Stability and Change in High School Grades

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Abstract

This study investigated the stability of students' grades in high school courses during the academic year. Records of over 8000 high school students from five large Midwest high schools were analyzed to determine the relationship between the first achievement grade students were assigned during an academic term and their final course grades. Results showed that grades were remarkably stable, with correlations between first achievement grades and final course grades generally ranging between +.4 and +.7. Correlations were typically larger for 9th and 10th grade courses than 11th and 12th grade courses. Differences among departments (subject areas) were statistically significant, but differences among schools were not. Differences related to student gender, grade level, ethnicity, and poverty level also were statistically significant but modest in magnitude. The implications of such stability and its probable influence on student motivation are discussed.

Stability and Change in High School Grades

Grades have long been recognized in the measurement community as prime examples of unreliable measurement (Brookhart, 1991, 1993; Smith, 2003; Stiggins, Frisbie, & Griswold, 1989). What one teacher considers in determining students' grades may differ drastically from what another teacher considers, even if they teach the same grade level or course (Cizek, Fitzgerald, & Rachor, 1996; McMillan, Workman, & Myran, 1999). In school districts where established grading policies present guidelines for teachers to follow in assigning grades, there still remains significant variation among teachers in the grading procedures and practices they employ (Brookhart, 1994; McMillan, 2001).

Yet despite their questionable psychometric properties, grades have a powerful influence on students, especially at the secondary level. Strong evidence shows that grades have particularly important effects on students' attitudes, behaviors, and motivation to learn (Brookhart, 2004, McMillan, 2003). Ideally grades provide students with formative information that they can use in efforts to improve their performance. But grades also play a major role in many high-stakes educational decisions that profoundly affect students' lives (Willingham, Pollack, & Lewis, 2002). Because of their significance in the college admissions process, many students work hard to attain high grades in the most rigorous courses (Smith, 2003). At the other end of the spectrum, poor academic performance and low grades are consistently cited as primary factors in students' decisions to dropout of school (Goldschmidt & Wang, 1999; Lee & Burkam, 2003).

Especially important are the first grades students receive at the beginning of a marking period or academic term. In the minds of many students, and perhaps their teachers as well,

these first grades set the stage for all that is to come. Grades put students into categories with regard to their performance, and getting out of a category can prove difficult (see Roderick & Camburn, 1999). For this reason the first achievement grade students receive may be highly predictive of subsequent measures of their achievement and even their final course grades.

Psychologist Ellis Page noted the importance of first grades nearly 50 years ago in his classic study of secondary teachers' grading practices. Page discovered that the grades students receive on the first assessment administered at the beginning of an academic term are highly predictive of the grades they receive on subsequent assessments (Page, 1958). He also showed, however, that if letter grades are accompanied by standard comments based on the grade (i.e., A: *Excellent! Keep it up;* B: *Good work. Keep at it*; C: *Perhaps try to do still better?* D: *Let's bring this up*; F: *Let's raise this grade!*), or by individualized comments recommending to students how they could improve their work, their grades on subsequent assessments significantly improved. Even though more recent studies confirm Page's results (e.g., Stewart & White 1976), few secondary teachers today seem familiar with such findings or make use of these relatively simple strategies.

It could be argued, on the other hand, that the relationship between first achievement grades and final course grades may be quite modest. One reason is that these two measures have clearly different purposes. The first achievement grade typically reflects students' performance on a relatively brief, in-class measure of learning, while the final course grade represents teachers' judgments of students' overall performance in an entire course of study (Willingham, Pollack, & Lewis, 2002). Another reason is that teachers derive first grades and final grades through very different procedures. First achievement grades are based on the number of questions answered correctly on a short quiz or test, or the number of criteria met on a brief

assessment. Investigations by Brookhart (1991), Cross and Frary (1999), and McMillan, and Nash (2000) show, however, that teachers consider a wide variety factors in determining course grades including effort, attitude, participation, attendance, class behavior, and gains in achievement. Other studies demonstrate that teachers use idiosyncratic approaches in combining information to generate course grades. Low quiz scores may be dropped; strong effort may be used to raise a grade; improvement from a previous marking period may be considered; or different weights may be attached to different course elements (Cizek, 1996; Frary, Cross, & Weber, 1993; Guskey, 2002; Guskey & Bailey, 2001; Haladyna, 1999; Truog & Friedman, 1996). These practices may alter greatly the relationship between first achievement grades and students' final course grades, drastically reducing the predictive value of first grades.

