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ABSTRACT

The conceptualization of equity as student learning and accountability as testing performance provided the theoretical framework for this study. The purpose of this analysis was to explore the relevance of school and social variables on student performance across 4 years in a school district in Kentucky. Multiple regression analyses were used to identify the strongest predictors of student achievement for 133 students. Prior academic year achievement was found to be the strongest predictor of educational outcomes. Socioeconomic status was also found to be an important variable explaining student achievement. Overall, findings indicated that schools' pattern of achievement is a major determinant of their performance, and it is an issue that needs to be addressed by policy makers. (Contains 6 tables and 31 references.) (Author/SLD)

Running Head: EDUCATIONAL REFORM IN THE ACCOUNTABILITY ERA

Educational Reform in the Accountability Era: The Impact of Prior Achievement and Socio-Economic Conditions on Academic Performance

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Abstract

The conceptualization of equity as student learning and accountability as testing performance provided the theoretical framework for this study. The purpose of this analysis was to explore the relevance of school and social variables on student performance across four years in a school district located in the state of Kentucky. Multiple regression analyses were used to identify the strongest predictors of student achievement (N = 133). Prior academic year achievement was found to be the strongest predictor of educational outcomes. Socio-economic status was also found to be another important variable explaining student achievement. Overall findings indicated that schools' pattern of achievement is a major determinant of their performance and it is an issue that needs to be addressed by policy makers.

Educational Reform in the Accountability Era: The Impact of Prior Achievement and Socio-Economic Conditions on Academic Performance

The American experience with equity and excellence has attracted worldwide attention. Starting with the legal outcomes of the case of Brown vs. Board of Education (1954), the American society has tried to make strong efforts to build an educational system that appreciates diversity as an enrichment opportunity for both individuals and society (Banks, 1984; Egginton & Munoz, 1998). Equity and excellence are two principles that educators are constantly trying to reconcile. Essentially, the conceptualization of equity as access to knowledge is a powerful strategy to improve education to all students, especially for those students with whom the educational system have been the least successful in the past.

As an essential outcome of this theoretical approach, Murphy (1988) developed the "third-generation" conceptualization of equity: equity as student opportunity to learn; the first-generation focused on equity as access and the second-generation focused on equity as process. The result of joining equity and excellence has been the development of new educational paradigms which incorporate the provision of support services and the inter-relationships among the home, school and family (Cárdenas, 1995). The idea is to provide the best possible education, regardless of any personal or social characteristic of the students. Important questions in this debate arise concerning the impact of school and socio-demographic characteristics on student achievement, especially in an accountability era.

Accountability systems have been designed to track the progress of educational reforms. The function of an accountability system in education is to monitor and evaluate the performance of the education system as a whole and the individual school's achievement (Wohlstetter, 1991).

This concept is not relatively new; since 1974, Levin has argued that performance accountability is concerned with educational outputs. Levin (1974) defined performance accountability as "a periodic report of the attainments of schools and other educational units" (p. 364). Performance reporting includes such measurement techniques as statewide assessments, school report cards, and performance indicators. The overall objective of a performance accountability system is to provide a standard upon which a school can compare its own progress over time. The end results should (a) stimulate actions to improve education, (b) monitor regulatory compliance for state requirements, and (c) produce rewards as well as sanctions to schools (Kirst, 1990).

In the new accountability era, the "Kentucky experiment" has attracted the attention of scholars around the world because this "experiment" has been one of the most important educational efforts to restructure a school system that is willing to achieve equity and excellence. Prior to the reform effort, Kentucky ranked near the bottom of the nation in virtually every measure of educational quality. The Kentucky Educational Reform Act (KERA) established the right of each and every child to an adequate education based on the equitable distribution of resources (Rose v. Council for Better Education, 1989). The initial lawsuit in Kentucky was filed on the belief that there existed inequities in the educational process, specifically the funding system for schools (Adams & White, 1997). Prior to KERA, allocation of funds to school districts was based upon the qualifications of the teachers, number of students per class, special needs of students, and student populations. Districts with fewer financial resources could not offer the same educational opportunities as other districts with a larger tax base.

