7</sup> Likewise, the present researcher believes that the aforementioned variables will be related to and will predict the academic success of students on the ExCET examination. A study in this area is thus warranted.

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<sup>6</sup> Jose P. Mestre and William Garcia, The Interdependence of Mathematical Skills, Grade Point Average, and Language Proficiency for Hispanic College Students (ERIC Document Reproduction Service, ED 204 150, 1981), p. 3.

<sup>7</sup> Terrence J. Crooks, Grade Prediction: The Usefulness of Context Specific Predictors (ERIC Document Reproduction Service, ED 194 547, 1980), p. 2.

### Statement of the Problem

Inasmuch as prediction of students' performance ranked exceedingly high among topics in educational -- psychological research, Holen and Newhouse undertook an investigation to ascertain if students' self-predictions of their test performance abilities could yield supplemental information. The researcher concluded that college students could accurately estimate their achievement in a given course and that students' self assessment could provide a significant new dimension to the predictability of actual performance independent of and supplemental to traditional data sources.<sup>8</sup>

The state of Texas presently requires prospective teachers to take the Examination for the Certification of Educators in Texas (ExCET). Therefore, a primary purpose of this study was to ascertain whether prospective teachers' performances on the section of the ExCET, which is entitled Professional Development and is inclusive of the subareas (1) Instructional Planning and Curriculum Development, (2) Assessment and Evaluation, (3) Instructional Methodology and Classroom Management, and (4) Principles of Education, were related to the independent variables Reading Skills scores, Writing Skills scores, and Mathematics Skills scores on the Teacher Education Academic Skills Test, grade-point average, age, and sex.

More specifically, the researcher sought to determine the extent to which a relationship, if any, existed between the dependent variables on the ExCET and the

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<sup>8</sup>Michael C. Holen and Robert C. Newhouse, "Student Self-Prediction of Academic Achievement," Journal of Educational Research 69, no. 6 (February 1976): 219-220.



independent variables Reading Skills scores, Writing Skills scores, and Mathematics Skills scores on the Teacher Education Academic Skills Test scores, grade point average, age, and sex.

The purpose of this study was to investigate the effectiveness of selective factors in predicting the performance of college students on the Examination for the Certification of Educators in Texas. Specifically, this study sought to answer the following question: Was there a relationship between the independent variables Teacher Education Academic Skills Test (TEAST) reading skills scores, writing skills scores, mathematics skills scores, grade-point average, age, and sex and the performance of students who had taken the Examination for the Certification of Educators in Texas entitled Professional Development?

### Significance of the Study

According to the United States Department of the National Center for Education Statistics, the nation is experiencing a teacher shortage. The nation's demand is great, and the supply is steadily decreasing. However, one sees an increase in college enrollment.<sup>9</sup>

The significance of this present study, then, is three-fold. First, the data revealed in this study can be used by administrators and counselors to develop strategic guidelines to enhance the performance of college students on various standardized tests. Consequently, allowing a variety of individuals to have input into the testing environment on college campuses can perhaps create a solid and sound foundation which possibly will foster the total educational process.

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<sup>9</sup>Frank B. Murray, "Goals for the Reform of Teacher Education: An Executive Summary of the Holmes Group Report," Phi Delta Kappan (October 1984): 121-122.

Secondly, an empirical study of this nature may provide college and university administrators with data regarding the strengths and weaknesses of their academic programs. An understanding and a knowledge of variables that impact the academic performances of college students are crucial elements in implementing criteria to improve the success rate of students on standardized examinations.

Finally, it is hoped that the findings of this investigation will provide administrators, teachers and counselors with added information. Such information should assist them in developing for college students sound and effective tutorial programs and counseling procedures for the purpose of enhancing their test performances.

### Hypotheses

This study was designed to examine the extent of the relationships between the selective independent variables reading skills scores, writing skills scores, mathematics skills scores, grade-point average, age, and sex, and the dependent variable performance on the Professional Development section of the ExCET. Based on the problems generated for this study, the following statistical hypotheses were formulated:

**H<sub>01</sub>:** There will be no statistically significant relationship between the dependent variable Instructional Planning and Curriculum Development on the ExCET and the independent variables Reading Skills scores, Writing Skills scores, and Mathematics Skills scores on the Teacher Education Academic Skills Test, grade-point average, age, and sex. Therefore, these independent variables will have no predictive validity.

**H<sub>02</sub>:** There will be no statistically significant relationship between the dependent variable Assessment and Evaluation on the ExCET and the independent variables Reading Skills scores, Writing Skills scores, and Mathematics Skills scores on the Teacher Education Academic Skills Test, grade-point average, age, and sex. Therefore, these independent variables will have no predictive validity.

**H<sub>03</sub>:** There will be no statistically significant relationship between the dependent variable Instructional Methodology and Classroom Management on the ExCET and the independent variables Reading Skills scores, Writing Skills scores, and Mathematics Skills scores on the Teacher Education Academic Skills Test, grade-point average, age, and sex. Therefore, these independent variables will have no predictive validity.

**H<sub>04</sub>:** There will be no statistically significant relationship between the dependent variable Principles of Education on the ExCET and the independent variables Reading Skills scores, Writing Skills scores, and Mathematics Skills scores on the Teacher Education Academic Skills Test, grade-point average, age, and sex. Therefore, these independent variables will have no predictive validity.

**H<sub>05</sub>:** There will be no statistically significant relationship between the dependent variable total score on the ExCET and the independent variables Reading Skills scores, Writing Skills scores, Mathematics Skills scores, grade-point average, age, and sex. Therefore, these independent variables will have no predictive validity.



### Assumptions

Several assumptions germane to this study were made. However, the major assumptions upon which this study was based were the following:

1. The sample was representative of the population;
2. The students would provide valid information pertaining to sex and age;
3. These parts of the ExCET would remain constant; and
4. Test scores were correct.

### Limitation

The study was limited to male and female students enrolled in a Teacher Education Program, located at a university in the southeastern part of Texas. Further, it was limited to students who took the Professional Development section of the Examination for the Certification of Educators in Texas and the Texas Education Academic Skills Test.

### Definition of Terms

1. Education Majors: Students who have been admitted to the Teacher Education Program at the university and who possess an overall grade point average of 2.5. Student must also have a grade-point average of 2.5 in math and English.
2. ExCET: Examination for the Certification of Educators in Texas.
3. ExCET Subareas for Professional Development -
  - Instructional Planning and Curriculum Development: Identify stages and characteristics of development of students (birth - age 22).
  - Assessment and Evaluation: Understand principles of testing and measurement.

- Instructional Methodology and Classroom Management: Apply knowledge of learning theory to instruction.
  - Principles of Education: Understand the purposes of education.
4. GPA: Grade-Point Average.
  5. TEAST: Texas Education Academic Skills Test which includes mathematics, reading and writing.
  6. Mathematics Achievement: Academic performance as measured on the Teacher Education Academic Skills Test (Mathematics) and the Elementary Algebra Test.
  7. Reading Achievement: Academic performance as measured by the Teacher Education Academic Skills Test (Reading).
  8. Senate Bill 50: A Texas state statute passed in 1981 requiring examination in all areas in which certification is granted and mandating tests for all individuals seeking initial certification and/or additional certification.
  9. Writing Achievements: Academic performance as measured on the Teacher Academic Skills Test (Writing).

<sup>10</sup> Harold A. Brubaker and Robert J. Yonkers, "Are Those Who Select A Career in Teaching the Academic Equals of Their Nonteaching Counterparts?" American Secondary Education 16, no. 1 (1987): 2-7.

## Chapter 2

### REVIEW OF THE RELATED LITERATURE

In general, the literature germane to this study was quite extensive on the one hand; on the other hand, literature specifically relating to the topic of the study was rather scarce. Accordingly, the researcher opted to discuss and/or review all relevant studies and the theories according to the following schema: (1) Predictive Factors in Academic Performance, (2) Texas Professional Certification, (3) National Professional Certification, and (4) Teacher Education Programs.

#### Predictive Factors in Academic Performance

Addressing predictive factors via their 1987 investigation, Brubaker and Yonker cited several studies from five institutions of higher learning. Specifically, their studies were done to compare the ACT, SAT, and high school percentile rank of education and non-education majors. When students with similar academic content orientation were compared, the researchers found that the standardized test scores of education majors were higher than were those of non-education majors.<sup>10</sup> While acknowledging that such statistics or data as those revealed in the

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<sup>10</sup>Harold A. Brubaker and Robert J. Yonkers, "Are Those Who Select A Career in Teaching the Academic Equals of Their Nonteaching Counterparts?" American Secondary Education 16, no. 1 (1987): 2-7.

majority of the studies cited might not translate into actual performance differences, Brubaker and Yonkers suggested that educational leaders publicly refute those studies which portray education as intellectually and academically inferior solely on the basis of statistical significance.