The purpose of this study was to investigate the accuracy of Page's contention today regarding the importance and predictive value of early grades. Specifically, it sought to determine if the first achievement grades secondary students are assigned at the beginning of an academic term or school year are predictive of subsequent grades and overall achievement as reflected in students' final course grades. In other words, do those first grades predict students' overall performance in a course and, hence, the final course grades they receive some 30+ weeks later?

Methods

The data for this investigation were drawn from the records of high school students enrolled in five large comprehensive high schools in a midwestern state. The high schools ranged in enrollment from approximately 1400 to 2000 students in grades 9 through 12, and were all located within the same school district. Because all schools collected similar information on

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students' grades and used the same computerized grading program, data collection was greatly simplified.

With assurances of anonymity for individual students, several pieces of information were gathered from students' record. First was a listing of the course titles in which each student was enrolled. Second was the first grade recorded by the teacher for the student in each course at the beginning of the 2002-2003 school year. This was a percentage grade typically entered into students' records during the second week of the academic term. Third was the one or two word description entered by the teacher indicating the nature of the evidence used to assign the grade (e.g., homework assignment, class participation, class notebook, composition, lab, project, quiz, test, etc.). Fourth was the final course grade assigned to students who completed each course. This also was a percentage grade based on an average of previous grades from the four marking periods and the final examination grade, as specified in the district's grading policy. In addition, students' gender, grade level (9, 10, 11, or 12), ethnicity, and free or reduced lunch status were also recorded. In total, this data set consisted of 59,107 records. Although each student received multiple grades, different teachers assigned the grades to students in different courses. For analysis purposes, therefore, the records were considered to be independent.

From this large data set, records were deleted that did not meet specific criteria related to the purpose of the study. First, records that did not include both a first grade and final grade were eliminated. In most cases this involved the records of new students who enrolled after the school year had begun and those of students who withdrew from classes or dropped out of school. Next, records of grades in courses other than the five major academic areas were deleted. Only grades from courses in language arts, mathematics, science, social studies, and foreign language were retained. Finally, records that included a first grade that was based on

something other than an indicator of achievement or performance were eliminated. This resulted in the deletion of the largest portion of the records – nearly 70%. For many teachers in all academic areas, the first grade entered was based on a course information form or course syllabus that students were required to have a parent sign. Students who returned the form signed received a 100% grade, while those who did not received a 0%. In other cases the first grade was based on class participation, a homework assignment, worksheet, practice exercise, class activity, or notebook check that, again, typically resulted in a grade of either 100% or 0%. Only those records for which the first grade was described as some form of quiz, test, assessment, or evaluation were retained. This elimination process resulted in a final data set that included 8217 records.

For analysis purposes the recorded percentage grades were converted to numerical values using a 4-point scale (i.e., 100% – 90% = 4, 89% – 80% = 3, 79% – 70% = 2, 69% – 60% = 1, 59% – 0% = 0). Although this reduced the variance in assigned grades, it was believed appropriate and necessary due to the large variance in percentage grades that are considered failing grades (59% – 0%). Some schools also used a differential weighting policy for honors and Advanced Placement course grades, but these weights were not considered in this study. Analyses consisted mainly of the calculation and comparison of grade means, standard deviations, correlation coefficients between the various measures, and regression analyses.

Results

Overall, grades remained remarkably stable over the course of the academic year. The means, standard deviations, first grade to final grade differences, and effect sizes included in Table 1 show that the average change in grades was virtually zero (-.08). In addition, the

correlation between first grades and final course grades for the entire sample was +.54, indicating that approximately 30% of the variance in final grades is attributable to the first grade assigned (see Table 2). The effect size (Cohen, 1988) of this correlation is +1.28. Given that first grades were based on an early and relatively brief measure of achievement (e.g., a quiz or brief assessment), and course grades were undoubtedly based on widely varying combinations of academic and non-academic factors (see Brookhart, 1993), this correlation and effect size are considerable.

[Insert Table 1]

Analyses of subgroup means showed a number of interesting trends. Although most of these subgroup differences were statistically significant, this was chiefly due to the size of the sample. The effect sizes of these differences were generally quite modest.

Results showed, for example, that female students tended to receive both higher first grades and higher final grades than male students. Furthermore, while female students' grades generally remained unchanged over the academic year, male students grades typically declined ($d = -.14$). This trend was consistent across all grade levels.