From a historical perspective, James Coleman and his colleagues were the first, after the post-Brown era, to analyze the issue of "equal educational opportunity" (Coleman, Campbell,

Hobson, McPartland, Mood, Weinfeld, & York, 1966). The goals of the project were to determine whether equal educational opportunities were offered in schools, and the relationship between student achievement and the kind of school the students attended. The Coleman Report examined the extent to which there was equality of investments in the education of different groups of students and the extent to which there was equality of academic results among groups as measured by performance on standardized achievement tests.

The findings released in Equality of Educational Opportunity were also very significant to the American educational system as were those in the case of Brown vs. Board of Education. Coleman et al (1966) concluded that, regarding achievement patterns, the lower achieving groups had higher percentages of students from homes in which the parents had little formal education and low occupational levels. The Coleman Report showed that a very significant factor related to student achievement was the family background of the students in terms of social class and race. In this sense, there is a need to improve schools where disadvantaged minority students attend and increase the family and community resources available to these students, beginning in early childhood.

Supporting the Coleman findings was a study titled Inequality: A Reassessment of the Effect of Family and Schooling in America (Jencks, Smith, Acland, Bane, Cohen, Gintis, Heyns, & Michelson, 1972). The research concluded that we can not blame economic inequality on differences between schools, since differences between schools seems to have very little effect on any measurable attribute of those who attend them. Jencks et al (1972) challenged the debate concerning the impact of schooling by arguing that educational reform cannot bring about economic or social equality and that school quality has little effect on student achievement. The

main finding was that even if the schools could be reformed to ensure that every child received an equally good education, adult society would hardly be more equal than it is at the present time. In that sense, if the American society really wants to achieve greater equality, then it must undertake more fundamental social and economic changes than simply reforming education.

In such an effort, Comer (1980) led the School Development Program (SDP), to improve schools mainly conformed by disadvantaged students. The SDP placed a great deal of emphasis on strengthening linkages between educators and parents in some elementary schools in New Haven that served a mostly disadvantaged African American student population. Another characteristic of this project was its relationship with the heavy urban focus of the emerging school reform agendas nation-wide due to the growing number of minority students attending large urban public school systems. Comer demonstrated that the effect of powerful psychological, institutional, and social forces on the performance of administrators, teachers, and students in schools. Parents and staff were able to build a school community that not only resolved, but prevented learning barriers such as poor motivation, low self-esteem, and discipline problems.

In the same line of thought, Seeley (1985) proposed a "partnership" model in which education is the shared responsibility of students, families, schools, and other elements of the community. Schools systems would need, in that sense, a new redefinition of roles and functions in order to give priority to the motivations and interactions essential to learning. The goal should be to change public education to create new relationships between students and teachers, and schools and communities, in which more learning can take place and in which both school and non-school resources can be more effectively used to promote learning. According to Seeley

(1985), it is impossible to understand student achievement without both community and pupil characteristics since they are highly correlated. The crucial issue in successful learning is not home or school -teacher or student- but the relationship between them. Learning only takes place where there is a productive learning relationship.

Murphy and Hallinger (1989) also contributed in the debate on equity as learning, specifically on the issues of curricular and instructional treatment differences. Basically, the study conveyed a picture of students who may attend the same school but who come away with very different educational experiences. Elements identified as responsible for differences on outcomes include the attention the students receive from school counselors, the type of subjects they study, the textbooks they read, the expectations their teachers have on them, the amount of homework they do, and the amount of time they spend in class. These authors recommend refocusing the educational reform efforts in general, and the educational equality issues in specific, toward what is going to be taught, to whom, and by whom.

In the last decade, public pressure demanding higher levels of accountability have encouraged educational, psychological, and sociological researchers to explore factors that contributed to student performance. Multiple meta-analyses have been performed to investigate the relationship between socioeconomic status (SES) and academic achievement. White (1982) investigated almost 200 studies that considered the relation between SES and academic achievement using meta-analysis techniques. Childs and Shakeshaft (1986) conducted another meta-analysis of research on the relationship between educational expenditures and student achievement and concluded that past a certain point, the amount of money a school district spends is not so vital as how the money is spent. Similarly, Hanushek (1997) conducted a meta-

analysis on about 400 studies and found no strong evidence of systematic relationships between school expenditures (e.g., teacher-student ratios, teacher education, or teacher experience) and student performance.

