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ABSTRACT

The empirical results of a multivariate regression analysis of data secured for Phase II of Pennsylvania's Educational Quality Assessment Project are presented. Regression equations are computed for each of ten goals at both the grade five and grade eleven levels. Restrictions which the method imposes on the interpretation of data are discussed, and recommendations for dealing with them are given. See also ED 051 290-291, 051 294, ED 053 159, and TM 000 976 for other documents on Educational Quality Assessment. (MS)

Educational Quality Assessment

Phase II Findings

Section 6

Phase II Data Analysis

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Foreword

The method of analysis utilized to interpret the data secured for Phase II of Pennsylvania's Educational Quality Assessment Project is a multivariate approach based upon regression. This method imposes certain restrictions on the interpretation of data. These restrictions are discussed in some detail, together with recommendations for dealing with them. The empirical results are also presented.

Regression Analysis

One of the most important results of statistical analysis is the ability to make predictions. Given information about pupil, school, staff and community conditions in Keystone, Pennsylvania, what will be the most likely average score on each of the 10 goals for Keystone students? Regression analysis allows the researcher to predict the most likely score on one variable (achievement) from the known scores on other variables (pupil, school, staff and community conditions). The regression equation is derived from the interrelationships that are found to exist among the condition variables and the achievement variables.

Regression analysis begins with a set (matrix) of two-variable (zero order) correlations (r) between the condition variables and the achievement variables. The magnitude of r indicates the strength of the relationship between any two variables. An r of .30 between achievement in Goal III and local tax effort indicates that as the local tax effort increases, achievement tends to increase. The square of r ($.30^2$) indicates that 9 per cent of the variance in achievement in Goal III is associated with the proportionate rate at which market value is utilized for the support of education.

An r of .31 between achievement in Goal III and teacher salary indicates that 9 per cent ($.31^2$) of the variance in pupil achievement in Goal III is associated with variance in teacher salaries. An r of $-.29$ between pupil achievement in Goal III and teacher dissatisfaction indicates that as teacher dissatisfaction with sources of policy influence increases, achievement decreases. When r is between $-.28$ and $+.28$ for these secondary data in the Phase II sample, no reliable relationship is indicated.

Although each correlation by itself contributes information about the relationship of achievement to some single variable, a combination of relationships taken together gives an index that is more predictive than any one r by itself. It is this combination of relationships which leads to the next step in regression analysis, the multiple correlation coefficient.

The coefficient of multiple correlation (R) indicates the strength of the relationship between one variable and two or more other variables taken together. R is a function of not only the relationships between the

condition variables and the achievement variables but also reflects the interrelationships among the condition variables.

R cannot be less than the highest r between any one of the condition variables with the achievement variable. For example, R between achievement in Goal III and local tax effort (.30) and teacher salary (.31) taken together cannot be less than .31. However, R often produces results that are difficult to estimate from a matrix of r's. R tends to be larger when intercorrelations among the condition variables are smaller. When relationships among the condition variables are low, each variable adds information to the predictive power of the regression equation. When relationships among the condition variables are high, variables tend to be redundant and add little information to the predictive power of the equation. For example, when r between two condition variables equals 0 and each of the variables correlates .50 with the achievement variable, R would equal .71. When, however, r between two condition variables equals .50, and each of the variables correlates .50 with the achievement variable, R would equal .58. R^2 is the proportion of variance which is common to the dependent variable (Goal III achievement above) and the set of independent variables (local tax effort and teacher salary above).

Solving for R leads to the next step in regression analysis, the consideration of beta coefficients. Beta coefficients are the weights given each of the condition variables entered into the multiple regression equation. Beta weights are indices of the relative importance of each of the condition variables to the prediction equation. The variables having the highest weights are those which make the highest contributions to the predicted score. For example, in predicting Goal IX achievement scores, LPL is most important (.36), students mores (.31) is next in importance and location (.27) is next in positive importance.

One property of beta weights which must always be kept in mind is that the importance of the magnitude of the weight applies only to the predictive process. The relative importance of the variable in accounting for the proportion of variance in achievement cannot be inferred from the magnitude of the beta weight.

Beta weights are affected by redundancy stemming from high correlations among two or more condition variables and repetitiveness stemming from the number of redundant condition variables. This is because a given beta weight may reflect the unique contribution of a variable plus the interaction effect of that variable with others in the set. As a result, it is possible for some condition variables which are very important contributors to variance in achievement to have relatively low beta weights. Therefore, beta coefficients are not intended to be used in making decisions about the relative theoretical contribution of the variables. The aim of the regression equation is to eliminate

superfluous variables in order to make predictions and not to test theoretical constructs.

Properly computed, semi-partial correlations, usually written $r_{1\ (2.3-n)}$, provide, however, a way to consider the relative effect of each variable in any given set of predictors. A semi-partial correlation coefficient is a statistic which represents the relationship between two variables when the relationship between one of them and the other members of the set of variables of interest is eliminated. (See Pugh, 1968.)

For example, suppose $r_{1\ (2.34)}$ stands for the correlation between academic achievement (var 1), level of previous learning (var 2), school conditions (var 3) and home conditions (var 4). Level of previous learning is very likely related to school conditions, if learning occurs in school, and to home conditions, with equivalent reasonableness. Therefore, the unique contribution of var 2 to var 1 can be known only if its relationship to variables 3 and 4 are controlled. Computation of $r_{1\ (2.34)}$ does this by removing from the value of the index of relationship those parts which are attributable to the common variance between 2 and 3 and between 2 and 4. The squared semi-partial correlation coefficient thus represents the proportion of variance which is shared by variables 1 and 2, and not by any other variable. In this particular example, a value for $r_{1\ (2.34)}$ has been found to be .60, which, when squared, indicates that LPL (var 2) uniquely accounts for 36 per cent of the variance in academic achievement.

Similarly, the unique contributions of var 3 and var 4 may be computed. They turn out to be .12 for $r_{1\ (3.24)}$ and .12 for $r_{1\ (4.23)}$. These values squared indicate that school conditions account for roughly 2 per cent of the explained variance and home conditions also about 2 per cent. The remaining 60 per cent is unaccounted for by any variable included in this set.

Several restrictions must be placed on this interpretation. First, the relative proportions of variance uniquely attributable apply only within the complete set of variables which were used for the overall calculation. This is true because the kinds of measures available are proxies for true measures. The learning process which results in academic achievement occurs within the minds of the students and cannot be directly measured. There are probably very many proxy measures which could be used to infer the learning process, and, being contaminated with information other than that specific to the concept of interest, would, therefore, be expected to have a different network of relationships.

Also related to this notion is the requirement that $r_{1\ (2.3-n)}$ includes all of the set of variables rather than part of the set.

Second, the existence of unique contributions to variance does not

prove causation. A causal theory should be formulated before the variables to be entered into the equation are selected. If the theoretically expected unique contributions occur, then the empirical results are consistent with the theory but are not sufficient to establish it. If the unique contributors are subsequently experimentally altered and corresponding alterations occur in the predicted or dependent variable, then the causative theory is supported.

Finally, the squared semi-partial correlation coefficient should be considered as the minimum index of common variance, with the squared zero-order correlation coefficient representing the maximum. Within these restrictions, however, $r_{1\ (2.3—n)}$ does provide a way of determining the relative contribution of each of a set of variables to a dependent variable of interest.