Krockover et al. (1987) reported the results of a study conducted at Purdue University during the 1983 Spring and Fall semesters and the 1984 Spring semester. Specifically, the researchers attempted to ascertain: (1) whether the typical predictors of college success were equally predictive for both education and non-education majors and (2) if there were differences between the performance of education and non-education majors as measured, by grades in common core university courses in communication, English, and psychology.

Purdue's teacher education graduates for the 1983 Spring and Fall semesters and the 1984 Spring semester, along with a comparative sample of non-education majors, were used in the study. A total of 420 education majors from five schools of Purdue University and 168 non-education majors (from the same five schools) comprised the sample. The Kruskal-Wallis and the Mann-Whitney tests were used to compare both groups' performances in the common core courses.

According to the results yielded by the data, the researchers concluded that the variables high school rank, SAT total scores, and freshman GPAs were as valid predictors for education majors as they were for non-education majors. There also existed, too, a very insignificant difference between education and non-education majors when compared on the basis of grades received in common university core courses and of grade-point averages. Teachers, however, scored higher than did non-teachers on senior GPA. On the other hand, virtually no significance was found between education and non-education majors on the basis of SAT scores. Consequently, the researchers opined that commonly held notions about the



academic inferiority of students majoring in teacher education programs were refuted by the findings of their study, which also supported studies conducted at Michigan State and Illinois State Universities.<sup>11</sup>

In many academic settings, it has been established that students who do exceptionally well in English usually do well in their academic work. This, of course, comes from the belief that knowledge of the English language is a must in order to succeed in institutions of higher learning. Rogers' study reinforced this belief wherein English achievements as measured by sentences contributed most in predicting college grade-point average.<sup>12</sup>

According to Lent, Brown, and Larkin, the self-efficacy theory, which involves an individual's belief about his/her ability to perform successfully, is only appropriate for many predictive studies. In fact, self-efficacy, interest congruence, and consequence thinking were the three variables used by Lent et al to predict grades for students who selected technical/scientific majors. Of the three used, the variable which gave the best prediction of grades was self-efficacy. Moreover, Lent et al contended that this theory may even become important as one reviews and discusses behavior modification.<sup>13</sup>

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<sup>11</sup>G. H. Krockover, H. Mortloch, and B. T. Johnson, "Comparing Success Predictors and Common Core Course Performance," Action In Teacher Education 9 (Spring 1987): 61-65.

<sup>12</sup>Raymond Rogers, A Multiple Regression Analysis of the Variables from the CGP Test Upon GPA (ERIC Document Reproduction Service, ED 175 490, 1979), p. 12.

<sup>13</sup>Robert W. Lent, Steven D. Brown, and Kevin C. Larkin, "Comparison of Three Theoretically Derived Variables in Predicting Career and Academic Behavior: Self-Efficacy, Interest Congruence, and Consequence Thinking," Journal of Counseling Psychology 34 (1987): 293-298.

Brahm Norwich used mathematics learning as the focus of his investigation of the theoretical relations that derive from the self-efficacy theory. His primary aim was to investigate the predictive relations between self-efficacy and subsequent performance in a mathematics task and attainment and subsequent self-efficacy, using conditions of differing task familiarity. Norwich's subjects, 38 boys and 34 girls between nine and ten years of age, were from four different mixed-sex primary schools in London, England, and comprised four complete classes. Two schools were located in more advantaged social-economic areas; the other two schools were, by contrast, located in less advantaged areas. The children attempted the mathematics tasks between the first and second and the third and fourth self-efficacy assessments, with no accuracy feedback being provided after the first task performance. Accuracy feedback, however, was provided after the second task.

As a result of his investigation, Norwich concluded that, under the condition of low task familiarity, prior self-efficacy and math performance, but not math concept, independently predicted relations with self-efficacy. On the other hand, Norwich's analysis indicated that prior self-efficacy had the only predictive relation with subsequent self-efficacy, under the condition of greater task familiarity. Thus, Norwich's final conclusion about the self-efficacy theory was, like Bandura's theory about performance accomplishments and the influence of situational factors on self-efficacy, that more theoretical clarity about the nature of self-efficacy and the use of designs and assessment methodologies appropriate to the complexity of theory on self-efficacy were needed.<sup>14</sup>

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<sup>14</sup>Brahm Norwich, "Self-Efficacy and Mathematics Achievement: A Study of Their Relation," Journal of Educational Psychology 79, no. 4 (1987): 384-387.



Acknowledging that prediction of student performance ranked exceedingly high among topics in educational-psychological research, Holen and Newhouse undertook an investigation to ascertain if students' self predictions of their test performance abilities could yield information supplemental to that provided through traditional data sources, namely, high school grade averages, college averages, grades in previous, related courses, and teacher judgment. The population was 159 college juniors and seniors who were enrolled in an educational psychology course, taught by an instructor of the university. Such data as the students' high school grade-point averages, college grade-point averages, and grades in the prerequisite educational psychology course were obtained before the students were administered the instrument. The instrument was a 30-item, four-alternative multiple choice test. In addition, each student was asked to estimate his/her score, to turn in the estimated score, and to begin the test.

When the students' actual scores were correlated with the predictor variables (high school grade averages, college grade averages, previous course grades, and predicted grades) and when the students' predictions were correlated with actual performance and college grade averages, the researchers found that 60% of the subjects missed their actual scores by only two or fewer points. Moreover, 87% missed their actual scores by four or fewer points.

Consequently, the researchers concluded that college students could accurately estimate their achievement in a given course and that students' self-assessment could provide a significant and new dimension to the predictability of actual performance independent of and supplemental to traditional data sources. In short, they declared, students did have the ability to grade themselves, and

*M. Nettle, A. R. Theory, and E. Grossman, "A Comparative Analysis of the Predictors of Black and White Students' Academic Achievement in Colleges: A Case for Expanding Admissions Policies to Include Quality of the College Experience," American Educational Research Association, Chicago, March 1985.*

students did know something about their own preparation or achievement not accounted for by their other educational history.<sup>15</sup>

At Oklahoma State University two researchers, McPhee and Kerr, conducted a study using students in the College of Education who had completed the Curriculum Proficiency Examination (CPE) and who had taken the American College Test (ACT). Two different groups were used in their study. Group one contained scores from the Sequential Tests of Education Progress (STEP) and the cumulative grade-point average. Group two contained grade-point average in the students' major field and grade-point average in education courses. The ACT scores were found to be predictive of performance on the STEP and CPE.<sup>16</sup>

In their study of predictors of black and white students' academic achievement in college, Nettles, Thoeny, and Grossman examined those factors which predicted academic success for both races. Students reported their cumulative grade-point average (CGPA) and completed a Student Opinion Survey. The findings of this study indicated that the Scholastic Aptitude Test scores were not accurate predictors of black students' CGPA. Instead, student satisfaction, peer relations, and interfering problems were stronger predictors for blacks than for whites.<sup>17</sup>

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<sup>15</sup>Michael C. Holen and Robert C. Newhouse, "Student Self-Prediction of Academic Achievement," Journal of Educational Research 69, no. 6 (February 1976): 219-220.

<sup>16</sup>S. A. McPhee and M. E. Kerr, "Scholastic Aptitude and Achievement as Predictors of Performance on Competency Test," Journal of Educational Research 78 (January-February 1985): 1986-1990.

<sup>17</sup>M. Nettle, A. R. Thoeny, and E. Grossman, "A Comparative Analysis of the Predictors of Black and White Students' Academic Achievement in College: A Case for Expanding Admissions Policies to Include Quality of the College Experience," American Educational Research Association, Chicago, March 1985.

During the fall of 1982 at the University of Georgia, Hoglebe, et al. conducted a study to examine students' perceptions and academic performance as predictors of success in the University's Developmental Studies program. The sample included 90 males and 102 females (154 White and 38 non-White), all of whom had been denied regular admission as a result of low high school GPAs, low SATs in the verbal and mathematics sections. Information was obtained via the use of a nine-item questionnaire which was administered to the subjects before they arrived on campus. Moreover, the multiple regression technique was used to analyze the data, which had been grouped into four predictor sets and were run separately for males and females.

In general, the researchers reported, the sample characteristics were relatively consistent across both groups for student perception variables. However, some notable differences existed between the two groups as regards the four academic variables (high GPA, SAT-V, SAT-M, and first-quarter GPA). First-quarter GPAs for females were significantly higher than for males; nevertheless, the researchers opined that females' high school GPA and the SAT scores did not account for significant variance in predicting first-quarter GPA for that group. On the other hand, high school GPA and SAT scores of males did account for a significant percent (33%) of the first-quarter GPA variance for males. Accordingly, Hoglebe, et al. concluded that both academic predictors and student-perception variables affected males' first-quarter GPA performance, but academic predictor variables were the primary influence on female first-quarter GPA performance.<sup>18</sup>

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<sup>18</sup>Mark C. Hoglebe, Patricia L. Devinell and Leroy Ervin, "Student Perceptions As Predictors of Academic Performance In College Developmental Studies," Educational and Psychological Measurement 45 (Autumn 1985): 635-46.



