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A factor analysis approach to job characteristics items of Iowa State teacher education students and graduates using selected variables

by

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CHAPTER I - INTRODUCTION

Survey research is by far the primary data collection technique employed in educational research; therefore, it is somewhat surprising that little attention has been paid to the influence of population subgroups on reliability and item analysis of multiple-item scales (Bohrnstedt, Mohler & Mueller, 1987). Warren, Mulford, and Winkelpleck (1973) stated that scales (Likert) are often developed by researchers from attitude items designed from other studies as part of the continuing exploration by researchers on the relationship between attitudes and behavior.

These scales allow self-rating by a subject on perceptions or impressions of themselves. Each person's total score on the Likert scale is calculated by adding their item scores. Those items that do not discriminate well between the high and low groups are discarded. This procedure provides internal consistency for the scale. The internal consistency analysis for each scale is based only upon those respondents who answered all the items of that scale (Sirotnik, 1979). According to Dorans (1983), scales are developed by researchers in an effort to get consistent results with the fewest errors. So it is important for researchers to construct scales which can be proven valid

and reliable over time in order to gain scientific acceptance (Carmines & Zeller, 1979). In order for an instrument to gain scientific acceptance, it must also be proven valid and reliable over a period of time.

In 1980, the Research Institute for Studies in Education (RISE) began implementation of a comprehensive research model designed to evaluate and improve the teacher preparation program at Iowa State University (ISU). (A description of RISE can be found in Appendix A.) The model was designed to be a longitudinal study that used survey research to obtain responses from students enrolled in a beginning teacher education course (who have not necessarily been formally admitted to the Teacher Education Program) and the graduates of the teacher education program at various stages in their careers. The longitudinal model allows RISE to study change and explore time-ordered associations of attitudinal measures, such as items related to job characteristics (Borg & Gall, 1985).

Today, as in the past, job characteristics still play an important role in the occupational choice of teachers. In 1957, Rosenberg examined the occupational values of college bound students preparing for various careers and found that those students who chose a teaching career placed the greatest value on a desire to help and to work

with people. He found that they placed the least amount of value on extrinsic rewards; those students who valued extrinsic rewards tended to choose other types of careers, such as business, finance, or law. Almost thirty-five years later, Bland (1986) found similar results among students enrolled in a beginning teacher education class at ISU.

The literature reveals that job characteristics items have been used as variables in a number of research studies conducted at ISU using the longitudinal data. The longitudinal data were used for different reasons by different researchers. For example, Chen (1982) examined characteristics of graduating and practicing teachers. Thompson, Warren, Dilts, and Blaustein (1983) viewed the difference between students' career expectations and the actual characteristics of their employment, while Keith, Warren, and Dilts (1983) investigated the influence of sex, career plans, and teaching level affected their preferences for job factors among graduates of the teacher education program. Williams (1985) looked at the correlation between student/teacher preparation and student teaching satisfaction. Bland (1986) examined the career plans of students enrolled in a beginning teacher education class whereas Jimmar (1986) focused on the relationships between

the long-range career plans of female teacher education graduates. Sweeney (1987) examined factors that influence career paths of teachers.

Major Components of the Study

Factor Analysis

According to Buswell (1966), research designs in educational research have become more complex in the last five years, because educational researchers often measured a large number of variables in a single research project; data analysis and interpretation become quite unwieldy in this situation. Therefore, to address this concern, researchers are increasingly drawing upon techniques, such as factor analysis, which provide an empirical basis for reducing many variables to a few factors. These factors then become manageable data for analysis and interpretation (Borg & Gall, 1985).

The use of factor analysis is mainly exploratory or confirmatory, depending on the major objectives of the researcher. Exploratory Factor Analysis attempts to reduce a set of variables into one or more underlying factors. Confirmatory Factor Analysis, on the other hand, posits that there are a certain number of factors in a given set of variables and then seeks to determine whether the

hypothesis holds true or not. Factor analysis is a procedure that can be used in conjunction with other measures for determining the reliability of any set of measures. In this study, the type of factor analysis will be the same for all subgroups, and the criteria for identification items to be in a scale or factor will be uniformly applied across all subgroups.

Reliability

Reliability, as applied to educational measurements, may be defined as "the level of internal consistency or stability of the measuring device over time" (Borg & Gall, 1985, 225). There are several methods of estimating reliability, most of which call for computing a correlation coefficient between two sets of similar measurements: test-retest, alternative form, split-halves, and internal consistency. Only one of the four methods needs to be used to determine if a measuring instrument is reliable. In this study, the internal consistency method is used because it provides a conservative estimate of reliability.

In general, when various analyses yield inconsistent results, measurement error may be one of the factors influencing the results. Measurements that have a large degree of error are less reliable than those that don't

(Carmines and Zeller 1979). According to Cochran (1968), measurement error can produce unsuspected biases or reduce the precision of a study. Firebaugh, Weaver and Warren (1975) stated that random measurement error can influence reliability as well. The higher the reliability, the smaller the amount of error. Reliability provides an estimate of the amount of error that is present in a given study. Measurement error may vary from subgroup to subgroup and sample to sample.

Error is calculated by means of the observed value. The observed value of measure has two major components, the true score and measurement error (X=t+e). The term true score implies there is no error present. A person's true score is the average score that is obtained if the person is measured an infinite number of times on a specific variable and measurement error is random. No single measurement can pinpoint the true score exactly. However, the average of an infinite number of repeated measurements would be equal to the true score.

Job Characteristics Items

Findings of different factor analysis studies of 18 job characteristics items (see "Definition of Terms" p. 10) with different samples has yielded what appears to be

inconsistent results. The factor analyses in those studies were based on the total sample, not on subgroups within the sample such as male/female or teaching/not teaching elementary/secondary studies. Borg and Gall (1985) stated that subgroup analyses may provide worthwhile knowledge and theoretical insights. Subgroups have been found to influence other measures. Ghiselli (1963) and Warren et al. (1973) found that subgroups have influence on measurement error differences as well as on substantive differences. A limited number of studies (for example, Warren, Klonglan and Sarbi, 1969) have indicated that reliability may be influenced by subgroups or categories in the total study. Also, the method used to determine which items should be added together influences the selection of items and the indicators of the quality of measurement. Approaches to identifying items for factors include theoretical instrument design, practical clustering, and factor analysis.

In summary, these specific 18 job characteristics items have been factor analyzed in a number of studies conducted at ISU, involving students and graduates of the Teacher Education Program. The variation in the grouping of items and range of reliability estimates in the various studies raises the following research question what influence does

subgroup have upon item selection, reliability estimates, and substantive results? In this study, the following three classification variables will be used for subgroup analyses: gender, teaching status (teaching/not teaching), and teaching level (elementary/secondary). If different items are used to form a factor which represents the same theoretical concept across the various samples and subgroups they will be compared in terms of their reliability estimates. These factors also will be compared on tests of significance.

Statement of the Problem

The limited knowledge of subgroup analyses and the inconsistent results of item selection for factors using factor analysis for job characteristics items suggests that additional study from both measurement and substantive viewpoints are needed to provide theoretical insight into subgroup analysis. Therefore, further research needs to be conducted to examine the influence of subgroup analysis and factor formulation on measurement criteria and inferences made in this study. Carmines and Zeller (1979) stated that a highly reliable indicator of theoretical concept is one that leads to consistent results on repeated measurements because it does not fluctuate greatly due to random error.

Purpose of the Study

The purpose of this study is to consider differences in the selection of job characteristics items for samples at various data collection points, to compare estimates of reliability of job characteristics items, and to test of significance of subgroups. Reliability is especially important in the studies of job characteristics items because it can be used to identify possible reliability shifts over time.

Importance of the Study

The importance of this study is that it provide a reliable grouping of job characteristics items based on comprehensive statistical analysis. In particular, it is important to have information about job characteristics items because they play an important role in teachers' remaining in the teaching profession (Chapman, 1983). Murphy (1982) stated that job factors can be classified as intrinsic and extrinsic rewards derived from work. He also stated that much of the attrition in the teaching profession can be attributed to teachers' dissatisfaction with intrinsic and extrinsic rewards (Murphy 1982). The results of this study should provide insights to other

researchers as they form factors to represent theoretical concepts.

Definition of Terms

"Factor analysis" refers to a variety of statistical techniques whose common objective is to represent a set of variables in terms of a smaller number of hypothetical variables.

"Reliability" is a function of the consistency of measures (of the same underlying concept) using identical, repeated items or maximally similar methods of measurement.

"Clustering" is a combination of items that are grouped together by means of a theoretical concept or statistical process.

"Measurement Error" is the extent to which standard techniques of analysis become erroneous and misleading if certain types of errors are present.

"Job Characteristics Items" were taken from the questionnaires. These items are:

a. Opportunity to be creative and original
b. Opportunity to use special abilities or aptitudes
c. Opportunity to work with people rather than things

d. Opportunity to earn a good deal of money
e. Social status and prestige
f. Opportunity to effect social change
g. Relative freedom from supervision by others
h. Opportunity for advancement
i. Opportunity to exercise leadership
j. Opportunity to help and serve others
k. Adventure
j. Opportunity for a relatively stable and secure future
m. Fringe benefits (health care, retirement benefits)
n. Variety in the work
o Responsibility
p. Control over what I do
q. Control over what others do
r. Challenge

Research Questions

In order to achieve the purpose of this study, the following eight research questions were formulated on the basis of the review of literature and the theoretical framework for the study:

1. What influence does sample have on clustering?
2. What influence does gender have on clustering?

3. What influence does teaching status have on clustering?
4. What influence does teaching level have on clustering?
5. What influence does the sample used to form factors have on reliability?
6. What influence does gender have on reliability?
7. What influence does teaching status have on reliability?
8. What influence does teaching level have on reliability?

Research Hypotheses

Furthermore in order to achieve the purpose of this study, the following three hypotheses were formulated on the basis of the review of literature and the theoretical framework for the study:

1. There is a significant difference in means for the factors according to gender.
2. There is a significant difference in means for the factors according to teaching status.
3. There is a significant difference in means for the factors according to teaching level.

Basic Assumptions

The data used in this study were collected from "Teacher Education Students Survey", "Teacher Education Program Graduate Survey", "One-Year Follow-up Teacher

Education Graduate Survey", and Five-Year Follow-up Teacher Education Graduate Survey" conducted by RISE from fall 1984 to spring 1987.

The basic assumptions underlying this study were:

1. The instruments, survey procedures, and data collection method used by RISE were reliable and valid.
2. Respondents to the questionnaires replied honestly.
3. The questions included in the "Teacher Education Students Survey", "Teacher Education Program Graduate Survey", "One-Year Follow-Up Teacher Education Graduate Survey", and "Five-Year Follow-Up Teacher Education Graduate Survey" were effective measures of job characteristics items.
4. Job characteristics items can be factor analyzed into factors.

Delimitations of the Study

This study has the following delimitations:

1. The results from this study should be generalized to individuals with similar characteristics and participating in similar teacher preparation programs.
2. The student respondents for this study were all enrolled at ISU.
3. The teacher respondents for this study were all

graduates of ISU.

4. The questions describing job factors of the "Teacher Education Students Survey" and "Teacher Education Program Graduate Survey" were stated differently from "One-Year Follow-up Teacher Education Graduate Survey" and "Five-Year Follow-up Teacher Education Graduate Survey".
5. The job characteristics items of the "Teacher Education Students Survey", "Teacher Education Program Graduates Survey", "One-Year Follow-up Teacher Education Graduate Survey" and "Five-Year Follow-up Teacher Education Survey" do not represent all the job characteristics items.

Organization of the Remainder of the Study

Presented in Chapter II is the review of the literature. It includes a discussion of the theoretical and empirical literature of factor analysis, reliability, and job characteristics items as related to gender, teaching status, and teaching level.

Presented in Chapter III are the methodology and design of the study. It includes a discussion of the data source, instrumentation, measurement and operationalization of the variables, and the data analysis techniques employed.

Presented in Chapter IV are the results of the data analysis and findings. The findings are presented in relation to hypotheses stated in Chapter I.

Presented in Chapter V is a summary of the study, a discussion of the implications of the research findings for educational practice and research, and recommendation for future study.

CHAPTER II - A REVIEW OF THE LITERATURE

Statistical Approach

There are numerous studies on factor analyzing of job characteristics items, but none or few ever examined the effects of subgroups on item selection, reliability estimates or substantive results. Due to a lack of research on subgroups, a statistical approach in relation to previous research was developed to support this study. In order to better examine the effects of subgroups on job characteristics items, five steps must be observed. These five steps are: factor analysis, reliability, gender, teaching status, and teaching level. For the first step (factor analysis), it is necessary to understand a statistical approach that can be used for item selection. For the purpose of this study, the literature revealed various approaches by which items can be selected and reliability be estimated.

Factor Analysis

In past studies, item selection was a simple process for researchers because most research designs only involved one or two variables, which did not require a systematic

approach for selecting items (Buswell, 1966). As one looks at research designs today, one can assume that all research projects involve a large number of variables, which require a more systematic approach to item selection. One of the most commonly used approaches for item selection is factor analysis.

Factor analysis refers to a variety of statistical techniques that share the common objective of representing a set of variables in terms of a smaller number of hypothetical variables. This is one of the most frequently used techniques in multivariate research because it provides an empirical basis for reducing the many variables to just a few factors. Factor analysis performs the function of data reduction by grouping variables that are moderately or highly correlated with one another. These factors then become manageable data for analysis and interpretation. The use of factor analysis is mainly confirmatory or exploratory, depending on the major objectives of the researcher.

Confirmatory factor analysis is used when the researcher may anticipate or hypothesize that there are two different underlying dimensions for his/her data and that certain variables belong to one dimension while others belong to the second. In other words; confirmatory factor

analysis is used to test expectation, then it is used as a means of confirming a certain hypothesis, not as a means of exploring underlying dimensions. This study will focus on exploratory factor analysis.

Exploratory factor analysis is used when the researcher might not have any idea as to how many underlying dimensions there are for the given data. Therefore, the researchers used exploratory factor analysis as an expedient way of ascertaining the minimum number of factors that can account for observed covariation and as a means of exploring the data for possible data reduction. When conducting a factor analysis solution (whether confirmatory or exploratory factor analysis), other steps are involved.

The initial step in a factor solution is extraction. The main objective of the extraction step is to determine the minimum number of common factors that satisfactorily produce the correlations among the observed variables. The correlation matrix is searched (statistically, not literally) for sets of variables that intercorrelate, or share common variance with each other. Each set is a factor, a mathematical combination of the variables that can be grouped together. There are several alternative methods for obtaining the initial factor solution. These major alternative methods are: (1) maximum likelihood (or

canonical factoring); (2) least-squares (variants are principal axis factoring with iterated communalities or Minres); (3) Alpha factoring; (4) image factoring; and (5) principal components analysis. This study focuses on the principal components analysis method.

> Principal components analysis can be defined as a "linear combinations of observed variables, possessing properties such as being orthogonal to each other, and the first principal component representing the largest amount of variance in the data, the second representing the second largest and so on; often considered variants of common factors, but more accurately are contrasted with common factors which are hypothetical" (Kim & Mueller, 1979, p. 78).

In 1933, Hotelling developed the principal component analysis method. It is the most frequently used procedure in the social sciences and education for factor analyzing large groups of variables. The principal components analysis is a method of transforming a given set of observed variables into another set of variables. The objective of principal components analysis is not to explain the correlations among variables but to account for as much variance as possible in the data. For extracting variables, there is no one set criterion, but, according to

Kim and Mueller (1979), there is a rule of thumb. The rule is, variables that have an eigenvalue greater than or equal to one are extracted. An eigenvalue is a mathematical property of a matrix. It is used in relation to the decomposition of a covariance matrix, both as a criterion of determining the number of factors to extract and a measure of variance accounted for by a given dimension (Kim & Mueller, 1979).

The second step in a factor solution is factor loading. Each variable extracted should have high factor loading with the other factors. This indicates that a specific variable shares variance with other variables in its factors, but its variance is distinct from that of variables loaded heavily on other factors. These factors are named based on the variables that load on a specific factor.

The third step in a factor solution is rotation. The factors are manipulated mathematically to reduce the ambiguity of factor loadings. The goal is to enhance the correlation of variables with the factors they load most highly on and to reduce the correlation of the variables with other factors. The first factor accounts for as much variance as possible, the second factor accounts for as much of the residual variance left unexplained by the first

factor, the third factor accounts for as much of the residual variance left unexplained by the first two factors, and so on (Kim & Mueller 1978).

There are two basic types of of rotation, orthogonal and oblique.

> Orthogonal Rotation: the operation through which a simple structure is sought under the restriction that factors be orthogonal (or uncorrelated); factors obtained through this rotation are by definition uncorrelated.
>
> Oblique Rotation: the operation through which a simple structure is sought; factors are rotated without imposing the orthogonality condition and resulting terminal factors are in general correlated with each other (Kim and Mueller, 1979 p. 86).

Kim and Mueller (1979) noted that no method of rotation improves the degree of fit between the data and the factor structure. Any rotated factor solution explains exactly as much covariation in the data as the initial solution. The initial factoring step usually determines the minimum number of factors that can adequately account for observed correlations.

Procedure Factor Analysis

In order to ascertain if there were underlying dimensions to some of the variables under study, factor analysis was carried out on each subgroup (gender, teaching level, and teaching status) of the 18 sub-items concerning

job characteristics items. The data were analyzed using the principal components analysis and varimax rotation from the Statistical Package in the Social Sciences (SPSSX) (Nie, Hull, Jenkins, Steinbrenner, & Bent 1983). In each analysis, seven guidelines were considered in determining which items load on which factor and which factors to select for further study. Guidelines relevant to the selection of items for a factor are as follows:

Factors were formed by including those items with factor

loading .40 or greater, or if they were similar in content to those with loading equal to or above .39. Factors of items forming each factor should be similar in content as far as possible.

Guidelines relevant to selection of a factor are as follows:

Eigenvalue of each factor should be 1 or greater.
Percentage of variance explained in each factor should be 5 percent or greater.
Chronbach Alpha as an estimate of reliability of items forming each factor should be .65 or greater.

A factor that did not meet these five guidelines was not included. Also, a factors that consisted of only one item or two items was not included.

Reliability

In the study of reliability of factor measurements within the context of classical test theory model, the function coefficient alpha, so named and extensively studied by Cronbach, and in its general or special studies by Cureton (1958), Dressel (1940), Guttman (1953), Hoyt (1941), Jackson and Ferguson (1941), Kuder and Richardson (1937), Rulon (1939) and others, play a most important role in understanding the coefficient of reliability. Coefficient of reliability can be estimated by such methods as Cronbach Coefficient Alpha, Guttman Lamda, Spearman-Brown Prophecy Formula, Kuder-Richardson Formula 20, etc. These different methods of estimating reliability coefficient usually produce similar results. However, there are usually some differences because different methods take into account different sources of error (Borg and Gall, 1985 and Roscoe 1969). Reliability coefficient reflects the extent to which a test is free of error variance. Error variance may be defined as the sum effect

of the chance differences that arise between persons from factors associated with a particular measurement.

Reliability studies provide information on the degree to which a measure will yield similar results for the same subjects at different times or under different conditions (Borg & Gall, 1985). In other words, they give an estimate of consistency. According to Smith and Glass (1987, p. 106), "The internal consistency method provides information on only one source of error and ignores sources of error from observers, temporary states of the subjects and non-standardized procedures." In this study, Cronbach's Coefficient Alpha is used to estimate the reliability of factor measures. Cronbach's Coefficient Alpha is based on the average correlation of all pairs of items on the test. This method of reliability assesses the internal consistency of an instrument (Smith & Glass, 1987). It also provides a conservative estimate of reliability.

Reliability is usually expressed as a coefficient. The coefficient demonstrates whether or not the instrument designer was correct in expecting a certain collection of items to yield interpretable statements about individual differences (Kelley 1943). The coefficient of reliability is a function of the number of items in a test, the greater the number of items in a test the more the reliable the

test tends to be (Roscoe, 1969). Reliability coefficients vary between values of .00 and 1.00, with 1.00 indicating perfect reliability (which is never attained in practice) and .00 indicating no reliability. Moore (1983) stated that an measuring instrument with a reliability coefficient above .80 generally indicates good consistency of a instrument. When estimating the consistency of an instrument, there is another important criterion to considered. This criterion is the average item correlation. The average item correlation is the average of the "corrected item-total correlation" which can be calculated with procedure reliability using SPSSX.

Procedure reliability performs an item analysis on the components of additive scales by computing coefficients of reliability. The computations performed are designed for those situations where the goal is to assess the reliability of a sum or weighted sum across variables as an estimate of a case's true score. These procedures can easily be computed with SPSSX.

Gender

Tradition plays an important role in determing gender differences between various job characteristics factors. This phenomenon of gender difference has been taking place

at least since the Industrial Revolution, where men and women were separated in the work place not so much by legal enactment as by an extraordinary combination of informal forces (Oppenheimer, 1968). These forces included strong social norms concerning appropriate work roles for men and women. The most traditional perspective for job outcomes are consistent with early sex role socialization (Keith, 1980). Sex role socialization inclines individuals to choose occupations that are traditionally assigned to their sex; it also fosters needs, values, and skills that cause differences in job factors (Rosen and Aneshensel, 1978).

The literature reveals that sex differences in job factor preference can be categorized as intrinsic or extrinsic rewards from work (Herzberg, Mausner, Petterson, and Capwell 1957). According to Herzberg et al. (1957), males place more importance on factor he terms intrinsic: achievement, recognition, and advancement; whereas females place more importance on extrinsic factors such as working conditions and interpersonal relationships. Fox (1961) found that female respondents were influenced significantly more than male respondents by (1) their desire to work with children and adolescents; (2) the opportunity to leave the teaching profession and return to it later; and (3) membership in Future Teacher clubs. Male respondents on

the other hand, were influenced significantly more than female respondents by: (1) their liking for a particular subject; (2) the trend toward increasing salaries for teachers; (3) the results of vocational interest and inventories; and (4) the opportunity to use teaching as a stepping stone to another career. Bartol (1974) and Manhardt (1972) found that males placed more importance on long-range career objectives, while females emphasized the value of a comfortable working environment and pleasant interpersonal relationships.

In a study of high school students, Dawkins (1980) found that males placed greater importance on earning a lot of money, being looked up to, acting as a leader, and being free from supervision, while females place greater importance on helping others and working with people rather than things. Research shows that as students move from high school to college, their values remain basically the same. Keith (1980) found in a study of college graduates that males placed greater importance on self-expression (the opportunity to use special abilities or attitudes, to be creative, and to be free from supervision), extrinsic rewards (salary, status, advancement, and retirement benefits), and leadership than did females in selecting

their current employment. However, both males and females had the desire to work with people and serve others.

In a more recent study of college graduates, Keith, Warren, and Dilts (1983) found that women were more likely to define people-oriented aspects of an occupation (focusing on people rather than things, and helping and serving others) as important and wanted more diversity (including variety, challenge, and responsibility) in their work than did men. Keith, Warren, and Dilts also found that both men and women placed great importance in the extrinsic aspects of work (salary, social status, and fringe benefits).

When comparing Dawkins (1980) and Keith's (1980) findings, there are similarities between the importance that high school students and college graduates place on job characteristics items. However, similar findings did not hold true in the Keith, Warren, and Dilts study which, as stated, infers that both men and women placed great important on the extrinsic aspects of work. These inconsistencies also exist in other studies. Singer (1974) and Saleh and Lalljee (1969) found few or no differences in preferences for job factors by gender. Singer (1974) concluded there is "no evidence of the sex, work, and role stereotypes posited by previous investigator" and that "the

stereotypes prevalent in the past three decades are no longer indicative of college students about to enter today's job market" (p. 363). According to Siegfried, MacFarland, Graham, Moore, and Young (1981), the presence of sex differences in occupational orientations has diminished greatly because of the feminist movement which is taking place in the labor force.

Teaching Status

During the 1960s there was a critical nationwide shortage of teachers. One reason for the shortage was the large number of prospective teachers who did not enter teaching after graduation. This trend continues to hold true of teacher education graduates today. According to Feistritzer (1984), approximately 50 percent of the 1983 teacher education graduates did not enter teaching the academic year following graduation. The reason for teachers entering or not entering the teaching profession can be attributed to job preference factors (Pavalko, 1970).