Data collected for Phase II of the Educational Quality Assessment Project were analyzed using these ideas. A regression equation was computed for each goal at the two grade levels from which data were collected. The regression computation followed a procedure of adding or deleting one variable at a time on the basis of the most improvement in "goodness of fit" of a regression line to the data. In the program used, a variable can be added at one point in the computation and later be removed if the variance accounted for by subsequently added variables has sufficient commonality with the initial variable to remove its unique contribution. (See The Pennsylvania State University Computation Center, Upreg Program.)

All independent variables upon which data were collected were submitted to this program with the stipulation that each variable must contribute at least one per cent to the explained variance indicated by the squared multiple R in order to be included in the final equation. Those variables surviving this test were then submitted to a second program to compute partial and semi-partial correlation, as well as providing a printout of the correlation between each pair of variables. (See The Pennsylvania State University Computation Center, QSASE.) Although beta coefficients are available from these computational procedures, regression coefficients are reported in the formulae to avoid misinterpretation of relative contribution. Regression coefficients may also be applied directly as weights to the raw scores of each independent variable for purposes of computing a predicted dependent variable, in this instance a goal score. In order to make the presentations less cumbersome, the variables are reported in acronym form in the regression equation. The same variables are presented in words in the semi-partial correlation list for each goal. They also appear in word form in the Appendices. The data for each goal at both grade levels are presented in the following pages. The significant zero-order correlations appear in Appendices A and B.

GOAL I

Self-Concept

GRADE 5

The regression equation for this goal at this level and the per cent of variance it can predict are as follows:

Predicted school mean = 80.04 + .053 FOCC + .656 HOUSING + .755 TSTABL + .052 TEXPER – .005 SUBSIDY

Corrected $R^2 = .229$

The five condition variables in this equation account for only about 23 per cent of the variance in the predicted score. Clearly other unidentified variables must account for much of the difference in the self-concept scores of school children as measured by the Goal I instrument.

For those variables on which data are available, the list below shows the squared semi-partial correlation coefficient for each variable, indicating the amount of variance uniquely common between each variable and self-concept.

Father's occupation	= .040
Types of residences in school's community	= .036
Teacher stability	= .021
Teacher experience	= .019
School subsidy per WADM	= .014*

Because of the interaction effects, these unique variances do not sum to the R^2 of .229. In this case almost half of the accountable variance must be due to interaction. It seems logical to assume, for example, that interaction exists between father's occupation and housing, with some relationship also with the subsidy variable.

It is also logical to assume that a school wishing to improve the pupil's self-concept score must investigate variables other than those included here. This is both disappointing and hopeful. Although we are unable to explain well the variability of the self-concept measure, it is clear that schools are not restricted in the approaches they may try by known unmodifiable conditions.

* Although the proportions of variance indicated by the squared semi-partial correlations cannot conceptually assume a negative value, the relationship underlying the common variance may be positive or negative. For the data presented in this report the direction of the relationship may be read from the sign of the regression weight of each variable in the regression equation.

GRADE 11

The regression equation for this goal at this level and the per cent of variance it can predict are as follows:

Predicted school mean = 68.39 − .577 REACTL + 1.939 TEDUC − 1.342 RACE + 2.479 VALUES − .0008 TSALARY + 1.579 TSTABL + .273 LOCATION + .095 EFFORT − .027 POSTGRAD + .868 COUNSEL + .001 ENROLL + .401 HOUSING + .401 TMEDUC + 205.134 GUIDANCE

Corrected R^2 = .610

In contrast to the small relationship with only five variables found in the Grade 5 computation, the Grade 11 equation shows a total of 14 variables making significant contributions to the 61 per cent of explained variance. Listed below are the squared semi-partial correlation coefficients for the 14 variables, indicating the proportion of variance uniquely common between each variable and self-concept.

Perception of actual characteristics influencing professional recognition	= .093
Teacher's education	= .070
Predicted achievement index by race	= .067
Personal values	= .053
Teacher salary	= .051
Teacher stability	= .048
Predicted achievement index by location	= .039
Tax effort index	= .038
Continuing education	= .030
Accessibility of counselors	= .024
School enrollment	= .020
Types of residences in school's community	= .014
Educational level of teacher's mother	= .012
Counselor:pupil ratio	= .010

It appears that several of these variables reflect directly or indirectly the financial condition of the school district or its commitment to education. These can be changed. Other variables (e.g. racial background of students or location) cannot be manipulated. It seems that whatever accounts for the school's ability to hire and keep better educated teachers and more accessible and effective counselors may result in higher attainment on the self-concept measure. It is interesting to note that the teacher salary variable has a negative sign, indicating that higher achievement on Goal I accompanies lower teacher salaries. However, the most influential single variable, teachers' perception of actual character-

istics influencing professional recognition (REACTL), indicates by its negative sign that when recognition is earned by professional merit, not by interpersonal conniving, conditions exist which encourage positive student self-concept. This in itself may be related to teacher stability.

It must be remembered, however, that the simultaneous occurrence of two events does not prove causation. A school district hoping to improve achievement on this goal would do well to investigate basic causes underlying these related variables before attempting to make more than superficial changes.

GOAL II

Understanding Others

GRADE 5

Predicted school mean = 24.95 + .835 FEDUC + .110 LPL − .523 TSTABL + 1.168 TSEX + .102 TCAREER

Corrected R^2 = .351

Only 35 per cent of the total variance of a predicted score is accounted for by the five condition variables in this equation. More than half of the variance must be attributed to unidentified variables.

The squared semi-partial coefficient for each variable is listed below.

Father's education	= .081
Level of previous learning	= .040
Teacher stability	= .021
Teacher sex	= .015
Teacher career	= .013

Since the unique variance of these variables sums to less than 35 per cent, interaction among variables appears to contribute about one-half of the accountable variance. It is probable, for example, that some of this interaction may occur among teacher sex, teacher stability and teacher career.

The level of father's education accounts for a portion of the identified variance in Goal II. That this variable is related to a child's understanding of others is not unexpected. Research has shown that the educational level attained does affect the degree to which an individual accepts stereotyped patterns of bias without question and parental beliefs do affect the formation of a child's pattern of accepting others. (See Bettleheim and Janowitz, 1964.)

Most of the variance in Goal II has not been accounted for by the variables identified. Self-study could identify variables within individual schools which are influencing students' understanding of others.

A negative relationship was shown between teacher stability and students' Goal II scores. This suggests that teachers who have had a comparatively mobile life and broad experiences may have a positive influence upon students.

It should be noted that interracial exposure did *not* contribute to the variance accounted for in Goal II.

GRADE 11

Predicted school mean = 57.78 + 4.093 VALUES + .400 LOCATION − .088 BOOKSP + 49.848 STAFFP + 1.732 MORESB + 4.816 PCTMW − 1.944 TCOLLEGE + .449 TFOCC + 1.039 TSTABL + .586 TMEDUC − .314 DISCREP

Corrected R^2 = .643

The 11 variables in this equation account for 64 per cent of the total variance in the predicted score for Goal II. Only 36 per cent of the variance is attributable to unidentified condition variables.

The unique variance of each variable is shown in the following list.

Personal values	= .083
Predicted achievement index by location	= .075
Books:pupil ratio	= .050
Staff:pupil ratio	= .044
Mores-boys	= .043
Percentage of mothers working	= .040
Teacher's college	= .040
Occupational level of teacher's father	= .034
Teacher stability	= .018
Education level of teacher's mother	= .017
Discrepancy between actual and ideal educational policy influences	= .014

There are only two variables in the equation over which a school has a degree of control, books:pupil ratio and staff:pupil ratio. Nine per cent of accountable variance is related to these two variables.