In his 1986 doctoral dissertation at Western Michigan University, John Hair presented an analysis of the ways in which selected cognitive and demographic factors predicted whether Black students were academically successful at a predominantly White two-year private business college, a two-year public community college, and public undergraduate/graduate university. Analyzing the academic achievement of 226 Black students enrolled between the fall terms of 1983-1984 and 1984-1985, Hair concluded that of the eight independent variables, the most significant predictors of academic success for Black students were high school GPA and type of curriculum in which they were enrolled.<sup>19</sup>

### Texas Professional Certificate

According to Dunlap and Descamps, the public continually expects high level performance and accountability from teachers and from universities that prepare teachers. Presently, the state of Texas appears to be in the vanguard of teacher education and public school education reform expectations for grades K-12. In fact, the Texas legislature passed two bills that have had tremendous impact on education in the state. One bill was H. B. 246, which stated that the state of Texas will have a single common curriculum for grades K-12. The second bill was H. B. 72, which included provisions for financing public education, career ladder

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<sup>19</sup> John Hair, "An Analysis of Selected Factors Related to Predicting the Academic Success of Black Students Attending Predominantly White Colleges," DAI 48 (1986): 59A.



requirements for inservice teachers, testing of teachers and administrators, and implementing of classroom management requirements.<sup>20</sup>

During the summer of 1988, Veselka reported the results of his investigation of the many facets of educational reform in Texas. One of the most controversial provisions required the testing of currently certified teachers and administrators. A statute passed in 1981 called for the testing of teacher candidates seeking their initial certificates, but not for the testing of practicing educators. In 1984, Governor Mark White appointed the Select Committee on Public Education, chaired by H. Ross Perot. On March 10, 1986, the Texas Examination of Current Administration and Teachers (TECAT) was administered to 205,000 teachers and administrators. Purportedly, one objective of this test was to identify and subsequently remove incompetent teachers and administrators from the public schools. The test measured basic reading and writing skills.<sup>21</sup>

The poor showing on the Pre-Professional Skills Test (PPST) in 1984 for entry into teacher education programs brought about changes by the Texas Coordinating Board. Chairman Temple called for tougher high school graduation standards and college admission requirements as a means of improving the academic skills of teachers. Immediately following 1984, the state of Texas began looking at other instruments for the purposes of testing basic skills of students. Subsequently, monies have been appropriated by the state for remedial programs and for the

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<sup>20</sup>William P. Dunlap and Jorge Descam, "A Process For Changing Teacher Education Curriculum," College Student Journal 20, no. 2 (Summer 1986): 174-178.

<sup>21</sup>Marvin Veselka. Educator Recertification Testing in Texas: Big State, Big Challenges (ERIC Document Reproduction Service, ED 290 763 June 1988), 2-8.

development of a strong supplemental academic program. Too, during the fall semester of 1989, the Texas Academic Skills Program (TASP), House Bill 2182, began. This test was to identify those students who were in need of remedial work, regardless of their majors.<sup>22</sup>

The passage of these three bills, namely, H.B. 2182, H.B. 543, and S.B. 994, will force institutions of higher learning to combine and enhance present academic programs and reallocate present funds. With the passing of House Bill 2182, institutions of higher learning must now report the test scores of students to the state, and must forward copies of the same scores to the various high schools of the students. Also, House Bill 543 requires institutions of higher learning to submit to the high schools a copy of their students' first year grade-point averages, and the developmental required courses.<sup>23</sup>

The National Evaluation System developed the Examination for the Certification of Educators in Texas (ExCET). The tests were designed to measure the entry-level skills of beginning teachers. The ExCET consists of 64 different examinations. Beginning May 1, 1986, all prospective teachers seeking Texas certification must earn a passing score in his/her field of certification as well as on a second examination covering Professional Education Knowledge. According to Moak, as of 1988, 82.6% of prospective teachers passed the ExCET.<sup>24</sup>

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<sup>22</sup>Coordinating Board Texas College and University System, Basic Skills Test Endorsed for Freshmen, CB Report, no. 8-9, August 1986 vol. 21, p. 1.

<sup>23</sup>Coordinating Board Texas College and University System, Governor Authorizes Basic Skills Test, CB Report, no. 4, June 1987 vol. 22, p. 3.

<sup>24</sup>Lynn M. Moak, Report on the Results of the Examination for the Certification of Educators in Texas (ExCET) Program, Texas Education Agency, (Austin, Texas, Division of Teacher Assessment February/March 1988), 1-13.

### National Professional Certification

Hanes and Rowls surveyed fifty state departments of education and major colleges within these states in 1982. From this survey, they found that forty states at that time required their teachers to be recertified. Predictably, amidst the public's furor, the remaining ten states would require periodic renewal of teaching licenses.<sup>25</sup>

Jerry Ayers conducted a study to examine the concurrent validity of the 1982 version of the National Teacher Examination (NTE) (via correlations with test scores, success as an undergraduate and certain personal characteristics) vis a vis the predictive validity of the National Teacher Examination in relation to principal ratings, pupil ratings, and classroom observations made by independent observers of a group of teacher education graduates of the same university. His subjects were 46 graduates (from the classes of 1984 and 1985 at Tennessee Technological University) who taught in grades one through seven. After collecting data from university records and from the administering of instruments to principals, subjects, pupils, and classroom observations of the subjects, Ayers used grade-point averages, American College Test (ACT) scores, and NTE scores as variables. Means and standard deviations for all variables were computed. The Pearson product-moment correlations were computed between the four variables derived from the NTE and all other variables in the study.

Ayers' results, which he divided into two parts -- concurrent validity and predictive validity -- indicated that for concurrent validity the best predictors of

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<sup>25</sup> Jerry B. Ayers, "Another Look at the Concurrent and Predictive Validity of the National Teacher Examination," *Journal of Educational Research* 81, no. 3 (1988): 133-137.

<sup>25</sup> Madlyn Levine Hanes and Michael D. Rowls, "Teacher Recertification: A Survey of the States," *Phi Delta Kappan* (October 1984): 123-126.



success on the several components of the NTE were overall grade-point averages. More specifically, however, scores from the ACT appeared to be better success predictors on the NTE than did grade-point averages - - especially as regards the Communication Skills Test of the NTE.

On the other hand, with regard to predictive ability, correlations between principal ratings and NTE scores were low. Likewise, the relationship between pupil ratings and NTE achievement was quite low, though deemed useful as a means of helping administrators and teachers to improve instruction. Finally, relationships between observational data and scores from the NTE were found to be insignificant and thus were consistent with earlier studies conducted by Ayers. Thus, acknowledging that his study supported the findings of previous investigations, Ayers urged replication of his study with groups of secondary teacher education program graduates in order to explore and, subsequently, to understand more thoroughly the possible uses of the National Teacher Examination both for teacher selection and for improvements in teacher education programs.<sup>26</sup>

By 1986, the Carnegie Forum on Education and the Economy contended there was a need to create a National Board for Professional Teaching Standards. The primary purposes would be to establish high standards for what teachers needed to know and needed to be able to do. The National Board would be authorized to

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<sup>26</sup> Jerry B. Ayers, "Another Look at the Concurrent and Predictive Validity of the National Teacher Examination," Journal of Educational Research 81, no. 3 (January/February 1988): 133-137.



certify teachers who met those standards.<sup>27</sup> In short, all public school teachers, according to this proposal, would be nationally certified, thus, in effect, making state certification unnecessary.

Colleges, without doubt, and universities have always been evaluated. From his visits to many colleges and universities, Boyer found that their programs were vigilantly monitored by both federal and state governments. Six regional accrediting bodies, Boyer noted, measured the overall status of the institutions. Moreover, one hundred fifty-four professional accrediting bodies review specialized academic programs. The overwhelming preponderance of these assessments has led Boyer to conclude that higher education has already been assessed more than adequately.<sup>28</sup>

One criticism of the Holmes Group Report, as seen by King, was the inadequacy of academic ability and preparation; the report did not acknowledge the excellent means which several accrediting organizations had taken to improve teacher education programs. Specifically, these organizations were the American Association of State Colleges and Universities (ASSCU), American Association of Colleges for Teacher Education (AACTE), and the contributions of the National Council for Accreditation of Teacher Education (NCATE). The efforts of these and other educational organizations have, to date, resulted in viable alternatives to dismantling schools of education nationwide and have also lent some clout to those

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<sup>27</sup>Carnegie Forum on Education and the Economy, A Nation Prepared: Teachers for the 21st Century, The Report of the Task Force on Teaching As a Profession, Library of Congress Cataloging in Publication Data, 1986.

