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ABSTRACT

This study examines the effects of increased mathematics and social studies requirements for high school graduation on at-risk students. Information was analyzed from the following sources for five high schools in California and two high schools in Georgia: (1) teacher surveys; (2) student surveys; (3) interviews with administrators; (4) student transcripts; and (5) examination of course materials. The following findings are reported: (1) some schools responded to additional mathematics requirements by stretching a repetitive basic mathematics program over additional years; (2) some schools responded to additional mathematics and history requirements by eliminating basic sections of classes and integrating those students into the higher level classes; (3) some teachers reported great difficulty in teaching the integrated classes because of the wide spread of student abilities; (4) teacher qualifications tended to be inferior in the basic courses, increasing the likelihood that students who were required to take additional basic mathematics courses would be exposed to inferior teaching; and (5) the new state requirements had little effect on the overall pattern of student course-taking, with the exception of science courses in California. A list of 10 references, 11 graphs, and 93 tables presenting statistical data are appended. (FMW)

Center for Research on Evaluation,
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Effects of Testing Reforms and
Standards and School Dropouts Project

Where Excellence and Preparedness Meet: Increased Course Requirements and At-Risk Students

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Introduction

This paper explores the relationships between increased standards for high school graduation and the educational fortunes of at-risk students--students whose achievement and or background characteristics signal increased chances of school failure and dropping out. This work is part of a series of studies and analyses performed in the Standards and School Dropouts Project for CRESST at the UCLA Graduate School of Education.

The presentation first describes the data enlisted for the analyses--in-depth probes of seven high schools in California and Georgia sponsored originally by the School Reform Assessment Project at UCLA's Center for the Study of Evaluation. This study focused on coursework reforms in mathematics and social studies. Of particular relevance to questions of standards and at-risk students are the narratives offered by educators in these schools concerning such questions, presented in the next section. A third section examines questions of teacher qualifications and particularly the qualifications questions offered to students in different levels of courses. A final section describes examinations of longitudinal school transcript data obtained for samples of students in these schools--samples drawn both pre- and post-reforms.

The portraits that emerge are suggestive of certain effects of standards raising reforms on at-risk students or potential school dropouts. One is that adding years to course-taking requirements in mathematics can stretch-out a repetitive basic mathematics program over additional years. An alternative response to added requirements in both math and history in some districts has been to try to eliminate basic sections of classes and to incorporate would-have-been-basic students in higher class level offerings. Some teachers report great difficulty reaching the spread of students in these new classes. Another observation of this presentation is that teacher qualifications tend to be inferior in lower level courses--noncredentialled and non-major teachers are more likely to be found in basic classes. Thus where students are relegated to added years of basic math, their relative exposure to less qualified teachers as a part of their high school experience may increase. Finally, we are beginning to understand comparative paths through high school on the basis of transcript analyses. Our transcript probes indicate first that overall course taking in both states was not much affected by the new state requirements: only science course taking and only in California were such effects found.

Data Collection[1]

Data for this exploration were generated by CRESST's School Reform Assessment (SRA) project, a two-year study

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[1] This section is adapted from McDonnell, Burstein, Ormstead, Catterall and Moody, 1990--a report on the study generating data employed for this report.

intended primarily to design a variety of student coursework indicators. The project had two principal goals: to expand upon and refine the technical quality of existing coursework indicators, and to accommodate the information needs of policymakers with indicators that could measure, at least in a general way, the effects of major coursework policies. A secondary product of the study was a set of longitudinal views of coursework changes for students of different background and performance histories that we enlist for this paper.

In designing a set of coursework indicators that state governments could adapt to their own data collection systems, the SRA Project drew upon existing measures from sources such as the SIMS-IEA study, NELS 88, and NAEP. We also engaged in benchmarking procedures, by using interviews with school and district-level personnel, course materials, and student transcripts to verify data obtained from the surveys, and to generate a set of longitudinal descriptions not obtainable in cross-section survey panels. Because the in-depth interviews and course materials provide information on coursework that is much closer to the actual content of instruction than enrollment statistics or even most survey items, they constitute evidence about the validity of more routinely-collected data (Koretz, forthcoming). The transcripts are an important source of historical data on how coursework patterns for different types of students have changed since the pre-reform period.