The schools should investigate ways of intervening between causes underlying the other variables in this equation and achievement in this goal and attempt to identify other sources of variance which could affect understanding of others. It would be useful to investigate possible factors which may influence the formation of the personal values of the students, since this variable contributes approximately 8 per cent of the variance in Goal II.

GOAL III

Basic Skills

GRADE 5

Predicted school mean = 1.99 + .077 LPL + .004 FAMSES + .007 TEXPER + .281 SEX - .001 INSEXADM - .054 GUIDANCE

Corrected R^2 = .770

Approximately 77 per cent of the variance in the predicted score has been accounted for by the six condition variables in the regression equation. It is apparent that unidentified variables are contributing 23 per cent to basic skills as measured by the Goal III instruments.

The squared semi-partial correlation coefficient for each of the six variables is listed.

Level of previous learning	= .365
Family socioeconomic status	= .015
Teacher experience	= .015
Sex of students	= .007
Instructional expenses per ADM	= .006
Counselor:pupil ratio	= .005

In reviewing the six identified variables, three—level of previous learning, instructional expenses per ADM and guidance—may be related to school influence. More than half of the accountable variance appears to be due to level of previous learning. When considering this fact, it is well to note that innate ability contributes to level of previous learning.

GRADE 11

Predicted school mean = 1.33 + .080 LPL + .150 TSTABL + .032 TCAREER

Corrected R^2 = .866

The amount of variance unique to each variable is demonstrated by the squared semi-partial correlation coefficients listed below.

Level of previous learning	= .870
Teacher stability	= .022
Teacher career	= .016

Although level of previous learning apparently accounts for most of the identified variance, it is highly unlikely that this variable has a causative relation to basic skills in any exclusive sense. Other relationships must be considered. For example, family socioeconomic status has 84 per cent common variance with level of previous learning and 41 per cent common variance with basic skills. The solution to improved performance in this area must be in finding ways to intervene between background variables and the attainment of basic skills.

Further investigation was needed to reveal variables which may possibly be manipulated to improve performance in Goal III. The similarity of measures used to produce the LPL score and the standardized achievement battery used as the basic skills measure could be causing this close relationship, masking other significant variables.

Regression equations between the condition variables and the Goal III—verbal and Goal III—math subtests were computed, suppressing LPL as a variable. These computations produced a combined list of 13 variables of which 12 had not appeared previously.

Although it must be remembered that simultaneous occurrence of two events does not prove that one causes the other, an investigation of the relationships does suggest hypotheses on which research into common causes can be based. As stated earlier, the unique common variance, a measure of the relationship between two variables, is best seen in the value of the squared semi-partial correlation coefficients. Listed below are these squared correlations of condition variables with verbal subtests and with math subtests of the Goal III measure.

	(Semi-partial r^2)	
Variable	***Verbal***	***Math***
Father's occupation	.068	
Predicted achievement index by race	.046	.089
Continuing education	.041	.090
Occupational expectation		.069 (Neg).*
Family socioeconomic status		.046
Occupational desire		.036
Teacher satisfaction	.034	
Books:pupil ratio	.021	.034
School subsidy per WADM	.018	
Interracial experience	.014 (Neg.)	
Teacher stability	.014	
Types of residences in school's community	.011	.022
Discrepancy between actual and ideal educational policy influence		.012 (Neg.)

* (Neg.) indicates negative relationship between condition variable and test score.

The first six variables listed, with the largest amounts of unique variance accounted for, seem closely related to community and family socioeconomic status, as do interracial experience and housing from later in the list. The remaining five variables, somewhat less influential, are teacher and school variables.

Perhaps the most appropriate approach to improving Goal III performance is discovering effective methods of providing compensatory education.

GOAL IV

Interest in School

GRADE 5

The regression equation for this goal at this level and the per cent of variance it can predict are as follows:

Predicted school mean = 48.14 + 2.022 MEDUC + .153 CLPRACT + .253 LOCATION – .037 FAMSES – 1.825 TSEX + .001 ENROLL

Corrected $R^2 = .165$

The major portion of the variance of a predicted score for interest in school is not accounted for in this equation. These six variables contribute only 16 per cent of the total variance.

The squared semi-partial coefficient showing the unique variance of each variable is shown in the list below.

Mother's education	= .052
Teacher classroom practices	= .034
Predicted achievement index by location	= .019
Family socioeconomic status	= .014
Teacher sex	= .012
School enrollment	= .010

The education of the mother and classroom practices of the teacher account for more than half of the identified variance in interest in school at this level. It is reasonable to assume that a mother's educational level would affect her attitudes toward school and that these attitudes could influence the interest of her children in school.

A teacher's classroom practices may affect total school climate and this in turn has an effect on the student's interest in school.

Schools should make a major effort to analyze variables present within their system in an attempt to identify forces which affect the child's interest in school.

GRADE 11

Predicted school mean = 48.14 + 1372.092 GUIDANCE + 3.390 LIBRARY – 1.865 TPPOS + .460 TSATISF + 2.876 MORESB + .107 HOLDING – .056 POSTGRAD + .095 MOCC + 7.267 PCTMW + 2.482 ATTEND + .889 TAGE + 3.105 VALUES –

.008 INSEXADM + 1.633 TSTABL

Corrected $R^2 = .416$

Approximately 42 per cent of the variance in predicted scores is accounted for by the 14 variables in the equation. The unique contribution of each variable to the variance is shown by the squared semi-partial coefficients listed below.

Counselor:pupil ratio	= .081
Accessibility of library	= .067
Teacher present position	= .050
Teacher satisfaction	= .034
Mores-boys	= .032
Holding power	= .028
Continuing education	= .027
Mother's occupation	= .025
Percentage of mothers working	= .023
Attendance	= .022
Teacher's age	= .021
Personal values	= .014
Instructional expenses per ADM	= .012
Teacher stability	= .010

Counselor:pupil ratio contributes a greater amount of unique variance to interest in school than do the other variables in the equation. Adjustments of this ratio within a school could effect a change in the degree of interest in school shown by students.

The greater portion of the variance in Goal IV has not been identified. It would be well for schools to investigate other sources of variance which influence a student's interest in school.

GOAL V

Citizenship

GRADE 5

Predicted school mean = 105.90 + .888 LPL + .176 TEXPER + 10.108 SEX + 1.804 FEDUC

Corrected R^2 = .275

Approximately 27 per cent of the total variance of a predicted score is accounted for by the four condition variables in this equation. The greater part of the total variance is due to other unidentified variables.

The squared semi-partial coefficient for each variable is listed below.

Level of previous learning	= .112
Teacher experience	= .021
Sex of students	= .020
Father's education	= .015

Level of previous learning, an area in which school experience as well as innate ability exerts a great influence, has a unique variance equal to a little less than half the accountable variance. School learning experiences are probably contributing to an understanding of the responsibilities of citizenship. The experience of the classroom teacher may be related both to level of previous learning and to citizenship and contributes to interaction variance.

GRADE 11

Predicted school mean = 69.08 + 9.507 VALUES + 1.721 TAGE − .649 OCEXPECT + 4.381 LIBRARY + 3.284 RACE + 5.033 ATTEND + .506 OCDESIRE + 2.254 TMEDUC − .0013 TSALARY + 105.264 STAFFP + .001 ENROLL − 3.320 TCOLLEGE + 723.131 GUIDANCE + 2.269 TLOCALE

Corrected R^2 = .585

Fifty-eight per cent of total variance in Goal V is accounted for by the 14 condition variables in the regression equation. The unique contribution of each variable is shown by the squared semi-partial coefficients listed on the following page.