The data in Table 1 also show that both first grades and final grades tend to rise with grade level. In other words, 9th graders generally received lower grades than 10th graders; 10th graders received lower grades than 11th graders; and so on. Several factors might account for these differences. Students with low grades are more likely to dropout of school and, hence, would not be represented in 11th and 12th grade classes. The effects of tracking also are more evident in 11th and 12th grade classes as students enroll in course sections based on their level of

performance in previous classes. Students who do poorly and receive a low grade in lower level classes are less likely to enroll in advanced classes. Furthermore, students' grades may improve as they mature and become better acclimated to the academic demands of high school classes. Considering the pattern of grade change, freshmen grades decline the most during the academic year while senior grades remain the most consistent.

Grade differences among academic departments also were statistically significant but small. First grades were generally highest in science and foreign language classes, while final grades were highest in science and social studies classes. Both first grades and final grades were lowest in mathematics classes. Inspection of the grade descriptions to ascertain if these subject area differences might be due to the type of measure used by the teacher to determine the first grade yielded no clear explanation. In addition, while course titles were included in the data set, these did not provide sufficient information to determine if a particular course was a basic or advanced level courses and, hence, the possibility of an interaction between department and course level could not be explored. In terms of change, grades generally rose in social studies classes ($d = +.16$) but declined most in foreign language classes ($d = -.25$).

Comparisons of grades among different ethnic groups of students showed that both first grades and final grades were generally higher among Asian students and lower among African-American and Hispanic students, with Caucasian students falling in between. Inspection of first grade to final grade change yielded further unexpected differences. Over the course of the academic year, Asian students' grades generally improved ($d = +.34$), Caucasian and Hispanic students grades remained much the same ($d = -.05$ and $-.07$, respectively), but African-American students' grades generally declined ($d = -.21$). In other words, the "gaps" in the achievement among these different groups of students appears to be increasing. Whether these trends might

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be due to differences in student motivation, parent involvement, cultural emphases, teachers'

expectations, or other factors remains to be explored.

Differences based on poverty also were statistically significant, with both first grades and

final grades generally being lower as poverty increased. Change in grades also varied depending

upon poverty level. Grades of students who received no benefits remained consistent ($d = -.03$),

while students' grades with reduced lunch benefits and free lunch benefits generally declined

($d = -.11$ and $-.23$, respectively). Thus as was true of ethnicity, the "gaps" in the achievement

among these different groups of students based on poverty appears to be increasing. Some

suggest that high school students from economically disadvantaged backgrounds are more likely

to hold jobs outside of school that impose restrictions on the time they have available for school

work and, thus, negatively affect their academic performance (Singh, 1998). Others argue that

different levels of home support and involvement may account for these achievement differences

(Eccles & Harold, 1993; Simmons & Blyth, 1987). Again, however, whether such differences

are due primarily to student, teacher, home, or school factors, or some combination thereof, is

unknown.

The correlation coefficients and effect sizes shown in Table 2 also reveal several

interesting patterns. Similar to the analysis of means, however, while nearly all of these

correlation coefficients are statistically significant due to the large sample size, most effect sizes

are relatively modest.

[Insert Table 2]

As described above, the correlation between first grades and final grades (r = +.54, $d = 1.28$) shows a high level of consistency in grades over the academic year. Since teachers typically include many non-academic factors such as effort, punctuality of assignments, and behavior in determining students' final course grades (McMillan, 2001), a correlation of this magnitude is quite remarkable. Non-academic factors generally would not be included in determining students' first achievement grades because of the criteria used in selecting the sample.

The correlations demonstrate that gender differences were stronger in final course grades than in first grades (r = +.07, $d = .14$; and r = +.14, $d = .28$, respectively). This may be due to an overall decline in male students' performance over the academic year. Other research evidence indicates, however, that teachers tend to be more critical in their judgments of boys' behavior than they are of girls' behavior (Bennett, Gottesman, Rock, & Cerullo, 1993). These critical judgments of behavior are more likely to be reflected in course grades than first grades and, hence, may explain this difference.

Analyses showed that grade level differences also were more strongly associated with final course grades than with first grades (r = +.06, $d = .12$; and r = +.11, $d = .22$, respectively). Correlations calculated for each separate grade level revealed that consistency is greatest for 9th grade students (r = +.65) and lowest for 12th grade students (r = +.49). This may be due to reduction in the variance in grades as grade level increases, or perhaps to the student, teacher, or school factors mentioned above.