<sup>28</sup>Ernest L. Boyer, College The Undergraduate Expression in America, The Carnegie Foundation For The Advancement of Teaching (New York: Harper and Row, 1987), 251.

educators and administrators who hold steadfastly to ideas of improving both prospective teachers, and the programs which train them.<sup>29</sup>

### Teacher Education Program

During the fall of 1984, Ishler from Texas Tech University conducted a study to gather information on requirements for admissions to teacher education programs. Institutions which are members of the Association of Colleges and Schools of Education and Affiliated Private Universities (ACSE) were surveyed. Questionnaires were sent to 103 institutions. Of this number, 66 responded with data that was utilized. All institutions have admission requirements and graduation requirements. In order for a student to be admitted to the teacher education program, he/she must have completed 12 to 75 semester hours, must have a grade point average of 2.0 through 3.0, and must have prior experience with children.

In order for a student to graduate from a teacher education program, the student must have completed 114 to 138 hours -- hours required in general education, content areas, professional education, field experience, student teaching requirements, cumulative GPA and required GPA in content area, required GPA in professional education courses, and certification test. It was found that requirements for teacher education programs were generally higher than were the requirements of other undergraduate programs.<sup>30</sup>

Clark reviewed the following National Reports which addressed the need to upgrade teacher education programs:

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<sup>29</sup>Bernard R. Gifford and John E. King, "Should We Abolish The Bachelors Degree In Education?" Change 18, no. 6 (September-October 1986): 31-36.

<sup>30</sup>Richard E. Ishler, "Requirements for Admission to and Graduation from Teacher Education," Phi Delta Kappan (October 1984): 121-122.

- 1983 - National Commission on Excellence in Education: A Nation At Risk
  - The Imperative for Education Reform
  - The Nation Responds
  - Policy Recommendations for Teacher Education in Texas
  - Task Force on Education for Economic Growth Action for Excellence: A Comprehensive Plan To Improve Our Nation's Schools
  - High School - A Report On Secondary Education in America
- 1986 - Tomorrow's Teacher - A Report of the Holmes Group
  - Carnegie Forum on Education and the Economy Task Force on Teaching as a Professional, A Nation Prepared: Teachers for the 21st Century

In effect, all of the authors of the reports recommended raising the standards for teacher education and concurred that reform should begin at the state level.<sup>31</sup>

### Summary

The review of the related literature was presented to survey and/or discuss all relevant studies and the theories according to the following schema: (1) Prediction Studies, (2) Texas Professional Certification, (3) National Professional Certification, and (4) Teacher Education Programs. As revealed in the reviewing the current literature, many of the authorities had different views which contributed significantly to various independent variables. This research study, therefore, attempted to ascertain if different or similar findings could be realized in later chapters.

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<sup>31</sup> David Clark, "Better Teachers for the Year 2000: A Proposal for the Structural Reform of Teacher Education," Phi Delta Kappan (1984): 119.



### Chapter 3

## DESIGN OF THE STUDY

### Type of Design

In this study, a non-experimental design of correlational nature was applied. The multiple correlation method and multiple regression analysis were used. These methods were utilized in order to determine the degree of relationship and the amounts of control which designated independent variables (reading skills scores, writing skills scores, mathematics skills scores, grade-point average, age, and sex) had on the criterion variable Professional Development section on the Examination for the Certification of Educators in Texas. (The population of this study consisted of 159 male and female undergraduate students who were enrolled in a Teacher Education Program at a four-year institution of higher learning in an urban center in southeast Texas and who had taken the TEAST and the ExCET. The students' ages ranged from 17 to 47 years old. Additionally, the majority of the target population consisted of black students.)

In this research study, the purpose of this study was to investigate the relationship between: the independent variables of the Teacher Education Academic Skills Test (TEAST), reading skills scores, mathematics skills scores, writing skills scores, grade-point average, age, and sex and the performance of students who have taken the Examination for the Certification of Educators in Texas (ExCET) entitled Professional Development, the dependent variable. More specifically, this study sought to answer the following question: Is there



a significant relationship between the four (4) dependent variables, namely, (1) Instructional Planning and Curriculum Development, (2) Assessment and Evaluation, (3) Instruction Methodology and Classroom Management, (4) Principles of Education, and (5) the independent variables on the TEAST?

### Population and Sampling Procedure

The population of this study consisted of 159 undergraduate male and female students enrolled in the Teacher Education Program at a four-year institution of higher learning in an urban center in southeast Texas. The university has a student clientele of over 8,000. This simple random sampling procedure was utilized in this investigation which allows each student to have an equal chance of being selected. The procedures for selecting the students for this study were done as indicated below. All the students who had taken the Texas Education Academic Skills Test and the Examination for Certification of Educators in Texas were identified by the researcher. Once the students were identified by the researcher, they were assigned a number from the table of random numbers. Finally 59 students were randomly selected from the target population to participate in this investigation.

### Instrumentation

Two investigative instruments were used to gather the data for this investigation. They were the Texas Education Academic Skills Test (TEAST) and the Examination for Certification of Educators in Texas (ExCET).

### Texas Education Academic Skills Test

The Texas Education Academic Skills Test provides an entry level measure of reading skills, writing skills, and mathematics skills. The reading section consists

of 40 items and has a 40-minute time limit designed to measure vocabulary and reading comprehension. The writing section consists of 45 items and has a 40-minute time limit designed to ascertain the students' competencies in sentence structure, punctuation, spelling, grammar usage, and composition skills. The mathematics section consists of 42 items and has a 40-minute time limit and is designed to measure the students' ability to solve problems and perform basic arithmetic operations such as fractions and operations with decimals and percentages.

### **Examination for the Certification of Educators in Texas**

The Examination for the Certification of Educators in Texas (ExCET) was developed by the National Evaluation Systems, Inc. The State Board of Education mandated the development of a testing program as part of the teacher certification requirements. The content for the Professional Development section is organized into four major content areas, namely, (1) Instructional Planning and Curriculum Development, (2) Assessment and Evaluation, (3) Instructional Methodology and Classroom Management, and (4) Principles of Education. This test is designed to assess subject-matter knowledge of entry level educators. The test is based on content in the form of objectives. (Each test question refers to one of the objectives.) All test items are multiple choice, and students are given five hours to complete the test consisting of 250 items. The score is based on the number of questions answered correctly.

The important issues which were addressed in the development of the ExCET were: validity, reliability, bias, and standard setting. In designing the ExCET researchers utilized the legal requirements, and professional standards outlined by the Equal Employment Opportunity Commission (EEOC), Standards for Educational

and Psychological Testing prepared by the American Educational Research Association (AERA), the American Psychological Association (APA), and the National Council on Measurement in Education (NCME). The three sources of content validity information used in developing the ExCET were: a review of state textbooks, Essential Elements of the Curriculum requirements, a survey of job incumbents, and professional preparation for both teacher and students. Further, the test development procedures for the ExCET was done to ensure the validity and reliability of the tests. Individual judges reviewed each test item for content validation. As a result of this method, over 99 percent of the test items were considered valid by the pool of judges.<sup>32</sup>

The two methods utilized to evaluate the reliability of the ExCET were: the Kuder Richardson Reliability Coefficient (KR20) and the Livingston Reliability Formula. The Kuder Richardson reliability coefficients range from .73 to .94, and the Livingston reliability coefficients range from .75 to .97. Both methods are suitable for use with criterion referenced tests such as the ExCET, and are used often for estimating test reliability. Based on the above criteria, the instrument was considered to be valid.<sup>33</sup>

able to one dependent variable using the principles of correlation and regression. For this investigation, the stepwise and multiple regression techniques were

#### **Data Collection Procedures**

These students' test scores on the Texas Education Academic Skills Test (TEAST) and the Examination for Certification of Educators in Texas (ExCET) were

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<sup>32</sup> Michael L. Chernoff, William P. Gorth, and Paula M. Nassif, The Validity Issue: What Should Teacher Certification Tests Measure? (Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers, 1987), 100-116.

<sup>33</sup> Telephone interview with Pamela Tackett. Division of Teacher Assessment Texas Education Agency, 9 Mar. 1990.



obtained from the Testing Center of the Investigative Institution. Additionally, the students' grade-point average, age, and sex were obtained from their records by authorized officials at the university. Additionally, after it was determined that a

signifi Moreover, after obtaining the students' test scores, the researcher, with the aid of the registrar office personnel gathered demographic data pertaining to the students. The background data that were obtained for this investigation were their sex, age, and grade-point average. The raw data from both examinations were compiled and then assigned proper codes. The codes were then punched onto the computer terminal. The application of the Statistical Package Social Sciences (SPSSX) were used to treat the data.

### Statistical Analysis

In order to analyze the data for the present investigation, two statistical procedures were employed. They were multiple regression and multiple correlation analysis. The former, according to Kerlinger, is an appropriate method for studying the relationship and predictive validity of more than one independent variable to one dependent variable to one dependent variable using the principles of correlation and regression. For this investigation, the stepwise and multiple regression techniques were applied.<sup>34</sup>

<sup>35</sup>George A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw-Hill, 1976, p. 472.

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<sup>34</sup>Fred Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston, 1973), 616-618.