Personal values	= .076
Teacher's age	= .072
Occupational expectation	= .069
Accessibility of library	= .059
Predicted achievement index by race	= .048
Attendance	= .042
Occupational desire	= .033
Educational level of teacher's mother	= .029
Teacher salary	= .021
Staff:pupil ratio	= .021
School enrollment	= .017
Teacher's college	= .014
Counselor:pupil ratio	= .013
Teacher locale	= .012

A student's personal values, his occupational expectancy and his occupational desires may be related to each other as well as to citizenship. The unique variance of these three variables sums to 18 per cent.

A teacher's age, contributing second highest value of unique variance, may very well reflect the degree of social experience he has had. This social experience would probably, in turn, serve as the referrent used to develop ways of teaching citizenship to students.

The variables directly controlled by the school are staff:pupil ratio, library accessibility, teacher's salary and counselor:pupil ratio. All of these variables have been identified as contributing to variance in citizenship. A school might manipulate these variables to determine whether a combination can be found to affect citizenship most favorably.

GOAL VI

Health Habits

GRADE 5

The regression equation for this goal at this level and the per cent of variance it can predict are as follows:

Predicted school mean = 5.77 + .403 LPL + .061 TEXPER + .960 MEDUC + .904 RACE

Corrected R^2 = .588

The four condition variables in the equation account for approximately 59 per cent of the variance in the predicted score. Other unidentified variables must account for a large portion of the difference in health habits.

The squared semi-partial correlation coefficient for each of the four identified variables is:

Level of previous learning	= .182
Teacher experience	= .024
Mother's education	= .022
Predicted achievement index by race	= .019

Only one identified variable, level of previous learning, may be directly influenced by the school. It is not surprising to note that mother's education is apparently related to the health habits of the child, as is race. These variables can be affected within the classroom by compensatory learning.

GRADE 11

Predicted school mean = 43.77 + .394 LPL + 7.361 MORESB + 2.855 TEDUC - .635 LOCATION + 1.600 TMEDUC - 3.871 MORESG + 9.291 SEX + 2.252 ATTEND - 1.696 LIBRARY + 3.445 VALUES + 1.790 TLOCALE + 1.371 COUNSEL

Corrected R^2 = .703

Listed on the following page for each of the 12 identified variables is the squared semi-partial correlation coefficient.

Level of previous learning	= .082
Mores-boys	= .075
Teacher's education	= .058
Predicted achievement index by location	= .056
Educational level of teacher's mother	= .037
Mores-girls	= .031
Sex of students	= .027
Attendance	= .024
Accessibility of library	= .020
Personal values	= .019
Teacher locale	= .017
Accessibility of counselors	= .013

Whereas only four identified variables were noted as contributing to health habits, Goal VI, at the 5th grade level, 12 were identified by the 11th grade instrument. The school may have either direct or indirect control over only six of these variables.

GOAL VII

Creativity

GRADE 5

Predicted school mean = 93.81 + .72 LPL + .14 TEXPER + 1.60 FEDUC + 7.29 SEX + .002 ENROLL

Corrected R^2 = .383

The five condition variables in the regression equation account for about 38 per cent of the variance in the predicted score. It is evident that variables other than these five also contribute to creativity of elementary age children.

The squared semi-partial correlation coefficient for each of the five variables is listed.

Level of previous learning	= .140
Teacher experience	= .026
Father's education	= .022
Sex of students	= .020
School enrollment	= .009

For creativity, Goal VII, slightly less than half of the accountable variance is due to the interaction of the five variables. Such a high per cent due to interaction seems quite logical when one considers the nature of creativity and the five variables under consideration. The child builds experience upon experience and the ability to interpret new events creatively depends to a large extent upon the quality of past experience. The introduction of sex as a potent variable is not surprising, however, in the light of past research. (See Torrance, 1965.) Sex has continually been an influencing factor in opportunities for and acceptance of the creative expression of pre-adolescent and adolescent children.

The school has the opportunity to explore a causal hypothesis concerning the effects of these variables on student creativity. If it is assumed, for example, that limited parental education has deprived students of opportunities for experiences, then compensatory learning can be designed and applied with the predicted outcome of increased performance on the creative tendency measure. The differentiation of experience determined by the pupil's sex and previous learning can be similarly explored. A systematic consideration of the qualities of teacher

experience which may contribute to a creative classroom climate may also be undertaken. It is quite likely that enrollment is a symptom rather than a causal factor in creative tendency, but this question too can be examined by innovations such as the school within a school or a differentially staffed learning team responsible for a sub-group of children.

Since more than 60 per cent of the variance is not accounted for by the regression equation, we must keep in mind that there are other variables affecting student creativity. Thus, the teacher must be highly perceptive of the student as a creative problem solver.

GRADE 11

Potential

Predicted school mean = 54.37 + .115 OCDESIRE + .006 INSEXADM − .043 ENROLL + .038 FAMSES − 1.265 ATTEND

Corrected R^2 = .577

The five condition variables in the regression equation account for approximately 58 per cent of the variance in the predicted score.

The squared semi-partial correlation coefficient for each of the five variables follows.

Occupational desire	= .079
Instructional expenses per ADM	= .045
School enrollment	= .043
Family socioeconomic status	= .040
Attendance	= .030

For creative potential as measured, over half of the accountable variance is due to the interaction of the five variables.

The most important variable for creative potential would seem to be the occupational desire of the student. It is interesting to note that smaller school enrollment and higher budgeted schools reflect greater creative potential. The fact that higher family SES and poor attendance relate to higher creative potential is tantalizing but the accountable variance is too low for very deep consideration.

Output

Predicted school mean = 174.73 − 4.149 TSTABL − 2.689 RACE + .187 OCEXPECT − .217 EFFORT − 9.655 SEX + 1.89 LIBRARY − .472 LOCATION − 4.724 PCTMW − .110 LPL + .006 SUBSIDY

Corrected R^2 = .599

The 10 condition variables in the regression equation account for approximately 60 per cent of the variance in the predicted score.

The squared semi-partial correlation coefficients for each of the variables are:

Teacher stability	= .151
Predicted achievement index by race	= .108
Occupational expcctation	= .092
Tax effort index	= .092
Sex of students	= .050
Accessibility of library	= .040
Predicted achievement index by location	= .024
Percentage of mothers working	= .018
Level of previous learning	= .010
School subsidy per WADM	= .009

The high contributions to variance explained by teacher stability, race, and tax effort, along with the small contribution of locality, are not by themselves reasonably interpretable. New causative hypotheses need to be developed and tested. The positive relationships of occupational expectancy and library accessibility are supportive of the usual picture of the creative youngster as optimistic and well informed.

It is interesting that there are no variables common to the regression equations of creative output and creative potential. There is a covert commonality among the variables however. For both creative potential and creative output the variables, excluding LPL, are of a type that cannot easily be manipulated within the classroom. The fact that occupational desire figures greatly in creative potential, and occupational expectancy figures greatly in creative output, suggests that the school will help itself when it seeks to raise the students' sights vocationally. The student who looks to the future with optimism will face the present with courage.

The school district has certain options that should serve as nurturants of creativity. School districts should explore smaller classes, open libraries, racially mixed student bodies and hiring teachers with diverse teaching experiences.