Murphy (1982) stated that much of the attrition in the teaching profession can be attributed to teachers' dissatisfaction with intrinsic and extrinsic rewards. Keith, Warren and Dilts (1983) classify salary, social

status, future security and fringe benefits as extrinsic rewards, and the opportunities for creativity and to use special abilities as intrinsic rewards. Teachers' dissatisfaction with intrinsic and extrinsic rewards can result from their high expectations at graduation. Thompson, Warren, Dilts, and Blaustein (1983) found that current teacher expectations were higher than the reality of the job situation. College seniors placed less value on money/status (opportunity to earn a good deal of money, social status and prestige, opportunity for a relatively stable and secure future, and fringe benefits) than did teachers who had taught for one year.

The Metropolitan Life Survey (1985) revealed that 60 percent of former teachers cite inadequate salaries as the main reason they left teaching. Sixty-two percent of current teachers who seriously considered leaving cite inadequate salaries as the main reason that they may leave. This study is consistent with several other past studies that cite salary as the primary cause of teacher attrition (Thorndike & Hagen, 1960; Blaser, 1965). However, findings regarding the salary factor varied. Dunn (1961) in New Jersey and Browing (1963) in a study of Maryland teachers both reported that salary held a low priority among the determinants of career change among females. Bloland and

Selby (1980) also found that salary is unimportant for women, but that it is an important factor in the career change of males. Keith, Warren and Dilts (1983) found that opportunities for advancement were most important to those planning nonacademic careers, while diversity in work was most characteristic of individuals who planned to teach or be in education-related fields (superintendents, principals, and counselors). Hutcheson (1986) observed that people who persisted as teachers tended to value the recognition and approval of other people, while those leaving teaching appeared to value more extrinsic rewards, such as fringe benefits.

Teaching Level

The literature provided little direct evidence as to how teaching level preferences (elementary or secondary) were related to job factors until a recent study conducted by Keith, Warren, and Dilts (1983). Keith, Warren and Dilts investigated the influences of sex, career plans, and teaching level on preferences for job factors among 486 graduates of ISU's Teacher Education Program. Their findings revealed that women in elementary education expressed a greater preference for jobs which provided an opportunity for self expression, an opportunity to help

others, and for jobs with diversity in the work place. Women in secondary education placed a greater emphasis on autonomy and leadership. Keith, Warren, and Dilts concluded that teaching level may be more closely linked to gender than to preference for some job factors.

Fox (1961) found that prospective elementary school teachers were influenced significantly more than prospective secondary school teachers by: (1) their desire to work with children or adolescents; (2) their desire to be of service to society; (3) experience of working with youngsters; (4) the opportunity to leave the profession and return to it later; and (5) membership in Future Teachers clubs. Prospective secondary school teachers were influenced significantly more than prospective elementary school teachers by: (1) their liking for a particular subject; (2) the comparatively short school day, long summer vacation and other vacations; (3) the trend toward increasing salaries of teachers; (4) results of vocational interest inventories; and (5) the opportunity to use teaching as a stepping stone to another career.

Other studies provided indirect evidence as to how teaching level relates to teacher satisfaction. Lester (1984) reported that elementary school teachers were more satisfied than senior high school teachers in terms of the

following categories: colleagues, working conditions, pay, responsibility, and work itself. This finding is consistent with the findings of the National Education Association (1980), which found that elementary school teachers are the most satisfied, and that senior high school teachers are the most dissatified with job factors.

However, Erlandson and Pastor's 1981 study is inconsistent with other studies. Erlandson and Pastor found that high school teachers possessed a predominance of higher order needs strengths (participation in decision making, the use of a variety of valued skills and abilities, freedom and independence, challenge, expression of creativity, and an opportunity for learning) over lower order needs strengths (high pay, fringe benefits, job security, friendly co-workers, and considerate supervision).

CHAPTER III - METHODOLOGY

This study was designed to examine items of job characteristics and to identify what influence subgroups have on item selection, reliability estimates, and substantive results.

The purpose of this chapter is to describe the instruments used to collect the data, data source, population and samples, and the analysis of the data.

Data Source and Collection

In 1980, the Research Institute for Studies in Education began implementation of a comprehensive model designed to evaluate and improve the teacher preparation program at Iowa State University. The model was designed to be a longitudinal study that used survey research to collect data from students enrolled in a beginning teacher course (see note in the introduction) and the graduates of the teacher education program at various stages in their careers. This study used data gathered from surveys at four data collection points (enrolled in a beginning teacher course, graduation from the teacher preparation program, one year following graduation and five years following graduation). The survey was conducted during the

fall and spring semester of 1984-87 when students were enrolled in the Education 204 course, the beginning teaching course at the time of graduated from the teacher preparation program, one year following graduation, and five years following graduation.

In conducting the Teacher Education Students Survey, RISE distributed questionnaires to students enrolled in the Education 204 course two weeks before the end of each semester with a cover letter explaining the purpose of the survey and enlisting their voluntary participation. When conducting the Teacher Education Program Graduate Survey, the One-Year Followup Teacher Education Graduate Survey, and the Five-Year Followup Teacher Education Graduate Survey, RISE closely follows the procedures for conducting a mail survey recommended by Dillman (1978). At each data collection point, those to be surveyed are mailed a copy of the survey with a cover letter explaining the purpose of the survey and enlisting their voluntary participation. (A copy of the most recent version of each of the cover letter appears in Appendix B.) Two weeks later, a reminder postcard is mailed to those who have not responded to the earlier mailing. After two more weeks, another copy of the survey and a second letter requesting voluntary participation are mailed to those who have not responded to

the first two mailings. All surveys in the project have received approval from the Iowa State University Committee on the Use of Human Subjects in Research.

Instruments

The instruments used in this study were developed by RISE personnel, and each was developed for use in the on going RISE research project to evaluate the ISU teacher preparation program. Because the data collected from these surveys are used to evaluate the teacher preparation program, the questionnaires share many common items. Most of the data used in this study were derived from questions included in all four questionnaires.

The Teacher Education Students Survey was administered while students were enrolled in a beginning teacher course. The items from the questionnaire that provided data relevant to this study are those that ask subjects to report (1) their gender; (2) their current long-range career plan; and (3) their job characteristics of their potential jobs.

The Teacher Education Program Graduate Survey was administered at time of graduation from the teacher preparation program. The items from the questionnaire that provided data relevant to this study are those that ask

subjects to report (1) their employment plans for the following year; (2) the level of their student teaching (elementary/secondary); and (4) their job characteristics.

The One-Year Followup Teacher Education Graduate Survey was administered one year following graduation from the teacher preparation program. The items from the questionnaire that provided data relevant to this study are those that asked subjects to report (1) their current employment status (teaching/not teaching); (2) their teaching level (elementary and secondary); and (3) the extent to which specific job characteristics are provided in their current job.

The Five-Year Followup Teacher Education Graduate Survey was administered five years following graduation from the teacher preparation program. The items from the questionnaire that provided data relevant to this study are those that ask subjects to report (1) their current employment status (teaching/not teaching); (2) their teaching level (elementary/secondary); and (4) the extent to which specific job characteristics are provided in their current job. (A copy of the most recent version of each of the questionnaires appears in Appendix A.) Gender data used in this study were taking from the permanent record cards of the teacher education graduates.

It is important to note that some of the items on the surveys were recoded into specified groups. The Teacher Education Students Survey item "current long-range career plan" was categorized into thirteen career plans. These groups were further dichotomized into "teaching only" and "not teaching" career plans (teaching status). The item also was coded into teaching level. Those students who indicated that their long-range career plans are to teach at the elementary and preschool level were included in the elementary group. Those students who indicated that long-range career plans were to teach at the secondary and K-12 level were included in the "Secondary" group. Those students who did not indicate teaching as a career were included in the not teaching/not specified group.

On the Teacher Education Program Graduate Survey, graduates were asked what are their employment plans are for the next academic year. Those graduates who indicated that they have obtained a teaching position and those who are seeking a teaching position were included in the "teaching only" group. Those graduates who indicated that they are seeking a non-teaching position, graduate study, or other were included in the "not teaching" group. The One-Year Followup Teacher Education Graduate and Five-Year

Followup Teacher Education Graduate Surveys teaching status item were not recoded.

The item that represents teaching level on Teacher Education Program Graduate, One-Year Followup Teacher Education Graduate, and Five-Year Followup Teacher Education Graduate Surveys were categorized into elementary and secondary teaching levels. Those graduates that indicated prekindergarten/kindergarten and elementary were included in the "elementary" group, and those graduates that indicated secondary and K-12 were included in the "secondary" group.

Population and Samples

The population for this study consisted of students who were enrolled in Education 204 and graduates of the teacher preparation program at various time periods.

Teacher Education Students Sample (Education 204)

The students included in this sample were students enrolled in Education 204 course from fall 1984 through spring 1987 semesters who participated in the survey two weeks before the semester's end. The total number of students surveyed in each sub-sample is as follows:

SURVEY TIME	NUMBER	RELATIVE PERCENT
Fall and Spring 1984-85	421	27.9
Fall and Spring 1985-86	564	37.3
Fall and Spring 1986-87	525	34.8
TOTAL	1510	100.0

This sample was comprised of 1510 students that were enrolled in Education 204 that completed a survey during fall 1984 through spring 1987 semesters.

Teacher Education Program Graduate Sample (Graduating Seniors)

The graduating seniors included in this sample graduated during fall 1985 through spring 1987 semesters who completed a survey at time of graduation from the teacher preparation program. The total number of graduates in each sub-sample is as follows:

SURVEY TIME	NUMBER	RELATIVE PERCENT
Fall and Spring 1984-85	195	32.3
Fall and Spring 1985-86	209	34.6
Fall and Spring 1986-87	200	33.1
	---	-----
TOTAL	604	100.0

This sample was comprised of 604 teacher education graduates that completed a survey after graduating from the teacher preparation program during fall 1984 through spring 1987 semesters.

One-Year Followup Teacher Education Graduate Sample (First Year Followup)

The teacher education graduates included in this sample graduated during fall 1983 through spring 1986 semesters who completed a survey one year following graduation from the teacher preparation program. The total number of graduates in each sub-sample is as follows:

SURVEY TIME	NUMBER	RELATIVE PERCENT
Fall and Spring 1984-85	202	36.2
Fall and Spring 1985-86	183	32.8
Fall and Spring 1986-87	173	31.0
	---	-----
TOTAL	558	100.0

This sample was comprised of 558 teachers education graduates that completed a survey one year following graduation from the teacher preparation program during fall 1984 through spring 1987 semesters.

Five-Year Followup Teacher Education Sample
(Fifth Year Followup)

The teacher education graduates included in this sample graduated during the spring 1980 through spring 1983 semesters who completed a survey five year following graduation from the teacher preparation program. The total number of graduates in each sub-sample is as follows:

SURVEY TIME	NUMBER	RELATIVE PERCENT
Spring 1985	174	27.0
Spring 1986	238	36.9
Spring 1987	233	36.1
	---	-----
TOTAL	645	100.0

This sample was comprised of 645 teachers education graduates that completed a survey five years following graduation from the teacher preparation program during spring 1985, spring 1986, and spring 1987 semesters.

General information about the characteristics of the students enrolled in teacher education program and teacher education graduates are presented in Table 1, 2, and 3. Table 1 displays the gender characteristics of the samples. In each sample, more than 69 % of the respondents were females. There were missing cases only in Education 204 Sample (0.1 %).

Presented in Table 2 is information about students' current long-range career plans and information about the occupations of graduates at time of graduation, one year

and five years following graduation from the teacher preparation program. Seventy-eight percent of the students from the Education 204 and Graduating Seniors Samples plan to teach. The greatest percentage of graduates that were teaching was in the First Year Followup Sample (72 %). Only 50 percent of graduates were teaching in the Fifth Year Followup Sample.

In term of teaching level, the majority of the teachers were at the elementary level in the First Year Followup (55 %) and Fifth Year Followup Samples (55 %). In the Graduating Seniors Sample 53 % were at the elementary level and 47 % at the secondary level. Fifty percent of the students in Education 204 Sample were at the elementary level and fifty percent were at the secondary level. These results can be seen in Table 3.

Analysis of Data

The data were analyzed using the Statistical Package for the Social Sciences (Nie et al., 1983). There were two steps in the data analysis: (1) preliminary analysis and (2) hypotheses testing. The preliminary analysis included frequency counts, percentages, factor analysis, and reliability. In particular, factor analysis was carried out on the 18 characteristics items of each survey and

TABLE 1. Gender Characteristics of the Samples

GENDER		NUMBER	RELATIVE PERCENT	ADJUSTED PERCENT
EDUCATION 204				
Female		1052	69.7	69.8
Male		456	30.2	30.2
Not specified		2	0.1	****
	TOTAL	1510	100.0	100.0
GRADUATING SENIORS				
Female		480	79.5	79.5
Male		124	20.5	20.5
	TOTAL	604	100.0	100.0
FIRST YEAR FOLLOWUP				
Female		441	79.0	79.0
Male		117	21.0	21.0
	TOTAL	558	100.0	100.0
FIFTH YEAR FOLLOWUP				
Female		503	78.0	78.0
Male		142	22.0	22.0
	TOTAL	645	100.0	100.0

TABLE 2. Teaching Status of the Samples

TEACHING STATUS		NUMBER	RELATIVE PERCENT	ADJUSTED PERCENT
EDUCATION 204				
Teaching		1170	77.5	77.7
Not teaching		336	22.3	22.3
Not specified		4	0.3	****
	TOTAL	1510	100.0	100.0
GRADUATING SENIORS				
Teaching		469	77.6	77.9
Not teaching		133	22.0	22.1
Not specified		2	0.3	****
	TOTAL	604	100.0	100.0
FIRST YEAR FOLLOWUP				
Teaching		401	71.9	71.9
Not teaching		157	28.1	28.1
	TOTAL	558	100.0	100.0
FIFTH YEAR FOLLOWUP				
Teaching		322	49.9	50.0
Not teaching		322	49.0	50.0
Not specified		1	0.2	****
	TOTAL	645	100.0	100.0

TABLE 3. Teaching Level of the Samples

TEACHING LEVEL		NUMBER	RELATIVE PERCENT	ADJUSTED PERCENT
EDUCATION 204				
Elementary		584	38.7	49.9
Secondary		586	38.8	50.1
Not specified		340	22.5	****
	TOTAL	1510	100.0	100.0
GRADUATING SENIORS				
Elementary		320	53.0	53.0
Secondary		284	47.0	47.0
	TOTAL	604	100.0	100.0
FIRST YEAR FOLLOWUP				
Elementary		218	39.1	54.9
Secondary		179	32.1	45.1
Not teaching/ Not specified		161	28.9	****
	TOTAL	558	100.0	100.0
FIFTH YEAR FOLLOWUP				
Elementary		171	26.5	55.3
Secondary		138	21.4	44.7
Not teaching/ Not specified		336	52.1	****
	TOTAL	645	100.0	100.0

combined surveys (undergraduates and graduates surveys) to discover underlying factors within each survey and subgroup. Factor analysis and reliability were used to test the following research questions:

Question 1: What influence does sample have on clustering?

Question 2: What influence does gender have on clustering?

Question 3: What influence does teaching status have on clustering?

Question 4: What influence does teaching level have on clustering?

Question 5: What influence does sample used to form factors have on reliability?

Question 6: What influence does gender have on reliability?

Question 7: What influence does teaching status have on reliability?

Question 8: What influence does teaching level have on reliability?

In step two, a t-test of independent means was used to test the following research hypotheses:

Hypothesis 1: There is a significant difference in means for the factors according to gender for both undergraduates and followups.

Hypothesis 2: There is a significant difference in means for the factors according to teaching level for both undergraduates and followups.

Hypothesis 3: There is a significant difference in means for the factors according to teaching status for both undergraduates and followups.

A single asterisk (*) was used in the tables to denote significant differences at the .05 level, and the double asterisk (**) was used to denote significant differences at the (.01) level.

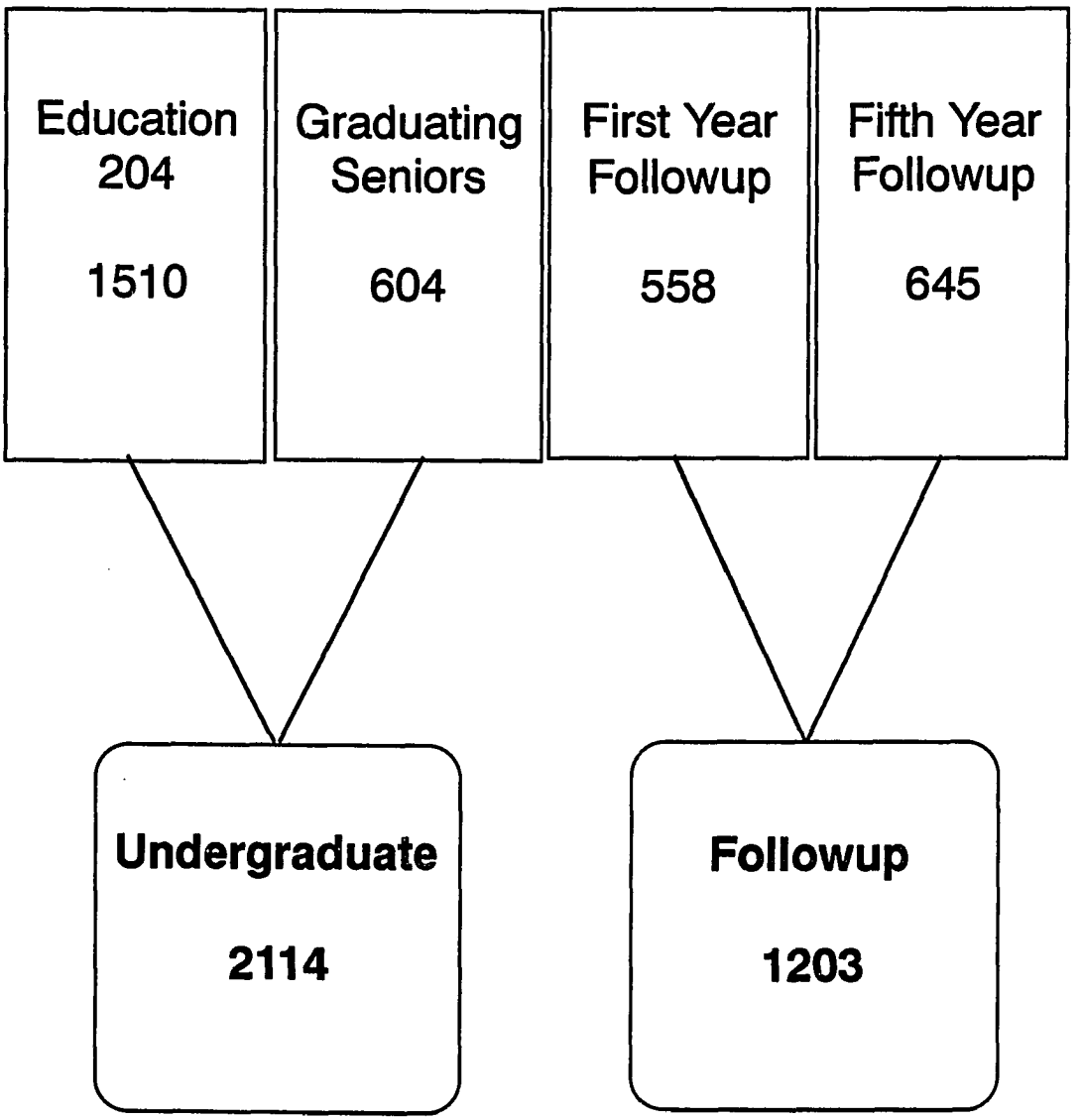

FIGURE 1. Combined Samples

CHAPTER IV - RESULTS AND DISCUSSION

The findings and statistical analyses are presented in this chapter. Data used in this study were subjected to a number of statistical procedures: factor analysis, reliability, and a t-test for independent means. The results from the above statistical procedures will be discussed in sections: factor analysis, reliability, gender differences, teaching status differences, and teaching level differences.

Factor Analysis

A factor analysis was carried out on eighteen items of job characteristics for each sample to discover the underlying factors within each sample. It was also carried out on the combined samples and subgroups. Each factor analysis was conducted and analyzed according to the guidelines stated in Chapter II. Listed in Table 4 are the item numbers and the item statements for each item used in this study. Note that the items used in this study were the same for each sample.

TABLE 4. Names of the Job Characteristics Items

ITEM NUMBER	ITEM STATEMENTS
JC1	Opportunity to be creative and original
JC2	Opportunity to use special abilities or aptitudes
JC3	Opportunity to work with people rather than things
JC4	Opportunity to earn a good deal of money
JC5	Social status and prestige
JC6	Opportunity to effect social change
JC7	Relative freedom from supervision by others
JC8	Opportunity for advancement
JC9	Opportunity to exercise leadership
JC10	Opportunity to help and serve others
JC11	Adventure
JC12	Opportunity for a relatively stable and secure future
JC13	Fringe benefits (health care, retirement benefits)
JC14	Variety in the work
JC15	Responsibility
JC16	Control over what I do
JC17	Control over what others do
JC18	Challenge

Addressing of Research Question 1

What influence does sample have on clustering?

Based on the evidence presented in Tables 5 through 10, clustering appear to be influenced by sample. Sample also appear to be influenced the number of factors, factor loadings, eigenvalues, and the amount of variance. However, it did not seem to have influence the number of factors in Tables 5, 6, or 7. Students enrolled in Education 204 (Table 5) and graduating seniors of the teacher education program (Table 6) consisted of two factors each: (1a) challenge/responsibility/special abilities, (1b) challenge/responsibility, and (2) extrinsic rewards. Students in this selected challenge/responsibility/special abilities as their first factor that a job should provide whereas graduating seniors selected challenge/ responsibility as their first factor that a job should provide. When combining the Education 204 sample with the graduating seniors sample, the factors were the same as for the graduating seniors sample (the combined sample will be referred to as "undergraduate sample" later on in this study) (Table 7). The first factor in all three samples accounted for more than 25

TABLE 5. Factor Matrix of Job Characteristics Items for Students Enrolled in Education 204

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		4.38	2.19	1.38	1.12	1.04
ITEM LOADING						
JC1		.61*	-.05	-.00	.07	.20
JC2	Challenge/	.59*	.03	.06	.12	.21
JC14	Responsibility/	.55*	.15	.12	.10	-.08
JC18	Special	.55*	-.01	.23	.22	-.08
JC15	Abilities	.46*	.05	.38	.30	-.18
JC16		.44*	.10	.36	.06	-.03
JC11		.38	.12	.15	.07	.01
JC13		.09	.70*	.06	.08	-.07
JC12	Extrinsic	.10	.66*	.05	.15	-.11
JC4	Rewards	-.00	.60*	.28	-.13	.24
JC5		.00	.54*	.29	.06	.34
JC8		.16	.44*	.43	-.08	.21
JC9		.22	.12	.61*	.22	.05
JC17		.12	.19	.46*	.09	.04
JC7		.25	.12	.29	-.06	.17
JC10		.14	.05	.13	.67*	-.05
JC3		.14	.05	.01	.64*	.08
JC6		.17	.03	.12	.28	.29
Percentage of Variance		24.30	12.20	7.70	6.20	5.80

Total explained variance 56.20%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 6. Factor Matrix of Job Characteristics Items for Graduating Seniors

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		4.82	1.94	1.43	1.15	1.07
ITEM LOADING						
JC15		.72*	.06	.25	.11	.11
JC10		.59*	.03	.04	.15	.10
JC9	Challenge/	.53*	.39	.05	.14	.11
JC18	Responsibility	.53*	-.07	.16	.11	.21
JC14		.48*	.01	.43	.16	.16
JC16		.43*	.05	.29	.36	.13
JC3		.39	.16	-.07	-.01	.09
JC11		.36	.15	.24	.13	.10
JC5	Extrinsic	.07	.71*	.10	.21	-.04
JC4	Rewards	-.02	.63*	.31	.03	.09
JC8		.19	.48*	.27	.08	.06
JC7		.27	.31	.07	.27	-.03
JC13		.11	.26	.71*	.05	.09
JC12		.08	.26	.63*	-.03	.02
JC7		.08	.15	.08	.74*	.06
JC6		.28	.15	-.09	.39	.06
JC1		.20	.02	.03	.02	.72*
JC3		.18	.04	.11	.09	.60*
Percentage of Variance		26.80	10.80	8.00	6.40	6.00

Total explained variance 57.80%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 7. Factor Matrix of Job Characteristics Items for Undergraduate Combined Sample

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		4.60	2.11	1.29	1.19	1.02
ITEM LOADING						
JC15		.62*	.10	.10	.29	.14
JC16	Challenge/	.56*	.21	.07	.07	.15
JC18	Responsibility	.53*	.02	.03	.20	.29
JC14		.51*	.05	.21	.10	.26
JC9		.44*	.42	.02	.25	.05
JC11		.34	.14	.13	.09	.19
JC5	Extrinsic	-.02	.65*	.28	.12	.03
JC4	Rewards	-.02	.58*	.40	-.07	.06
JC8		.22	.55*	.27	-.03	.08
JC17		.29	.39	.05	.12	-.05
JC7		.28	.34	-.01	-.00	.11
JC13		.15	.23	.67*	.05	.03
JC12		.12	.18	.67*	.10	-.00
JC10		.25	.00	.09	.66*	.03
JC3		.09	.02	.07	.61*	.12
JC6		.13	.24	-.06	.31	.15
JC1		.24	.03	-.02	.09	.66*
JC2		.26	.10	.05	.14	.58*
Percentage of Variance		25.50	11.70	7.20	6.60	5.70

Total explained variance 56.70%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

percent of the explained variance and the second factor accounted for almost eleven percent of the explained variance. Each of the samples accounted for more than 50 percent of the total explained variance.