Because of resource and time constraints, SRA focused on mathematics and history curricula: three course categories within mathematics--mathematics below algebra I (e.g., general math, consumer math, pre-algebra), algebra I, and algebra II--and two social studies courses--U.S. history and U.S. government. These subjects were selected because they were among those most affected by state changes in high school graduation requirements; the specific course categories were chosen because analyses of local responses to state curriculum policies suggested that the range of local effects would largely be captured with such a focus (Clune, White, and Patterson, 1989; McDonnell, 1988).

Study Sample and its Limitations

This study was conducted in two different states--California and Georgia--as a means of controlling for the policy context in which indicators would be developed and used. These two states were selected because data on their recent policies and local responses to those policies were available from earlier studies.

California's indicator system is among the most well-developed state systems in the country, but its information on student course-taking is limited to school-level enrollment statistics collected by course title. Because California has engaged in a major effort to upgrade its state-developed curriculum frameworks, it is particularly important that new indicators measure the extent to which that content is reflected in school- and classroom-level curricula. California's very diverse student population also offered an opportunity for this study to test differential effects of standards policies.

Georgia is currently developing a more comprehensive state indicator system, including a new course categorization system. The Georgia system with three different diplomas--general, college Preparatory, and vocational--each with different coursework requirements affords another basis for measuring curricular differentiation.

Both California and Georgia also increased course requirements for high school graduation in the 1980s. California requires 22 Carnegie units, including 13 in particular courses: three years of English, two of mathematics, two of science, three in social studies to include U.S. and world history and culture, economics, geography, and U.S. government, one in fine arts or foreign language, and two in physical education. These requirements became effective with the graduating class of 1987.

Georgia requires 21 units of which 13 are specified by the state: four years of English, two of mathematics, two of science, three in social studies, one in physical education, and one in computer technology, fine arts, or vocational education. The course requirements became effective with the class of 1988. Seven high schools were used as data sources for this study. Five of the schools included grades 9-12; two of the Georgia schools contained only grades 10-12. In the case of the latter two schools, ninth-grade mathematics and social studies teachers were surveyed at the junior highs that served as feeder schools. These schools do not constitute a representative sample of high schools in either California or Georgia. Not only did resource constraints limit us to such a small number, but the extent of data collection required in each school meant that for every school which agreed to participate, others were contacted and refused. Nevertheless, we did use schools that vary in their location, size, ethnic composition, and extent of curricular differentiation.

Of the seven schools, five had a majority Anglo enrollment (55-65 percent); one is majority Hispanic, and the other has an enrollment almost equally divided among Anglos, Blacks, and Hispanics. The proportion of students attending four-year colleges ranged from 7 to 28 percent across the seven schools. Three schools had a minimal amount of formal differentiation among levels of the curriculum with only regular and honors classes offered; three were highly differentiated, offering up to four different levels; and one was moderately differentiated with remedial, regular, and honors in some subjects, but only regular and honors in others. This sample, while small and unrepresentative, enabled us to develop a unique data base for designing indicators and examining the information they conveyed. The SRA data assessed coursework in greater depth than can be done with the type of statistics now used in state indicator systems; they provide a more systematic mapping of coursework patterns than is possible from ethnographic studies; and they allow for the evaluation of a variety of statistical measures that are often used in large national studies, but rarely judged on their validity. (Appendix A describes the SRA sample in greater detail.)

Data Collection Procedures

The five types of data collected in each school are summarized in Fig. 3.1. Collection strategies included teacher surveys, student surveys, interviews with school and district personnel, examination of texts and course materials, and examination of samples of student transcripts.