However, Kozol (1991) argued that denial of the means of competition is perhaps the single most consistent outcome of the education offered to poor children in the schools of our large cities. In effect, a circular phenomenon evolves: "the richer districts -those in which property lots and houses are more highly valued- have more revenue, derived from taxing land and homes, to fund their public schools. The reputation of the schools, in turn, expands the tax base for their public schools" (p. 121). This impact is further compounded by the relationship between family economic conditions and student performance. Miller (1995) argued that students from low-income homes tend to do less well in school than students from high-income families. Since high percentages of African American, Hispanic, and Native Americans children grow up in very disadvantaged circumstances, a very low representation of these groups among high achievement students can be expected. The conclusion is clear: it is essential to increase educational opportunities for students from low-income homes.

A recent example of teamwork on how to help more disadvantaged and minority students perform well academically is Central Park East Elementary School in East Harlem, New York (Meier, 1995). Central Park East Elementary is a small school of choice that offered a demanding curricular and instructional approach similar to those of many respected private schools. It is based on the assumption that inner-city minority students can perform very well in such an environment if they are given the opportunity. This example stresses the ideas that public education is vital to the future of American democracy and that good education is possible to all

our children. Innovations suggested by Meier include breaking up huge schools into small schools, choice within the public school system, respect, teaching that connects learning to real-world activities, and a new ideal of being well-educated.

Given the importance attributed to both school and socio-demographic conditions on educational outcomes by previous research, the purpose of the current study was to examine school features and socio-demographic factors that might have an impact on student achievement in a school district involved in a substantial reform effort since 1990. Data from all schools in a public school system located in Kentucky were analyzed to answer the following research question concerned with student achievement on the statewide assessment system: What are the variables that might be the strongest predictors of student achievement, defined in term of scores on the Kentucky Instructional Results Information System (KIRIS)?

Method

Participants

The analyses were conducted on 133 schools (88 elementary school, 24 middle schools, and 21 high schools) in the school district under examination. A priori power analysis was performed using the recommendations provided by Stevens (1996): n/k ratio of 15 to 1, where n equals the number of participants and k equals the number of predictor variables in the regression model. Here, the regression analyses were performed with a 17 to 1 n/k ratio, which is two points above the recommended number.

Independent Variables

Multiple independent variables were included in the statistical analyses. All of the data for the independent variables were obtained in the county profile by schools from the 1995/1996 to 1998/1999 school years. A list of the independent variables and their definitions follow:

Enrollment is the number of students enrolled in the school. Expenditure per pupil for instruction is the total school budget divided by enrollment. Percentage of students qualifying for free and reduced lunch is the number of students who qualified for either free or reduced lunches according to federal guidelines. Pupil-teacher ratio is the number of teachers divided by the number of students at each school. Percentage of Black students is an indicator of the racial makeup of the school and it is computed by dividing the number of Black students by the total number of students in each school. Prior KIRIS results are the total academic indexes from the previous school year. School level refers to elementary, middle, and high school levels. This was the only variable that was dummy coded, following the procedures recommended by Pedhazur and Schmelkin (1991). For the school level variable, the elementary level was coded as one and all other levels as zero. The middle level was coded as one and all other levels as zero.

Dependent Variable

The fundamental dependent variable was the KIRIS total academic index. The KIRIS is the statewide testing/assessment program composed of several content area tests given to different grade levels. The same students are not tested on the same content areas in consecutive years. KIRIS Transitional (On-demand) open-response tests are given in grades 4, 5, 7, 8, and 11. KIRIS Writing Portfolio is given at grades 4, 7, and 12. The content tests each have different weights: reading (20%), mathematics (20%), science (15%), social studies (15%), arts and

humanities (5%), practical living skills (5%), writing portfolio (12%) and on-demand writing (3%). Performance on each of the subtests is categorized into 4 levels of increasing mastery: novice, apprentice, proficient, and distinguished. The total academic index is derived from the percentages of students who were in each of the categories of novice, apprentice, proficient, and distinguished. The index score is calculated by multiplying the percent of distinguished by 1.4, percent of proficient by 1.0, percent of apprentice by .4, and percent of novice by 0, and then summing all four numbers.