First year graduates of the teacher education program indicated that (1) challenge/responsibility, (2) autonomy/special abilities, and (3) extrinsic rewards were the characteristics their jobs provided them with, whereas fifth year graduates of the teacher education program indicated (1) autonomy/special abilities, (2) challenge/responsibility, (3) extrinsic rewards, and (4) service/people were the characteristics their job provided them with. When combining the first year followup sample with the fifth year followup sample, the factors were the same as for fifth year followup sample (the combined sample will be referred to as "followup sample" later on in this study), but the order of the factors was different.

The followup sample was the only sample in the study to have every item to load on a specific factor. The first factor in all three samples accounted for more than 33 percent of the explained variance. The overall explained variance in each of the three samples was more than 57 percent. The results can be seen in Tables 8, 9, and 10.

TABLE 8. Factor Matrix of Job Characteristics Items for First Year Followup of Graduates

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		6.04	1.86	1.17	1.02	1.00
ITEM LOADING						
JC15		.74*	.24	.08	.06	.18
JC18	Challenge/	.59*	.14	.14	.19	.42
JC9	Responsibility	.57*	.32	.20	.24	.08
JC10		.46*	.19	-.04	.43	.07
JC17		.43*	.11	.11	.21	.17
JC1	Autonomy/	.27	.76*	.07	.19	.12
JC2	Special	.15	.65*	.12	.21	.30
JC16	Abilities	.48	.54*	.18	.12	.07
JC7		.13	.42*	.18	.09	.09
JC8		.03	-.03	.62*	.07	.24
JC4	Extrinsic	-.02	.05	.62*	.10	.14
JC12	Rewards	.19	.20	.60*	.02	-.03
JC13		.12	.18	.47*	.06	-.08
JC6		.19	.19	.19	.62*	-.12
JC5		.13	.15	.47	.50*	.12
JC3		.26	.22	-.01	.35	.23
JC14		.34	.26	.11	.10	.57*
JC11		.24	.22	.17	.23	.50*
Percentage of Variance		33.50	10.30	6.50	5.70	5.60

Total explained variance 61.60%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 9. Factor Matrix of Job Characteristics Items for Fifth Year Followup of Graduates

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		6.24	2.08	1.15	1.04	1.01
ITEM LOADING						
JC2		.68*	.25	.09	.12	.16
JC1	Autonomy/	.67*	.21	.03	.23	.08
JC16	Special	.64*	.42	.01	.14	.15
JC7	Abilities	.56*	.14	.14	.10	.02
JC17		.42*	.27	.17	.25	-.01
JC18		.31	.62*	.26	.22	.05
JC15	Challenge/	.33	.62*	.03	.23	.17
JC14	Responsibility	.30	.58*	.20	.13	.06
JC9		.43	.43*	.23	.23	.08
JC4	Extrinsic	.08	.07	.70*	-.10	.27
JC5	Rewards	.24	.09	.64*	.20	.18
JC8		.00	.22	.63*	-.06	.23
JC11		.28	.31	.35	.24	-.00
JC10	Service/People	.22	.19	-.09	.77*	.12
JC3		.13	.26	.00	.50*	.08
JC6		.40	.05	.28	.49*	-.05
JC12		.17	.10	.31	.09	.66*
JC13		.03	.07	.21	.07	.58*
Percentage of Variance		34.70	11.50	6.40	5.80	5.60

Total explained variance 64.00%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 10. Factor Matrix of Job Characteristics Items for Followup Sample

FACT1	FACT2	FACT3	FACT4		
EIGENVALUES		6.13	1.97	1.09	1.06
ITEM LOADING					
JC18		.70*	.19	.19	.22
JC15		.62*	.07	.28	.24
JC14	Challenge/	.59*	.16	.25	.13
JC9	Responsibility	.49*	.21	.35	.27
JC11		.43*	.25	.20	.21
JC17		.39*	.12	.24	.25
JC4		.11	.71*	.04	-.08
JC8	Extrinsic	.23	.64*	-.03	-.06
JC5	Rewards	.18	.59*	.17	.26
JC12		.09	.55*	.19	.11
JC13		.02	.44*	.13	.10
JC1	Autonomy/	.25	.08	.73*	.23
JC2	Special	.27	.18	.65*	.16
JC16	Abilities	.44	.11	.57*	.19
JC7		.20	.15	.45*	.12
JC10		.25	-.02	.17	.74*
JC6	Service/People	.20	.23	.26	.46*
JC3		.26	.04	.16	.46*
Percentage of Variance		34.00	11.00	6.10	5.90

Total explained variance 57.00%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

Addressing of Research Question 2

What influence does gender have on clustering?

The results in Tables 11 through 14 showed that gender seems to influence the number of factors, factor loadings, eigenvalues, and the variance. When undergraduates were asked what factors a job should provide; undergraduate females reported (1) challenge/ responsibility, and (2) extrinsic rewards while undergraduate males reported (1) challenge/responsibility/ special abilities, (2) extrinsic rewards, (3) job factors, and (4) service/people. Factors for both undergraduate females and males accounted for more than 56 percent of the explained variance. (Results can be seen in Tables 11 and 12.)

When followups were asked what job characteristics items were provided in their jobs; followup females reported (1) challenge/responsibility, (2) autonomy/special abilities, (3) service/people, and (4) extrinsic rewards while followup males reported (1) challenge/special abilities, (2) autonomy/responsibility/service/people, and (4) extrinsic rewards. The first factor for both females and males followup samples accounted for more that 33 percent of the explained variance. Factors for followup

TABLE 11. Factor Matrix of Job Characteristics Items for Undergraduate Females

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		4.66	2.11	1.23	1.15	1.03
ITEM LOADING						
JC15		.65*	.07	.11	.16	.26
JC16	Challenge/	.57*	.22	.09	.12	.08
JC18	Responsibility	.54*	.02	.01	.30	.16
JC14		.48*	.10	.22	.22	.09
JC9		.46*	.39	.07	.10	.26
JC11		.34	.13	.15	.20	.11
JC5	Extrinsic	.02	.65*	.28	.03	.08
JC4	Rewards	.01	.59*	.39	.05	-.09
JC8		.22	.54*	.28	.11	-.02
JC7		.29	.39	.00	.10	.04
JC17		.32	.34	.05	-.02	.10
JC6		.15	.28	-.05	.16	.28
JC13		.16	.23	.72*	.03	-.00
JC12		.12	.19	.64*	-.03	.08
JC1		.22	.03	-.02	.72*	.07
JC2		.23	.13	.03	.55*	.13
JC10		.23	-.01	.03	.05	.65*
JC3		.10	.03	.04	.10	.58*
Percentage of Variance		25.90	11.70	6.90	6.40	5.70

Total explained variance 56.60%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 12. Factor Matrix of Job Characteristics Items for Undergraduate Males

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		4.36	2.20	1.41	1.21	1.12
ITEM LOADING						
JC2		.64*	.10	-.02	.11	.11
JC14	Challenge/	.62*	.10	.05	.08	.16
JC18	Responsibility/	.62*	.00	.15	.20	-.02
JC1	Special	.53*	.01	-.03	.03	.15
JC15	Abilities	.49*	.03	.28	.28	.08
JC11		.40*	.09	.22	.05	-.02
JC12		.14	.67*	.06	.10	.00
JC13	Extrinsic	.08	.65*	.09	.12	.05
JC4	Rewards	.00	.56*	.41	-.12	-.00
JC5		-.06	.45*	.43	.13	.09
JC9		.26	.03	.59*	.23	.08
JC17	Job Factors	.04	.15	.52*	.12	.12
JC8		.17	.38	.51*	-.01	.08
JC10		.20	.11	.15	.67*	-.06
JC3	Service/People	.14	.09	.06	.53*	-.01
JC6		.05	-.00	.06	.44*	.22
JC7		.14	.05	.12	.02	.60*
JC16		.45	.05	.12	.14	.53*
Percentage of Variance		24.20	12.20	7.80	6.70	6.20

Total explained variance 57.20%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 13. Factor Matrix of Job Characteristics Items for Followup Females

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		5.99	1.92	1.18	1.07	1.01
ITEM LOADING						
JC15		.72*	.25	.19	-.02	.12
JC18	Challenge/	.63*	.24	.29	.23	.03
JC14	Responsibility	.55*	.24	.20	.14	.07
JC9		.50*	.35	.23	.22	.08
JC17		.35	.28	.24	.17	-.02
JC11		.33	.27	.30	.31	.00
JC1	Autonomy/	.22	.72*	.25	.02	.10
JC2	Special	.23	.65*	.22	.09	.14
JC16	Abilities	.47	.59*	.11	.02	.13
JC7		.21	.50*	.03	.10	.05
JC10		.30	.15	.70*	-.07	.11
JC3	Service People	.27	.11	.50*	.01	.05
JC6		.12	.37	.49*	.28	-.00
JC4	Extrinsic	.06	.08	-.06	.64*	.21
JC8	Rewards	.14	-.03	-.02	.58*	.21
JC5		.09	.24	.29	.57*	.14
JC12		.09	.14	.08	.27	.71*
JC13		.04	.07	.04	.18	.55*
Percentage of Variance		33.30	10.70	6.60	5.90	5.60

Total explained variance 62.00%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 14. Factor Matrix of Job Characteristics Items for Followup Males

		FACT1	FACT2	FACT3
EIGENVALUES		6.83	2.01	1.25
ITEM LOADING				
JC14		.68*	.16	.23
JC18	Challenge/	.61*	.24	.25
JC11	Special Abilities	.55*	.14	.23
JC2		.51*	.30	.19
JC10		.10	.71*	-.03
JC9		.48	.58*	.15
JC16		.52	.54*	.19
JC6	Autonomy/	.11	.54*	.20
JC1	Responsibility/	.50	.52*	.06
JC3	Service/People	.18	.49*	.10
JC15		.45	.47*	.26
JC7		.24	.42*	.24
JC17		.39	.40*	.14
JC4		.23	-.07	.80*
JC8	Extrinsic	.43	-.02	.70*
JC5	Rewards	.21	.30	.67*
JC12		.19	.21	.61*
JC13		.06	.30	.58*
Percentage of Variance		38.00	11.20	7.00

Total explained variance 56.10%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

females accounted for a greater percent of the explained variance (62 %) than for followup males (56.10%). (Results can be seen in Tables 13 and 14.)

Addressing of Research Question 3

What influence does teaching status have on clustering?

Teaching status appears to influence the number of factors, factor loading, eigenvalues, and the variance for both undergraduates and followup samples. These results can be seen in Tables 15 through 18. Undergraduates who plan to teach indentified challenge/responsibility as the first factor, and extrinsic rewards as the second factor whereas undergraduates who do not plan to teach indentified extrinsic rewards as the first factor, and (2) challenge/responsibility as the second factor in what a job should provide. The ordering of the factors switched between the groups. The first factor in both samples accounted for more than 25% of the variance. The explained variance was greater for undergraduates who did not plan to teach than for undergraduates who planned to teach.

When comparing the ordering of the factors for followups who were teaching to the followups who were not

TABLE 15. Factor Matrix of Job Characteristics Items for Undergraduates Who Plan to Teach

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		4.67	2.02	1.23	1.16	1.03
ITEM LOADING						
JC15		.59*	.09	.13	.34	.18
JC16	Challenge/	.56*	.26	.07	.06	.17
JC14	Responsibility	.50*	.10	.18	.14	.28
JC18		.49*	.03	.04	.30	.30
JC11		.30	.18	.17	.15	.16
JC5		-.06	.60*	.33	.11	.03
JC8	Extrinsic	.18	.51*	.30	.02	.10
JC4	Rewards	-.02	.50*	.44	-.06	.06
JC7		.26	.43*	-.00	-.02	.11
JC9		.40	.42*	.10	.26	.04
JC17		.28	.38	.06	.08	-.04
JC6		.10	.29	-.05	.27	.16
JC13		.16	.17	.70*	-.01	.08
JC12		.13	.12	.66*	.09	.03
JC10		.20	.04	.05	.65*	.07
JC3		.11	.04	.03	.56*	.13
JC1		.21	.06	.05	.12	.72*
JC2		.22	.10	.08	.17	.55*
Percentage of Variance		25.90	11.20	6.80	6.40	5.80

Total explained variance 56.20%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 16. Factor Matrix of Job Characteristics Items for Undergraduates Who Do Not Plan to Teach

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		4.53	2.48	1.44	1.18	1.03
ITEM LOADING						
JC4		.75*	-.04	-.02	.15	.10
JC5	Extrinsic	.67*	.00	.09	.30	.07
JC12	Rewards	.64*	.15	.18	-.15	-.21
JC13		.62*	.16	.22	-.07	-.17
JC8		.61*	.22	-.05	.31	.02
JC14		.14	.60*	.15	-.12	.08
JC18	Challenge/	-.02	.59*	.06	.18	.14
JC16	Responsibility	.12	.59*	.07	.19	.05
JC15		.06	.58*	.23	.35	-.02
JC11		.05	.42*	.08	.03	.18
JC7		.12	.32	.01	.13	.15
JC10		.05	.25	.74*	.13	-.10
JC3		.14	.04	.66*	.05	.10
JC6		.07	.13	.31	.24	.18
JC9		.18	.32	.21	.57*	.15
JC17		.33	.19	.16	.42*	-.01
JC1		-.14	.30	.02	.05	.62*
JC2		.00	.46	.12	.07	.52*
Percentage of Variance		25.20	13.80	8.00	6.50	5.80

Total explained variance 59.20%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 17. Factor Matrix of Job Characteristics Items for Followups Who Were Teaching

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		5.34	1.69	1.33	1.08	1.06
ITEM LOADING						
JC1	Autonomy/	.77*	.17	.06	.17	.21
JC2	Special	.69*	.17	.12	.16	.13
JC16	Abilities	.55*	.38	.05	.17	.26
JC7		.41*	.16	.14	.09	.08
JC18		.14	.64*	.21	.20	.13
JC15	Challenge/	.10	.62*	-.04	.27	.29
JC14	Responsibility	.29	.57*	.12	.10	-.15
JC11		.27	.44*	.38	.06	-.09
JC9		.29	.42*	.13	.39	.15
JC17		.20	.36	.15	.23	.01
JC5		.13	.03	.59*	.27	.23
JC4	Extrinsic	.03	.08	.56*	-.03	.26
JC8	Reward	.05	.20	.50*	-.01	.10
JC6		.26	.06	.41*	.31	.01
JC10		.13	.26	.01	.71*	.07
JC3		.19	.20	.10	.39	-.04
JC12		.23	.07	.24	.07	.53*
JC13		.14	.02	.19	-.01	.49*
Percentage of Variance		29.70	9.40	7.40	6.00	5.90

Total explained variance 58.40%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 18. Factor Matrix of Job Characteristics Items for Followups Who Were Not Teaching

		FACT1	FACT2	FACT3
EIGENVALUES		7.27	2.15	1.23
ITEM LOADING				
JC16		.73*	.09	.19
JC2		.72*	.11	.10
JC15	Autonomy/	.72*	.16	.20
JC1	Challenge/	.71*	.04	.17
JC18	Responsibility/	.70*	.28	.15
JC9	Special	.69*	.25	.20
JC14	Abilities	.64*	.32	.12
JC17		.54*	.16	.22
JC7		.54*	.10	.14
JC11		.50*	.28	.19
JC6		.48*	.21	.39
JC8		.16	.74*	-.05
JC12		.13	.73*	.14
JC4	Extrinsic	.22	.71*	-.09
JC13	Rewards	.04	.58*	.18
JC5		.43	.55*	.16
JC10		.31	.03	.85*
JC3		.34	.10	.48*
Percentage Variance		44.40	11.90	6.20

Total explained variance 58.50%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

teaching, followups that were teaching ordered the factors as (1) autonomy/special abilities, (2) challenge/responsibility, and (3) extrinsic rewards while followups who were not teaching ordered the factor as (1) autonomy/challenge/responsibility/special abilities and (2) extrinsic rewards. Autonomy/challenge/responsibility/special abilities factor explained the greatest percent of the variance than any other factor in the study (44.40).

Addressing of Research Question 4

What influence does teaching level have on clustering?

Based on the evidence presented in Tables 19 through 22 clustering seem to influence teaching level. Teaching level also influenced the number of factors, eigenvalues, and the variance. Undergraduates at the elementary school level indicated (1) challenge/responsibility, and (2) extrinsic rewards whereas undergraduates at the secondary school level indicated (1) challenge/responsibility/special abilities, (2) job factor, and (3) extrinsic rewards as important factors that a job should provide. Both teaching levels for undergraduates accounted for almost the same amount of variance (56.9 percent and 56.0 percent, respectively).

TABLE 19. Factor Matrix of Job Characteristics Items for Undergraduates at the Elementary Level

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		4.64	2.09	1.22	1.06	1.05
ITEM LOADING						
JC15		.66*	.09	.08	.16	.29
JC18	Challenge/	.59*	.05	-.03	.25	.15
JC16	Responsibility	.52*	.28	.11	.09	.10
JC14		.50*	.12	.23	.20	.13
JC11		.34	.17	.23	.16	.08
JC5		-.05	.62*	.32	.07	.08
JC8	Extrinsic	.18	.51*	.32	.15	-.02
JC4	Rewards	-.04	.50*	.44	.12	-.12
JC7		.18	.46*	.09	.02	.05
JC9		.39	.41*	.10	.08	.26
JC17		.26	.39	.05	-.06	.09
JC6		.12	.31	-.03	.14	.25
JC13		.13	.18	.73*	.05	-.02
JC12		.14	.17	.59*	-.01	.08
JC1		.26	.04	.05	.72*	.09
JC2		.24	.13	.07	.53*	.22
JC10		.19	.07	.03	.05	.56*
JC3		.13	.03	.00	.12	.54*
Percentage of Variance		25.80	11.60	6.80	5.90	5.90

Total explained variance 56.00%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 20. Factor matrix of Job Characteristics Items for Undergraduates at the Secondary Level

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		4.68	2.04	1.29	1.20	1.04
ITEM LOADING						
JC14		.60*	.14	.16	.15	.02
JC2	Challenge/	.55*	-.02	.13	.11	.10
JC1	Responsibility/	.55*	-.00	.02	.09	.11
JC16	Special	.54*	.28	.07	.07	.18
JC18	Abilities	.54*	.17	.02	.34	-.06
JC15		.48*	.35	.09	.39	-.07
JC11		.33	.26	.06	.16	.02
JC9		.24	.60*	.07	.28	.01
JC8	Job Factors	.15	.49*	.33	.04	.04
JC17		.12	.47*	.07	.07	.08
JC5		-.07	.45*	.38	.04	.22
JC12		.13	.08	.74*	.08	-.05
JC13	Extrinsic	.19	.16	.65*	.05	.00
JC4	Rewards	-.01	.45	.46*	-.09	.04
JC10		.25	.10	.02	.67*	.05
JC3		.14	.06	.04	.53*	.13
JC6		.12	.07	.01	.33	.54*
JC7		.33	.29	-.02	-.06	.42*
Percentage of Variance		26.00	11.30	7.10	6.70	5.80

Total explained variance 56.90%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 21. Factor Matrix of Job Characteristics Items for Followups at the Elementary Level

		FACT1	FACT2	FACT3	FACT4	FACT5	FACT6
EIGENVALUES		5.16	1.77	1.27	1.17	1.14	1.00
ITEM LOADING							
JC18		.68*	.12	.06	.21	.20	.13
JC14	Challenge/	.58*	.15	.22	.11	.13	-.08
JC15	Responsibility	.55*	.26	-.02	-.10	.23	.21
JC11		.46*	.14	.22	.41	-.00	-.04
JC16		.31	.63*	.23	.06	.05	.19
JC7	Autonomy	.06	.60*	.14	.17	.03	-.00
JC9		.31	.52*	.07	.17	.35	.11
JC17		.24	.35	.10	.23	.27	-.05
JC2		.12	.23	.79*	.13	.11	.19
JC1		.16	.41	.60*	.11	.09	.25
JC5	Extrinsic	.03	.11	.15	.56*	.25	.32
JC4	Rewards	.03	.08	-.01	.49*	-.10	.37
JC6		.06	.14	.22	.45*	.24	.03
JC8		.15	.10	-.00	.39	-.05	.11
JC10		.23	.16	.09	-.00	.72*	.03
JC3		.22	-.01	.39	.08	.40*	.03
JC12		.04	.13	.15	.15	.12	.59*
JC13		.04	-.01	.08	.13	-.03	.56*
Percentage of Variance		28.70	9.90	7.10	6.50	6.30	5.60

Total explained variance 64.00%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

TABLE 22. Factor Matrix on Job Characteristics Items of Followups at the Secondary Level

		FACT1	FACT2	FACT3	FACT4	FACT5
EIGENVALUES		5.44	1.67	1.47	1.12	1.05
ITEM LOADING						
JC1	Autonomy/	.80*	.12	.01	.16	.14
JC2	Special	.65*	.17	.06	.13	.24
JC16	Abilities	.65*	.39	.12	.20	.10
JC7		.41*	.06	.16	.11	.12
JC12		.39	.20	.39	-.04	-.14
JC13		.33	.17	.26	-.03	-.20
JC15		.18	.67*	.09	.21	.11
JC18	Challenge/	.18	.50*	.22	.17	.31
JC9	Responsibility	.32	.50*	.14	.35	.10
JC17		.14	.45*	.12	.10	.20
JC4	Extrinsic	.07	.10	.62*	.02	.08
JC8	Rewards	.03	.15	.61*	.03	.19
JC5		.12	.04	.61*	.28	.00
JC10		.17	.36	.05	.62*	-.00
JC6	Service People	.25	-.01	.37	.44*	.12
JC3		.06	.20	.05	.42*	.16
JC14		.23	.32	.05	.10	.64*
JC11		.16	.23	.26	.16	.50*
Percentage of Variance		30.20	9.30	8.10	6.20	5.80

Total explained variance 59.70%

*Significant item loading on each factor according to SPSSX algorithm. Eigenvalues are from the initial statistics presented in the factor solution.

Followups at the elementary school level indicated (1) challenge/responsibility, (2) autonomy, and (3) extrinsic rewards as factors that their job provided whereas followups at the secondary level indicated (1) special abilities/autonomy, (2) challenge/responsibility, (3) extrinsic rewards, and (4) service/people. Followups at the secondary level had more factors than followups at the elementary level, but the followups at the elementary level explained the greastest amount of the variance (64.0 percent and 59.7 percent, respectively).

Listed are definitions for undergraduate combined and followup samples factors:

Challenge/Responsibility factor represents the process of working toward achieving those tasks that may seem unattainable.