Moreover, according to Ferguson, the multiple correlation procedure is appropriate in investigating complex intercorrelation between independent variables and the dependent variables. Additionally, after it was determined that a significant relationship existed between the independent variables and the dependent variable, the principles of multiple regression were employed to provide some insight into the magnitude of the correlation among the variables. Also a regression equation which assisted the researcher in explaining the presumed phenomenon presented by the dependent variable was generated from the data in this study.<sup>35</sup>

#### Demographic Profile of Independent and Dependent Variables

Fifty-nine prospective teachers were participants in the study. Of these participants, 45 individuals (76.3%) were females and 14 (23.7%) were males. The average reading score for the participants in the study was 20.66, with a standard deviation of 5.34, while the average writing score was 22.63, with a standard

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<sup>35</sup>George A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw-Hill), 1976, p. 472.

standard deviation of 5.22. With reference to grade-point averages, the participants had a mean score of 2.89, with a .59 standard deviation. Additionally, the mean scores for the Instructional Planning Assessment, Instructional Methodology, Principles of Education, and total sections of the ExCET were 69.43, 66.15, 67.31,

## Chapter 4

### DATA ANALYSIS

The purpose of this study was to examine the extent of the relationships as well as the predictive validity of such selected variables as reading skills scores, writing skills scores, mathematics skills scores, grade-point averages, age, and sex to the prediction of performances of prospective teachers on the Examination for the Certification of Educators in Texas. The stepwise multiple regression technique was used for data analysis. The results are reported according to: (1) the demographic variables, (2) intercorrelation analysis among independent and dependent variables, (3) analyses of hypotheses.

#### Demographic Profile of Independent and Dependent Variables

Fifty-nine prospective teachers were participants in the study. Of these participants, 45 individuals (76.3%) were females and 14 (23.7%) were males. The average reading score for the participants in the study was 20.66, with a standard deviation of 5.38, while the average writing score was 22.63, with a standard deviation of 3.87. Moreover, the average score for mathematics was 20.29, with a standard deviation of 5.22. With reference to grade-point averages, the participants had a mean score of 2.89, with a .59 standard deviation. Additionally, the mean scores for the Instructional Planning Assessment, Instructional Methodology, Principles of Education, and total sections of the ExCET were 69.42, 66.15, 67.31,

76.32, and 69.90, respectively. The standard deviation for the Instructional Planning, Assessment, Instructional Methodology, Principles of Education, and total sections of the ExCET were 10.26, 17.38, 13.11, 11.68, and 9.88, respectively. (See Table I for these results.)

**Table I**  
**Means and Standard Deviations of**  
**Independent and Dependent Variables**  
**(N = 59)**

Variables		Mean	SD
Q <sub>1</sub>	Age	33.66	7.17
Q <sub>2</sub>	Reading	20.66	5.38
Q <sub>3</sub>	Writing	22.63	3.87
Q <sub>4</sub>	Math	20.29	5.22
Q <sub>5</sub>	GPA	2.89	.59
Q <sub>6</sub>	Sex	1.75	4.32
Q <sub>7</sub>	Instructional Planning	69.42	10.26
Q <sub>8</sub>	Assessment	66.15	17.38
Q <sub>9</sub>	Instructional Methodology	67.31	13.11
Q <sub>10</sub>	Principles of Education	76.32	11.68
Total		69.90	9.88

### Intercorrelation Analysis Among the Independent and Dependent Variables

Intercorrelation were obtained between the six independent variables and the five measures of the dependent variables. The variable age was correlated with the dependent measure of instructional planning yielding an  $r$  of .17. Also, the independent variables reading, writing, mathematics, grade-point average, and sex were correlated with the instructional planning dimension. The correlation coefficients were .38, .31, .43, .64, and -.13, respectively.

The intercorrelations were calculated between the independent variables and the dependent variable to establish a multiple regression model to test the five major hypotheses in this study. See Table 2 for these findings.

Writing	.31	.24	.14	.08	.25
Math	.42	.30	.30	.23	.37
GPA	.64*	.48	.30	.37	.63
Sex	.02	.01	-.07	-.13	-.03

\*Highest correlation

### Hypotheses

H<sub>01</sub>: There is no significant relationship between the dependent variable of Instructional Planning and Curriculum Development on the ExCET and the independent variables of the Reading Skills scores, Writing Skills scores, and Mathematics Skills scores on the Teacher Education Academic Skills Test, grade-point average, age, and sex. Therefore, these independent variables will have no predictive validity.



**Table 2**  
**Intercorrelations Among**  
**Independent and Dependent Variables**

Independent Variables	Dependent Variable - ExCET Examination				
	Instructional Planning and Curriculum Development	Assessment and Evaluation	Instructional Methodology and Classroom Management	Principle of Education	Total
Age	.16	-.18	-.17	-.09	.01
Reading	.38	.10	.08	.11	.21
Writing	.31	.24	.14	.08	.25
Math	.42	.30	.30	.23	.39
GPA	.64*	.48	.50	.37	.63
Sex	.02	.01	-.01	-.13	-.03

\*Highest correlation

### Hypotheses

**H<sub>01</sub>:** There is no significant relationship between the dependent variable of Instructional Planning and Curriculum Development on the ExCET and the independent variables of the Reading Skills scores, Writing Skills scores, and Mathematics Skills scores on the Teacher Education Academic Skills Test, grade-point average, age, and sex. Therefore, these independent variables will have no predictive validity.

As shown in Table 3, when the stepwise regression procedure was utilized, the first variable entered into the equation was grade-point average, which resulted in a multiple correlation coefficient (R) of .64. This variable accounted for 42% of the variance in the criterion variable. The analysis yielded a regression coefficient of 10.23. The reported  $F$  value was 40.50 ( $df = 1/57$ ,  $P < .01$ ). (See Table 3.) The critical value at the .01 level of significance was 7.12. Therefore, the null hypothesis was rejected at the .01 level of significance. As a result of this finding, it appears that a significant relationship did exist between grade-point average and the Instructional Planning and Curriculum Development Section of the ExCET.

Analysis of Variance	DF	SS	MS	F
Regression	1	2533.84262	2533.84262	40.49523
Residual	57	3566.56416	62.57130	

Variables in the Equation	B	Std. Error	Standard Error B	F
Q <sub>1</sub> (Constant)	11.183537 37.143113		1.757426	40.495

Variables out in the Equation	Beta In	Partial	Tolerance	F
Q <sub>1</sub>	.121891	.159040	.985316	1.205
Q <sub>2</sub>	.239089	.304339	.967221	2.391
Q <sub>3</sub>	.167256	.212728	.945755	1.629
Q <sub>4</sub>	.190275	.225706	.932647	1.734
Q <sub>5</sub>	-.027555	-.035903	.992582	.267

Table 3

**Variable(s) Entered on Step One - GPA**  
**Instructional Planning and Curriculum Development**

Multiple R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Predicted Value
.64448	.41536	.40510	7.91020

Analysis of Variance	DF	SS	MS	F
Regression	1	2533.84262	2533.84262	40.49528
Residual	57	3566.56416	62.57130	

Variables in the Equation	B	Beta	Standard Error B	F
Q5 (Constant)	11.183537 37.143113	.644481	1.757426	40.495

Variables not in the Equation	Beta in	Partial	Tolerance	F
Q1	.121891	.159040	.995316	1.205
Q2	.239099	.304339	.947221	2.391
Q3	.167256	.212728	.945755	1.629
Q4	.190275	.225706	.822647	1.734
Q6	-.027555	-.035903	.992582	.269

The second variable entered into the equation, as shown in Table 4, was the reading skills scores, which resulted in a multiple correlation coefficient ( $R$ ) of .685. When added to the grade-point average, this variable accounted for 47% of the variance on the Instructional Planning and Curriculum Development section of the ExCET. Reading skills scores carried a regression coefficient of .455 (see Table 4). The reported  $F$  value was 24.78 ( $df = 2/56$ ,  $P < .01$ ). Using a critical value of 5.01, the null hypothesis was rejected at the .01 level of significance. Consequently, the variable reading skills scores was found to contribute significantly to the explained variance in the Instructional Planning and Curriculum Development section of the Examination for the Certification of Teachers in Texas (ExCET).