GOAL VIII

Vocational Development

GRADE 5

Predicted school mean = 51.12 + .159 LPL + .036 FOCC + .788 RACE - .447 TLOCALE + 0.88 TAGE

Corrected R^2 = .420

Five identified variables and their squared semi-partial correlation coefficients are:

Level of previous learning	= .068
Father's occupation	= .041
Predicted achievement index by race	= .035
Teacher locale	= .015
Teacher's age	= .011

Although each of these variables appears to have a very small percentage of unique variance in common with vocational development, together they account for over 40 per cent of the variance. This suggests substantial interaction between general aptitude or achievement as measured by the level of previous learning instrument and socio-economic status as defined by fathers' occupations and racial composition of the school. As the proportions of whites and of professional or white-collar workers increase, and also as the level of previous learning scores increase, vocational development scores increase.

The other pair of variables are related to possible teacher effects. A staff with diversified backgrounds and some experience influences pupils directly or indirectly in these early school years. Perhaps teachers from less restricted backgrounds are able to present materials and information related to vocational development more effectively than the less experienced teacher who comes back to the hometown to teach.

GRADE 11

Predicted school mean = 60.89 + .177 LPL + .102 TFOCC + .084 VALUES + 4.747 SEX - .380 DISCREP + .001 ENROLL

Corrected R^2 = .595

The squared semi-partial correlation coefficient for each of the six variables is listed on the following page.

Level of previous learning	= .185
Occupational level of teacher's father	= .102
Personal values	= .084
Sex of students	= .059
Discrepancy between actual and ideal educational policy influences	= .058
School enrollment	= .013

It appears that in both 5th and 11th grades vocational development is related to general achievement, i.e., the only identified variable related to both grades is level of previous learning. Although the variables are different, however, there are similarities in the pattern. In the 5th grade the home and community environment, as well as teachers, seemed to make a difference. In the 11th grade the school environment seems to be related to vocational development. Both pupil personal values and teacher perception of how closely actual influences on educational policy approach the ideal are good indicators of school climate. Apparently vocational development increases as these indices improve.

The relationship with the occupational level of the teacher's father is an interesting one. Only an indirect association is suggested, but apparently the higher the general socioeconomic level of the teacher's background, the greater the vocational development of the pupils.

One suggestion for a school without the above characteristics which wishes to improve vocational development is to consciously plan a program to impart occupational information and attitudes which may be informally developed in a different climate. In fact, it seems likely that conscious effort in vocational education and counseling might help any school to improve in this area.

GOAL IX

Appreciation of Human Accomplishment

GRADE 5

The regression equation for Goal IX at 5th grade level and the per cent of variance it can predict are as follows:

Predicted school mean = 42.55 + 3.603 SEX + .172 TCAREER + .155 LOCATION + .003 SUBSIDY + .330 TLOCALE
Corrected R^2 = .118

The five condition variables in this equation account for only about 12 per cent of the variance in the predicted score. Other conditions not measured in this study must account for 5th grade attainment on this goal measure. Listed below are the squared semi-partial correlations for the variables for which data are available.

Sex of students	= .057
Teacher career	= .039
Predicted achievement index by location	= .023
School subsidy per WADM	= .012
Teacher locale	= .008

It appears that the sex of students is contributing significantly, with teacher career expectations next in importance. It is probable that cultural expectations for girls differ from those for boys, allowing and perhaps encouraging girls to participate in music, art and dramatic activities, but branding them as "sissy" for boys. In some school climates a boy must be an extreme individualist to be willing to admit he enjoys art or music and to participate in the related activities.

In general, however, a group wishing to improve the average performance on this measure of attitudes toward human accomplishments should investigate variables other than those included in this study, but they should keep in mind that presently investigated conditions are not necessarily ineffective. It may be that more time is needed for attitudes to mature in this area. A comparison of the 5th and 11th grade equations would suggest that perhaps time and maturity do make a difference.

GRADE 11

Predicted school mean = 76.57 + .370 LPL − 1.185 TPPOS + 3.570 MORESB + 5.547 VALUES + 2.971 TLOCALE + 3.118 ATTEND + .562 LOCATION − 3.242 TCOLLEGE + 7.223 PCTMW + 52.541 STAFFP + 1.164 RECIDEA + .071 MOCC + 7.072 SEX + .219 TSATISF − .325 REACTL

Corrected $R^2 = .665$

This combination of 15 variables accounts for almost 67 per cent of the variance in the 11th grade score as opposed to the small amount of variance accounted for by the 5th grade equation. While some of the variables listed may not be subject to school manipulation, some could be changed, and such changes may affect achievement on Goal IX instruments.

The squared semi-partial correlations listed below indicate the proportion of variance uniquely common between each variable and the appreciation of human accomplishment measure.

Level of previous learning	= .065
Teacher present position	= .058
Mores-boys	= .055
Personal values	= .048
Teacher locale	= .046
Attendance	= .041
Predicted achievement index by location	= .037
Teacher's college	= .031
Percentage of mothers working	= .023
Staff:pupil ratio	= .019
Perception of "ideal" characteristics influencing professional recognition	= .016
Mother's occupation	= .016
Sex of students	= .014
Teacher satisfaction	= .007
Perception of actual characteristics influencing professional recognition	= .006

The unique contribution of level of previous learning is 6.5 per cent, the largest single amount found. A positive value here indicates that general achievement, reflecting both native ability and prior experience, is related to attitudes and appreciations in the areas of humanities and arts. It appears that growth in ability to understand and possibly increased experience in an area is related to increased appreciation. The positive contributions of mores-boys and personal values support this hypothesis also, as higher scores on these indices suggest that students perceive intellectual factors as relatively more important than social factors or athletics in determining peer group recognition.

The combination of a negative value for teacher present position and a positive value for teacher locale suggests that schools which attract teachers of more nearly local origin but do not have them firmly settled in a position for a long period of time may also contribute to performance on this goal.

Another relationship more difficult to understand is a positive relationship with the teachers' perception of "ideal" characteristics influencing professional recognition but a negative relationship with the teachers' perception of actual characteristics influencing professional recognition. This seems to indicate that higher attainment on this goal is related to school situations where teachers feel quality and quantity of work need not ideally lead to professional recognition but where in actuality professional quality and quantity of work, more than personal relationships, do influence professional recognition. Such a relationship is indeed paradoxical, and while it does not seem conceptually to be closely related to pupil achievement on Goal IX, perhaps these contradictory indices do help describe a particular type of teacher or school climate which facilitates student appreciations and understandings of the humanities.

GOAL X

Preparation For A Changing World

GRADE 5

Predicted school mean = 105.98 - .428 TAGE + 2.560 FEDUC + .315 TCAREER - 4.599 SEX + 1.014 GUIDANCE - 2.318 MEDUC
Corrected $R^2 = .077$

From the size of the corrected R^2 it can be seen that the given equation including six closely associated variables accounts for less than one-tenth of the score variance. Clearly other unidentified variables must account for achievement on the Goal X measure.

The squared semi-partial correlation coefficients for the six variables in the equation are listed below.

Teacher's age	= .028
Father's education	= .023
Teacher career	= .014
Sex of students	= .011
Counselor:pupil ratio	= .010
Mother's education	= .009

Some of the conditions mentioned in the list are not under school control, but the small amount of variance accounted for is, therefore, hopeful rather than discouraging. Schools are not limited in avenues of possible improvement open to investigation.

One appropriate hypothesis is that factors which influence attainment on this goal have not been identified. Another equally valid hypothesis is that by 5th grade these variables have not yet had a chance to make a difference. A look at the following 11th grade section reveals that over half the score variance at that level is accounted for by some of the condition variables investigated. One could hypothesize that more time is needed for any one variable to have a significant influence on pupil achievement.