Extrinsic Rewards factor represents the rewards a job could provide, if an individual is successful in his/her job.

Autonomy/Special Abilities factor represents being free of supervision and using special abilities to be creative.

Service/People factor represents "people-oriented" items. This factor involves the opportunity to serve, help, and work with people. It also takes into account the sense of accomplishment when a person or persons have helped in some mannner.

Reliability

Addressing of Research Question 5

What influence do factors formed by sample have on reliability?

The results in Table 23 show that the coefficient alpha and the average item correlation did not appear to be influenced by sample using the factors suggested by the three samples (Education 204, graduating seniors, and undergraduates) in the combined data set (Undergraduate Combined Sample). The coefficient alphas for the three samples ranged from .72 to .76 with an average item correlations ranging from .51 to .54.

When looking at the results for followup samples, the coefficient alpha and the average item correlation appear to be influenced by sample using the factors suggested

TABLE 23. Reliability for Factors Based on Undergraduate Factor Analysis Using Combined Sample

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
SECONDARY EDUCATION 204 (TABLE 5)				
FACTOR 1 Challenge/ Responsibility/ Special Abilities/	6	1 2 14 18 15 16	.50	.76
FACTOR 2 Extrinsic Rewards	5	13 12 4 5 8	.53	.76
GRADUATING SENIORS (TABLE 6)				
FACTOR 1 Challenge/ Responsibility	6	15 10 9 18 14 16	.49	.75
FACTOR 2 Extrinsic Rewards	3	5 4 8	.54	.72
UNDERGRADUATES (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.51	.74
FACTOR 2 Extrinsic Rewards	3	5 4 8	.51	.72

TABLE 24. Reliability for Factors Based on Followup Factor Analyses Using Combined Followup Sample

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FIRST YEAR FOLLOWUP OF GRADUATES (TABLE 8)				
FACTOR 1 Challenge/ Responsibility	5	15 18 9 10 17	.56	.78
FACTOR 2 Autonomy/ Special Abilities	4	1 2 16 7	.60	.79
FACTOR 3 Extrinsic Rewards	4	8 4 12 13	.49	.70
FIFTH YEAR FOLLOWUP OF GRADUATES (TABLE 9)				
FACTOR 1 Autonomy/ Special Abilities	5	2 1 16 7 17	.55	.77
FACTOR 2 Challenge/ Responsibility	4	18 15 14 9	.61	.79
FACTOR 3 Extrinsic Rewards	3	4 5 8	.54	.72
FACTOR 4 Service/People	3	10 3 6	.46	.64

TABLE 24 (Continued)

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.58	.81
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.51	.74
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.60	.79
FACTOR 4 Service People	3	10 6 3	.46	.64

by three samples (First Year Followup of Graduates, Fifth Year Followup of Graduates, and Followup) in the combined data set (Followup Sample). The coefficient alphas for three samples ranged from .64 to .81 with an average item correlation ranging from .46 to .61. The results can be seen in Table 24. (The reader is referred to Table 4 for a list of job characteristics items and Table 5 and Table 10 for a factor analysis solution for each sample.)

Addressing of Research Question 6

What influence does gender have on reliability?

Based on the evidence in Table 25 reliability does not seem to be influenced by gender when considering two common

factors (1a challenge/responsibility, 1b challenge/responsibility/special abilities, and 2 extrinsic rewards). The two common factors seem to have produced similar coefficient alphas for both groups (.75 and .73 respectively). However, the same did not appear to be true for the average item correlation for the two common factors. The average item correlations for two common factors ranged from .48 to .55.

Table 26 provides reliability information for followup females and males. The coefficient alphas for the two groups were greater than .76 except for two factors: extrinsic rewards (.67) and service/people (.64). The factors were produced by undergraduate females. It appears that the extrinsic rewards factor was less reliable for followup females than followup males. The average item correlation for extrinsic rewards for followup females was .48 whereas the average item correlation for extrinsic rewards for followup males was .64. (The reader is referred to Table 4 for a list of job characteristics items and Tables 11 through 14 for a factor analysis solution for each group.)

TABLE 25. Reliability for Undergraduate Females and Males

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
UNDERGRADUATE FEMALES (TABLE 11)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.51	.75
FACTOR 2 Extrinsic Rewards	3	5 4 8	.55	.73
UNDERGRADUATE MALES (TABLE 12)				
FACTOR 1 Challenge/ Responsibility/ Special Abilities	6	2 14 18 1 15 11	.48	.73
FACTOR 2 Extrinsic Rewards	4	4 5 12 13	.52	.72
FACTOR 3 Job Factors	3	9 17 8	.44	.63
FACTOR 4 Service/People	3	10 3 6	.40	.58

TABLE 26. Reliability for Followup Females and Males

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FOLLOWUP FEMALES (TABLE 13)				
FACTOR 1 Challenge/ Responsibility	4	15 18 14 9	.61	.79
FACTOR 2 Autonomy/ Special Abilities	4	1 2 16 7	.60	.79
FACTOR 3 Service/People	3	10 3 6	.46	.64
FACTOR 4 Extrinsic Rewards	3	4 5 8	.48	.67
FOLLOWUP MALES (TABLE 14)				
FACTOR 1 Challenge/ Special Abilities	4	14 18 11 2	.57	.76
FACTOR 2 Autonomy/ Responsibility/ Special Abilities	9	10 9 16 6 1 3 15 7 17	.58	.84
FACTOR 3 Extrinsic Rewards	5	4 8 5 12 13	.64	.84

Addressing of Research Question 7

What influence does teaching status have on reliability?

Presented in Table 27 is reliability information for undergraduates who plan to teach and undergraduates who do not plan to teach. The coefficient alphas and the average item coefficients appear to be higher for undergraduates who do not plan to teach than for undergraduates who plan to teach regarding two common factors: challenge/ responsibility and extrinsic rewards. For undergraduates who plan to teach, the coefficient alphas ranged from .69 to .73 whereas the undergraduates who do not plan to teach had coefficient alphas that ranged from .71 to .80.

Presented in Table 28 is reliability information for followups who were teaching and followups who were not teaching. The two groups appear to have one common factor: extrinsic rewards. This factor seems to have a much higher coefficient alpha and average item correlation for followups who were not teaching than for followups who were teaching. Followups who were not teaching seem to have produced the factor (autonomy/challenge/responsibility/ special ability) with the highest reliability (.90) than any other sample or subgroup in this study. (The reader is referred to Table 4 for a list of job characteristics items

TABLE 27. Reliability for Undergraduates Who Plan to Teach and Undergraduates Who Do Not Plan to Teach

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
UNDERGRADUATES WHO PLAN TO TEACH (TABLE 15)				
FACTOR 1 Challenge/ Responsibility	4	15 16 14 18	.52	.73
FACTOR 2 Extrinsic Rewards	5	5 8 4 7 9	.44	.69
UNDERGRADUATES WHO DO NOT PLAN TO TEACH (TABLE 16)				
FACTOR 1 Extrinsic Rewards	5	4 5 12 13 8	.58	.80
FACTOR 2 Challenge/ Responsibility	5	14 18 12 13 8	.48	.71

and Tables 15 through 18 for a factor analysis solution for each group.)

Addressing of Research Question 8

What influence does teaching level have on reliability?

The results in Table 29 show that the average item correlation and the coefficient alpha appear to be influenced by teaching level for undergraduates at the

TABLE 28. Reliability for Followups Who Were Teaching and Followups Who Were Not Teaching

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FOLLOWUPS WHO WERE TEACHING (TABLE 17)				
FACTOR 1 Special Abilities/ Autonomy	4	1 2 16 7	.58	.77
FACTOR 2 Challenge/ Responsibility	5	18 15 14 11 9	.53	.74
FACTOR 3 Extrinsic Rewards	4	5 4 8 6	.42	.64
FOLLOWUPS WHO WERE NOT TEACHING (TABLE 18)				
FACTOR 1 Autonomy/ Challenge/ Responsibility/ Special Abilities	11	16 2 18 1 15 9 14 17 7 11 6	.65	.90
FACTOR 2 Extrinsic Rewards	5	8 12 4 13 5	.51	.74

elementary and secondary levels in respect to two common factors: 1a challenge/responsibility (.52 and .73), 1b challenge/responsibility/special abilities (.52 and .77), 2a extrinsic rewards (.47 and 69), and 2b extrinsic rewards (.49 and .67). Undergraduates at the secondary level

TABLE 29. Reliability for Undergraduates at the Elementary and Secondary Levels

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
ELEMENTARY LEVEL (TABLE 19)				
FACTOR 1 Challenge/ Responsibility	4	15 18 16 14	.52	.73
FACTOR 2 Extrinsic Rewards	5	5 8 4 7 9	.47	.71
SECONDARY LEVEL (TABLE 20)				
FACTOR 1 Challenge/ Responsibility/ Special Abilities	6	14 2 1 16 18 15	.52	.77
FACTOR 2 Job Factors	4	9 8 17 5	.42	.64
FACTOR 3 Extrinsic Rewards	3	12 13 4	.49	.67

produced more factors than undergraduates at the elementary level. The coefficient alphas for the two groups ranged between .77 and .64 with an average item correlations ranging between .52 and .42. Based on the evidence in Table 30a, it also appears that the average item correlation and the coefficient alpha are influenced by

TABLE 30a. Reliability for Followups at the Elementary and Secondary Levels

SAMPLES/FACTORS	NUMBER OF ITEMS		AVERAGE ITEM CORRELATION	ALPHA
ELEMENTARY LEVEL (TABLE 21)				
FACTOR 1 Challenge/ Responsibility	4	18 14 15 11	.50	.70
FACTOR 2 Autonomy	3	16 7 9	.50	.68
FACTOR 3 Extrinsic Rewards	3	5 4 6	.41	.60
SECONDARY LEVEL (TABLE 22)				
FACTOR 1 Autonomy/ Special Abilities	4	1 2 16 7	.60	.79
FACTOR 2 Challenge/ Responsibility	4	15 18 9 17	.52	.72
FACTOR 3 Extrinsic Rewards	3	4 8 5	.49	.68
FACTOR 4 Service/People	3	10 6 3	.47	.59

teaching level for followups at the elementary and secondary level in respect to two common factors: 1a challenge/ responsibility (.50 and .70), 1b challenge/

TABLE 30b. Summary of Reliability for Samples Factors

SAMPLE	FACT1	FACT2	FACT3	FACT4
Education 204	.76	.76		
Graduating Seniors	.75	.72		
Undergraduates	.74	.72		
First Year Followup	.78	.79	.70	
Fifth Year Followup	.77	.79	.72	.64
Followups	.81	.74	.79	.64
U/Females	.75	.73		
U/Males	.73	.72	.63	.58
Followup Females	.79	.79	.64	.67
Followup Males	.76	.84	.84	
U/Who Plan to Teach	.73	.69		
U/Who Do Not Plan to Teach	.80	.71		
F/Who Were Teaching	.77	.74	.64	
F/Who Were Not Teaching	.90	.74		
U/Elementary Level	.73	.71		
U/Secondary Level	.77	.64	.69	
F/Elementary Level	.70	.68	.60	
F/Secondary Level	.79	.72	.68	.59

responsibility (.52 and .72), 2a extrinsic rewards (.41 and .60), and 2a extrinsic rewards (.49 and .68). Followups at the secondary level produced more factors than followups at the elementary level. The coefficient alphas for the two groups ranged between .79 and .59 with an average item correlations ranging between .60 and 41. (The reader is referred to Table 4 for a list of job characteristics items and Table 19 through Table 22 for a factor analysis solution for each group.)

Additional Analyses for the Question of Influence of Sample on Factor Formation and Reliability Estimates

This section of the study was designed to determine how reliable factors are across selective samples and subgroups. In order for this objective to be achieved, reliability information was obtained on factors for selective samples and subgroups. It was also obtained on factors for undergraduate combined and followup samples for each selective sample and subgroup.

When comparing factors across samples, the majority of Education 204 factors did appear to be more reliable than graduating seniors factors for undergraduate combined and followup samples. Education 204 factors for undergraduate

TABLE 31. Reliability for Education 204 Sample Using Factors Suggested by Education 204, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
EDUCATION 204 (TABLE 5)				
FACTOR 1 Challenge/ Responsibility/ Special Abilities/	6	1 2 14 18 15 16	.48	.75
FACTOR 2 Extrinsic Rewards	5	13 12 4 5 8	.54	.77
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.48	.71
FACTOR 2 Extrinsic	3	5 4 8	.55	.72
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.43	.69
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.54	.77
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.38	.60
FACTOR 4 Service/People	3	10 6 3	.37	.54

TABLE 32. Reliability for Graduating Seniors Sample Using Factor Suggested by Graduating Seniors, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
GRADUATING SENIORS (TABLE 6)				
FACTOR 1 Challenge/ Responsibility	6	15 10 9 18 14 16	.54	.79
FACTOR 2 Extrinsic Rewards	3	5 4 8	.51	.69
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.54	.77
FACTOR 2 Extrinsic Rewards	3	5 4 8	.51	.69
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.47	.72
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.51	.75
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.34	.54
FACTOR 4 Service/People	3	10 6 3	.36	.52

TABLE 33. Reliability for First Year Followup Sample Using Factors Suggested by First Year Followup of Graduates, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FIRST YEAR FOLLOWUP OF GRADUATES (TABLE 8)				
FACTOR 1 Challenge/ Responsibility	5	15 18 9 10 17	.57	.78
FACTOR 2 Autonomy/ Special Abilities	4	1 2 16 7	.59	.78
FACTOR 3 Extrinsic Rewards	4	8 4 12 13	.47	.68
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.61	.81
FACTOR 2 Extrinsic	3	5 4 8	.49	.67
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.57	.80
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.48	.72
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.59	.78
FACTOR 4 Service/People	3	10 6 3	.44	.62

TABLE 34. Reliability for Fifth Year Followup Sample Using Factors Suggested by Fifth Year Followup of Graduates, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FIFTH YEAR FOLLOWUP OF GRADUATES (TABLE 9)				
FACTOR 1 Autonomy/ Special Abilities	5	2 1 16 7 17	.58	.80
FACTOR 2 Challenge/ Responsibility	4	18 15 14 9	.61	.79
FACTOR 3 Extrinsic Rewards	3	4 5 8	.58	.75
FACTOR 4 Service/People	3	10 3 6	.46	.66
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.63	.83
FACTOR 2 Extrinsic Rewards	3	5 4 8	.58	.75
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.58	.81
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.53	.76

Table 34. (Continued)

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.61	.80
FACTOR 4 Service/People	3	10 6 3	.48	.65

and followup samples had coefficient alphas that ranged from .77 to .54 with an average item correlation ranging from .55 to .37. Graduating seniors factors for undergraduate and followup samples had coefficient alphas that ranged from .79 to .52 with an average item correlation ranging from .51 to .36. These results can be seen in Table 31 and Table 32.

The results in Tables 33 and 34 show that the coefficient alpha and the average item correlation did seem to be higher for fifth year followup of graduates than for first year followup of graduates on all common factors, including factors for undergraduate combined and followup samples. First year graduates coefficient alphas ranged from .81 to .67 with an average item correlation ranging from .61 to .44 whereas fifth year followup of graduates coefficient alphas ranged from .83 to .65 with an average

TABLE 35. Reliability for Undergraduate Female Sample Using Factors Suggested by Undergraduate Females, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
UNDERGRADUATE FEMALES (TABLE 11)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.51	.75
FACTOR 2 Extrinsic Rewards	3	5 4 8	.55	.73
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.51	.75
FACTOR 2 Extrinsic Rewards	3	5 4 8	.55	.73
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.45	.70
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.54	.77
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.38	.59
FACTOR 4 Service/People	3	10 6 3	.33	.50

TABLE 36. Reliability for Undergraduate Male Sample Using Factors Suggested by Undergraduate Males, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
UNDERGRADUATE MALES (TABLE 12)				
FACTOR 1 Challenge/ Responsibility/ Special Abilities	6	2 14 18 1 15 11	.48	.73
FACTOR 2 Extrinsic Rewards	4	4 5 12 13	.52	.72
FACTOR 3 Job Factors	3	9 17 8	.44	.63
FACTOR 4 Service/People	3	10 3 6	.40	.58
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.48	.72
FACTOR 2 Extrinsic Rewards	3	5 4 8	.51	.70
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.42	.68
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.52	.75

TABLE 36. (Continued)

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.41	.62
FACTOR 4 Service/People	3	10 6 3	.40	.58

item correlation ranging from .63 to .48. When comparing first and fifth year followup of graduates samples in terms of undergraduate and followup factors, it appeared that first year followup of graduates factors were less reliable than fifth year followup of graduates factors. However, the first year followup of graduates factors had greater reliability than that of the graduating seniors and Education 204 samples for undergraduate and followup factors.

Based on the evidence in Tables 35 and 36 the coefficient alpha and average item correlation did appear to be higher for undergraduate females than undergraduate males for factors 1 and 2. The same findings also held true for undergraduate combined and followup factors. Undergraduate females coefficient alphas ranged from .77 to .50 with an average item correlation ranging from .54 to

TABLE 37. Reliability for Followup Female Sample Using Factors Suggested by Followup Females, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FOLLOWUP FEMALES (TABLE 13)				
FACTOR 1 Challenge/ Responsibility	4	15 18 14 9	.61	79
FACTOR 2 Autonomy/ Special Abilities	4	1 2 16 7	.60	.79
FACTOR 3 Service/People	3	10 3 6	.46	.64
FACTOR 4 Extrinsic Rewards	3	4 5 8	.48	.67
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.62	.82
FACTOR 2 Extrinsic Rewards	3	5 4 8	.48	.67
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.57	.80
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.46	.70

TABLE 37. (Continued)

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.60	.79
FACTOR 4 Service/People	3	10 6 3	.46	.64

.33 whereas undergraduate males coefficient alphas ranged from .75 to .58 with an average item correlation ranging from .52 to .40.

Table 37 and Table 38 provide reliability information for followup females, followup males, undergraduate combined, and followup samples. Followup males had two factors (autonomy/responsibility/special abilities and extrinsic rewards) with a coefficient alpha of .84 and a average item correlation greater than .57. When looking at followup females and males factors for undergraduate and followup samples, followup females' factors did seem less reliable than the followup males. Followup females factors for undergraduate combined and followup samples had a coefficient alpha that ranged from .82 to .64 with an average item correlation ranging from .62 to .46. Followup males' factors for undergraduate combined and followup

samples had a coefficient alpha that ranged from .84 to .65 with an average item correlation ranging from .68 to .48.

Presented in Table 39 and Table 40 is reliability information for undergraduates who plan to teach, undergraduates who do not plan to teach, undergraduate combined, and followup samples. The coefficient alpha and the average item coefficient did appear to be higher for undergraduates who do not plan to teach than for undergraduates who plan to teach for almost every factor, including factors for undergraduate combined and followup samples. For undergraduates who plan to teach, the coefficient alpha ranged from .74 to .54 with an average item correlation ranging from .52 to .34 whereas undergraduates who do not plan to teach had a coefficient alpha that ranged from .60 to .80 with an average item correlation ranging from .61 to .41.

Followups who were teaching have two factors with a coefficient alpha greater than .74 and an average item correlation greater than .53. Followups who were not teaching seem to have produced the factor (autonomy/ challenge/responsibility/special abilities) with the highest reliability (.90) and the greatest number of items (11) than any other sample or subgroup in this study. Followups who were teaching had coefficient alphas that

TABLE 38. Reliability for Followup Male Sample Using Factors Suggested by Followup Males, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FOLLOWUP				
MALES (TABLE 14)				
FACTOR 1 Challenge/ Special Abilities	4	14 18 11 2	.57	.76
FACTOR 2 Autonomy/ Responsibility/ Special Abilities	9	10 9 16 6 1 3 15 7 17	.58	.84
FACTOR 3 Extrinsic Rewards	5	4 8 5 12 13	.64	.84
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.64	.84
FACTOR 2 Extrinsic Rewards	3	5 4 8	.68	.82
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.66	.82
FACTOR 2 Extrinsic Rewards	5	4 5 8 12 13	.64	.84
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.59	.78
FACTOR 4 Service/People	3	10 6 3	.48	.65

TABLE 39. Reliability for Undergraduates Who Plan to Teach Sample Using Factors Suggested by Undergraduates Who Plan to Teach, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
UNDERGRADUATES WHO PLAN TO TEACH (TABLE 15)				
FACTOR 1 Challenge/ Responsibility	4	15 16 14 18	.52	.73
FACTOR 2 Extrinsic Rewards	5	5 8 4 7 9	.44	.69
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.51	.74
FACTOR 2 Extrinsic Rewards	3	5 4 8	.50	.69
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.44	.70
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.50	.74
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.37	.59
FACTOR 4 Service/People	3	10 6 3	.34	.51

TABLE 40. Reliability for Undergraduates Who Do Not Plan to Teach Sample Using Factors Suggested by Undergraduates Who Do Not Plan to Teach, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
UNDERGRADUATES WHO DO NOT PLAN TO TEACH (TABLE 16)				
FACTOR 1 Extrinsic Rewards	5	4 5 12 13 8	.58	.80
FACTOR 2 Challenge/ Responsibility	5	14 18 12 13 8	.48	.71
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.50	.73
FACTOR 2 Extrinsic Rewards	3	13 12 4 5 6	.61	.77
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.44	.70
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.58	.80
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.41	.62
FACTOR 4 Service/People	3	10 6 3	.41	.60

TABLE 41. Reliability for Followups Who Were Teaching Sample Using Factors Suggested by Followups Who Were Teaching, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FOLLOWUPS WHO WHERE TEACHING (TABLE 17)				
FACTOR 1 Special Abilities/ Autonomy	4	1 2 16 7	.58	.77
FACTOR 2 Challenge/ Responsibility	5	18 15 14 11 9	.53	.74
FACTOR 3 Extrinsic Rewards	4	5 4 8 6	.42	.64
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	18 15 14 9 11 17	.54	.77
FACTOR 2 Extrinsic Rewards	3	4 8 5 12 13	.51	.69
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.51	.76
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.41	.65
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.58	.58
FACTOR 4 Service/People	3	10 6 3	.34	.52

TABLE 42. Reliability for Followups Who Were Not Teaching Sample Using Factors Suggested by Followups Who Were Not Teaching, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FOLLOWUPS WHO WERE NOT TEACHING (TABLE 18)				
FACTOR 1 Autonomy/ Challenge/ Responsibility/ Special Abilities	11	16 2 15 1 18 9 14 17 7 11 6	.65	.90
FACTOR 2 Extrinsic Rewards	5	8 12 4 13 5	.61	.81
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.71	.88
FACTOR 2 Extrinsic Rewards	3	5 4 8	.62	.78
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.65	.85
FACTOR 2 Extrinsic Rewards	5	5 4 8 12 13	.61	.81
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.63	.81
FACTOR 4 Service/People	3	10 6 3	.54	.70

ranged from .77 to .52 with an average item correlation ranging from .58 to .41 whereas followups who were not teaching had coefficient alphas that ranged from .90 to .70 with an average item correlation ranging from .65 to .45. The factors for followups who where not teaching did seem more reliable than the factors for followups who where teaching for undergraduate combined and followup samples. Factor for followups who were not teaching also seemed more reliable than any other sample or subgroup in this study. These results can be seen in Table 41 and Table 42.