The best multiple predictors for the Instructional Planning and Curriculum Development section on the ExCET were the variables grade point average and reading skills inasmuch as they contributed significantly to the Instructional Planning and Curriculum Development section of the ExCET. Therefore, the independent variables age, sex, mathematics skills scores, and writing skills scores were not found to contribute significantly to the Instructional Planning and Curriculum Development section of the ExCET. Even though age, sex, mathematics skill scores, and writing skill scores did not contribute significantly to the Instructional Planning and Curriculum Development section of the ExCET, their order of entry into the regression model consisted of age being entered in the third step, sex in the fourth step, writing skill scores in the fifth step and mathematics skill scores in the sixth and final step. Additionally, the beta weights of the above independent variables were .13, -.12, .10, and .04, respectively. Moreover, a regression equation used to predict the students' performances on the Instructional Planning and Curriculum Development section of the ExCET included



the variables grade-point average and reading skills scores. The regression equation utilized was:

$$Y' = 30.48 + (10.23) (\text{Grade-Point Average}) + (.455) (\text{Reading Skills Scores}).$$

Multiple R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Predicted Value
.68521	.46951	.43056	7.60195

Analysis of Variance	DF	SS	MS	F
Regression	2	2861.18664	1432.09332	24.78114
Residual	56	3236.22014	57.78965	

Variables in the Equation	B	Beta	Standard Error B	F
Q5	10.230951	.587552	1.735357	24.781
Q2	.455453	.239099	.190497	
(Constant)	30.484619			

Variables not in the Equation	Beta In	Partial	Tolerance	F
Q1	.182193	.941547	1.374	
Q3	.865074	1.013		
Q4	.633105	.710		
Q6	.939265	.500		

Table 4

Variable(s) Entered on Step Two - Reading Skills Scores  
Instructional Planning and Curriculum Development

Multiple R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Predicted Value
.68521	.46951	.45056	7.60195

Analysis of Variance	DF	SS	MS	F
Regression	2	2864.18664	1432.09332	24.78114
Residual	56	3236.22014	57.78965	

Variables in the Equation	B	Beta	Standard Error B	F
Q5	10.230351	.589552	1.735357	24.781
Q2	.455455	.239099	.190497	
(Constant)	30.484269			

Variables not in the Equation	Beta in	Partial	Tolerance	F
Q1	.133127	.182149	.941547	1.374
Q3	.106447	.135932	.865074	1.018
Q4	.087218	.095281	.633105	.710
Q6	.049403	.067292	.939245	.500

**H<sub>02</sub>:** There is no significant relationship between the dependent variable of Assessment and Evaluation on the ExCET and the independent variables of the Reading Skills scores, Writing Skills scores, and Mathematics Skills scores on the Teacher Education Academic Skills Test, grade point average, age, and sex. Therefore, these independent variables will have no predictive validity.

The variable entered into the equation at step one, as shown in Table 5, was grade-point average, which resulted in a multiple correlation coefficient ( $R$ ) of .477. This variable accounted for 23% of the variance in the criterion variable. The analysis yielded a regression coefficient of 14.06 for this variable (see Table 5.) The calculated  $F$  value for this variable was 16.88 ( $df = 1/57$ ,  $P < .01$ ). (See Table 5). The critical value at the .01 level of significance was 7.12. Thus, the null hypothesis was rejected and it was concluded that a significant relationship did exist between grade-point average and the Assessment and Evaluation section of the ExCET.

The analysis of data revealed that age, reading skills scores, writing skills scores, mathematics skills scores, and sex did not contribute significantly to the students' performances on the Assessment and Evaluation section of the ExCET. The independent variables of age, reading skill scores, writing skill scores, mathematics skill scores, and sex did not separately produce a significant effect on the Assessment and Evaluation section of the ExCET. Nevertheless, when placed in the regression model their levels of entry were: the second variable entered into the model was age with a beta weight of  $-.07$  and the variables entered into the fifth and sixth levels of the regression model were writing skill scores and mathematics skill scores with beta weights of  $.20$  and  $.12$ , respectively. The

regression equation used to predict students' performances on the Assessment and Evaluation section of ExCET included grade-point average. The equation used was:

$$Y' = 25.58 + (14.06) (\text{Grade-Point Average}).$$

Multiple R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Predicted Value
.47796	.22944	.21491	15.40133

Analysis of Variance	DF	SS	MS	F
Regression	1	4003.1687	4003.16877	16.87
Residual	57	13520.45835	237.20102	

Variables in the Equation	B	Beta	Standard Error B	F
Q <sub>5</sub> (Constant)	18.056747 25.577970	.477938	3.421745	16.87

Variables not in the Equation	Beta In	Partial	Tolerance	F
Q <sub>1</sub>	-.117928	-.133941	.995316	1.011
Q <sub>2</sub>	-.008742	-.009627	.947221	.072
Q <sub>3</sub>	.135370	.149374	.945955	1.134
Q <sub>4</sub>	.122030	.126006	.822647	.951
Q <sub>6</sub>	-.027165	-.030812	.992582	.231



**Table 5**  
**Variable(s) Entered on Step One - GPA**  
**(Assessment and Evaluation)**

Multiple R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Predicted Value
.47796	.22844	.21491	15.40133

Analysis of Variance	DF	SS	MS	F
Regression	1	4003.1687	4003.16877	16.87
Residual	57	13520.45835	237.20102	

Variables in the Equation	B	Beta	Standard Error B	F
Q5 (Constant)	14.056947 25.577970	.477958	3.421745	16.87

Variables not in the Equation	Beta in	Partial	Tolerance	F
Q1	-.117928	-.133941	.995316	1.011
Q2	-.008742	-.009687	.947221	.072
Q3	.135370	.149874	.945755	1.134
Q4	.122030	.126006	.822647	.951
Q6	-.027165	-.030812	.992582	.231

**H<sub>03</sub>:** There is no significant relationship between the dependent variable of Instructional Methodology and Classroom Management on the ExCET and the independent variables of the Reading Skills scores, Writing Skills scores, and Mathematics Skills scores on the Teacher Education Academic Skills Test, grade-point average, age, and sex. Therefore, these independent variables will have no predictive validity.

The variable entered in step one, as shown in Table 6, was grade-point average, which resulted in a multiple correlation coefficient (R) of .504. This variable accounted for 25.41% of the variance in the performance of students on the Instructional Methodology and Classroom Management section of the ExCET. (See Table 6.) A regression coefficient of 11.18 was reported. The calculated F value for this variable was 19.42 ( $df = 1/57$ ,  $P < .01$ ). Using a critical value of 7.12, the null hypothesis was rejected at the .01 level of significance. Therefore, grade-point average was found to contribute significantly to students' performances on the Instructional Methodology and Classroom Management section of the ExCET.

The data indicated that the independent variables age, reading skills scores, writing skills scores, mathematics skills scores, and sex were not found to contribute significantly to the students' performances on the Instructional Methodology and Classroom Management section of the ExCET. Although the aforementioned variables did not produce an independent effect on the Instructional Methodology and Classroom Management section of the ExCET, it is interesting to note their level of entry into the regression model. The variables entered into the model at the second and third steps were age and reading skills scores. These variables had beta weights of  $-.13$  and  $-.14$ , respectively. Additionally, the variables entered into the regression equation at the fourth, fifth, and sixth steps were sex, writing skill scores and mathematics skill scores. Their

beta weights were  $-.05$ ,  $.06$ , and  $.17$ , respectively. The regression equation used to predict students' performances on this section of the ExCET included the variable grade-point average, and the equation used was:

$$Y' = 35.02 + (11.18) (\text{Grade-Point Average}).$$

Multiple R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Predicted Value
.50408	.25409	.24101	11.42370

Analysis of Variance	DF	SS	MS	F
Regression	1	2533.95635	2533.95635	19.42
Residual	57	7438.55213	130.50091	

Variables in the Equation	B	Std. Error	Standard Error B	F
Q <sub>1</sub>	11.183783	.504078	2.538026	19.42
(Constant)	35.023744			

Variables not in the Equation	Beta In	Partial	Tolerance	F
Q <sub>2</sub>	-.108715	-.125582	.995316	.947
Q <sub>3</sub>	-.041273	-.054510	.947221	.348
Q <sub>4</sub>	.039594	.033324	.945755	.250
Q <sub>5</sub>	.110822	.116384	.822647	.877
Q <sub>6</sub>	-.051051	-.058491	.992582	.441

**Table 6**  
**Variable(s) Entered on Step One - GPA**  
**(Instructional Methodology and Classroom Management)**

Multiple R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Predicted Value
.50408	.25409	.24101	11.42370

Analysis of Variance	DF	SS	MS	F
Regression	1	2533.95635	2533.95635	19.42
Residual	57	7438.55213	130.50091	

Variables in the Equation	B	Beta	Standard Error B	F
Q <sub>5</sub> (Constant)	11.183788 35.023744	.504078	2.538026	19.42

Variables not in the Equation	Beta in	Partial	Tolerance	F
Q <sub>1</sub>	-.108715	-.125582	.995316	.947
Q <sub>2</sub>	-.041273	-.046510	.947221	.348
Q <sub>3</sub>	.029594	.033324	.945755	.250
Q <sub>4</sub>	.110822	.116384	.822647	.877
Q <sub>5</sub>	-.051051	-.058891	.992582	.441



**H<sub>04</sub>:** There is no significant relationship between the dependent variable of Principles of Education on the ExCET and the independent variables of the Reading Skills scores, Writing Skills scores, and Mathematics Skills scores on the Teacher Education Academic Skills Test, grade-point average, age, and sex. Therefore, these independent variables have no predictive validity.