The Commonwealth Accountability Testing System (CATS) includes several modifications in response to years of debate. For instance, CATS is now distributed across all grades (4-12) with different subjects in each grade in response to the criticism of the considerable testing burden suffered by grades 4, 8, and 11 in the previous assessment system (KIRIS). Grades 4 and 7 receive the reading, science, writing portfolios, and on-demand writing tests. Grades 5 and 8 receive the mathematics, social studies, arts and humanities, practical living and vocational studies tests. Grade 10 receives the reading, practical living and vocational studies tests. Grade 11 receives the mathematics, science, social studies, arts and humanities tests. Finally, grade 12 receives the writing portfolio and on-demand writing tests. In addition, the Kentucky Department of Education (KED) has cautioned about the inappropriateness of establishing comparisons in scores for determining reward or assistance to schools. The CATS used in the 1998-99 school year has a slightly different weighting system for determining the total academic index that allows for differentiating within the novice and apprentice categories (low, medium and high). Despite the differences in content and scoring between KIRIS and CATS, a Pearson product-moment correlation showed that both tests are very highly correlated ($r = .96$, $p < .01$).

Instrument and Data Collection

The primary data sources for this investigation were the 1995-1996 to 1998-99 schools' profile documents. The school district has developed in the last decade a strong management information system that collects socio-demographic, academic, and non-academic information. As previously mentioned, the data on the following variables were utilized: school level, enrollment, expenditure per pupil for instruction, percentage of students qualifying for free lunch, student teacher ratio, percentage of Black students, and scores on the KIRIS.

Design and Procedures

This study was a typical case of secondary analysis (Babbie, 1989). The research design was quantitative in nature, specifically correlational (Gall, Borg, and Gall, 1996). Multiple regression is the recommended procedure when the researcher is interested in predicting a dependent variable from a set of predictors (Kerlinger & Pedhazur, 1973; Pedhazur, 1992). Multiple regression analysis was conducted to identify the predictors of student performance on the KIRIS. The dummy coded school level variables (elementary, middle) were entered into the first set using the enter selection method with the criteria of entry at .05. All other variables were entered into the second set using the stepwise selection method (criteria: probability of F to enter <= .05, probability of F to remove >= .10).

Results

Descriptive Statistics of Variables

The first analysis involved performing basic descriptive analysis of the dependent and the independent variables included in the multiple regression analyses (See Table 1). Over the four-year period, KIRIS scores have increased as well as the percentage of Black students and the

number of students qualifying for free and reduced lunch. The average expenditure per pupil across the four-year period was approximately $3005 and the enrollment has remained relatively stable.

INSERT TABLE 1 ABOUT HERE

Correlation Analysis

For each year, multiple bivariate correlation analysis were conducted using the criterion variables of student achievement and the school and socio-demographic predictor variables. Table 2 shows that many variables were highly correlated at .01 alpha level for the 1995/1996 school year. Free/reduced lunch was most negatively correlated with KIRIS scores ($r = -.60$, $p < .01$). In addition, expenditures per pupil and percentage of Black students were negatively correlated with KIRIS scores. Only the pupil-teacher ratio was positively correlated with KIRIS scores.

INSERT TABLE 2 ABOUT HERE

The correlations for the 1996/1997 school year are presented in Table 3. When prior KIRIS scores were considered in the correlational analysis, the prior scores appeared as the strongest positively correlated variable with current KIRIS scores ($r = .88$, $p < .01$). Pupil-teacher ratio was the second strongest variable that positively correlated with KIRIS scores at the .01

alpha level. In contrast, free/reduced lunch, expenditures per pupil, and percentage of Black students were all negatively correlated with KIRIS scores (in that order).

INSERT TABLE 3 ABOUT HERE

Table 4 shows the correlation matrix for the 1997/1998 school year. Again, prior KIRIS scores held the strongest positive correlation with current KIRIS scores ($r = .93$, $p < .01$). Pupil-teacher ratio was also positively correlated with KIRIS scores. Similar to the previous years, the relationship between KIRIS scores and percentage of students on free/reduced lunch was very high and in a negative direction. In addition, per pupil expenditures and percentage of Black students also appeared highly negatively related to KIRIS scores.

INSERT TABLE 4 ABOUT HERE

Table 5 shows the correlation matrix for CATS scores and the predictor variables entered in the regression model for the 1998/1999 school year. CATS scores were highly positively correlated with KIRIS scores for the prior school year ($r = .96$, $p < .01$) and pupil-teacher ($r = -.66$, $p < .01$). The second strongest relationship was the negative correlation between CATS scores and free/reduce lunch. Other variables that were highly negatively correlated with CATS scores were expenditures per pupil and percentage of Black students. Enrollment for all four school years was not found to be highly correlated with KIRIS/CATS scores.