Tables 43 and 44 provide reliability information for undergraduates at the elementary level, undergraduates at the secondary level, undergraduate combined, and followup samples. The majority of the factors for undergraduates at the secondary level seem more reliable than factors at the elementary level, especially factors for undergraduate combined, and followup samples. Undergraduates at the elementary level had coefficient alphas that ranged from .76 to .43 with an average item correlation ranging from .53 to .28 whereas for undergraduates at the secondary level the coefficient alphas ranged from .77 to .66 with an average item correlation ranging from .52 to .40. Undergraduates at the elementary level for followup samples appear to have produced the factor (service/people) with

TABLE 43. Reliability for Undergraduates at the Elementary Level Sample Using Factors Suggested by Undergraduates at the Elementary Level, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
ELEMENTARY LEVEL (TABLE 19)				
FACTOR 1 Challenge/ Responsibility	4	15 18 16 14	.52	.73
FACTOR 2 Extrinsic Rewards	5	5 8 4 7 9	.47	.71
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.51	.74
FACTOR 2 Extrinsic Rewards	3	5 4 8	.53	.71
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.44	.70
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.52	.76
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.35	.55
FACTOR 4 Service/People	3	10 6 3	.28	.43

TABLE 44. Reliability for Undergraduates at the Secondary Level Sample Using Factors Suggested by Undergradauate at the Secondary Level, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
SECONDARY LEVEL (TABLE 20)				
FACTOR 1 Challenge/ Responsibility/ Special Abilities	6	14 2 1 16 18 15	.52	.77
FACTOR 2 Job Factors	4	9 8 17 5	.42	.64
FACTOR 3 Extrinsic Rewards	3	12 13 4	.49	.67
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.52	.75
FACTOR 2 Extrinsic Rewards	3	5 4 8	.48	.67
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.37	.71
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.50	.74
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.40	.61
FACTOR 4 Service/People	3	10 6 3	.39	.57

TABLE 45. Reliability for Followups at the Elementary Level Sample Using Factors Suggested by Followups at Elementary Level, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
ELEMENTARY LEVEL (TABLE 21)				
FACTOR 1	4		.50	.70
Challenge/ Responsibility		18 14 15 11		
FACTOR 2	3		.50	.68
Autonomy		16 7 9		
FACTOR 3	3		.41	.60
Extrinsic Rewards		5 4 6		
UNDERGRADUATE (TABLE 7)				
FACTOR 1	5		.53	.75
Challenge/ Responsibility		15 16 18 14 9		
FACTOR 2	3		.38	.56
Extrinsic Rewards		5 4 8		
FOLLOWUP (TABLE 10)				
FACTOR 1	6		.50	.75
Challenge/ Responsibility		18 15 14 9 11 17		
FACTOR 2	5		.39	.63
Extrinsic Rewards		4 8 5 12 13		
FACTOR 3	4		.41	.76
Autonomy/ Special Abilities		1 2 16 7		
FACTOR 4	3		.33	.50
Service/People		10 6 3		

TABLE 46. Reliability for Followups at the Secondary Level Sample Using Factors Suggested by Followups at the Secondary Level, Undergraduate Combined, and Followup Factor Analysis

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
SECONDARY LEVEL (TABLE 22)				
FACTOR 1 Autonomy/ Special Abilities	4	1 2 16 7	.60	.79
FACTOR 2 Challenge/ Responsibility	4	15 18 9 17	.52	.72
FACTOR 3 Extrinsic Rewards	3	4 8 5	.49	.68
FACTOR 4 Service/People	3	10 6 3	.47	.59
UNDERGRADUATE (TABLE 7)				
FACTOR 1 Challenge/ Responsibility	5	15 16 18 14 9	.46	.79
FACTOR 2 Extrinsic Rewards	3	4 8 5 12 13	.49	.68
FOLLOWUP (TABLE 10)				
FACTOR 1 Challenge/ Responsibility	6	18 15 14 9 11 17	.52	.77
FACTOR 2 Extrinsic Rewards	5	4 8 5 12 13	.42	.65

TABLE 46. (Continued)

SOURCE/FACTORS	NUMBER OF ITEMS	ITEM NUMBERS	AVERAGE ITEM CORRELATION	ALPHA
FACTOR 3 Autonomy/ Special Abilities	4	1 2 16 7	.59	.77
FACTOR 4 Service/People	3	10 6 3	.38	.55

the lowest coefficient alpha (.28) lower than any other sample or subgroup in this study.

The results in Tables 45 and 46 show reliability information for followups at the elementary level, followups at the secondary level, undergraduate combined, and followup samples. Followups at the elementary level and followups at the secondary level had only one common factor: extrinsic rewards. The coefficient alpha for the extrinsic rewards factor for followups at the elementary level was .60 with an average item correlation of .41. While at the secondary level the coefficient alpha for extrinsic rewards factors was .68 with an average item correlation of .49.

When looking at the factor for undergraduate and followup samples at the elementary and secondary levels, followups at the elementary level appear to have produced factors with lower reliability and average item correlation

TABLE 47. Summary of Reliability for Samples and Subgroups Using Composites Suggested by Undergraduate Combined and Followup Samples

	UNDERGRADUATE		FOLLOWUP			
SOURCE	FACT1	FACT2	FACT1	FACT2	FACT3	FACT4
Education 204	.71	.72	.69	.77	.60	.54
Graduating Seniors	.77	.69	.72	.75	.54	.52
First Year Followup	.81	.67	.80	.72	.78	.62
Fifth Year Followup	.83	.75	.81	.76	.80	.65
U/Females	.75	.73	.70	.77	.59	.50
U/Males	.72	.70	.68	.75	.62	.58
Followup Females	.82	.67	.80	.70	.79	.64
Followup Males	.84	.82	.82	.84	.78	.65
U/Who Plan to Teach	.74	.69	.70	.74	.59	.51
U/Who Do Not Plan to Teach	.73	.77	.70	.80	.62	.60
F/Who Were Teaching	.77	.69	.76	.65	.58	.52
F/Who Were Not Teaching	.88	.78	.85	.81	.81	.70
U/Elementary Level	.74	.71	.70	.76	.55	.43
U/Secondary Level	.75	.67	.71	.74	.61	.57
F/Elementary Level	.75	.56	.75	.63	.76	.50
F/Secondary Level	.79	.68	.77	.65	.77	.55

than followups at the secondary level. For followups at the elementary level coefficient alphas ranged from .76 to .50 with an average item correlation ranging from .50 to .38 whereas the coefficient alpha for followups at the secondary level ranged from .77 to .55 with an average item correlation ranging from .59 to .38.

T-test of Independent Means

The factor analysis presented earlier in this chapter divided the eighteen items of job characteristics into composite items for both undergraduate and followup samples. The composite items were used to examine the difference in means between gender, teaching status, and teaching level. The t-test of independent means was used to examine difference in means for hypotheses 1, 2, and 3. A Likert scale with the following rating was used for the job characteristics items: 5 = very important, 4 = important, 3 = neutral 2 = unimportant, and 1 = very unimportant.

Gender Differences

Testing of Hypothesis 1

Hypothesis 1A: There is a significant difference in means for factors according to gender for undergraduates.

TABLE 48. Gender Difference of Job Characteristics Factors for Undergraduate Combined Sample

FACTORS	N	MEAN	STANDARD DEVIATION	T VALUE	PROB
CHALLENGE/ RESPONSIBILITY					
Female	1528	4.36	.45	6.07	.00**
Male	579	4.22	.47		
EXTRINSIC REWARDS					
Female	1528	3.48	.02	-1.11	.27
Male	579	3.51	.70		

** = .01 Level of significance.

Factor 1 Challenge/Responsibility (undergraduates)

The challenge/responsibility factor represents the process of working toward achieving those tasks that may seem unattainable. The factor was formed based on five items from Table 7.

A significant difference was found between the means of undergraduate females (4.36) and males (4.22) rating the importance of challenge/responsibility that a job should

provide. The null hypothesis of no significant difference was rejected at the .05 level of significant (see Table 48).

Factor 2 Extrinsic Rewards (undergraduates)

The extrinsic rewards factor represents the rewards a job could provide, if an individual is successful in his/her job. The factor was formed based on three items from Table 7.

A significant difference was not found between the means of undergraduate females (3.48) and males (3.51) rating the importance of the extrinsic rewards a job should provide. The null hypothesis of no significant difference was retained (see Table 48).

Hypothesis 1B: There is a significant difference in means for factors according to gender for followups.

Factor 1 Challenge/Responsibility (followups)

The challenge/responsibility factor represents the process of working toward achieving those tasks that may seem unattainable. The factor was formed based on six items from Table 10.

A significant difference was not found between the means of followup females (3.85) and males (3.81) rating

TABLE 49. Gender Difference of Job Characteristics Factors Followup Sample

FACTORS	N	MEAN	STANDARD DEVIATION	T VALUE	PROB
CHALLENGE/ RESPONSIBILITY					
Female	885	3.85	.71	0.86	.39
Male	241	3.81	.73		
EXTRINSIC REWARDS					
Female	884	2.93	.82	-3.11	.00**
Male	241	3.14	.98		
AUTONOMY/ SPECIAL ABILITIES					
Female	885	3.97	.72	0.70	.49
Male	241	3.93	.70		
SERVICE/PEOPLE					
Female	885	3.96	.66	1.19	.23
Male	241	3.91	.70		

** = .01 Level of significance.

the importance of challenge/responsibility provided by their present jobs. The null hypothesis of no significant difference was retained (Table 49).

Factor 2 Extrinsic Rewards (followups)

The extrinsic rewards factor represents the rewards a job could provide, if an individual is successful in his/her job. The factor was formed based on five items from Table 10.

A significant difference was found between the means of followup females (2.93) and males (3.14) rating the importance of the extrinsic rewards provided by his/her present jobs. The null hypothesis of no significant difference was rejected at the .05 level of significance (see Table 49).

Factor 3 Autonomy/Special Abilities (followups)

The autonomy/special abilities factor represents being free of supervision and using special abilities to be creative. The factor was formed based on four items from Table 10.

A significant difference was not found between the means of followup females (3.97) and males (3.93) rating the opportunity to make use of autonomy/special abilities

provided by their present jobs. The null hypothesis of no significant difference was retained (see Table 49).

Factor 4 Service/People (followups)

The factor service/people represents "people-oriented" items. This factor involves the opportunity to serve, help, and work with people. It also takes into account the sense of accomplishment when a person or persons have helped in some manner. The factor was formed based on three items from Table 10.

A significant difference was not found between the means of followup females (3.96) and males (3.91) rating the importance of service/people provided by their present jobs. The null hypothesis of no significant difference was retained (see Table 49).

Teaching Status Differences

Testing of Hypothesis 2

Hypothesis 2A: There is a significant difference in mean for factors according to teaching status for undergraduates.

Factor 1 Challenge/Responsibility (undergraduates)

The challenge/responsibility factor represents the process of working toward achieving those goals which seem

TABLE 50. Teaching Status Difference of Job Characteristics Factors for Undergraduate Combined Sample

FACTORS	N	MEAN	STANDARD DEVIATION	T VALUE	PROB
CHALLENGE/ RESPONSIBILITY					
Teaching	1637	4.32	.46	0.19	.85
Not teaching	467	4.32	.47		
EXTRINSIC REWARDS					
Teaching	1637	3.43	.64	-7.16	.00**
Not teaching	467	3.70	.73		

** = .01 Level of significance.

unattainable. The factor was formed based on five items from Table 7.

When looking at mean differences of this factor, the null hypothesis of no significant difference in means between perceptions of undergraduates who plan to teach (4.32) and undergraduates who do not plan to teach (4.32) in the importance of challenge/responsibility that a job should provide was not rejected at the .05 level of significance (see Table 50).

Factor 2 Extrinsic Rewards (undergraduates)

The extrinsic rewards factor represents the rewards a job could provide, if an individual is successful in his/her job. The factor was formed based on three items from Table 7. When looking at mean differences of this factor, the null hypothesis of no significant difference in means between perceptions of undergraduates who plan to teach (3.43) and undergraduates who do not plan to teach (3.70) in the importance of extrinsic rewards that a job should provide was rejected at the .05 level of significance (see Table 50).

Hypothesis 2B: There is a significant difference in means for factors according to teaching status for followups.

Factor 1 Challenge/Responsibility (followups)

The challenge/responsibility factor represents the process of working toward achieving goals which seem unattainable. The factor was formed based on six items from Table 10.

There was a significant difference in means between perceptions of followups who were teaching (3.90) and followups who were not teaching (3.74) as to the importance of challenge/responsibility provided by their present jobs. The null hypothesis of no significant difference was rejected at the .05 level of significant (see Table 51).

TABLE 51. Teaching Status Difference of Job Characteristics Factors for Followup Sample

FACTORS	N	MEAN	STANDARD DEVIATION	T VALUE	PROB
CHALLENGE/ RESPONSIBILITY					
Teaching	704	3.90	.63	3.45	.00**
Not teaching	422	3.74	.82		
EXTRINSIC REWARDS					
Teaching	704	2.85	.74	-6.28	.00**
Not Teaching	421	3.18	1.00		
AUTONOMY/ SPECIAL ABILITIES					
Teaching	704	4.01	.67	2.79	.00**
Not Teaching	422	3.88	.79		
SERVICE PEOPLE					
Teaching	704	4.07	.54	7.80	.00**
Not Teaching	422	3.76	.80		

** = .01 Level of significance.

Factor 2 Extrinsic Rewards (followups)

The extrinsic rewards factor represents the rewards a job could provide, if an individual is successful in

his/her job. The factor was formed based on five items from Table 10.

There was a significant difference in means between perceptions of followups who were teaching (2.85) and followups who were not teaching (3.18) as to the importance of the extrinsic rewards provided by their present job. The null hypothesis of no significant difference was rejected at the .05 level of significance (see Table 51).

Factor 3 Autonomy/Special Abilities (followups)

The autonomy/special abilities factor represents the process of being free of supervision and using special abilities to be creative. The factor was formed based on five items from Table 10.

There was a significant difference in means between perceptions of followups who were teaching (4.01) and followups who were not teaching (3.88) as to the importance of autonomy/special abilities provided by their present jobs. The null hypothesis of no significant difference was rejected at the .05 level of significance (see Table 51).

Factor 4 Service/People (followups)

The factor service/people represents "people-oriented" items. This factor represents the opportunity to serve,

help, and work with people. It also takes into account the sense of accomplishment when a person or persons have helped in some manner. The factor was formed based on five items from Table 10.

There was a significant difference in means between perceptions of followups who were teaching (4.01) and followups who were not teaching (3.88) as to in the importance of service/people within their present job provided. The null hypothesis of no significant difference was rejected at the .05 level of significance (see Table 51).

Teaching Level Differences

Testing of Hypothesis 3

Hypothesis 3A: There is a significant difference in means for factors according to teaching level for undergraduates.

Factor 1 Challenge/Responsibility (undergraduates)

The challenge/responsibility factor represents the process of working toward achieving those goals which may seem unattainable. The factor was formed based on five items from Table 7.

There was a significant difference in means between perceptions of undergraduates at the elementary level (4.37) and undergraduates at the secondary level (4.29) as

TABLE 52. Teaching Level Difference of Job Characteristics Factors for Undergraduate Combined Sample

FACTORS	N	MEAN	STANDARD DEVIATION	T VALUE	PROB
CHALLENGE/ RESPONSIBILITY					
Elementary	903	4.37	.44	3.62	.00**
Secondary	866	4.29	.48		
EXTRINSIC REWARDS					
Elementary	903	3.46	.64	1.09	.27
Secondary	866	3.43	.65		

** = .01 Level of significance.

to the importance of the challenge/responsibility a job should provide. The null hypothesis of no significant difference was rejected at the .05 level of significant (see Table 52).

Factor 2 Extrinsic Rewards (undergraduates)

The extrinsic rewards factor represents the rewards a job could provide, if an individual is successful in his/her job. The factor was formed based on three items from Table 7.

A significant difference was not found between the means of undergraduates at the elementary level (3.46) and undergraduates at the secondary level (3.43) rating the importance of the extrinsic rewards that a job should provides. The null hypothesis of no significant difference was retained (see Table 52).

Hypothesis 3B: There is a significant difference in means for factors according to teaching level for followups.

Factor 1 Challenge/Responsibility (followups)

The challenge/responsibility factor represents the process of working toward achieving those tasks that may seem unattainable. The factor was formed based on six items from Table 7.

There was a significant difference in means between perceptions of followups on the elementary level (3.95) and followups on the secondary level (3.84) as to the importance of challenge/responsibility provided by their present jobs. The null hypothesis of no significant difference was rejected at the .05 level of significance (see Table 53).

Factor 2 Extrinsic Rewards (followups)

TABLE 53. Teaching Level Difference of Job Characteristics Factors for Followup Sample

FACTORS	N	MEAN	STANDARD DEVIATION	t VALUE	PROB
CHALLENGE/ RESPONSIBILITY					
Elementary	381	3.95	.61	2.30	.02*
Secondary	306	3.84	.64		
EXTRINSIC REWARDS					
Elementary	381	2.92	.73	2.68	.00**
Secondary	306	2.77	.74		
AUTONOMY/ SPECIAL ABILITIES					
Elementary	381	4.09	.64	3.69	.00**
Secondary	306	3.90	.69		
SERVICE/PEOPLE					
Elementary	381	4.12	.53	2.39	.02*
Secondary	306	4.18	.55		

* = .05 Level of significance.
** = .01 level of significance.

The extrinsic rewards factor represents the rewards a job could provide if an individual is successful in his/her job. The factor was formed based on five items from Table 10.

There was a significant difference in means between perceptions of followups on the elementary level (2.92) and followups on the secondary level (2.77) as to the importance of extrinsic rewards provided by present jobs. The null hypothesis of no significant difference was rejected at the .05 level of significance (see Table 53).

Factor 3 Autonomy/Special Abilities (followups)

The autonomy/special abilities factor represents the process of being free of supervision and using special abilities to be creative. The factor was formed based on four items from Table 10.

There was a significant difference in means between perceptions of followups on the elementary level (4.09) and followups on the secondary level (3.90) as to the importance of autonomy/special abilities provided by their present jobs. The null hypothesis of no significant difference was rejected at the .05 level of significance (see Table 53).

Factor 4 Service/People (followups)

The service/people factor represents "people-oriented" items. This factor includes the opportunity to serve, help, and work with people. It also take into account a

sense of accomplishment when a person or persons have helped in some manner. The factor was formed based on three items from Table 10.

There was a significant difference in means between perception of followups on the elementary level (4.12) and followups on the secondary level (4.18) as to the importance of service/ people to provided by their present jobs. The null hypothesis of no significant difference was rejected at the .05 level of significance (see Table 54).

CHAPTER V - SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Summary

This study was undertaken to examine what influence subgroups have on the item selection, reliability estimates, and substantive results of eighteen items concerning job characteristics. The study was based on research data collected by the Research Institute for Studies in Education at Iowa State University from students enrolled in a beginning teacher course (Education 204) and graduates of the teacher education program at various stages in their careers (graduation from the teacher preparation program, one year following graduation and five years following graduation).

The importance of this study is that it provides a reliable grouping of job characteristics items based on comprehensive statistical analyses. In order to accomplish this objective, several statistical analyses were used. Factor analysis was used to form composites of the eighteen job characteristics items; reliability was used to examine how reliable the composites were; and a t-test of independent means was used to test differences in means between subgroups (gender, teaching status, and teaching level).

Major Findings

The following were the major findings of this study:

1. Listed are the different factors of the various samples and subgroups:
   (a) autonomy/challenge/responsibility/special abilities
   (b) autonomy/responsibility/service/people
   (c) autonomy/special abilities
   (d) challenge/responsibility/special abilities
   (e) challenge/responsibility
   (f) extrinsic rewards
   (g) job factors

2. The followup sample was the only sample in the study to have all eighteen job characteristics items to load on a specific factor.

3. The reliability of the factor ranged from .55 to .87 with a average item correlation that ranged from .37 to .60 for the various samples and subgroups.

4. Survery results for the followups who were not teaching appeared to produce the factor with the highest reliability (autonomy/challenge/

responsibility/special abilities). Results from the undergraduates who were planning to teach at the elementary level produced the factor with the lowest reliability. The reader is reminded that most elementary students are females.

5. There was a significant difference in means between the perceptions of female and male undergraduates as to the importance of the challenge/responsibility a job should provide. However, there was no significant difference means between the perceptions of female and male undergraduates as to the importance of extrinsic rewards a job should provide.

6. There was no significant difference in means between the perceptions of female and male followups as to the importance of challenge/responsibility, autonomy/special abilities, and service/people provided by their present jobs. However, there was a significant difference in means between the perceptions of female and male followups as to the importance of extrinsic rewards provided by

their present jobs.

7. There was no significant difference in means between the perceptions of undergraduate students who plan to teach and undergraduate student who do not plan to teach in the importance of challenge/responsibility in what a job should provide. However, there was a significant difference in means between the perceptions of undergraduates students who plan to teach and undergraduates students who do not plan to teach as to the importance of the extrinsic rewards that a job should provide.

8. There was a significant difference in means between the perceptions of followups who were teaching and followups who were not teaching as to the importance of challenge/ responsibility, extrinsic rewards autonomy/ special abilities, and service/people in their present jobs.

9. There was a significant difference in means between the perceptions of undergraduates at the elementary level and undergraduates at the

secondary level as to the importance of challenge/responsibility a job should provide; but there was no significant difference in means between the perceptions of undergraduates at the elementary and secondary levels as to the importance of extrinsic rewards a job should provide.

10. There was a significant difference in means between the perceptions of followups at the elementary and secondary levels as to the importance of challenge/responsibility, extrinsic rewards autonomy/special abilities, and service/people provided by their present jobs.

Conclusion

In the past, studies have been conducted on job characteristics items of students and teachers in teacher education; however the majority of these studies were conducted during the 1950s and early 1970s. Very few of the studies focused on subgroup analysis of job characteristics items. The scarcity of studies since this time period has left the area of teacher education with little or no research pertaining to the importance of job

characteristics items of students and teachers, especially by gender, teaching status, and teaching level.

The purpose of a job is to provide rewards for services rendered. These rewards can be either intrinsic or extrinsic. Extrinsic rewards have often been considered the reason for a person choosing or failing to choose an occupational area. Keith, Warren, and Dilts (1983) found that both men and women placed great importance in the extrinsic aspects of work (salary, social status, and fringe benefits). These findings are consistent with the undergraduate findings, but inconsistent with the graduate findings respecting extrinsic rewards. Keith (1980) found in a study of college graduates that males placed greater importance on self-expression (the opportunity to use special abilities or attitudes, to be creative, and to be free from supervision), extrinsic rewards (salary, status, advancement, and retirement benefits), and leadership than did females in selecting their current employment. Keith's findings were inconsistent with this study on the factors of self-expression and leadership, but consistent regarding the factors of extrinsic rewards and people oriented. Singer (1974) and Saleh and Lalljee (1969) found few or no differences in preferences for job factor by gender which are consistent with this study.

While there were few or no differences in preferences for job factors by gender, there were many differences in preferences for job factors by teaching status in this study. Those findings are consistent with Keith, Warren and Dilts' (1983) and Hutcheson's (1982) findings. When comparing teaching level findings with other findings there was little or no direct evidence which to compare these findings. In 1961, Fox found that prospective secondary school teachers were influenced by the increasing salaries for teachers significantly more than prospective elementary school teachers. Those findings are consistent with this study of undergraduates regarding extrinsic rewards.

Recommendations for Further Research

Based on the overall findings, the following recommendations for further research are made:

1. This study should be replicated using the same samples at a different time to see if the results are consistent. If the results are consistent, then these studies have gone a long way in gaining scientific acceptance.

2. Followup studies of persons in this study should be taken to determine changes in their

responses on significant factor of both undergraduates and followups.

3. Since the research findings are basically generalized to a single university, a study of this nature should be done on a national level using colleges and universities with teacher education programs.

4. A regression model could be designed to determine which composites suggested by undergraduate and followup samples are good indicators for predicting teachers' occupational choices.

5. It is recommended that the relationships of variables to factors be examined in samples that represent different demographic populations.

6. Similar data should be gathered on graduates who completed the teacher preparation program at Iowa State University during the past ten years in order to determine if these findings are similar over a greater period of time.

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A sincere gratitude is expressed to Genell Boatwright, Tracy Middleton, and family members for their love and patience throughout the whole experience.

APPENDIX A: STUDENT AND TEACHER EDUCATION PROGRAM QUESTIONNAIRES

First, we would like to ask you some questions about your current involvement with the Teacher Education Program.

1. Please check the response which best describes your current position on applying to the Iowa State Teacher Education Program.

____ I have been admitted to Teacher Education
____ I have applied for admission to Teacher Education
____ I plan to apply for admission to Teacher Education
____ I am uncertain whether or not I will apply for admission to Teacher Education
____ I plan to complete a Teacher Education Program at another institution
____ I do not plan to apply to a Teacher Education Program

2. Check the response which best describes your primary reason for enrolling in Education 204.

____ It is a requirement for the Teacher Education Program
____ I wanted to obtain more information on a teaching career
____ My advisor recommended the class
____ Friends recommended the class
____ It was the only class available during this time
____ Other ---> Specify _____

3. In what way has Education 204 influenced your decision on teaching as a career?

____ It has confirmed my previous decision to become a teacher
____ It has caused me to decide to become a teacher
____ It has confirmed my previous decision not to become a teacher
____ It has caused me to decide not to become a teacher
____ It has caused uncertainty about my decision to become a teacher
____ It has caused uncertainty about my decision not to become a teacher
____ It has not affected my decision

Now, we would like to ask you some questions about your plans for the future.