Like gender and grade level, poverty was more strongly related to final course grades than to first achievement grades (r = –.12, $d = .24$; and r = –.20, $d = .41$, respectively). In general, higher levels of poverty are associated with lower grades. The magnitude of these

correlations and effect sizes, however, are twice as large as those associated with gender or grade level, indicating poverty's more prominent influence. Additionally, the negative correlation between poverty and grade level (r = –.11, *d* = .22) probably indicates that students of poverty are more likely to dropout and not be represented in higher grade levels. It also may be, however, that older students are simply more reluctant to report their poverty status.

Interestingly, the correlation between the first grade and grade change or difference is –.73, indicating that approximately 54% of the variance in grade change is "explained" given the first grade. The negative sign with this correlation indicates that in general, the lower the first grade, the greater the positive change or improvement in the grade. Further analyses showed, however, that this trend is somewhat more complicated.

Table 3 includes tallies of first grades and final grades for the sample. These data demonstrate that there were only about half the number of students who received failing first grades as received failing course grades. At the same time, however, 30% fewer students received an A for their final course grade as received an A for the first grade. Thus while it appears teachers may be reluctant to assign failing course grades to students, getting a high grade on an initial quiz or assessment is no guarantee of a high course grade. It also may be that in determining final course grades, high school teachers remain influenced by notions of the normal curve distribution in which few scores occur at the extremes and most clustered near the center.

[Insert Table 3]

These trends are shown more clearly in Table 4, which illustrates final grade distributions based on students' first achievement grade, expressed in both numbers and percentages. As was

evident in earlier analyses, about half of the students (51.6%) who receive a first achievement

grade of A at the beginning of the school year also received an A as their final course grade.

Only 7% of these students received D or F as their final course grade. Among those students

who receive a failing first achievement grade, about a third (32.0%) received a failing course

grade. But amazingly, 25% of these students received a final course grade of A or B. Hence,

while first grades are predictive, the prediction is certainly not absolute.

[Insert Table 4]

Finally, two regression analyses were conducted. In the first, final course grade was used

as the dependent variable and regressed on first achievement grade, gender, grade level,

department, ethnicity, and poverty level. The results, shown in Table 5, illustrate that the

contribution of each of these variables, with the exception of department, is statistically

significant. Nevertheless, most of the explained variance (approximately 30%) is attributable to

the first achievement grade. Gender, grade level, ethnicity, and poverty level add only about 3%

more to the R-squared value. Thus about a third of the variance in final course grades is

explained by the variables included in this study.

In the second regression analysis, the difference between the final course grade and first

achievement grade (grade difference) was regressed on the same set of independent variables.

As the data in Table 6 show, these results are quite similar as those from the analysis of final

course grades. All of the variables but department proved to be statistically significant,

explaining approximately 40% of the variance in the grade difference. But, again, most of this

explained variation (approximately 37%) is attributable to the first grade. As noted earlier,

generally the lower the first achievement grade, the more likely the grade will change over the course of the academic year, especially if the first achievement grade is a failing grade. The other variables in the model account for only about 3% more in the R-squared value. The similarities in the coefficients and t-values in these regression analyses are due to the nature of first grade, final grade, and grade difference measures, all of which are made up of similar whole number values (0-4).

[Insert Tables 5 & 6]

Together these analyses demonstrate the striking importance of the first achievement grade assigned to high school students. Other factors not considered in this investigation obviously account for a significant portion of the variation in both final course grades and grade change. These might include student factors such as motivation or self efficacy (Hampton & Mason, 2003; Linnenbrink & Pintrich, 2002), teacher factors related to expectations or instructional quality (Berliner & Casanova, 1996; Goldenberg, 1992), school factors regarding grading policies that include consideration of non-academic factors such as behavior and attendance (Roderick & Camburn, 1999), or some combination thereof. Still, the first achievement grade remains a major factor in explaining variation in high school students' final course grades.

Summary and Implications

Finding that students' grades are generally consistent across the academic term or school year, and that grades from the beginning of the term can be used to predict fairly accurately final

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summative grades at the end of the term, may not seem unusual or particularly surprising. But these results lead to three important implications, all requiring further investigation. The first relates to our need to understand why this high level of stability and predictability in students' grades exists. Is students' level of performance in high school courses dictated by factors that remain stable across the academic term? Do students and their teachers believe these factors are immutable and, hence, feel helpless in efforts to alter results? What factors might explain the changes that do occur, and can these factors be influenced by teachers or school officials? And if they can be, what are the implications for classroom practice, for school policy, and for educational improvement efforts overall?