INSERT TABLE 5 ABOUT HERE

Regression Analysis

As presented in Table 6 for the 1995/1996 school year, two independent variables contributed significantly to the prediction of KIRIS scores: free/reduced lunch percentage and the dummy coded variable, elementary school. The dummy variable explained 6% of the total variance, while free/reduced lunch percentage explained 49% of the total variance. All other variables were excluded from the regression analysis using the stepwise selection method. The KIRIS scores for the 1995/1996 school year are predicted by 54% using the adjusted R squared.

For the 1996/1997 school year, the dummy coded variables of elementary and middle school together explained 7% of the total variance, the KIRIS scores for the prior school year explained an additional 72% of the total variance, and free/reduce lunch percentage explained an additional 3% of the variance. Overall, the KIRIS scores for the 1996/1997 school year are predicted by 82% when using the adjusted R squared. For the 1997/1998 school year, the dummy coded variable, middle school explained 12% of the total variance. The prior KIRIS scores explained 76% and free/reduced lunch percentage explained 2% of additional variance. Overall, the KIRIS scores for the 1997/1998 school year are predicted by 90% when using the adjusted R squared. For the 1998/1999 school year, the dummy coded variable, elementary school explained 1% of the total variance. The prior KIRIS scores explained an additional 77% of the variance and free/reduced lunch explained 16% of additional variance. Overall, the CATS scores for the 1998/1999 school year are predicted by 94% when using the adjusted R squared.

INSERT TABLE 6 ABOUT HERE

Discussion

The first regression analysis for the 1995/1996 school year did not include prior academic achievement as a predictor variable. As result, free/reduced lunch appeared as the strongest negative predictor of student performance for that particular year. This finding supports previous research suggesting that poverty is a significant predictor of student achievement. School level membership also explained some of the variance. Other school-related variables, such as pupil-teacher ratio and expenditures, as well as socio-demographic variables, such as percentage of Black students, were not considered significant predictors of achievement scores. Overall, however, the findings of this study showed a clear pattern of prediction in achievement in the regression analyses for the 1996/1997, 1997/1998, and 1998/1999 school years. The results of the regression analyses across three years consistently showed that prior academic achievement was the strongest positive predictor for student performance in all the schools participating in these analyses, followed by school level membership and free/reduced lunch status.

The findings from this study suggest that the highest level of prediction on performance in an educational reform environment using system-wide assessment instruments is prior academic achievement. An average of 76% of the explained variance of the regression models was explained by prior academic achievement on the system-wide assessment instruments across three years. The pattern of accountability behavior indicated that the previous academic achievement variable is the best predictor of current school performance. Furthermore, the

explained variance of the cross-sectional regression models were increasing over the last three years when previous academic achievement was included (Adjusted R^2 = .82, .90, .94, respectively). While this finding demonstrates a progressive stabilization of school performance in a reform environment, it also emphasizes the need for comparing schools against themselves when making attributions about progress in a performance based accountability system. This is particularly important in settings where high levels of heterogeneity in socio-demographic characteristics are present.

From a purely theoretical perspective, Murphy's (1988) analysis on the relationship between equity and excellence is relevant in this study. It is this conceptualization that integrates the principles of equity and excellence an important issue for the educational reform efforts in an accountability era. The third-generation conceptualization of equity basically defines equity as student opportunity to learn; the first-generation only focused on equity as access (i.e. input) and the second-generation focused on equity as school activities and processes. In this regard, this conceptualization goes beyond the traditional input and process focus of prior educational reform efforts and establishes an interesting link with the school efforts toward quality expressed in terms of student achievement. Significant policy changes have to be framed by the conceptualization of equity as excellence in the accountability educational reform era. In this regard, this conceptualization of equity is highly inter-related to the idea of accountability as performance. Under the conceptualization of accountability as performance, output educational indicators are used to track and evaluate school achievement (Levin, 1974; Wohlstetter, 1991).