GRADE 11

Predicted school mean = 95.99 + 10.734 VALUES - 849.114 GUIDANCE + .130 BOOKSP - .255 CLPRACT - 2.783 TCOLLEGE - .413 TSATISF - .0010 TSALARY - 2.384 MORESG + 1.293

RACE − .708 DISCREP + .073 MOCC + .050 FAMSES + .154 TEXPER − .364 TCAREER + .049 INNOVATE

Corrected $R^2 = .532$

With over half of the variance accounted for, this equation gives some indication of possible school conditions which may influence the achievement in this area. The following listing of squared semi-partial correlation coefficients indicates the amount of unique variance each of the variables contributes.

Personal values	= .241
Counselor:pupil ratio	= .061
Books:pupil ratio	= .051
Teacher classroom practices	= .037
Teacher's college	= .037
Teacher satisfaction	= .035
Teacher salary	= .030
Mores-girls	= .023
Predicted achievement index by race	= .020
Discrepancy between actual and ideal educational policy influences	= .020
Mother's occupation	= .019
Family sociocconomic status	= .016
Teacher experience	= .016
Teacher career	= .014
School innovation	= .011

It appears that almost half the accountable variance is related to the personal values of students. This index depends upon choice by student of the one quality in a list of five which is important to him personally. A higher score on this index indicates that the members of the student body tend to perceive intellectual pursuits as more productive in gaining peer group recognition than social status factors. This seems to be a reflection of both school and community climate.

A study of the preceding list will also reveal that several of the other variables are apparently related to this major one. In fact, as opposed to some of the goals, many of the variables which seem related to Goal X accomplishment at this level are connected with school. After an examination of the teacher and school variables with their appropriate signs, however, no clear pattern emerges. The most profitable approach to this goal appears to be an analysis and possible modification of factors which may influence the personal values of students.

Summary Comment

Several summary observations can be made from these data. First, prediction for 11th grade students is uniformly more precise than prediction for 5th grade students. This finding suggests that some causation must underly both the student performance measures and the many school, community and individual predictor variables. Such a causation must operate over a period of time in order to have its effect. It also suggests that modification or intervention is possible.

Second, several condition variables are common to both grade levels and seem to divide themselves into several areas which may be sources of differing influence upon goal achievements of students. They are school-related variables, including guidance availability and enrollment; teacher-related variables, including teacher locale, teacher stability, teacher age and teacher career aspirations; community-related variables represented by location and quality of housing; and individual variables represented by family socioeconomic status, level of previous learing and sex. These variables should all be considered as indicators which identify the kinds of experiences which students have encountered as they develop. Modification of student output should, therefore, focus upon the quality of the experiences rather than the indicators, although the latter provide the educational practitioner with clues about where to look. An examination of the semi-partial correlations will also provide an indication of the importance of the experiences related to each indicator. Thus, with these data the practitioner's efforts may be more sharply focused upon potentially productive improvement processes.

Finally, the 47 condition variables for which data were collected do not explain most of the variation in student performance on the goal measures. On the average, 51 per cent is left unexplained. This is true even though the condition variables were selected to represent those factors which are commonly considered to account for differences in student performance.

Several possible explanations are available to account for this phenomenon. Among these is the possibility that the goal measures are unreliable. This is not likely, however, from two considerations. First, the obtained reliability coefficients range from $r_{tt} = .75$ to $r_{tt} = .92$ with a mean value of $r_{tt} = .85$. (See Toole, Campbell and Beers, 1970.)

Furthermore, these values represent reliabilities for individual scores, whereas the predictions for schools are based upon mean scores. It is a property of means that the variance due to random errors such as unreliability tends to be sharply reduced as sample size increases. This effect is reflected in the relative size of the standard error of measurement (based on r_{tt}) compared to the size of the standard error of the mean. For the average sample size upon which these data are based, the standard error of the mean is very slightly more than one-fourth as large as the standard error of measurement for the lowest reliability obtained (1.27 and 4.76 respectively). This is analogous to obtaining a reliability coefficient of .98 for a measure used in a comparable analysis of individual data.

Another explanation is that the relationships are non-linear and, therefore, the methods of analysis did not allow them to emerge. This possibility cannot be dismissed, although a pilot study with similar data did not show substantial non-linearity. (See Campbell, et al, 1968.)

The most likely explanation appears to be that process variables, the things students and teachers do in the classroom and other school settings, are important contributors to the variability of students in goal performance measures. These variables, being modifiable by the school, provide hope for and possibility of improving the quality of education.

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Appendix A

Grade 5 Correlation Coefficients in Excess of .140 in Absolute Value*

Variable Pair	Correlation	Variable Pair	Correlation	Variable Pair	Correlation	Variable Pair	Correlation	Variable Pair	Correlatic
1, 2	.574	3,17	.376	5,44	.152	10,41	.143	18,42	.142
1, 3	.549	3,18	.160	5,46	.197	10,42	-.240	18,43	-.370
1, 4	.537	3,19	.180	5,47	.220	10,47	.343	18,45	-.216
1, 5	.406	3,21	.499	6, 7	.259	11,12	.544	18,46	-.311
1, 8	.727	3,23	.722	6, 8	.173	11,13	.508	18,47	.294
1, 9	.469	3,29	.199	6, 9	.243	11,14	.785	19,21	.146
1,10	.337	3,30	.159	6,10	.170	11,15	.150	19,23	.233
1,11	.557	3,36	.165	6,11	.323	11,17	.207	19,27	-.175
1,12	.581	3,38	-.163	6,13	.373	11,18	.282	19,29	.160
1,14	.479	3,39	.179	6,14	.321	11,21	.619	19,36	.144
1,17	.160	3,41	.243	6,15	.233	11,23	.386	19,38	-.146
1,18	.458	3,42	-.298	6,33	.186	11,47	.325	19,39	.163
1,19	.170	3,43	.206	7, 9	.249	12,14	.446	19,42	-.171
1,20	.150	3,44	.183	7,11	.177	12,17	.152	20,21	.183
1,21	.854	3,46	.229	7,13	.142	12,18	.414	20,43	-.155
1,23	.569	3,47	.349	7,14	.160	12,19	.182	21,23	.538
1,32	-.163	3,50	.265	7,24	-.168	12,21	.599	21,40	.204
1,36	.146	4, 5	.516	7,36	.147	12,23	.467	21,42	-.179
1,40	.141	4, 8	.450	8, 9	.535	12,36	.145	21,45	-.216
1,42	-.214	4, 9	.480	8,10	.413	12,40	.140	21,47	.415
1,45	-.141	4,10	.392	8,11	.668	12,42	-.184	22,23	.294
1,47	.454	4,11	.396	8,12	.564	12,47	.369	23,29	.161
1,49	.144	4,12	.462	8,13	.185	13,14	.523	23,30	.212
2, 3	.908	4,13	.223	8,14	.643	13,17	.253	23,36	.222
2, 4	.817	4,14	.309	8,16	-.167	13,21	.160	23,38	-.265
2, 5	.549	4,17	.486	8,18	.465	13,23	.184	23,39	.322
2, 7	.168	4,18	.168	8,21	.795	13,36	.220	23,41	.319
2, 8	.483	4,19	.213	8,23	.476	13,46	.204	23,42	-.454
2, 9	.506	4,21	.504	8,40	.238	14,17	.140	23,43	.297
2,10	.359	4,23	.928	8,45	-.194	14,18	.300	23,44	.187
2,11	.453	4,26	.176	8,47	.409	14,21	.553	23,46	.245
2,12	.397	4,29	.186	8,49	.154	14,23	.295	23,47	.500
2,13	.306	4,30	.206	9,10	.298	14,47	.300	23,50	.153
2,14	.358	4,36	.218	9,11	.582	16,17	.147	24,25	.738
2,17	.465	4,38	-.259	9,12	.413	16,18	-.318	24,26	-.367
2,18	.141	4,39	.300	9,13	.376	16,21	-.141	24,28	.177
2,19	.179	4,40	.149	9,14	.529	16,31	.148	24,29	-.314
2,21	.521	4,41	.339	9,17	.283	16,37	.163	24,31	-.187
2,23	.805	4,42	-.472	9,19	.156	16,41	.248	24,33	.321
2,29	.195	4,43	.320	9,21	.493	16,42	-.173	24,37	.246
2,30	.183	4,44	.210	9,23	.477	16,43	.276	24,38	.430
2,36	.229	4,46	.310	9,33	.164	16,46	.195	24,39	-.222
2,38	-.242	4,47	.494	9,34	.144	17,21	.163	24,40	.249
2,39	.241	4,50	.163	9,36	.200	17,23	.422	24,42	.162
2,41	.334	5, 8	.347	9,40	.230	17,24	-.140	24,46	-.172
2,42	-.386	5, 9	.277	9,41	.194	17,26	.160	25,26	-.296
2,43	.296	5,10	.244	9,42	-.265	17,38	-.208	25,27	.190
2,44	.247	5,11	.286	9,43	.173	17,39	.319	25,28	.294
2,46	.277	5,12	.306	9,46	.157	17,41	.435	25,29	-.313
2,47	.430	5,13	.156	9,47	.342	17,42	-.462	25,33	.249
2,50	.267	5,14	.204	10,11	.452	17,43	.366	25,37	.284
3, 4	.709	5,17	.256	10,12	.356	17,44	.214	25,38	.430
3, 5	.569	5,21	.355	10,13	.413	17,46	.286	25,39	-.187
3, 8	.493	5,23	.557	10,14	.446	17,47	.167	25,40	.143
3, 9	.457	5,38	-.165	10,17	.255	18,21	.455	26,33	-.178
3,10	.313	5,39	.240	10,18	.146	18,23	.195	26,38	-.212
3,11	.427	5,41	.227	10,21	.410	18,32	-.145	26,39	.351
3,12	.376	5,42	-.326	10,23	.349	18,37	-.245	26,41	.222
3,13	.307	5,43	.232	10,28	.154	18,41	-.332	26,42	-.302
3,14,	.344								