The second implication relates more to the philosophical issues involved: specifically, should it be this way? Should we be able to predict high school students' final course grades based on evidence gathered during the second week of the academic term or school year? If so, are we making adequate and effective use of the 34 weeks of instruction that fall in between? Does the first achievement grade affect teachers' expectations of what their students can do? Do students simply accept this first grade as indicative of future success or non-success in a course and remain resigned to it? Does this first grade influence their motivation to learn in the course? If so, what might teachers do to guarantee that more students attain a higher level of success and, hence, a higher grade in that first instructional unit? And if teachers did so, would that lead to higher levels of motivation and improved student performance and achievement at the end of the academic term?

The third implication has to do with the modest but statistically significant influence of gender, grade level, ethnicity, and poverty level. While this investigation showed that each of these factors appears to influence first achievement grades, final course grades, and grade

change, the precise nature of this influence remains unknown. Why, for example, do female students typically earn higher grades than male students, and why does the difference between female and male students' grades generally increase over the course of the school year? What factors in the classroom, school, or home explain the differences among students of different ethnic groups or different levels of poverty? Although the data presented here indicate that the influence of these factors may be relatively modest, it seems too important to neglect.

Teachers' grading practices, like their instructional practices, evolve slowly as their philosophies about grading and instruction change, as their knowledge of the consequences of different practices broadens, and as their experience expands (Frisbie & Waltman, 1992). Schools, too, typically are slow to change policies and practices as value-laden as are those associated with grading. Hopefully the findings of this study will help in those efforts, both of schools and of individual teachers. Hopefully, too, they will prompt other researchers to investigate these related critical questions so that we might understand better the nature of the identified relationships.

References

Bennett, R. E., Gottesman, R. L., Rock, D. A., & Cerullo, F. (1993). Influence of behavior perceptions and gender on teachers' judgments of students' academic skill. *Journal of Educational Psychology*, *85*(2), 247-356.

Berliner, D. C., & Casanova, U. (1996). *Putting research to work in your school*. Arlington Heights, IL: IRI/Skylight Training and Publishing.

Brookhart, S. M. (1991). Grading practices and validity. *Educational Measurement: Issues and Practice*, *10*(1), 35-36.

Brookhart, S. M. (1993). Teachers' grading practices: Meaning and values. *Journal of Educational Measurement*, *30*(2), 123-142.

Brookhart, S. M. (1994). Teachers' grading: Practice and theory. *Applied Measurement in Education*, *7*(4), 279-301.

Brookhart, S. M. (2004). *Grading*. Upper Saddle River, NJ: Pearson, Merrill, Prentice-Hall.

Cizek, G. J. (1996). Grades: The final frontier in assessment reform. *NASSP Bulletin*, *80*(584), 103-110.

Cizek, G. J., Fitzgerald, S. M., & Rachor, R. E. (1996). Teachers' assessment practices: Preparation, isolation, and the kitchen sink. *Educational Assessment*, *3*(2), 159-179.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (3rd ed.). New York: Academic Press.

Eccles, J. S., & Harold, R. D. (1993). Parent-school involvement in the early adolescent years. *Teachers College Record*, *94*(3), 568-587.

Frary, R. B., Cross, L. H., & Weber, L. J. (1993). Testing and grading practices and opinions of secondary teachers of academic subjects: Implications for instruction in measurement. *Educational Measurement: Issues and Practice*, *12*(3), 23-30.

Frisbie, D. A., & Waltman, K. K. (1992). Developing a personal grading plan. *Educational Measurement: Issues and Practices*, *11*(3), 35-42.

Goldenberg, C. (1992). The limits of expectations: A case for case knowledge about teacher expectation effects. *American Educational Research Journal*, *29*(3), 517-544.

Goldschmidt, P., & Wang, J. (1999). When can schools affect dropout behavior? A longitudinal multilevel analysis. *American Educational Research Journal*, *36*(4), 715-738.

Guskey, T. R. (2002). Computerized gradebooks and the myth of objectivity. *Phi Delta Kappan*, *83*(10), 775-780.

Guskey, T. R., & Bailey, J. M. (2001). *Developing Grading and Reporting Systems for Student Learning*. Thousand Oaks, CA: Corwin Press.