From a practical perspective, this study supports Murphy and Hallinger (1989) analysis that educational administrators and policy-makers have to refocus the educational reform efforts in general, and the educational equality issues in specific, toward what is going to be taught, to whom, and by whom. If prior academic achievement is the strongest predictor of student success, under a conceptualization of equity as access to learning, curricular and instructional treatment differences are at the core of the educational enterprise. Some of the elements identified as responsible for differences in student outcomes from prior research include the attention that students receive from school counselors, the expectations their teachers have on them, the amount of homework they do, and the amount of time they spend in class (Murphy & Hallinger, 1989). Instructional time is becoming more and more a central concern. In lower ability schools, more instructional time is lost due to interruptions and simply managing behavior.

Changing the pattern of academic performance of schools is not an easy task because it involves multiple actors. The development of social capital in the formation of human capital seems important in this discussion (Coleman, 1988). Social capital refers to changes in the relations among social actors with the goal of facilitating change. For instance, the level of social capital has shown an important impact in reducing the probability of dropping out of high school and on educational achievement in general (Coleman, 1988).

Schools can reverse the effects of socio-economic status and can produce high levels of achievement to all students. However, the ideal research-based education goes beyond the walls of schools to meet the social needs and overcome the barriers to learning. Only when universities, public school systems, and parents works together it is possible to obtain an acceptable level of academic achievement (Comer, 1980). Preventing learning barriers and not

only reacting to those barriers can increase levels of motivation, self-esteem, and student achievement. In this regard, education is becoming an activity that draws on the work of social scientist and community leaders to better understand equity as excellence in the accountability era. The example of Kentucky is relevant since the reform efforts include social services and outreach programs. The local community has to provide services to support and complement the school efforts to make excellence in learning a reality (Wilson & Roeder, 1997).

Public education is vital to the future of democracy and good education is possible for all our children. Inner-city school districts are challenged with an environment with multiple barriers for learning. Families should assist schools in educating their children and schools are supposed to assist families. Education is no longer an exclusive responsibility of either teacher or parents. Education is a shared responsibility of students, families, schools, and other actors of the community. Characteristics of children, families, and communities, as well as the working conditions in the schools have important impacts on the work of teachers, student learning, and school performance (Roeder, 1999). School systems need to articulate comprehensive planning and resource allocation efforts to prioritize programs, services, and activities conducive to higher learning if the objective is to offer each child an opportunity to learn, develop, and succeed.

This study was strictly exploratory and does not intend to have generalizability. The analysis was restricted to the public elementary, middle, and high schools of a very particular county in the state of Kentucky. In addition, by using a stepwise regression procedure, other school and non-school variables might yield different results regarding their impact on student achievement in system-wide assessment instruments. Further research has to address new school and non-school variables that affect student achievement. Moreover, it is recommended the use

of correlational designs involving hierarchical regression approaches as well as other quasi-experimental designs. Repeated-measures analysis would be a particularly useful tool for examining schools achievement patterns over time. Finally, comprehensive school reforms designs are an interesting avenue to explore since the academic achievement patterns in some schools might require substantial school changes.

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Table 1

Descriptive Statistics (N = 133)

Variable	95/96	96/97	97/98	98/99
KIRIS/CATS	30.52	36.05	35.76	53.22
School level				
Elementary	.66	.66	.66	.66
Middle	.18	.18	.18	.18
Enrollment	671.75	702.08	698.41	668.00
Expenditure per pupil for instruction	$2,988.03	$2,859.74	$2,954.79	$3,220.71
Student teacher ratio	17.66	17.85	18.12	18.05
Percentage of Black students	31.96	32.32	32.99	33.84
Students qualifying for free/reduced lunch	51.86	53.80	53.76	54.40

Table 2

Correlation Matrix for Student Achievement and Predictor Variables (1995/1996)

Variables	KIRIS	Elem	Middle	Enroll	Expend	P-T ratio	Black	Lunch
KIRIS	1.00							
Elementary	.20	1.00						
Middle	-.24*	.-66*	1.00					
Enrollment	-.01	-.74*	.26*	1.00				
Expenditures	-.49*	.24*	-.20	-.36*	1.00			
P-T ratio	.39*	-.14	.17	.35*	-.74*	1.00		
Black students	-.44*	.09	-.02	-.27*	.65*	-.57*	1.00	
F/R Lunch	-.60*	.34*	-.10	-.43*	.74*	-.62*	.66*	1.00

*$p < .01$

Table 3

Correlation Matrix for Student Achievement and Predictor Variables (1996/1997)