*A correlation of .140 is significant at the .01 level.

Variable Pair	Correlation	Variable Pair	Correlation
26,43	.220	38,44	-.222
26,46	.187	38,46	-.249
26,49	-.148	38,47	-.167
27,28	.752	39,40	-.274
27,36	-.226	39,41	.339
27,38	.250	39,42	-.457
27,39	-.208	39,43	.316
27,41	-.181	39,44	.162
27,42	.236	39,45	.169
27,43	-.191	39,46	.234
27,44	-.180	39,47	.192
28,29	-.142	39,49	-.172
28,36	-.178	41,42	-.537
28,38	.267	41,43	.906
28,39	-.194	41,44	.504
28,42	.169	41,45	.223
29,30	.376	41,46	.281
29,36	.168	41,48	.212
29,38	-.235	42,43	-.440
29,39	.195	42,46	-.152
29,43	.143	42,47	-.227
29,46	.203	42,48	-.196
30,38	-.174	43,44	.452
30,41	.175	43,45	.217
30,42	-.190	43,46	.299
30,43	.193	43,48	.223
31,32	.149	44,46	.199
31,33	-.155	44,47	.151
31,34	-.314	44,50	.150
31,38	-.168	45,46	.188
31,39	.159	46,49	-.186
31,40	-.163	46,50	.208
31,41	.146		
31,45	.185		
31,46	.161		
33,40	.235		
34,35	-.194		
34,36	.294		
34,40	.205		
34,46	-.144		
35,37	-.154		
36,38	-.162		
36,39	.147		
36,41	.164		
36,43	.176		
36,50	.170		
37,38	.309		
37,39	.217		
37,41	.469		
37,42	-.207		
37,43	.470		
37,44	.226		
37,45	.165		
37,46	.163		
38,39	-.429		
38,40	.267		
38,41	-.191		
38,42	.297		
38,43	-.175		

Variable	Description	Code
1	Level of Previous Learning	LPL
2	Father's Education	FEDUC
3	Mother's Education	MEDUC
4	Father's Occupation	FOCC
5	Mother's Occupation	MOCC
6	A - IX Human Accomplishments	
7	B - X Changing World	
8	C - VI Health Habits	
9	D - II Others Who Differ	
10	E - I Self-Understanding	
11	F - VII Creativity	
12	G - VIII Vocational Development	
13	H - IV Interest in School	
14	I - V Citizenship	
15	Sex of Students	SEX
16	Interracial Exposure	INTERRAC
17	Predicted Achievement Index by Location	LOCATION
18	Predicted Achievement Index by Race	RACE
19	Accessibility of Library	LIBRARY
20	Attendance	ATTEND
21	Achievement Composition	ACH. COMP.
22	Percentage of Mothers Working	PCTMW
23	Family Socioeconomic Status	FAMSES
24	Teacher's Age	TAGE
25	Teacher Present Position	TPPOS
26	Teacher's College	TCOLLEGE
27	Teacher Locale	TLOCALE
28	Teacher Stability	TSTABL
29	Educational Level of Teacher's Mother	TMEDUC
30	Occupational Level of Teacher's Father	TFOCC
31	Perception of Actual Characteristics Influencing Professional Recognition	REACTL
32	Perception of "Ideal" Characteristics Influencing Professional Recognition	RECIDEA
33	Teacher Career	TCAREER
34	Teacher Satisfaction	TSATISF
35	Discrepancy between Actual and Ideal Educational Policy Influences	DISCREP
36	Teacher Classroom Practices	CLPRACT
37	Teacher Salary	TSALARY
38	Teacher Experience	TEXPER
39	Teacher Sex	TSEX
40	Teacher's Education	TEDUC
41	Total Expenses Per Weighted ADM	EXWADM
42	School Subsidy Per WADM	SUBSIDY
43	Instructional Expenses Per ADM	INSEXADM
44	Tax Effort Index	EFFORT
45	Counselor: Pupil Ratio	GUIDANCE
46	School Enrollment	ENROLL
47	Types of Residences in School's Community	HOUSING
48	Staff: Pupil Ratio	STAFFP
49	Books: Pupil Ratio	BOOKSP
50	School Innovation	INNOVATE