Haladyna, T. M. (1999). *A complete guide to student grading*. Boston: Allyn &Bacon.

Hampton, N. Z., & Mason, E. (2003). Learning disabilities, gender, sources of efficacy, self-efficacy beliefs, and academic achievement in high school students. *Journal of School Psychology*, *41*(2), 101-112.

Lee, V. E., & Burkam, D. T. (2003). Dropping out of high school: The role of school organization and structure. *American Educational Research Journal*, *40*(2), 353-393.

Linnenbrink, E. A., & Pintrich, P. R. (2002). Motivation as an enabler for academic success. *School Psychology Review*, *31*(3), 313-327.

McMillan, J. H. (2001). Secondary teachers' classroom assessment and grading practices. *Educational Measurement: Issues and Practice*, *20*(1), 20-32.

McMillan, J. H. (2003). Understanding and improving teachers' classroom assessment decision making: Implications for theory and practice. *Educational Measurement: Issues and Practice*, 22(4), 34-43.

McMillan, J. H., & Nash, S. (2000). *Teacher classroom assessment and grading practice decision making*. Paper presented at the annual meeting of the National Council on Measurement in Education, New Orleans.

McMillan, J. H., Workman, D., & Myran, S. (1999). *Elementary teachers' classroom assessment and grading practices*. Paper presented at the annual meeting of the American Educational Research Association, Montreal.

Page, E. B. (1958). Teacher comments and student performance: A seventy-four classroom

   experiment in school motivation. *Journal of Educational Psychology*, *49*(2), 173-181.

Roderick, M., & Camburn, E. (1999). Risk and recovery from course failure in the early years of

   high school. *American Educational Research Journal*, *36*(2), 303-343.

Simmons, R. G., & Blyth, D. (1987). *Moving into adolescence: The impact of pubertal change

   and school context*. Hawthorne, NY: DeGruyter.

Singh, K. (1998). Part-time employment in high school and its effect on academic achievement.

   Journal of Educational Research, 91(3), 131-139.

Smith, J. K. (2003). Reconsidering reliability in classroom assessment and grading. *Educational

   Measurement: Issues and Practice*, 22(4), 26-33.

Stewart, L. G., & White, M. A. (1976). Teacher comments, letter grades and student

   performance. *Journal of Educational Psychology*, *68*(4), 488-500.

Stiggins, R. J., Frisbie, D. A., & Griswold, P. A. (1989). Inside high school grading practices:

   Building a research agenda. *Educational Measurement: Issues and Practice*, *8*(2), 5-14.

Truog, A. L., & Friedman, S. J. (1996). *Evaluating high school teachers' written grading

   policies from a measurement perspective*. Paper presented at the annual meeting of the

   National Council on Measurement in Education, New York.

Willingham, W. W., Pollack, J. M., & Lewis, C. (2002). Grades and test scores: Accounting for

   observed differences. *Journal of Educational Measurement*, *39*(1), 1-37.

STUDENT GROUPS	FIRST GRADE		FINAL GRADE		GRADE DIFFERENCE	
	$\bar{X}$	sd	$\bar{X}$	sd	Difference	Effect Size
Total (n = 8217)	2.81	1.41	2.72	1.22	-0.08	*-0.06*
Gender						
Male (n = 4031)	2.73	1.44	2.55	1.26	-0.18	*-0.14*
Female (n = 4187)	2.88	1.40	2.89	1.16	0.01	*0.01*
Level						
9th (n = 1980)	2.72	1.46	2.50	1.32	-0.22	*-0.17*
10th (n = 2028)	2.79	1.42	2.72	1.18	-0.07	*-0.06*
11th (n = 2512)	2.82	1.39	2.78	1.19	-0.04	*-0.03*
12th (n = 1697)	2.89	1.36	2.89	1.16	0.00	*0.00*
Department						
English (n = 2386)	2.82	1.42	2.81	1.16	-0.01	*-0.01*
Math (n = 1484)	2.62	1.38	2.40	1.28	-0.22	*-0.17*
Science (n = 1693)	2.98	1.30	2.83	1.18	-0.14	*-0.12*
Social Studies (n = 1544)	2.69	1.48	2.88	1.18	0.18	*0.16*
Foreign Lang. (n = 1110)	2.91	1.30	2.58	1.30	-0.33	*-0.25*
Ethnicity						
Caucasian (n = 6195)	2.88	1.37	2.81	1.18	-0.06	*-0.05*
African Am. (n = 1415)	2.50	1.53	2.23	1.29	-0.27	*-0.21*
Hispanic (n = 167)	2.36	1.62	2.27	1.36	-0.09	*-0.07*
Asian (n = 267)	3.06	1.28	3.37	0.91	0.31	*0.34*
Native Am. (n = 11)	3.09	1.04	3.09	0.83	0.00	*0.00*
Other (n = 162)	2.88	1.44	3.01	1.14	0.12	*0.11*
Poverty						
Full Pay (n = 6585)	2.88	1.36	2.84	1.17	-0.04	*-0.03*
Reduced (n = 347)	2.69	1.46	2.56	1.18	-0.13	*-0.11*
Free (n = 1285)	2.48	1.55	2.18	1.33	-0.30	*-0.23*