4. What is your current long-range career plan? Please specify area(s). Check the one most appropriate response.

____ Elementary Teaching _____

____ Secondary Teaching _____

____ K-12 Teaching _____

____ College or University Teaching _____

____ School Counselor
____ School Administrator
____ Business or Industry _____

____ Government Employment (Other than Military) _____
____ Military
____ Full-time Homemaker
____ Other _____

5. How important is it that a job provide you with the following characteristics? Please circle one number for each characteristic. Use the following response categories.

Very Important . . . 5
Important. 4
Neutral. 3
Unimportant. 2
Very Unimportant . . 1

		Please circle your response				
a.	Opportunity to be creative and original. . .	5	4	3	2	1
b.	Opportunity to use special abilities or aptitudes.	5	4	3	2	1
c.	Opportunity to work with people rather than things.	5	4	3	2	1
d.	Opportunity to earn a good deal of money . .	5	4	3	2	1
e.	Social status and prestige	5	4	3	2	1
f.	Opportunity to effect social change.	5	4	3	2	1
g.	Relative freedom from supervision by others.	5	4	3	2	1
h.	Opportunity for advancement.	5	4	3	2	1
i.	Opportunity to exercise leadership	5	4	3	2	1
j.	Opportunity to help and serve others	5	4	3	2	1
k.	Adventure.	5	4	3	2	1
l.	Opportunity for a relatively stable and secure future.	5	4	3	2	1
m.	Fringe benefits (health care, retirement benefits).	5	4	3	2	1
n.	Variety in the work.	5	4	3	2	1
o.	Responsibility	5	4	3	2	1
p.	Control over what I do	5	4	3	2	1
q.	Control over what others do.	5	4	3	2	1
r.	Challenge.	5	4	3	2	1

6. When did you begin your course work at Iowa State?

_____ _____
Month Year

7. What was your approximate rank in your high school graduating class? (check one)

____ in upper 10%
____ in upper 11-25%
____ in upper 26-50%
____ in upper 51-75%
____ in lower 25%

8. Did you transfer to Iowa State from another college or university? (check one)

____ Yes ---> Go to Question 9
____ No ---> Go to Question 11

9. (Transfers only) How many semester hours did you transfer to Iowa State?

____ Semester hours (Semester hours = quarter hours x 2/3)

10. (Transfers only) What was your approximate G.P.A. at the time of transfer? (check one)

____ below 2.00
____ 2.01 - 2.50
____ 2.51 - 3.00
____ 3.01 - 3.50
____ above 3.50

11. What was your approximate G.P.A. (earned at Iowa State) at the beginning of this semester? _____

12. Have you worked in a full-time (40 hours per week) job? (check one)

____ Never ---> skip to 14
____ Occasionally ---> (including summers and vacations)
____ Continously from 1 - 3 years
____ Continously for more than 3 years

13. Please describe the occupation in which you worked the majority of the time. (Please be specific)

_____

14. Please check any of the following activities in which you have been involved as a participant.

____ 4-H
____ Scouts
____ Varsity Sports
____ Intramural Sports
____ Religious Youth Activities
____ Youth Camps
____ Foreign Travel
____ School Music Activities
____ FFA or FHA
____ Speech/Debate
____ Student Council
____ Cheerleading
____ School Newspaper/Yearbook
____ Honor Society
____ Service Clubs ---> Please Specify _____
____ Interest Clubs ---> Please Specify _____
____ Other ---> Please Specify _____

15. Please check any of the following activities in which you have been involved as a leader, counselor, coach or aide.

____ 4-H
____ Scouts
____ Varsity Sports
____ Intramural Sports
____ Religious Youth Activities
____ Youth Camps
____ Foreign Travel
____ Youth Choir or Band
____ Nursery School
____ Elementary School
____ Secondary School
____ Student Government
____ Other ---> Please specify _____

16. What is your age? _____

17. Sex? (Circle) M F

18. What is your Social Security Number? _____

19. What was your father's occupation most of the time while you were living at home? (Please be specific)

_____

20. What was your mother's occupation most of the time while you were living at home? (Please be specific)

_____

21. Are you currently a resident in Iowa? (Please check)
____ Yes
____ No
If "No", what is your state or country of residence? _____

22. What was the approximate number of students in your high school?

____ Students

23. What is your current marital status? (check one)

____ Single
____ Married
____ Married, one or more children
____ Other (Widowed, Separated, Divorced)

Now, we would like to ask you questions about your current attitudes toward teaching.

24. Please think about the best teacher you have known. What were the characteristics that made that teacher outstanding?

(1) _____

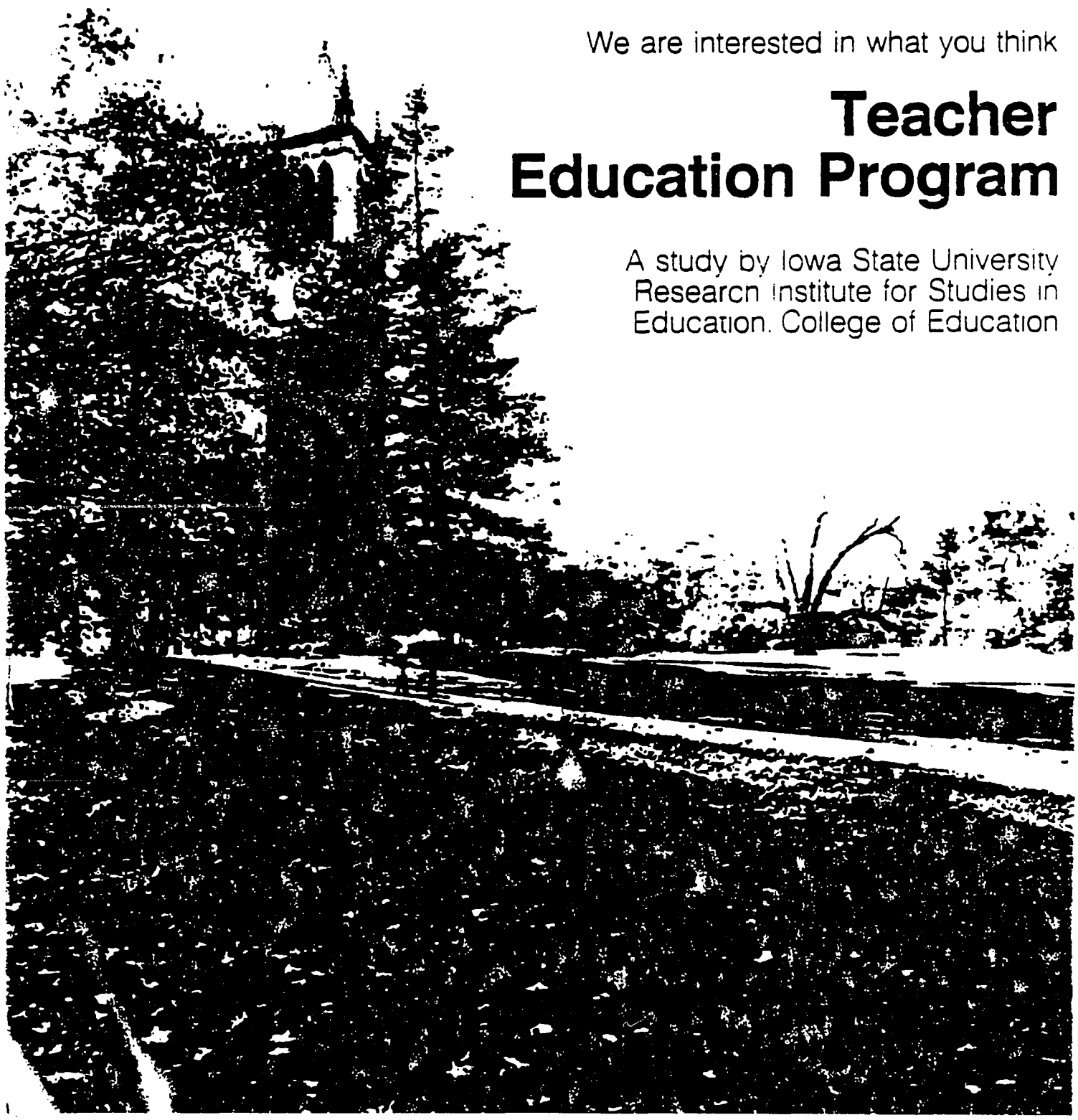
(2) _____

(3) _____

25. List the two most significant factors attracting you to the teaching profession.

(1) _____

(2) _____



We are interested in what you think

Teacher Education Program

A study by Iowa State University Research Institute for Studies in Education, College of Education

Spring 1987

A Note to Respondents

In recent years, the teaching profession has been marked by rapid change and the emergence of a number of issues and concerns. It is essential that teacher preparation programs be responsive to these concerns. Therefore, the ISU College of Education is developing a comprehensive model to evaluate and to improve the quality of the teacher preparation program. Your reactions to and responses about your preparation are a major ingredient of this model.

Various approaches are used by colleges of education to evaluate, improve, and modify programs for the preparation of educational personnel. Among these approaches in the evaluation process is a study of graduates from preparation programs. To provide the necessary information for program improvement, the data need to be collected on a regular basis and over a period of time. These longitudinal studies are beneficial in providing insights about program strengths and weaknesses and in assisting in program improvement and modification.

Since 1979, the Research Institute for Studies in Education (RISE) has been collecting data from teacher education graduates at major points in their preparation and careers. Now, at graduation, we are contacting you for information about your current attitudes towards the ISU Teacher Preparation Program and personal background characteristics. The information we receive is summarized and presented in a report that is discussed by faculty in the College of Education as they plan changes for improving and updating the teacher preparation program. As mentioned in the accompanying letter, no individual responses are ever reported.

These data, collected over the past seven years, have been very helpful in keeping the ISU Teacher Preparation Program current and responsive to changing educational needs. Your input is very much appreciated.

FIRST, we would like information about your teacher preparation program.

1. How long did you student teach? (check one)

___ 8 weeks or less

___ 12 weeks

___ 16 weeks

___ Other (Please specify ---> _____).

2. Based on the length of your student teaching experience, should student teaching have been longer or shorter?

	How many additional weeks?	How many fewer weeks?	Total suggested weeks
___ Longer --->	_____	xxxxxxxxxx	_____
___ Shorter --->	xxxxxxxxxx	_____	_____
___ About right	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx

3. At what level did you student teach?

___ Prekindergarten/Kindergarten (N-K)

___ Elementary (K-6)

___ Secondary (7-12)

___ K-12

4. In what teaching area(s) of specialization do you expect to get teaching approval?

(a) Prekindergarten/Kindergarten Level
___ Prekindergarten/Kindergarten ___ Other (Specify _____)

(b) Elementary Level
___ Elementary ___ Other (Specify _____)

(c) K-12 Level
___ Art ___ Health ___ Music ___ P.E.

(d) Secondary Level

___ Agriculture	___ Health	___ Physical Science
___ Art	___ Home Economics	___ Physics
___ Biology	___ Industrial Arts	___ Psychology
___ Chemistry	___ Journalism	___ Safety Education
___ Earth Science	___ Mathematics	___ Social Science
___ English	___ Music	___ Speech
___ Foreign Language	___ Physical Education	___ Other
___ General Science		

If you checked more than one, what is your major area? _____

5. Using the rating scale below, indicate how satisfied you were with aspects of your student teaching experience.

Very Satisfied. . . . 5
Satisfied 4
Neutral 3
Dissatisfied. 2
Very Dissatisfied . . 1

	Please circle your response				
a. Getting your choice of geographical location for your student teaching assignment.	5	4	3	2	1
b. Your cooperating teacher.	5	4	3	2	1
c. Your university supervisor.	5	4	3	2	1
d. Based on your student teaching experience, what is your reaction to teaching as a career for you?	5	4	3	2	1

6. At what age did you decide to become a teacher? _____ years old.

7. If you had it to do over again, would you prepare to become a teacher?

___ Yes

___ No

___ Undecided

8. Do you feel you will be ...

___ ... an excellent teacher?

___ ... a better than average teacher?

___ ... an average teacher?

___ ... a below average teacher?

___ ... an inadequate teacher?

9. On a scale of 0 to 10, how would you rate the quality of the Teacher Preparation Program at Iowa State University? (Please circle the appropriate number.)

Very Poor — Very High

0 1 2 3 4 5 6 7 8 9 10

10. In what ways did the program provide the most valuable professional preparation for you?

(1) _____

(2) _____

(3) _____

11. In what ways should the program have offered more preparation?

(1) _____

(2) _____

(3) _____

12a. During your academic program at Iowa State University, have you done any work with computers or had training with applications of computers to teaching?

___ No ----> go to Q. 13
___ Yes ---> please answer Q. 12b

12b. If yes, please check all experiences that apply.

___ 1. Introductory lecture(s) demonstration(s) on computers and educational applications
___ 2. Viewing available Computer Assisted Instruction (CAI) materials
___ 3. Selecting and evaluating Computer Assisted Instruction (CAI) materials
___ 4. Using computers to manage instruction (grades, attendance, etc.)
___ 5. Entire course(s) in educational computing or computer science
___ 6. Word processing
___ 7. Computer programming
___ 8. Using microcomputers (Apples, Pets, etc.)
___ 9. Using minicomputers (VAX)
___ 10. Using mainframe computers through terminal and batch processing
___ 11. Other (Please specify ----> _____).

13a. Please indicate how adequate your professional education preparation program was in the following areas. Use the following response categories.

Very Adequate . . . 5
Adequate. 4
Neutral 3
Inadequate. 2
Very Inadequate . . 1
Not Applicable. . . N

		Please circle your response					
1)	Planning units of instruction and individual lessons.	5	4	3	2	1	N
2)	Preparing and using media	5	4	3	2	1	N
3)	Maintaining student interest.	5	4	3	2	1	N
4)	Understanding and managing behavior problems in the classroom	5	4	3	2	1	N
5)	Teaching basic skills	5	4	3	2	1	N
6)	Consultation skills in interacting with other professionals	5	4	3	2	1	N
7)	Developing student-student relationships. . . .	5	4	3	2	1	N
8)	Referring students for special assistance . . .	5	4	3	2	1	N
9)	Skills for mainstreaming handicapped students .	5	4	3	2	1	N
10)	Methods of working with children with learning problems.	5	4	3	2	1	N
11)	Assessing learning problems	5	4	3	2	1	N
12)	Developing tests.	5	4	3	2	1	N
13)	Interpreting and using standardized tests . . .	5	4	3	2	1	N
14)	Content preparation in your area of specialization.	5	4	3	2	1	N
15)	Professional ethics and legal obligations . . .	5	4	3	2	1	N
16)	Psychology of learning and its application to teaching	5	4	3	2	1	N
17)	Evaluating and reporting student work and achievement.	5	4	3	2	1	N
18)	Relating activities to interests and abilities of students	5	4	3	2	1	N

Very Adequate . . . 5
Adequate. 4
Neutral 3
Inadequate. 2
Very Inadequate . . 1
Not Applicable. . . N

		Please circle your response					
19)	Locating and using materials and resources in your specialty area.	5	4	3	2	1	N
20)	Evaluating your own instruction	5	4	3	2	1	N
21)	Individualizing instruction	5	4	3	2	1	N
22)	Selecting and organizing materials.	5	4	3	2	1	N
23)	Using a variety of instructional techniques . .	5	4	3	2	1	N
24)	Understanding teachers' roles in relation to administrators, supervisors and counselors. . .	5	4	3	2	1	N
25)	Working with parents.	5	4	3	2	1	N
26)	Working with other teachers	5	4	3	2	1	N
27)	Assessing and implementing innovations.	5	4	3	2	1	N
28)	Appreciating and understanding individual and intergroup differences in values and lifestyles	5	4	3	2	1	N
29)	Using community resources	5	4	3	2	1	N
30)	Techniques of curriculum construction	5	4	3	2	1	N
31)	Influence of laws and policies related to schools.	5	4	3	2	1	N
32)	Techniques of infusing multicultural learning.	5	4	3	2	1	N
33)	Using written communication effectively	5	4	3	2	1	N
34)	Developing your own teaching style by observing others	5	4	3	2	1	N

35b. In rank order (1 highest rank), please list from the above items the corresponding numbers for the three areas of preparation with highest adequacy.

	1	2	3
Adequacy of Preparation	___	___	___

14. We would like your reactions to using selected components within the teacher preparation program. Some of these components are recent additions and therefore, may not have been included in your program. First, for each component, please check (✓) whether or not you participated. Then, for those you participated in, use the scale below to rate the extent to which the component helped you prepare to be a teacher. Finally, comment on the component (such as, explain what you liked or disliked, how it helped you, the extent of your participation, its strengths or weaknesses, etc.)

No Help at All — A Great Deal of Help

0 1 2 3 4 5 6 7 8 9 10

Component	Participate	Rating	Comments
Teacher on Television (TOT)	_____Yes _____No	_____	_____
Performance Element Modules (PEMs)	_____Yes _____No	_____	_____
Teaching Assessment Modules (TAMs)	_____Yes _____No	_____	_____
Writing Clinic	_____Yes _____No	_____	_____
Field Experiences (including pre-student teaching practicums, but not student teaching)	_____Yes _____No	_____	_____

15. What are your employment plans for the 1987/1988 school year?

___ Have obtained a teaching position for 1987/88 school year.

___ Currently seeking or plan to seek a teaching position.

___ Currently seeking or plan to seek a non-teaching position.

___ Graduate study (Please specify area ---> _____).

___ Other (Please specify ---> _____).

16. What is your long-range career plan? (Please check the most appropriate response. Check only one.)

___ Teaching ---> **skip to Q. 18**

___ Employment in education other than teaching ---> **skip to Q. 18**

Please specify ---> _____

___ Employment outside the field of education ---> **please answer Q. 17**

Please specify ---> _____

___ Other ---> **please answer Q. 17**

Please specify ---> _____

17. **(Non-teaching)** Why do you plan not to enter the field of education? Check as many as apply.

___ Lack of teaching positions available.
___ Greater career opportunities in nonacademic jobs.
___ Higher salaries and benefits in nonacademic jobs.
___ Marriage/family obligations.
___ Had not planned to enter education.
___ Experiences in student teaching.
___ General working conditions (nonteaching duties, hours, classroom size, work load).
___ Student related (motivation, lack of discipline, general attitudes).
___ General administrative framework in local schools.
___ Lack of respect.
___ Emotional aspects (stress, burnout, frustration, boredom).
___ Lack of support from parents and community.
___ Lack of advancement opportunities.
___ Other (Please specify ---> _____).

ALL RESPONDENTS

13. How important is it that a job provide you with the following characteristics? Please circle one number for each characteristic. Use the following response categories.

Very Important . . . 5
Important. 4
Neutral. 3
Unimportant. 2
Very Unimportant . . 1

	Please circle your response				
a. Opportunity to be creative and original. . .	5	4	3	2	1
b. Opportunity to use special abilities or aptitudes.	5	4	3	2	1
c. Opportunity to work with people rather than things.	5	4	3	2	1
d. Opportunity to earn a good deal of money . .	5	4	3	2	1
e. Social status and prestige	5	4	3	2	1
f. Opportunity to effect social change.	5	4	3	2	1
g. Relative freedom from supervision by others.	5	4	3	2	1
h. Opportunity for advancement.	5	4	3	2	1
i. Opportunity to exercise leadersnip	5	4	3	2	1
j. Opportunity to help and serve others	5	4	3	2	1
k. Adventure.	5	4	3	2	1
l. Opportunity for a relatively stable and secure future.	5	4	3	2	1
m. Fringe benefits (health care, retirement benefits).	5	4	3	2	1
n. Variety in the work.	5	4	3	2	1
o. Responsibility	5	4	3	2	1
p. Control over what I do	5	4	3	2	1
q. Control over what others do.	5	4	3	2	1
r. Challenge.	5	4	3	2	1

19. In self-appraisal and teacher evaluation, certain teaching behaviors are often identified. We would like you to rate your perception of your student teaching behavior in each of the following areas. Using the scale below, circle a number for each area.

	Very Low										Very High
a. Providing a setting conducive to learning	0	1	2	3	4	5	6	7	8	9	10
b. Motivating students	0	1	2	3	4	5	6	7	8	9	10
c. Demonstrating knowledge of subject matter	0	1	2	3	4	5	6	7	8	9	10
d. Monitoring and evaluating student progress and understanding	0	1	2	3	4	5	6	7	8	9	10
e. Providing clear, concise explanations and examples	0	1	2	3	4	5	6	7	8	9	10
f. Managing instructional activities efficiently and ensuring student time on task	0	1	2	3	4	5	6	7	8	9	10
g. Communicating effectively with students	0	1	2	3	4	5	6	7	8	9	10
h. Demonstrating sensitivity toward students	0	1	2	3	4	5	6	7	8	9	10
i. Demonstrating effective planning and organization skills	0	1	2	3	4	5	6	7	8	9	10
j. Exhibiting a positive self-concept	0	1	2	3	4	5	6	7	8	9	10
k. Accommodating a variety of ability levels	0	1	2	3	4	5	6	7	8	9	10
l. Implementing the lesson plans effectively	0	1	2	3	4	5	6	7	8	9	10
m. Maintaining high expectations for student achievement	0	1	2	3	4	5	6	7	8	9	10
n. Incorporating effective questioning techniques	0	1	2	3	4	5	6	7	8	9	10
o. Using a variety of instructional resources	0	1	2	3	4	5	6	7	8	9	10
p. Maintaining high standards for student behavior	0	1	2	3	4	5	6	7	8	9	10

Now we would like to ask you some general questions about yourself and your family.

20. Up to the present, where have you spent the majority of your life?
___ ... on a farm?
___ ... in a non-farm country home?
___ ... in a town with population less than 2,500?
___ ... in a town with population between 2,500 and 5,000?
___ ... in a town with population between 5,000 and 10,000?
___ ... in a town with population between 10,000 and 25,000?
___ ... in a town with population between 25,000 and 50,000?
___ ... in a city with population between 50,000 and 100,000?
___ ... in a city with population over 100,000?

21. Sex
___ Female
___ Male

22. Marital status

___ Single
___ Married

22a. Do you have any children?

____ Yes ---> How many?____
____ No

23. What was your father's occupation most of the time while you were living at home? Please be specific.

_____

24. What was your mother's occupation most of the time while you were living at home? Please be specific.

_____

25. Please think about the best elementary or secondary teacher you know or have known. What are the characteristics that made that teacher outstanding?