Appendix B

Grade 11 Correlation Coefficients in Excess of .280 in Absolute Value*

Variable Pair	Correlation	Variable Pair	Correlation	Variable Pair	Correlation	Variable Pair	Correlation
1, 2	.585	4,31	.369	9,28	.372	23,26	.385
1, 3	.524	4,42	.280	9,46	.334	23,27	-.295
1, 6	.462	4,44	.459	10,20	.466	23,28	.735
1, 8	.632	4,48	-.347	10,22	.312	23,42	.461
1, 9	.533	4,50	.306	10,26	.456	23,44	.554
1,10	.408	4,51	.403	10,28	.352	23,46	.556
1,14	.282	4,52	.283	10,46	.290	23,47	.444
1,15	.322	4,56	.357	11,12	-.288	23,48	-.522
1,20	.297	5, 7	.631	11,15	-.471	23,49	.443
1,22	.705	5, 9	.521	11,25	.280	23,50	.329
1,23	.404	5,16	.284	11,26	-.280	23,51	.396
1,24	.414	5,21	.280	11,33	-.320	23,52	.401
1,25	.342	5,56	.314	13,14	.413	24,25	.947
1,26	.915	6, 8	.343	13,21	-.310	24,26	.414
1,28	.691	6, 9	.309	13,23	.364	24,28	.710
1,42	.335	6,10	.287	13,24	.316	24,31	.335
1,44	.473	6,11	.288	13,25	.361	24,42	.476
1,46	.656	6,14	.538	13,36	.293	24,44	.564
1,47	.297	6,19	-.301	13,48	-.312	24,46	.576
1,48	-.330	6,22	.647	13,51	.385	24,47	.475
1,49	.308	6,23	.582	14,22	.734	24,48	-.593
1,50	.375	6,24	.674	14,23	.596	24,49	.484
1,52	.637	6,25	.637	14,24	.748	24,51	.458
2, 3	.469	6,26	.463	14,25	.773	24,52	.383
2, 5	.306	6,28	.623	14,26	.683	25,26	.331
2, 7	.502	6,42	.364	14,31	.386	25,28	.692
2, 8	.613	6,44	.444	14,42	.497	25,31	.405
2, 9	.529	6,46	.457	14,44	.569	25,42	.496
2,11	-.417	6,47	.519	14,46	.430	25,44	.610
2,13	-.317	6,48	-.518	14,47	.538	25,46	.554
2,15	.398	6,49	.548	14,48	-.730	25,47	.527
2,18	.392	6,56	.344	14,49	.517	25,48	-.672
2,20	.335	7, 8	.426	14,51	.515	25,49	.534
2,26	.609	7, 9	.498	15,26	.347	25,51	.482
2,52	.373	7,13	-.402	16,17	.290	25,52	.411
3, 4	.281	7,14	-.330	16,55	-.324	26,28	.644
3, 5	.352	7,15	.375	18,19	.878	26,40	-.288
3, 6	.357	7,18	.300	18,20	.402	26,42	.305
3, 7	.435	7,20	.325	18,29	.324	26,44	.462
3, 8	.606	7,21	.378	18,34	-.359	26,46	.627
3, 9	.655	7,23	-.289	19,20	.329	26,50	.298
3,10	.368	7,25	-.356	19,28	-.280	26,52	.573
3,14	.381	7,27	.303	19,34	-.414	27,31	-.281
3,18	.292	7,39	.307	19,48	.308	28,42	.486
3,20	.481	8, 9	.482	21,36	-.334	28,44	.607
3,22	.449	8,10	.288	21,51	-.335	28,46	.673
3,24	.346	8,20	.403	22,23	.712	28,47	.435
3,25	.310	8,22	.517	22,24	.747	28,48	-.659
3,26	.477	8,26	.632	22,25	.744	28,49	.421
3,28	.427	8,28	.504	22,26	.660	28,50	.415
3,46	.330	8,35	.305	22,28	.960	28,51	.432
3,52	.349	8,44	.381	22,35	.292	28,52	.589
3,56	.290	8,46	.418	22,42	.538	29,30	.815
4, 5	.399	8,47	.320	22,44	.658	29,31	.480
4, 6	.396	8,48	-.357	22,46	.664	29,34	-.398
4, 9	.285	8,49	.292	22,47	.497	29,39	.287
4,14	.530	8,52	.318	22,48	-.698	29,42	.310
4,15	-.281	9,10	.418	22,49	.501	29,43	.728
4,22	.468	9,18	.341	22,50	.401	29,44	.293
4,23	.400	9,20	.481	22,51	.449	29,45	.416
4,24	.525	9,22	.355	22,52	.590	30,31	.367
4,25	.516	9,24	.334	23,24	.717	30,32	.285
4,28	.436	9,26	.538	23,25	.702	30,33	.336

*A correlation of .280 is significant at the .01 level.

Variable Pair	Correlation
30,34	-.447
30,39	.347
30,42	.312
30,43	.638
30,44	.309
30,45	.294
31,42	.304
31,43	.369
31,44	.412
31,45	.338
31,47	.322
31,48	-.304
31,49	.343
32,33	.845
32,34	-.402
33,43	.295
34,35	.290
35,48	-.344
36,39	-.453
36,51	.380
36,55	-.339
39,40	-.498
40,44	-.308
42,43	.441
42,44	.757
42,46	.473
42,47	.458
42,48	-.483
42,49	.520
42,51	.529
42,52	.285
43,44	.377
43,45	.301
44,46	.498
44,47	.470
44,48	-.564
44,49	.505
44,51	.510
44,52	.485
45,47	.367
45,49	.367
45,54	.360
46,48	-.374
46,50	.369
46,52	.468
47,48	-.685
47,49	.954
47,54	.549
47,56	.334
48,49	-.668
48,51	-.363
48,52	-.387
48,57	-.306
49,54	.461
49,56	.345
50,52	.448
51,54	-.328
51,55	-.417
51,57	.399
54,55	.409
54,56	.364

Variable	Description	Code
1	Level of Previous Learning	LPL
2	A - VI Health Habits	
3	B - II Others Who Differ	
4	C - I Self-Understanding	
5	D - IV Interest in School	
6	E - VII-P Creative Potential	
7	F - V Citizenship	
8	G - VIII Vocational Development	
9	H - IX Human Accomplishments	
10	I - X Changing World	
11	J - VII-O Creative Output	
12	Sex of Students	SEX
13	Interracial Exposure	INTERRAC
14	Predicted Achievement Index by Location	LOCATION
15	Predicted Achievement Index by Race	RACE
16	Accessibility of Library	LIBRARY
17	Accessibility of Counselors	COUNSEL
18	Mores--Boys	MORESB
19	Mores--Girls	MORESG
20	Personal Values	VALUES
21	Attendance	ATTEND
22	Father's Occupation	FOCC
23	Mother's Occupation	MOCC
24	Occupational Desire	OCDESIRE
25	Occupational Expectation	OCEXPECT
26	Achievement Composition	ACH. COMP.
27	Percentage of Mothers Working	PCTMW
28	Family Socioeconomic Status	FAMSES
29	Teacher's Age	TAGE
30	Teacher Present Position	TPPOS
31	Teacher's College	TCOLLEGE
32	Teacher Locale	TLOCALE
33	Teacher Stability	TSTABL
34	Educational Level of Teacher's Mother	TMEDUC
35	Occupational Level of Teacher's Father	TFOCC
36	Perception of Actual Characteristics Influencing Professional Recognition	REACTL
37	Perception of "Ideal" Characteristics Influencing Professional Recognition	RECIDEA
38	Teacher Career	TCAREER
39	Teacher Satisfaction	TSATISF
40	Discrepancy between Actual and Ideal Educational Policy Influences	DISCREP
41	Teacher Classroom Practices	CLPRACT
42	Teacher Salary	TSALARY
43	Teacher Experience	TEXPER
44	Teacher's Education	TEDUC
45	Teacher Sex	TSEX
46	Continuing Education	POSTGRAD
47	Total Expenses Per Weighted ADM	EXWADM
48	School Subsidy Per WADM	SUBSIDY
49	Instructional Expenses Per ADM	INSEXADM
50	Tax Effort Index	EFFORT
51	School Enrollment	ENROLL
52	Types of Residences in School's Community	HOUSING
53	Holding Power	HOLDING
54	Staff: Pupil Ratio	STAFFP
55	Books: Pupil Ratio	BOOKSP
56	Counselor: Pupil Ratio	GUIDANCE
57	School Innovation	INNOVATE