Table 1. Means, Standard Deviations, and Effect Sizes for Various Student Subgroups

VARIABLE	First Grade	Final Grade	Grade Difference	Gender	Level	Poverty
First Grade	1.00					
Final Grade	.54 (0.00) *1.28*	1.00				
Difference	-.73 (0.00) *2.14*	.17 (0.00) *.39*	1.00			
Gender	.07 (0.00) *.14*	.14 (0.00). *.28*	.07 (0.00) *.14*	1.00		
Level	.06 (0.00) *.12*	.11 (0.00) *.22*	.06 (0.00) *.12*	.01 (0.33) *.02*	1.00	
Poverty	-.12 (0.00) *.24*	-.20 (0.00) *.41*	-.07 (0.00) *.14*	.06 (0.00) *.12*	-.11 (0.00) *.22*	1.00

Table 2. Correlation Coefficients, (Statistical Significance Probability Levels), and Effect Sizes (Cohen's *d*) Among Selected Variables

GRADE	First Grade [n]	Percentage	Final Grade [n]	Percentage
A	3751	(45.6)	2654	(32.3)
B	1837	(22.4)	2647	(32.2)
C	960	(11.7)	1537	(18.7)
D	627	(7.6)	740	(9.0)
F	1042	(12.7)	639	(7.8)
TOTALS	8217	(100.0)	8217	(100.0)

Table 3. Tallies of Grade Distributions in Numbers and Percentages

FIRST GRADE [8217]	FINAL GRADE				
	A	**B**	**C**	**D**	**F**
A [3751]	**51.6** [1935]	29.8 [1118]	11.6 [434]	4.8 [178]	2.3 [86]
B [1837]	24.9 [458]	**43.1** [791]	19.5 [359]	7.7 [137]	5.0 [92]
C [960]	13.2 [127]	37.1 [356]	**31.9** [306]	12.2 [117]	5.6 [54]
D [627]	9.9 [62]	30.6 [192]	30.3 [190]	**17.4** [109]	11.8 [74]
F [1042]	6.9 [72]	18.2 [190]	23.8 [248]	19.1 [199]	**32.0** [333]

Table 4. Final Grade Distribution Percentages [and Numbers] Based on First Grades

Predictor	Coefficient	df	T	Probability
Constant	0.54.	1	4.20	0.00
First Grade	0.40	1	48.91	0.00
Gender	0.30	1	12.90	0.00
Level	0.08	1	7.66	0.00
Department	0.01	1	0.39	0.70
Ethnicity	0.05	1	4.50	0.00
Poverty	-0.26	1	-16.06	0.00

Analysis of Variance

Source	df	SS	MS	F	Probability	R^2
Regression	6	3426.54	571.09	530.22	0.00	33.2
Error	8210	8843.82	1.08			
Total	8216	12269.36				

Table 5. Regression Results Using 'Final Grade' as the Dependent Variable

Predictor	Coefficient	df	T	Probability
Constant	0.54.	1	4.20	0.00
First Grade	-0.60	1	-73.11	0.00
Gender	0.30	1	13.04	0.00
Level	0.08	1	7.88	0.00
Department	0.01	1	0.25	0.81
Ethnicity	0.05	1	3.93	0.00
Poverty	-0.26	1	-15.99	0.00

Analysis of Variance

Source	df	SS	MS	F	Probability	R^2
Regression	6	5964.07	994.01	922.88	0.00	40.3
Error	8210	8842.82	1.08			
Total	8216	14806.89				

Table 6. Regression Results Using 'Grade Difference' as the Dependent Variable