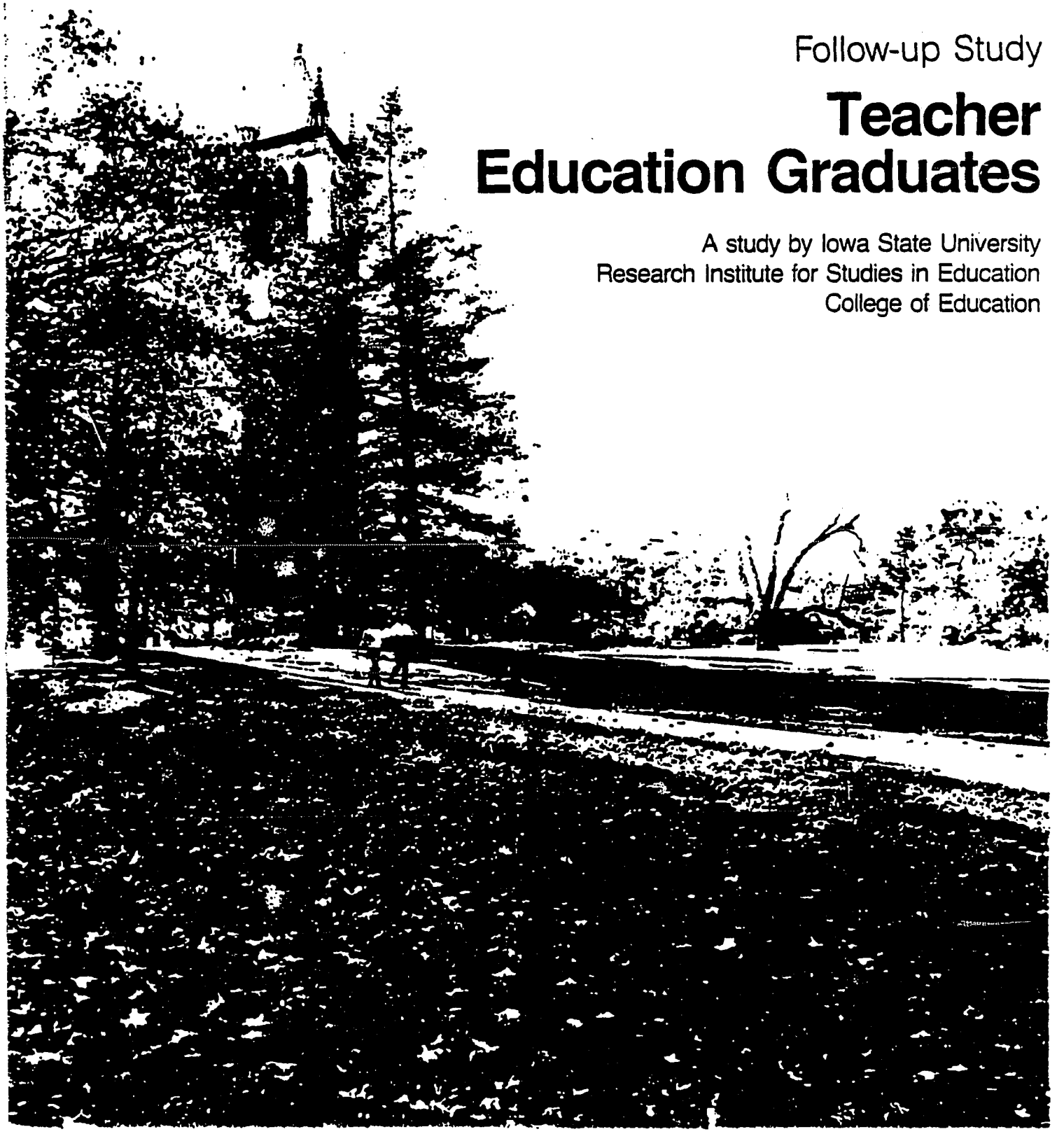
(1)_____

(2)_____

(3)_____

If you have any additional comments about teacher preparation or teacning in general, please use the space below.

The College of Education and the Research Institute for Studies in Education appreciate the time you have taken to complete this questionnaire. Postage for the questionnaire is prepaid, so all you need do is tape it and drop it in a mailbox.



Follow-up Study

Teacher Education Graduates

A study by Iowa State University
Research Institute for Studies in Education
College of Education

1987

A Note to Respondents

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These data, collected over the past seven years, have been very helpful in keeping the ISU Teacher Preparation Program current and responsive to changing educational needs. Your input is very much appreciated.

FIRST, we would like to ask you questions about your current employment.

1. Using the occupational code below, please circle your current position.

1 Teacher	8 Clerical/Secretarial/ Administrative support
2 Education-related (non-teaching)	9 Service
3 Other professional	10 Homemaker
4 Technical	11 Farmer
5 Managerial/Administrative	12 Student
6 Sales/Business	13 Unemployed
7 Craftsman/Operative	14 Other (specify)_____

Teachers ---> Please answer PART A, then skip to page 2, PART C.
Nonteachers ---> Please skip to PART B, page 2.

PART A (Teachers)

(a) What level do you teach?

___ Preschool/Kindergarten

___ Elementary (1-6)

___ Secondary (7-12) ---> Specify subject(s)_____

___ K-12 ---> Specify subject(s)_____

(b) Are you teaching ...

___ ... Full time?
___ ... Part time?
___ ... Substitute?
___ ... Other?

(d) What are your plans for next year?

___ Remain in same position.

___ Seek similar position elsewhere.

___ Employment in education other than teaching.

Please specify --->_____

___ Employment outside education

Please specify --->_____

___ Other

Please specify --->_____

PART B (Nonteachers)

(a) What are your reasons for not teaching at the present time? Check as many as apply.

___ Graduate study. (Please specify area _____)
___ Could not find a teaching position.
___ Inadequate salaries and benefits.
___ General working conditions (nonteaching duties, hours, classroom size, work load).
___ Student related (motivation, lack of discipline, general attitudes).
___ Feelings of ineffectiveness.
___ Administrator related (lack of support, dissatisfaction with administration, incompetent administration).
___ Lack of respect.
___ Emotional aspects (stress, burnout, frustration, boredom).
___ Lack of support from parents and community.
___ Lack of advancement opportunities.
___ Family obligations.
___ Had not planned to teach.
___ Better salaries and career opportunities in other fields.
___ Other (please specify) _____

(b) What are your employment plans for next year?

___ Remain in same position.

___ Seek similar position elsewhere.

___ Seek teaching position.

___ Employment in education other than teaching.

___ Other (please specify) _____

PART C (All Respondents)

Five years from now, do you plan to be . . .

___ Teaching

___ Employed in education other than teaching

___ Employed outside the field of education

___ Other (please specify) _____

Now, we would like information about your Teacher Preparation Program.

2. Based on the length of your student teaching experience, should student teaching have been longer or shorter?

	How many additional weeks?	How many fewer weeks?	Total suggested weeks
___ Longer --->	_____	xxxxxxxxxx	_____
___ Shorter --->	xxxxxxxxxx	_____	_____
___ About right	xxxxxxxxxx	xxxxxxxxxx	xxxxxxxxxx

3. At what level did you student teach?

___ Prekindergarten/Kindergarten (N-K)

___ Elementary (K-6)

___ Secondary (7-12)

___ K-12

4. In what teaching area(s) of specialization do you have teaching approval?

(a) Prekindergarten/Kindergarten Level

___ Prekindergarten/Kindergarten ___ Other (Specify _____)

(b) Elementary Level

___ Elementary ___ Other (Specify _____)

(c) K-12 Level

___ Art ___ Health ___ Music ___ P.E. ___ Other (Specify _____

(d) Secondary Level

___ Agriculture
___ Art
___ Biology
___ Chemistry
___ Earth Science
___ English
___ Foreign Language
___ General Science
___ Health
___ Home Economics
___ Industrial Arts
___ Journalism
___ Mathematics
___ Music
___ Physical Education
___ Physical Science
___ Physics
___ Psychology
___ Safety Education
___ Social Science
___ Speech
___ Other

If you checked more than one, what is your major area? _____

5. We would like you to rate your Teacher Preparation Program in specific areas: first, rate the adequacy of preparation; second, indicate how important the area is to your present position.

		Very Adequate. . 5 Adequate . . . . 4 Neutral. . . . . 3 Inadequate . . . 2 Very Inadequate. 1 Not Applicable . N						Very Important . 5 Important. . . . 4 Neutral. . . . . 3 Unimportant. . . 2 Very Unimportant 1 Not Applicable . N					
1)	Planning units of instruction and individual lessons	5	4	3	2	1	N	5	4	3	2	1	N
2)	Preparing and using media. . . .	5	4	3	2	1	N	5	4	3	2	1	N
3)	Maintaining student interest . .	5	4	3	2	1	N	5	4	3	2	1	N
4)	Understanding and managing behavior problems in the classroom	5	4	3	2	1	N	5	4	3	2	1	N
5)	Teaching basic skills.	5	4	3	2	1	N	5	4	3	2	1	N
6)	Consultation skills in interacting with other professionals.	5	4	3	2	1	N	5	4	3	2	1	N
7)	Developing student-student relationships.	5	4	3	2	1	N	5	4	3	2	1	N
8)	Referring students for special assistance	5	4	3	2	1	N	5	4	3	2	1	N
9)	Skills for mainstreaming handicapped students.	5	4	3	2	1	N	5	4	3	2	1	N
10)	Methods of working with children with learning problems	5	4	3	2	1	N	5	4	3	2	1	N
11)	Assessing learning problems. . .	5	4	3	2	1	N	5	4	3	2	1	N
12)	Developing tests	5	4	3	2	1	N	5	4	3	2	1	N
13)	Interpreting and using standardized tests	5	4	3	2	1	N	5	4	3	2	1	N
14)	Content preparation in your area of specialization	5	4	3	2	1	N	5	4	3	2	1	N
15)	Professional ethics and legal obligations.	5	4	3	2	1	N	5	4	3	2	1	N
16)	Psychology of learning and its application to teaching. . .	5	4	3	2	1	N	5	4	3	2	1	N
17)	Evaluating and reporting student work and achievement	5	4	3	2	1	N	5	4	3	2	1	N
18)	Relating activities to interests and abilities of students. . . .	5	4	3	2	1	N	5	4	3	2	1	N

		ADEQUACY						IMPORTANCE					
19)	Using written communication effectively.	5	4	3	2	1	N	5	4	3	2	1	N
20)	Locating and using materials and resources in your specialty area	5	4	3	2	1	N	5	4	3	2	1	N
21)	Evaluating your own instruction.	5	4	3	2	1	N	5	4	3	2	1	N
22)	Individualizing instruction. . .	5	4	3	2	1	N	5	4	3	2	1	N
23)	Selecting and organizing materials.	5	4	3	2	1	N	5	4	3	2	1	N
24)	Using a variety of instructional techniques	5	4	3	2	1	N	5	4	3	2	1	N
25)	Understanding teachers' roles in relation to administrators, supervisors, and counselors. . .	5	4	3	2	1	N	5	4	3	2	1	N
26)	Working with parents	5	4	3	2	1	N	5	4	3	2	1	N
27)	Working with other teachers. . .	5	4	3	2	1	N	5	4	3	2	1	N
28)	Assessing and implementing innovations.	5	4	3	2	1	N	5	4	3	2	1	N
29)	Appreciating and understanding individual and intergroup differences in values and lifestyles	5	4	3	2	1	N	5	4	3	2	1	N
30)	Using community resources. . . .	5	4	3	2	1	N	5	4	3	2	1	N
31)	Techniques of curriculum construction	5	4	3	2	1	N	5	4	3	2	1	N
32)	Influence of laws and policies related to schools	5	4	3	2	1	N	5	4	3	2	1	N
33)	Techniques for infusing multicultural learning	5	4	3	2	1	N	5	4	3	2	1	N
34)	Developing your own teaching style by observing others	5	4	3	2	1	N	5	4	3	2	1	N

5b. Using the areas of preparation listed above (numbered from 1 to 34), select three areas in which you feel most adequately prepared. Rank the 1st, 2nd, and 3rd and record the corresponding number below. Do likewis for the three areas with most importance to your present position.

	1st	2nd	3rd
Adequacy of Preparation	___	___	___
Importance to Position	___	___	___

6. We would like your reactions to using selected components within the teacher preparation program. Some of these components are recent additions and therefore, may not have been included in your program. First, for each component, please check (✓) whether or not you participated. Then, for those you participated in, use the scale below to rate the extent to which the component helped you in preparing for your present position. Finally, comment on the component (such as, explain what you liked or disliked, how it helped you, the extent of your participation, its strengths or weaknesses, etc.)

No Help — **A Great Deal of Help**

0 1 2 3 4 5 6 7 8 9 10

Component	Participate	Rating	Comments
Teacher on Television (TOT)	_____Yes _____No	____	_____
Performance Element Modules (PEMs)	_____Yes _____No	____	_____
Teaching Assessment Modules (TAMs)	_____Yes _____No	____	_____
Writing Clinic	_____Yes _____No	____	_____
Field Experiences (including pre-student teaching practicums, but not student teaching)	_____Yes _____No	____	_____

7. On a scale of 0 to 10, how would you rate the quality of the Teacher Preparation Program at Iowa State University? (Please circle the appropriate number.)

Very Poor Very High

0 1 2 3 4 5 6 7 8 9 10

8. In what three ways did the program provide the most valuable professional preparation for you?

(1) _____

(2) _____

(3) _____

9. In what three ways should the program have offered more preparation?

(1) _____

(2) _____

(3) _____

10. If you had it to do over again, would you prepare to become a teacher?

___ Yes

___ No

___ Undecided

11. What program improvements would you suggest for easing the transition from student to first-year teacher?

_____

_____

_____

_____

If you are <u>not</u> currently employed, skip to Question 18 on page 12.

12. How important were each of the following factors in your decision to accept your current position? Please circle one number for each factor. Use the following response categories.

Very Important . . . 5
Important. 4
Neutral. 3
Unimportant. 2
Very Unimportant . . 1
Not Applicable . . . N

		Please circle your response					
a.	Desirable location	5	4	3	2	1	N
b.	Salary offered	5	4	3	2	1	N
c.	Type of position	5	4	3	2	1	N
d.	Size of organization	5	4	3	2	1	N
e.	Reputation of school, firm or organization	5	4	3	2	1	N
f.	Liked people with whom I interviewed . . .	5	4	3	2	1	N
g.	Spouse has a job in the community.	5	4	3	2	1	N
h.	Only job I was offered	5	4	3	2	1	N

13. On a scale of 0 to 10, how would you rate your general satisfaction with your current job?

Very Low Very High

0 1 2 3 4 5 6 7 8 9 10

14. What is the population of the community where you are currently employed?

___ Under 1,000
___ 1,000 - 2,499
___ 2,500 - 4,999
___ 5,000 - 9,999
___ 10,000 - 24,999
___ 25,000 - 50,000
___ Over 50,000

15. To what extent does your current job provide you with the following characteristics? Please circle one number for each characteristic. Use the following response categories.

All of the Time 5
Most of the Time 4
Some of the Time 3
Seldom 2
Never 1

		Please circle your response				
a.	Opportunity to be creative and original. . .	5	4	3	2	1
b.	Opportunity to use special abilities or aptitudes.	5	4	3	2	1
c.	Opportunity to work with people rather than things.	5	4	3	2	1
d.	Opportunity to earn a good deal of money . .	5	4	3	2	1
e.	Social status and prestige	5	4	3	2	1
f.	Opportunity to effect social change.	5	4	3	2	1
g.	Relative freedom from supervision by others.	5	4	3	2	1
h.	Opportunity for advancement.	5	4	3	2	1
i.	Opportunity to exercise leadership	5	4	3	2	1
j.	Opportunity to help and serve others	5	4	3	2	1
k.	Adventure.	5	4	3	2	1
l.	Opportunity for a relatively stable and secure future.	5	4	3	2	1
m.	Fringe benefits (health care, retirement benefits).	5	4	3	2	1
n.	Variety in the work.	5	4	3	2	1
o.	Responsibility	5	4	3	2	1
p.	Control over what I do	5	4	3	2	1
q.	Control over what others do.	5	4	3	2	1
r.	Challenge.	5	4	3	2	1

If you are not teaching this year, please go to page 12. **ALL TEACHERS**, please answer Questions 16 and 17 first.

TEACHERS ONLY answer Questions 16 and 17.

16. We would like you to rate your perception of your teaching behavior in each of the following areas. Using the scale below, circle the number for each area that indicates how well you are doing in your teaching position.

	Very Low										Very High
a. Providing a setting conducive to learning	0	1	2	3	4	5	6	7	8	9	10
b. Motivating students	0	1	2	3	4	5	6	7	8	9	10
c. Demonstrating knowledge of subject matter	0	1	2	3	4	5	6	7	8	9	10
d. Monitoring and evaluating student progress and understanding	0	1	2	3	4	5	6	7	8	9	10
e. Providing clear, concise explanations and examples	0	1	2	3	4	5	6	7	8	9	10
f. Managing instructional activities efficiently and ensuring student time on task	0	1	2	3	4	5	6	7	8	9	10
g. Communicating effectively with students	0	1	2	3	4	5	6	7	8	9	10
h. Demonstrating effective planning and organization skills	0	1	2	3	4	5	6	7	8	9	10
i. Exhibiting a positive self-concept	0	1	2	3	4	5	6	7	8	9	10
j. Using evaluation activities appropriately	0	1	2	3	4	5	6	7	8	9	10
k. Implementing the lesson plans effectively	0	1	2	3	4	5	6	7	8	9	10
l. Maintaining high expectations for student achievement	0	1	2	3	4	5	6	7	8	9	10
m. Incorporating effective questioning techniques	0	1	2	3	4	5	6	7	8	9	10
n. Maintaining high standards for student behavior	0	1	2	3	4	5	6	7	8	9	10
o. Maintaining effective working relationships with peers and administrators	0	1	2	3	4	5	6	7	8	9	10

17. We also would like your perceptions about employment factors related to teaching. Please indicate how satisfied you are with each of the followi aspects of teaching. Use the following response categories.

Very Satisfied 5
Satisfied 4
Neutral 3
Dissatisfied 2
Very Dissatisfied . . 1
Not Applicable . . . . NA

		Circle your respons					
a.	Salary	5	4	3	2	1	NA
b.	General working conditions	5	4	3	2	1	NA
c.	Amount of administrative support received	5	4	3	2	1	NA
d.	Relationship with other teachers	5	4	3	2	1	NA
e.	Extent of involvement in decision making	5	4	3	2	1	NA
f.	Job benefits	5	4	3	2	1	NA
g.	Job responsibilities	5	4	3	2	1	NA
h.	Extent to which job provides challenge and opportunity for professional growth	5	4	3	2	1	NA
i.	Level of job performance	5	4	3	2	1	NA
j.	Opportunities for advancement	5	4	3	2	1	NA
k.	Method with which job performance evaluated	5	4	3	2	1	NA
l.	Frequency with which job performance evaluated	5	4	3	2	1	NA
m.	Size of community in which employed	5	4	3	2	1	NA
n.	Support given by family and friends for choice of teaching as a career	5	4	3	2	1	NA
o.	Amount of time spent working at job	5	4	3	2	1	NA
p.	Relationship with students	5	4	3	2	1	NA
q.	Level of parental involvement	5	4	3	2	1	NA
r.	Role played in professional associations	5	4	3	2	1	NA
s.	Community support for education	5	4	3	2	1	NA
t.	Teaching as a career	5	4	3	2	1	NA

All Respondents

NOW we would like to ask you some general questions about yourself and your family.

18. Marital status

___ Single (never married)

___ Married

___ Divorced, separated, or widowed

19. Do you have any children?

___ Yes ---> How many? _____

___ No

20. Which of the following categories best describes your <u>total</u> income during last year? (If married, include spouse's income)

___ less than $ 9,999

___ $10,000 to $14,999

___ $15,000 to $19,999

___ $20,000 to $24,999

___ $25,000 to $29,999

___ $30,000 to $49,000

___ $50,000 and over

21. Please think about the best elementary or secondary teacher you have had. What were the characteristics that made that teacher outstanding?

(1)_____

(2)_____

(3)_____

If you have any additional comments about teacher preparation or teaching in general, please use the space below.

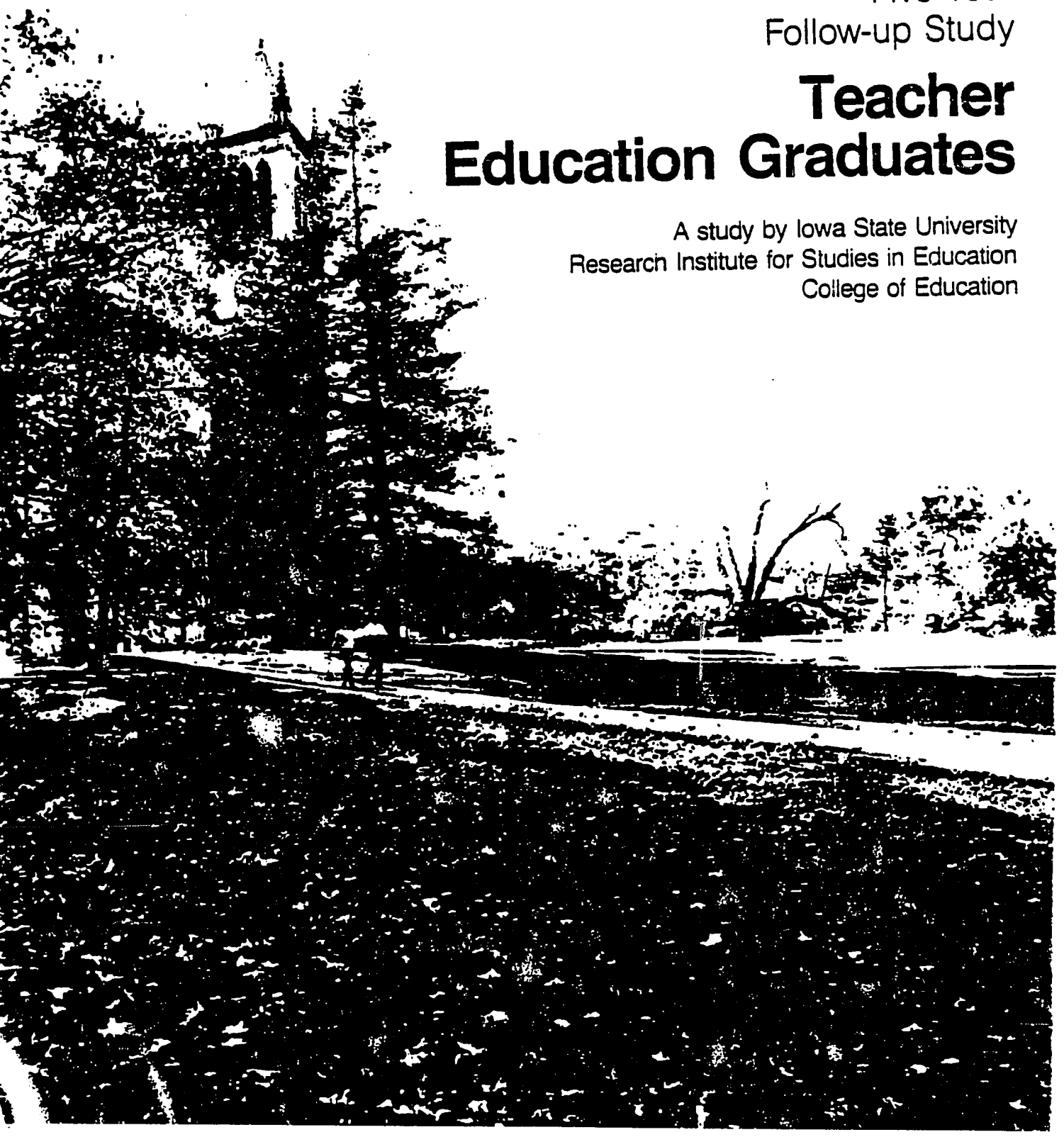
The College of Education and the Research Institute for Studies in Education appreciate the time you have taken to complete this questionnaire.

Postage for the questionnaire is prepaid, so all you need do is tape it and drop it in a mailbox.

Five-Year
Follow-up Study

Teacher Education Graduates

A study by Iowa State University
Research Institute for Studies in Education
College of Education



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A Note to Respondents

In recent years, the teaching profession has been marked by rapid change and the emergence of a number of issues and concerns. It is essential that teacher preparation programs be responsive to these concerns. Therefore, the ISU College of Education is developing a comprehensive model to evaluate and to improve the quality of the teacher preparation program. Your reactions to and responses about your preparation and subsequent employment experiences are a major ingredient of this model.

Various approaches are used by colleges of education to evaluate, improve, and modify programs for the preparation of educational personnel. Among these approaches in the evaluation process is a follow-up study of graduates from preparation programs. To provide the necessary information for program improvement, the data need to be collected on a regular basis and over a period of time. These longitudinal studies are beneficial in providing insights about program strengths and weaknesses and in assisting in program improvement and modification.

Since 1979, the Research Institute for Studies in Education (RISE) has been collecting data from teacher education graduates at major points in their preparation and careers. Now, five years after graduation, we are contacting you again for information about your current attitudes, competencies, and personal characteristics and about your employment history since graduation. The information we receive is summarized and presented in a report that is discussed by faculty in the College of Education as they plan changes for improving and updating the teacher preparation program. As mentioned in the accompanying letter, no individual responses are ever reported.

These data, collected over the past seven years, have been very helpful in keeping the ISU Teacher Preparation Program current and responsive to changing educational needs. Your input is very much appreciated.