With the use of the stepwise multiple regression procedure, as shown in Table 7, the variable entered into the equation at the first step was grade-point average, which resulted in a multiple correlation coefficient (R) of .373. This variable accounted for 13.90% of the variance in students' performances on the Principles of Education section of the ExCET. The variable grade-point average carried a regression coefficient of 7.37 (see Table 7). The calculated F value for this variable was 9.20 ( $df = 1/57$ ,  $P < .05$ ). The critical value at the .05 level of significance was 4.02. Therefore, the null hypothesis was not retained, and it was concluded that grade-point average did contribute significantly to students' performances on the Principles of Education section of the ExCET.

The analysis of data also revealed that age, reading skills scores, writing skills scores, mathematics scores, and sex did not contribute significantly to the students' scores on the Principles of Education section of the ExCET. Since the above independent variables did not contribute significantly to the Principles of Education section of the ExCET, their level of entry into the regression model and their beta weights were reported. The variables entered in the second step of the equation was age with a beta weight of  $-.10$ . The variable entered in the third step of the model was reading skill scores with a beta weight of  $-.03$ . The variable entered in the fourth, fifth, and sixth step of the regression model were sex, writing skill scores, and mathematics skill scores with beta weights of  $-.17$ ,  $.06$ ,

and .11, respectively. The regression equation used to predict the academic performance of students on the Principles of Education section of the ExCET included grade-point average; and the equation used was:

$$Y' = 55.04 + 7.37 (\text{Grade-Point Average}).$$

Multiple R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Predicted Value
.37287	.13903	.12392	18.93538

Analysis of Variance	DF	SS	MS	F
Regression	1	1100.67488	1100.67488	9.20
Residual	57	6816.20648	119.58257	

Variables in the Equation	B	Std. Error	Standard Error B	F
Q <sub>5</sub> (Constant)	7.370872 55.046448	1.372866	2.429536	9.20

Variables not in the Equation	Beta In	Partial	Tolerance	F
Q <sub>1</sub>	.119644	.128640	.995716	.971
Q <sub>2</sub>	.029434	.030836	.947221	.232
Q <sub>3</sub>	.005057	.005302	.945755	.040
Q <sub>4</sub>	.090276	.088242	.822647	.663
Q <sub>5</sub>	.164952	.177119	.992582	1.367

**Table 7**  
**Variable(s) Entered on Step One - GPA**  
**(Principles of Education)**

Multiple R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Predicted Value
.37287	.13903	.12392	10.93538

Analysis of Variance	DF	SS	MS	F
Regression	1	1100.67488	110.67488	9.20
Residual	57	6816.20648	119.58257	

Variables in the Equation	B	Beta	Standard Error B	F
Q <sub>5</sub> (Constant)	7.370872 55.046448	.372866	2.429536	9.20

Variables not in the Equation	Beta in	Partial	Tolerance	F
Q <sub>1</sub>	.119644	.128640	.995316	.971
Q <sub>2</sub>	.029494	.030936	.947221	.232
Q <sub>3</sub>	.005059	.005302	.945755	.040
Q <sub>4</sub>	.090274	.088242	.822647	.663
Q <sub>5</sub>	.164959	.177119	.992582	1.347

**H<sub>05</sub>:** There is no significant relationship between the dependent variable of the total score on the ExCET and the independent variables of age, Reading Skills scores, Writing Skills scores, Mathematics Skills scores, grade-point average, and sex. Therefore, these independent variables will have no predictive validity.

The first variable entered into the equation, as shown in Table 8, was grade-point average, which resulted in a multiple correlation coefficient (R) of .634. This variable accounted for 40.16% of the variance in the students' performances on the total ExCET. A regression coefficient of 10.59 (see Table 8) and an F value of 38.25 (df = 1/57,  $P < .01$ ) were reported. The critical value at .01 level of significance was 7.12. Therefore, the null hypothesis was rejected, and it was concluded that a significant relationship did exist between grade-point average and students' performances on the total ExCET.

The best predictor for H<sub>05</sub> included grade-point average. The variables age, reading skills scores, writing skills scores, mathematics skills scores, and sex were not found to contribute significantly to the students' total score on the ExCET. The aforementioned independent variables were found not to contribute significantly to the total score on the ExCET, their level of entry into the regression equation was that of age being entered in the second step, reading skill scores in the third step and sex in the fourth step of the regression model. In addition, writing skill scores and mathematics skill scores were entered into the model at the fifth and sixth steps. Moreover, the beta weights of the above independent variables were -.05, -.02, -.14, .14, and .12, respectively. Thus, a regression equation was used to predict the total score of students on the ExCET, and the equation used was:

$$Y' = 39.33 + (10.58) (\text{Grade-Point Average}).$$



**Table 8**  
**Variable(s) Entered on Step One - GPA**  
**(Total Score)**

Multiple R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Predicted Value
.63370	.40158	.39108	7.70678

Analysis of Variance	DF	SS	MS	F
Regression	1	2271.90302	2271.90302	38.25
Residual	57	3385.48681	59.39451	

Variables in the Equation	B	Beta	Standard Error B	F
Q5 (Constant)	10.589715 39.331722	.633705	1.712232	38.25

Variables not in the Equation	Beta in	Partial	Tolerance	F
Q1	-.035752	-.046109	.995316	.345
Q2	..065716	.082679	.947221	.621
Q3	.108676	.136622	.945755	1.032
Q4	.152690	.179025	.822647	1.362
Q5	.089131	-.114792	.992582	.865

Admittedly, grade-point average is an important variable in any researcher's attempt to explain the performances of students on all of the sections of the ExCET. More specifically, a knowledge of grade-point average would provide a basis for the prediction of students' performances. When this information is placed into the regression model, the researcher can then predict reasonably accurate scores for students on the ExCET.

The purpose of this study was to investigate the relationships as well as the predictive validity of selected qualitative and quantitative variables in predicting the academic performance of prospective teachers. Specifically, this study examined both the separate and combined effects of the variables age, reading, writing, mathematics, grade-point average, and sex on the performance of students, as measured by the Examination for Certification of Educators in Texas (ExCET).

The data were collected from 59 prospective teachers enrolled at a university located in Southeastern Texas. The students' age, reading scores, writing scores, mathematics scores, grade-point average, sex and ExCET scores were obtained from the School of Education, Teacher Education Department.

The data from this study were analyzed using multiple correlation and regression analysis. The stepwise regression procedure, which inserted variables in turn until a satisfactory regression equation was achieved, was also used in this investigation. The hypotheses were tested at the .05 level or better.

### Findings

The following findings were observed from the results of this study. The students' reading skills scores and grade-point averages contributed significantly to

## Chapter 5

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to investigate the relationships as well as the predictive validity of selected qualitative and quantitative variables in predicting the academic performance of prospective teachers. Specifically, this study examined both the separate and combined effects of the variables age, reading, writing, mathematics, grade-point average, and sex on the performance of students, as measured by the Examination for Certification of Educators in Texas (ExCET).

The data were collected from 59 prospective teachers enrolled at a university located in Southeastern Texas. The students' age, reading scores, writing scores, mathematics scores, grade-point average, sex and ExCET scores were obtained from the School of Education, Teacher Education Department.

The data from this study were analyzed using multiple correlation and regression analysis. The stepwise regression procedure, which inserted variables in turn until a satisfactory regression equation was achieved, was also used in this investigation. The hypotheses were tested at the .05 level or better.

### Findings

The following findings were observed from the results of this study. The students' reading skills scores and grade-point averages contributed significantly to

the Instructional Planning and Curriculum Development dimension of the dependent variable. Of the two, reading skills scores contributed most, as they accounted for 47% of the variance. The second best predictor of the students' performances on the Instructional Planning and Curriculum Development section of the ExCET was grade-point average, which accounted for 42% of the variance. The other four independent variables, namely, age, sex, mathematics skills scores, and writing skills scores, did not contribute significantly to this dependent measure.

Moreover, grade-point average was the only one of the six independent variables which contributed significantly to the remaining four dependent measures of the dependent variables. In fact, grade-point averages accounted for 23% of the variance in the Assessment and Evaluation dimension for 25% in Instructional Methodology and Classroom Management dimension for 14% of variance in the Principles of Education dimension and for 40% of the variance in the total scores.

The importance of grade-point average in predicting performance on the ExCET, as revealed in the present study, was supported by the findings of McPhee and Kerr and Nettles, Thoeny, and Grossman. These researchers found that a significant relationship did, indeed, exist between scholastic achievement and grade-point average.

Yet, using grade-point average as a successful predictor variable in assessing performance on the ExCET should be viewed with some skepticism. In the pedagogical arena, some critics have voiced several concerns about the relatively weak validity which this variable possesses when it is used exclusively as a criterion variable. On the other hand, one should not overlook the fact that the grade-point average variable consistently contributes to the performance of teachers as measured by the ExCET. In addition, this variable had the highest intercorrelations among the five dependent measures than did any of the other



predictors. The data seemed to suggest that educators should take into consideration the effect of grade-point average on the performances of students when they are preparing students to take the ExCET.

In the present study, reading scores were found to contribute significantly to only one of the five dependent measures of the dependent variable. Thus, the use of reading scores as a successful predictor of performance as measured by the ExCET should be accepted with some caution. The lack of predictability of this variable, together with the total score, seems to support this conclusion.