Variables	KIRIS	Prior KIRIS	Elem	Middle	Enroll	Expend	P-T ratio	Black	Lunch
KIRIS	1.00								
Prior KIRIS	.88*	1.00							
Elementary	.16*	.20	1.00						
Middle	-.27*	-.24*	-.66*	1.00					
Enrollment	.06	-.01	-.70*	.21*	1.00				
Expenditures	-.52*	-.48*	.27*	-.17	-.38*	1.00			
P-T ratio	.44*	.43*	-.02	.13	.24*	-.75*	1.00		
Black students	-.44*	-.41*	.14	-.06	-.29*	.66*	-.52*	1.00	
F/R Lunch	-.65*	-.59*	.37*	-.11	-.42*	.81*	-.57*	.68*	1.00

*$p < .01$

Table 4

Correlation Matrix for Student Achievement and Predictor Variables (1997/1998)

Variables	KIRIS	Prior KIRIS	Elem	Middle	Enroll	Expend	P-T ratio	Black	Lunch
KIRIS	1.00								
Prior KIRIS	.93*	1.00							
Elementary	.13	.16	1.00						
Middle	-.33*	-.27*	-.66*	1.00					
Enrollment	.19	.09	-.69*	.20*	1.00				
Expenditures	-.49*	-.44*	.23*	-.16	-.47*	1.00			
P-T ratio	.46*	.41*	-.20	.17	.44*	-.81*	1.00		
Black students	-.45*	-.43*	.19	-.08	-.32*	.64*	-.58*	1.00	
F/R Lunch	-.69*	-.65*	.38*	-.13	-.46	.73*	-.64*	.70*	1.00

*$p < .01$

Table 5

Correlation Matrix for Student Achievement and Predictor Variables (1998/1999)

Variables	CATS	Prior KIRIS	Elem	Middle	Enroll	Expend	P-T ratio	Black	Lunch
CATS	1.00								
Prior KIRIS	.96*	1.00							
Elementary	.23*	.13	1.00						
Middle	-.39*	-.33*	-.66*	1.00					
Enrollment	.12	.20*	-.71*	.23*	1.00				
Expenditures	-.31*	-.35*	.40*	-.31*	-.64*	1.00			
P-T ratio	.43*	.43*	-.12	.11	.39*	-.68*	1.00		
Black students	-.36*	-.36*	.21*	-.08	-.40*	.59*	-.52*	1.00	
F/R Lunch	-.66*	-.69*	.36*	-.13	-.48*	.60*	-.58*	.64*	1.00

*$p < .01$

Note: Only for the 1998-1999 school year, the CATS was used as the dependent variable.

Table 6

Hierarchical Multiple Regression of Student Achievement (KIRIS) on Predictor Variables

Variables	95/96	t	96/97	t	97/98	t	98/99	t
Step 1								
Elementary	.45	5.33**	.07	1.21	.08	1.42	.15	4.51**
Middle	-.02	-.20	-.09	-1.82	-.12	-2.91**	-.05	-1.47
Step 2								
Prior KIRIS	(a)		.68	12.59**	.73	16.15**	.82	21.27**
Lunch	-.76	-11.90**	-.28	-4.94**	-.22	-4.49**	-.15	-3.72**
Adjusted R^2	.54		.82		.90		.94	
F value	52.93**		154.84**		231.86**		487.74**	
N	133		133		133		133	

Note: Standardized coefficients are reported.

(a) Prior KIRIS scores were not used in the regression analysis for the 1995/1996 school year.

For 1995/1996, $R^2 = .06$ for Step 1 ($p < .05$); $\Delta R^2 = .49$ for FRL in Step 2 ($p < .01$).

For 1996/1997, $R^2 = .07$ for Step 1 ($p < .01$); $\Delta R^2 = .72$ for prior KIRIS ($p < .01$) and $\Delta R^2 = .03$ for FRL in Step 2 ($p < .01$).

For 1997/1998, $R^2 = .12$ for Step 1 ($p < .01$); $\Delta R^2 = .76$ for prior KIRIS ($p < .01$), $\Delta R^2 = .02$ for FRL in Step 2 ($p < .01$).

For 1998/1999, $R^2 = .16$ for Step 1 ($p < .01$); $\Delta R^2 = .77$ for prior KIRIS ($p < .01$) and $\Delta R^2 = .01$ for FRL in Step 2 ($p < .01$).

*$p < .05$; ** $p < .01$

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