FIRST, we would like to ask you questions about your current employment.

1. What is your current employment situation?

___ Teaching ---> Please answer PART A, then skip to page 3, PART C.

___ Nonteaching ---> Please skip to PART B, page 2.

PART A (Teaching)

(a) What level do you teach?

___ Preschool/Kindergarten

___ Elementary (Grades 1-6)

___ Secondary (Grades 7-12)

___ K-12

(b) Are you teaching ...

___ ... Full time?

___ ... Part time?

___ ... Substitute?

___ ... Other?

(c) At the present, what subject area(s) do you teach? _____

_____

(d) What are your plans for next year?

___ Remain in same position.

___ Seek similar position elsewhere.

___ Employment in education other than teaching.

Please specify---->_____

___ Employment outside education

Please specify---->_____

___ Other Please specify---->_____

PART B (Nonteaching)

(a) What are your reasons for not teaching at the present time? Check as many as apply.

___ Graduate study. (Please specify area _____)

___ Could not find a teaching position.

___ Inadequate salaries and benefits.

___ General working conditions (nonteaching duties, hours, classroom size, work load).

___ Student related (motivation, lack of discipline, general attitudes).

___ Feelings of ineffectiveness.

___ Administrator related (lack of support, dissatisfaction with administration, incompetent administration).

___ Lack of respect.

___ Emotional aspects (stress, burnout, frustration, boredom).

___ Lack of support from parents and community.

___ Lack of advancement opportunities.

___ Family obligations.

___ Had not planned to teach.

___ Better salaries and career opportunities in other fields.

___ Other (please specify) _____

(b) What are your employment plans for next year?

___ Remain in same position.

___ Seek similar position elsewhere.

___ Seek teaching position.

___ Employment in education other than teaching.

___ Other (please specify) _____

PART C (All Respondents)

(a) We are interested in your employment history (jobs) for the last five years. Using the occupational code below, please list your major employment for each of the last five years, starting with your current position.

1 Teacher
2 Education-related (non-teaching)
3 Other professional
4 Technical
5 Managerial/Administrative
6 Sales/Business
7 Craftsman/Operative
8 Clerical/Secretarial/ Administrative support
9 Service
10 Homemaker
11 Farmer
12 Student
13 Unemployed
14 Other (specify)_____

YEAR (Following graduation)	POSITION (Occupational Code Number)	LOCATION (State/Country)
Fifth Year (Current Position)	_____	_____
Fourth Year	_____	_____
Third Year	_____	_____
Second Year	_____	_____
First Year	_____	_____

Any comments about your employment history: _____

_____

_____

_____

(b) Five years from now, do you plan to be . . .

___ Teaching

___ Employed in education other than teaching

___ Employed outside the field of education

___ Other (please specify) _____

ALL RESPONDENTS

2. How would you rate on a scale of 0 to 10 your general satisfaction with your current (most recent*) job?

Very Low Very High

0 1 2 3 4 5 6 7 8 9 10

*Note: If you are currently unemployed, please answer questions 2, 3, and 4 as they pertained to your most recent position.

3. How important were each of the following factors in your decision to accept your most recent position? Please circle one number for each factor. Use the following response categories.

Very Important . . . 5
Important. 4
Neutral. 3
Unimportant. 2
Very Unimportant . . 1
Not Applicable . . . N

		Please circle your response					
a.	Desirable location	5	4	3	2	1	N
b.	Salary offered	5	4	3	2	1	N
c.	Type of position	5	4	3	2	1	N
d.	Size of organization	5	4	3	2	1	N
e.	Reputation of school, firm or organization	5	4	3	2	1	N
f.	Liked people with whom I interviewed . . .	5	4	3	2	1	N
g.	Spouse has a job in the community.	5	4	3	2	1	N
h.	Only job I was offered	5	4	3	2	1	N

4. To what extent does (did) your most recent job provide you with the following characteristics? Please circle one number for each characteristic. Use the following response categories.

All of the Time 5
Most of the Time 4
Some of the Time 3
Seldom 2
Never 1

		Please circle your response				
a.	Opportunity to be creative and original. . .	5	4	3	2	1
b.	Opportunity to use special abilities or aptitudes.	5	4	3	2	1
c.	Opportunity to work with people rather than things.	5	4	3	2	1
d.	Opportunity to earn a good deal of money . .	5	4	3	2	1
e.	Social status and prestige	5	4	3	2	1
f.	Opportunity to effect social change.	5	4	3	2	1
g.	Relative freedom from supervision by others.	5	4	3	2	1
h.	Opportunity for advancement.	5	4	3	2	1
i.	Opportunity to exercise leadership	5	4	3	2	1
j.	Opportunity to help and serve others	5	4	3	2	1
k.	Adventure.	5	4	3	2	1
l.	Opportunity for a relatively stable and secure future.	5	4	3	2	1
m.	Fringe benefits (health care, retirement benefits).	5	4	3	2	1
n.	Variety in the work.	5	4	3	2	1
o.	Responsibility	5	4	3	2	1
p.	Control over what I do	5	4	3	2	1
q.	Control over what others do.	5	4	3	2	1
r.	Challenge.	5	4	3	2	1

NOW we would like you to evaluate the Teacher Preparation Program.

5. We would like you to rate your Teacher Preparation Program in specific areas: first, rate the adequacy of preparation; second, indicate how important the area is (was) to your most recent position.

		Very Adequate. . 5 Adequate . . . . 4 Neutral. . . . . 3 Inadequate . . . 2 Very Inadequate. 1 Not Applicable . N						Very Important . 5 Important. . . . 4 Neutral. . . . . 3 Unimportant. . . 2 Very Unimportant 1 Not Applicable . N					
1)	Planning units of instruction and individual lessons	5	4	3	2	1	N	5	4	3	2	1	N
2)	Preparing and using media. . . .	5	4	3	2	1	N	5	4	3	2	1	N
3)	Maintaining student interest . .	5	4	3	2	1	N	5	4	3	2	1	N
4)	Understanding and managing behavior problems in the classroom	5	4	3	2	1	N	5	4	3	2	1	N
5)	Teaching basic skills.	5	4	3	2	1	N	5	4	3	2	1	N
6)	Consultation skills in interacting with other professionals.	5	4	3	2	1	N	5	4	3	2	1	N
7)	Developing student-student relationships.	5	4	3	2	1	N	5	4	3	2	1	N
8)	Referring students for special assistance	5	4	3	2	1	N	5	4	3	2	1	N
9)	Skills for mainstreaming handicapped students.	5	4	3	2	1	N	5	4	3	2	1	N
10)	Methods of working with children with learning problems	5	4	3	2	1	N	5	4	3	2	1	N
11)	Assessing learning problems. . .	5	4	3	2	1	N	5	4	3	2	1	N
12)	Developing tests	5	4	3	2	1	N	5	4	3	2	1	N
13)	Interpreting and using standardized tests	5	4	3	2	1	N	5	4	3	2	1	N
14)	Content preparation in your area of specialization	5	4	3	2	1	N	5	4	3	2	1	N
15)	Professional ethics and legal obligations.	5	4	3	2	1	N	5	4	3	2	1	N

		ADEQUACY						IMPORTANCE					
16)	Psychology of learning and its application to teaching. . .	5	4	3	2	1	N	5	4	3	2	1	N
17)	Evaluating and reporting student work and achievement	5	4	3	2	1	N	5	4	3	2	1	N
18)	Relating activities to interests and abilities of students. . . .	5	4	3	2	1	N	5	4	3	2	1	N
19)	Using written communication effectively.	5	4	3	2	1	N	5	4	3	2	1	N
20)	Locating and using materials and resources in your specialty area	5	4	3	2	1	N	5	4	3	2	1	N
21)	Evaluating your own instruction.	5	4	3	2	1	N	5	4	3	2	1	N
22)	Individualizing instruction. . .	5	4	3	2	1	N	5	4	3	2	1	N
23)	Selecting and organizing materials.	5	4	3	2	1	N	5	4	3	2	1	N
24)	Using a variety of instructional techniques	5	4	3	2	1	N	5	4	3	2	1	N
25)	Understanding teachers' roles in relation to administrators, supervisors, and counselors. . .	5	4	3	2	1	N	5	4	3	2	1	N
26)	Working with parents	5	4	3	2	1	N	5	4	3	2	1	N.
27)	Working with other teachers. . .	5	4	3	2	1	N	5	4	3	2	1	N
28)	Assessing and implementing innovations.	5	4	3	2	1	N	5	4	3	2	1	N
29)	Appreciating and understanding individual and intergroup differences in values and lifestyles	5	4	3	2	1	N	5	4	3	2	1	N
30)	Using community resources. . . .	5	4	3	2	1	N	5	4	3	2	1	N
31)	Techniques of curriculum construction	5	4	3	2	1	N	5	4	3	2	1	N
32)	Influence of laws and policies related to schools	5	4	3	2	1	N	5	4	3	2	1	N
33)	Techniques for infusing multicultural learning	5	4	3	2	1	N	5	4	3	2	1	N

6. On a scale of 0 to 10 how would you rate the quality of the Teacher Preparation Program at Iowa State University? (Please circle the appropriate number.)

Very Poor Very High

0 1 2 3 4 5 6 7 8 9 10

7. In what three ways did the program provide the most valuable professional preparation for you?

(1) _____

(2) _____

(3) _____

8. In what three ways should the program have offered more preparation?

(1) _____

(2) _____

(3) _____

9. If you had it to do over again, would you prepare to become a teacher?

___ Yes

___ No

___ Undecided

10. What program improvements would you suggest for easing the transition from student to first-year teacher?

_____

_____

_____

_____

NOW we would like to ask you about your professional development in the last five years.

11. Have you upgraded your skills through formal education since graduating from the teacher preparation program?

___ Yes ----> Please answer (a) and (b)
___ No

(a) If yes, please check as many purposes as apply for participating in the formal education activities, and, for each purpose you check, indicate where you participated in the activity.

		LOCATION			
	PURPOSE	4-Year college/ university	2-Year college	Area Education Agency (AEA)	Other (specify)
___	Prepare for different type teaching position (certification)	____	____	____	____
___	Prepare for different type position in education--nonteaching	____	____	____	____
___	Prepare for different type position outside education	____	____	____	____
___	Recertification, job requirement	____	____	____	____
___	Professional development	____	____	____	____
___	Personal growth	____	____	____	____

(b) If yes, was this a degree program?

___ Yes ---> Type of degree ___ Undergraduate ___ Masters
___ Graduate ___ Doctoral

---> ___ Number of semester hours

___ No ---> ___ Number of semester hours
___ Number of CEU credits
___ Other (specify) _____

If you have NEVER TAUGHT during the five years following graduation, go to page 12. CURRENT AND FORMER TEACHERS, please answer questions 12 and 13 first.

CURRENT AND FORMER TEACHERS ONLY

12. We would like you to rate your perception of your teaching behavior in each of the following areas. Using the scale below, circle the number for each area that indicates how well you are doing or did in your most recent teaching position.

	Very Low										Very High
a. Providing a setting conducive to learning	0	1	2	3	4	5	6	7	8	9	10
b. Motivating students	0	1	2	3	4	5	6	7	8	9	10
c. Demonstrating knowledge of subject matter	0	1	2	3	4	5	6	7	8	9	10
d. Monitoring and evaluating student progress and understanding	0	1	2	3	4	5	6	7	8	9	10
e. Providing clear, concise explanations and examples	0	1	2	3	4	5	6	7	8	9	10
f. Managing instructional activities efficiently and ensuring student time on task	0	1	2	3	4	5	6	7	8	9	10
g. Communicating effectively with students	0	1	2	3	4	5	6	7	8	9	10
h. Demonstrating effective planning and organization skills	0	1	2	3	4	5	6	7	8	9	10
i. Exhibiting a positive self-concept	0	1	2	3	4	5	6	7	8	9	10
j. Using evaluation activities appropriately	0	1	2	3	4	5	6	7	8	9	10
k. Implementing the lesson plans effectively	0	1	2	3	4	5	6	7	8	9	10
l. Maintaining high expectations for student achievement	0	1	2	3	4	5	6	7	8	9	10
m. Incorporating effective questioning techniques	0	1	2	3	4	5	6	7	8	9	10
n. Maintaining high standards for student behavior	0	1	2	3	4	5	6	7	8	9	10
o. Maintaining effective working relationships with peers and administrators	0	1	2	3	4	5	6	7	8	9	10

13. We also would like your perceptions about employment factors related to teaching. Please indicate how satisfied you are/were with each of the following aspects of teaching. Use the following response categories.

Very Satisfied 5
Satisfied 4
Neutral 3
Dissatisfied 2
Very Dissatisfied . . 1
Not Applicable . . . . NA

		(Circle your response)					
a.	Salary	5	4	3	2	1	NA
b.	General working conditions	5	4	3	2	1	NA
c.	Amount of administrative support received	5	4	3	2	1	NA
d.	Relationship with other teachers	5	4	3	2	1	NA
e.	Extent of involvement in decision making	5	4	3	2	1	NA
f.	Job benefits	5	4	3	2	1	NA
g.	Job responsibilities	5	4	3	2	1	NA
h.	Extent to which job challenged and provided for professional growth	5	4	3	2	1	NA
i.	Level of job performance	5	4	3	2	1	NA
j.	Opportunities for advancement	5	4	3	2	1	NA
k.	Method with which job performance evaluated	5	4	3	2	1	NA
l.	Frequency with which job performance evaluated	5	4	3	2	1	NA
m.	Size of community in which employed	5	4	3	2	1	NA
n.	Support given by family and friends for choice of teaching as a career	5	4	3	2	1	NA
n.	Amount of time spent working at job	5	4	3	2	1	NA
o.	Relationship with students	5	4	3	2	1	NA
p.	Level of parental involvement	5	4	3	2	1	NA
q.	Role played in professional associations	5	4	3	2	1	NA
r.	Community support for education	5	4	3	2	1	NA
s.	Teaching as a career	5	4	3	2	1	NA

NOW we would like to ask you some general questions about yourself and your family.

14. Marital status

___ Single (never married)

___ Married

___ Divorced, separated, or widowed

15. Do you have any children?

___ Yes ---> How many? _____

___ No

16. What is the population of the community where you are currently or were most recently employed?

___ Under 1,000

___ 1,000 - 2,499

___ 2,500 - 4,999

___ 5,000 - [illegible]

___ 10,000 - 24,999

___ 25,000 - 50,000

___ Over 50,000

17. Which of the following categories best describes your <u>total</u> income during last year? (If married, include spouse's income)

___ less than $ 9,999

___ $10,000 to $14,999

___ $15,000 to $19,999

___ $20,000 to $24,999

___ $25,000 to $29,999

___ $30,000 to $49,000

___ $50,000 and over

If you have any additional comments about teacher preparation or teaching in general, please use the space below.

The College of Education and the Research Institute for Studies in Education appreciate the time you have taken to complete this questionnaire.

Postage for the questionnaire is prepaid, so all you need do is tape it and drop it in a mailbox.

APPENDIX B: STUDENT AND TEACHER EDUCATION PROGRAM LETTERS

Iowa State University of Science and Technology Ames, Iowa 50011

Research Institute for Studies in Education
College of Education
The Quadrangle
Telephone 515-294-7009

November 1986

Dear Teacher Education Student:

We are currently engaged in a research project designed to evaluate and improve the Teacher Education Program at Iowa State University.

Students in various phases of the program are being contacted to participate in the study. As a student beginning your Teacher Education classes, you can provide valuable information for our project. Your voluntary participation would be greatly appreciated.

You may be assured of complete confidentiality. We ask you for your social security number for data analysis procedures; we will match information from this questionnaire with instructor class information such as year in school and curriculum, and your evaluations of the Teacher Education Program as you progress through your program and careers. New identification numbers are assigned for data analysis and the information is analyzed in terms of groups, not in terms of individuals. Names and social security numbers are used only for contacting and matching purposes. The information provided is for use in this research project only.

We ask that you complete the attached questionnaire and return it by the end of the class period. If you have questions about this study, please contact the Research Institute for Studies in Education Office (294-7009).

Thank you for your assistance in our project; the information you provide should help us to continually improve the Teacher Education Program.

Sincerely,

Harold E. Dilts
Associate Dean

HED/pjd

Iowa State University of Science and Technology Ames, Iowa 50011

Research Institute for Studies in Education
College of Education
The Quadrangle
Telephone 515-294-7009

Spring 1987

Dear Teacher Education Student:

We are currently engaged in a research project designed to evaluate and improve the Teacher Education Program at Iowa State University.

Students in various phases of the program are being contacted to participate in the study. As a student beginning your Teacher Education classes, you can provide valuable information for our project. Your voluntary participation would be greatly appreciated.

You may be assured of complete confidentiality. We ask you for your social security number for data analysis procedures; we will match information from this questionnaire with instructor class information such as year in school and curriculum, and your evaluations of the Teacher Education Program as you progress through your program and careers. New identification numbers are assigned for data analysis and the information is analyzed in terms of groups, not in terms of individuals. Names and social security numbers are used only for contacting and matching purposes. The information provided is for use in this research project only.

We ask that you complete the attached questionnaire and return it by the end of the class period. If you have questions about this study, please contact the Research Institute for Studies in Education Office (294-7009).

Thank you for your assistance in our project; the information you provide should help us to continually improve the Teacher Education Program.

Sincerely,

Harold E. Dilts
Associate Dean

HED/pjd

Iowa State University of Science and Technology Ames, Iowa 50011-3190

Research Institute for Studies in Education
College of Education
Lagomarcino Hall
Telephone 515-294-7009

April 6, 1987

Dear Teacher Education Graduate:

Congratulations on completing your program in teacher preparation at Iowa State University!

We hope that your teaching and learning experiences in the program have been rewarding and have provided the basis for continuing professional and personal development. We appreciate your participation in the program and the contributions you have made through course work and other activities to the total program.

We need your opinions and observations to assist in improving present programs and developing new programs. Your voluntary participation in evaluating the programs at Iowa State University in terms of quality, effectiveness, and adequacy is requested. You may be assured of complete confidentiality. Longitudinal studies are beneficial to provide insights about teacher preparation programs which assist in program improvement and modification. Presently, graduates of the ISU program are contacted at time of graduation, the first year and the fifth year after graduation. The questionnaire has an identification number for mailing purposes and matching with responses to future questionnaires. Your name will not be placed on the questionnaire. The information provided will be analyzed in terms of group summarizations.

Return postage on the questionnaire has been prepaid, so you need only to drop the completed questionnaire in a mailbox.

If you have questions about this study, please contact the Office of Research Institute for Studies in Education, or call 515-294-7009.

Thank you for your assistance in completing the questionnaire which provides us with your insights about program strengths and weaknesses.

We wish you success in all your future activities.

Sincerely,

Virgil S. Lagomarcino

Virgil S. Lagomarcino
Dean

Richard D. Warren

Richard D. Warren, Director
Research Institute for Studies in Education

Enclosure

Iowa State University of Science and Technology Ames, Iowa 50011

Research Institute for Studies in Educatio
College of Education
The Quadrangle
Telephone 515-294-7009

May 2, 1987

Dear Teacher Education Graduate:

We know that you are very busy getting ready for graduation, but we do need your help!

You recently received a questionnaire from us on evaluating teacher preparation programs at Iowa State University. To date, we have not received your completed questionnaire. If you have mailed it recently, we want you to know that your participation is appreciated.

If you have not mailed your questionnaire, we would ask you to complete the enclosed questionnaire and drop it in a mailbox.

We have had a very good completion record and return rate on the questionnaire and would like very much to have your responses to include in our tabulations.

Thank you for your voluntary participation in the study.

Sincerely,

Virgil S. Lagomarcino
Virgil S. Lagomarcino
Dean

Richard D. Warren
Richard D. Warren
Director
Research Institute for Studies in Education

Enclosure
RDW/pjd

Iowa State University of Science and Technology Ames, Iowa 50011

Research Institute for Studies in Educati
College of Education
The Quadrangle
Telephone 515-294-7009

April 11, 1987

Dear Teacher Education Graduate:

We know that this is a very busy time for you, but we do need your help!

You recently received a questionnaire from us asking you to evaluate the Teacher Preparation Program and about your employment history and plans. To date, we have not received your completed questionnaire. If you have mailed it recently, we want you to know that your participation is appreciated.

If you have not mailed your questionnaire, we would ask you to complete the enclosed questionnaire (or the first one) and drop it in a mailbox.

We have had a very good completion record and return rate from our graduates and would like very much to have your responses to include in the tabulations.

Thank you for your voluntary participation in the study. We appreciate the time and effort involved and believe that your responses will be useful for the improvement of the Teacher Preparation Program at Iowa State University.

Sincerely,

Virgil S. Lagomarcino

Virgil S. Lagomarcino, Dean
College of Education

Richard D. Warren

Richard D. Warren, Director
Research Institute for Studies in Education

RDW:ss

Iowa State University of Science and Technology Ames, Iowa 50011

Research Institute for Studies in Educat
College of Education
The Quadrangle
Telephone 515-294-7009

May 2, 1987

Dear Teacher Education Graduate:

We know that you are very busy getting ready for graduation, but we do need your help!

You recently received a questionnaire from us on evaluating teacher preparation programs at Iowa State University. To date, we have not received your completed questionnaire. If you have mailed it recently, we want you to know that your participation is appreciated.

If you have not mailed your questionnaire, we would ask you to complete the enclosed questionnaire and drop it in a mailbox.

We have had a very good completion record and return rate on the questionnaire and would like very much to have your responses to include in our tabulations.

Thank you for your voluntary participation in the study.

Sincerely,

Virgil S. Lagomarcino
Dean

Richard D. Warren
Director
Research Institute for Studies in Education

Enclosure
RDW/pjd

Iowa State University of Science and Technology Ames, Iowa 50011-3190

Research Institute for Studies in Education
College of Education
Lagomarcino Hall
Telephone 515-294-7009

March 7, 1987

Dear Teacher Education Graduate of 1981/1982:

We know that this is a very busy time for you but we do need your help!

You recently received a questionnaire from us asking you to evaluate the Teacher Preparation Program and about your employment history and activities since graduation. To date, we have not received your completed questionnaire. If you have mailed it recently, we want you to know that your participation is appreciated.

If you have not mailed your questionnaire, we would ask you to complete the enclosed questionnaire (or the first one) and drop it in a mailbox.

We have had a very good completion record and return rate from our graduates and would like very much to have your responses to include in the tabulation.

Thank you for your voluntary participation in the study. We appreciate the time and effort involved, and believe that your responses will be useful for the improvement of the Teacher Preparation Program at Iowa State University.

Sincerely,

Virgil Lagomarcino

Virgil Lagomarcino, Dean
College of Education

Richard D Warren

Richard D. Warren, Director
Research Institute for Studies in Education

RDW/pjd
Enclosure

Iowa State University of Science and Technology Ames, Iowa 50011-3190

Research Institute for Studies in Education
College of Education
Lagomarcino Hall
Telephone 515-294-7009

February 8, 1987

Dear Teacher Education Graduate of 1981/1982:

In an effort to improve and update the current Teacher Preparation Program at Iowa State University, we are seeking information from you about the program and your activities since graduation. We need your opinions, observations, and employment history in order to modify our current program and to develop new programs.

Many of you participated in similar evaluation projects five years ago at the time of your graduation, and one year after that. We now seek updated information from you about your experiences since graduating from Iowa State. In order to ensure that the results are representative of Iowa State graduates with five years of experience, it is important that each questionnaire is completed and returned. Your voluntary participation in this phase of our study would be appreciated.

We ask that you complete the enclosed questionnaire, tape it closed, and place it in a mailbox (no stamp required).

You may be assured of complete confidentiality. The questionnaire has an identification number for mailing and matching purposes. Your name will not be placed on the questionnaire. The information provided will be analyzed and reported in terms of group summarizations, not individual responses.

We thank you in advance for your cooperation in completing the questionnaire and for your continuing role in helping to shape and improve the Teacher Preparation Program at Iowa State University.

We wish you success in all your future activities.

Sincerely,

Virgil S. Lagomarcino

Virgil Lagomarcino, Dean
College of Education

Richard D. Warren

Richard D. Warren, Director
Research Institute for Studies in Education

RDW/pjd
Enclosure