The instrument (Teacher Education Academic Skills Test) which was employed to measure the mathematics, reading and writing scores utilized in this study should be examined for its predictability power. A lack of validation studies regarding the above investigative measurement make it very difficult to accept the current findings in light of this limitation. Further research with similar variables measured by a more valid and reliable instrument is warranted.

### Conclusions

Based on the results ascertained from use of this instrument, it can be concluded that the predictability of the ExCET should involve the use of grade-point average. This notion is reinforced by the ability of this grade-point average variable to explain and/or account for 40% of the variance in students' total performances on ExCET. Additionally, this variable contributed significantly to the Instructional Planning and Curriculum dimension, to the Assessment and Evaluation dimension, to the Instructional Methodology and Classroom Management dimension, and to the Principles of Education dimension of the ExCET. The percentages of variance explained by use of grade-point average in these four dimensions were 42, 23, 25, and 14, respectively.

Moreover, it can be concluded that any attempt to predict the Instructional Planning and Curriculum section of the ExCET should be based on the knowledge of students' reading scores and grade-point averages. These variables, combined, accounted for 47% of the variance in this criterion measure.

Finally, it can be concluded that the independent and joint effect of the variables age, sex, mathematics scores, reading scores, and writing scores should not be included in a predictive model to assess the total performance of students on the ExCET. A knowledge of the predictability power of the aforementioned variables can enhance the accuracy of measuring students' performance on the ExCET.

#### Recommendations for Higher Education

The following recommendations are suggested for administrators and educators to consider regarding prediction models for the performance of students on the Examination for the Certification of Educators of Texas:

1. Educators in higher education who are responsible for preparing students for the teaching profession should be aware of the importance of grade-point average in predicting performance on the ExCET. A knowledge of as well as an understanding of the students' capabilities is a crucial variable in assessing their performances on the ExCET and/or similar examinations. The development of a knowledge base on the students' part is probably the most important factor in determining their academic success. Consequently, administrators of teacher education programs should take into account the criteria that make up grade-point average. Moreover, these criteria should be included in any

prediction model regarding the performances of students. However, the validation problem with grade-point average should also be considered.

2. Administrators of teacher education programs should add curricular components such as seminars, workshops and forums for the purpose of enhancing the students' general knowledge in conjunction with their specific classroom preparation. Enrichment programs would contribute positively to the students' chances of passing the ExCET and/or similar examinations.
3. Administrators of teacher education programs should also be aware of the influence of qualitative and quantitative variables on the academic performance of students on the ExCET. A knowledge and understanding of selected variables which might have some predictability power regarding performance on the Examination for the Certification of Educators in Texas (ExCET) can be very useful in developing strategies to help improve test scores.
4. Administrators and educators alike in higher education should be made familiar with pedagogical tools in the form of equipment and materials which are available to help identify and correct weaknesses in the students' academic preparation. By acquiring various equipment and materials, those individuals who are responsible for preparing students to pass the Examination for the Certification of Educators in Texas (ExCET) and/or similar examinations are likewise providing the students with the requisite skills needed to strengthen their ability to pass the ExCET.

### Recommendations for Further Research

In order to extend further the findings of this study, the researcher strongly recommends that:

1. A follow-up study be conducted. Such a study would provide additional data on the predictability power of grade-point average, age, sex, mathematics scores, reading scores, and writing scores which operate separately as well as combined on the ExCET.
2. A study be conducted which utilizes different measurements to assess the predictability of mathematics scores, reading scores, and writing scores on the ExCET.
3. A study be conducted to explore the relationship and the prediction power of variables such as ethnicity, study habits, work habits, test anxiety, study attitudes, mathematics ability, English ability, reading ability, and grade-point average regarding the performances of students on the ExCET.
4. Finally, a study be conducted to compare and contrast the regression models which have been developed to predict performances on examinations similar to the ExCET.



## APPENDIXES

### Intercorrelations Among Intellectual and Non-Intellectual Factors

# APPENDIX A Intercorrelations Among Intellectual and Non-Intellectual Factors

## APPENDIX A

### Intercorrelations Among Intellectual and Non-Intellectual Factors

## Tabulation Design Sheet

### ExCET Test Scores

### Teacher Education Academic Skills Test Scores

[illegible]

## APPENDIX B

## Tabulation Design Sheet



Table 9  
Intercorrelations Among Intellectual and Non-Intellectual Factors

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Q1	1.000	-.030	.302	.098	.068	.240	.165	-.085	-.074	-.094	.008
	.51.406	-1.151	8.389	3.651	.290	.757	12.163	-10.551	-6.929	-7.637	.551
	.999	.411	.010	.231	.303	.033	.105	.262	.290	.240	.477
	2981.220	-66.780	486.542	211.763	16.819	43.915	705.475	-611.949	-401.898	-454.559	31.966
Q2	-.030	1.000	.330	.520	.230	.109	.375	.102	.077	.114	.208
	-1.151	28.987	6.871	14.617	.731	.257	20.681	9.501	5.416	7.146	11.051
	.411	.999	.005	.000	.040	.206	.002	.222	.282	.196	.057
	-66.780	1681.220	398.542	847.763	42.399	14.915	1199.475	551.051	314.102	414.441	640.966
Q3	.302	.330	1.000	.475	.233	.400	.308	.239	.145	.082	.250
	8.389	6.871	14.962	9.592	.532	.679	12.230	16.092	7.374	3.708	9.565
	.010	.005	.999	.000	.038	.001	.009	.034	.136	.268	.028
	486.542	398.542	867.797	556.339	30.882	39.407	709.322	933.356	427.712	215.085	554.763
Q4	.098	.520	.475	1.000	.421	.153	.428	.302	.303	.231	.392
	3.651	14.617	9.592	27.209	1.298	.350	22.893	27.352	20.755	14.095	20.219
	.231	.000	.000	.999	.000	.124	.000	.010	.010	.039	.001
	211.763	847.763	556.339	1578.102	75.301	20.322	1327.797	1586.407	1203.814	817.525	1172.729
Q5	.068	.230	.233	.421	1.000	.086	.644	.478	.504	.373	.634
	.290	.731	.532	1.298	.349	.022	3.906	4.910	3.906	2.575	3.699
	.303	.040	.038	.000	.999	.258	.000	.000	.000	.002	.000
	16.819	42.399	30.882	75.301	20.259	1.297	226.569	284.782	226.574	149.328	214.539
Q6	.240	.109	.400	.153	.086	1.000	.028	.014	-.007	-.132	-.034
	.757	.257	.679	.350	.022	.193	.127	.108	-.042	-.675	-.147
	.033	.206	.001	.124	.258	.999	.416	.457	.478	.160	.399
	43.915	14.915	39.407	20.322	1.297	11.186	7.356	6.288	-2.424	-39.169	-8.525
Q7	.165	.375	.308	.428	.644	.028	1.000	.442	.671	.580	.866
	12.163	20.681	12.230	22.893	3.906	.127	105.179	78.727	90.300	69.534	87.733
	.105	.002	.009	.000	.000	.416	.999	.000	.000	.000	.000
	705.475	1199.475	709.322	1327.797	226.569	7.356	6100.407	4566.186	5237.373	4032.949	5088.542
Q8	-.085	.102	.239	.302	.478	.014	.442	1.000	.482	.503	.689
	-10.551	9.501	16.092	27.352	4.910	.108	178.727	302.132	109.866	102.157	118.343
	.262	.222	.034	.010	.000	.457	.000	.999	.000	.000	.000
	-611.949	551.051	933.356	1586.407	284.782	6.288	4566.186	17523.627	6372.254	5925.102	6863.915
Q9	-.074	.077	.145	.303	.504	-.007	.671	.482	1.000	.535	.864
	-6.929	5.416	7.374	20.755	3.906	-.042	90.300	109.866	171.940	81.969	111.928
	.290	.282	.136	.010	.000	.478	.000	.000	.999	.000	.000
	-401.898	314.102	427.712	1203.814	226.574	-2.424	5237.373	6372.254	9972.508	4754.203	6491.831
Q10	-.094	.114	.082	.231	.373	-.132	.580	.503	.535	1.000	.781
	-7.637	7.146	3.708	14.095	2.575	-.675	69.534	102.157	81.969	136.498	90.102
	.240	.196	.268	.039	.002	.160	.000	.000	.000	.999	.000
	-454.559	414.441	215.085	817.525	149.328	-39.169	4032.949	5925.102	4754.203	7916.881	5225.932
Q11	.008	.208	.250	.392	.634	-.034	.866	.689	.864	.781	1.000
	.551	11.051	9.565	20.219	3.699	-.147	87.733	118.343	111.928	90.102	97.541
	.477	.057	.028	.001	.000	.399	.000	.000	.000	.000	.999
	31.966	640.966	554.763	1172.729	214.539	-8.525	5088.542	6863.915	6491.831	5225.932	5657.390

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