Teacher Surveys

Teacher surveys were designed to take teachers about 30 minutes to complete. In every school, all teachers who taught any mathematics or social studies course in the 1987-88 academic year were surveyed. They were first asked questions about their educational background (e.g., number of mathematics or social studies courses taken, amount of subject-matter inservice over the past three years) and experience. They were then asked to give a period-by-period description of the classes they taught (including those outside mathematics and social studies as a means for understanding teacher assignment patterns), and to indicate whether and in what ways any of these courses may have been affected by recent changes in state graduation requirements or other state policies.

Those teachers who taught any of the five courses under study were then asked to complete a separate survey for each different section of a course that they taught. Teachers were asked to complete a separate questionnaire for each section of a course that they taught in a significantly different way. If they taught multiple sections of the same course to students at the same ability level using the same instructional strategies, they were asked to complete only one form. Therefore, the number of sections reported in Appendix A underestimates the total number offered across the seven schools. Teachers were asked about textbooks and other materials; topic coverage[2] ; the number of periods devoted to each topic; and whether it was taught as new content, reviewed and extended, reviewed only, assumed as prerequisite knowledge, or not taught and not assumed as student knowledge (essentially the IEA strategy for ascertaining depth of coverage). Respondents were also asked about their instructional strategies (an adaptation of the NAEP, IEA, and

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[2] In mathematics, the topics included on the survey 5 for algebra and 23 for the other mathematics courses are similar to those used in the SIMS/I study and a part of the CRESST Instructional Assessment Project. For U.S. history and government, 15 topics were selected for each course; these included historical events, political institutions, and concepts (e.g., the potential conflict between liberty and equality). In choosing these, we relied on curriculum frameworks such as the new ones in California and on consultations with historians and political scientists.

NELS 88 items[3]), their goals for the course, the types of assignments and exams they gave, their distribution of grades, student preparation, and level of student performance, given that preparation.

Student Surveys

These were conceived to be the type of questionnaire that states could administer in conjunction with their standardized achievement tests. Consequently, the student surveys were even shorter than those administered to teachers--approximately 10 minutes for tenth graders and 15-20 minutes for twelfth graders. There were administered to all tenth and twelfth graders in attendance on a particular day. These surveys were designed in such a way that they could be linked to individual teachers. In addition to items about the student's background and future educational plans, the remaining questions repeated the instructional strategy items asked of teachers. In this way, the level of agreement between these two data sources could be compared.

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[3] Mathematics teachers were asked about 14 different instructional strategies (e.g., the review of homework problems in class, small group work, the use of calculators and computers) and the frequency with which they were used. History and government teachers were asked about 12 different instructional strategies (e.g., lecturing to the class, student presentations, reading primarily materials) and the frequency of their use.

School-level Interviews and Case Studies

In each school in the SRA sample, the principal, head counselor, and the chairs of the mathematics and social studies departments were interviewed. The district-level staff responsible for supervising the high school curriculum was also interviewed. These interviews typically lasted about one hour and were often followed by additional telephone inquiries. Their purpose was to understand: 1) the type of students attending the school and whether enrollment patterns had changed recently; 2) the levels of courses offered and whether this curricular differentiation has the same meaning across academic departments; 3) what criteria the school uses in assigning students to different courses and sections; 4) how decisions about teacher assignment are made; and 5) how recent state policies may have affected the school's course offerings and instructional practices. In the interviews with department chairs, we also asked them to describe in some detail the major differences among the five courses under examination in terms of: level of difficulty, the types of students enrolled, topics covered, instructional materials and strategies, course requirements, and grading practices. In the interview with the district-level staff, we were particularly interested in district policies that were intended to influence the school-level curriculum, and how the sample school compared with others in the district in its course offerings and student assignment policies.

The SRA interviews indicate that a reasonable level of agreement exists across the principal, head counselor, department chairs, and other teachers on how the curriculum is organized in a given school. Differences were most evident in reports about the effects of various policy changes. The teacher surveys and the interview data were in general agreement about how recent state and district policies had influenced the school's curriculum, but administrators tended to see the impact as greater than the teachers did and were more positive in their assessment of the effects.

The SRA interview data suggested that respondents above the level of department chair cannot report accurately on how curricula vary across student ability levels within a particular department or course. Higher-level respondents tend to underestimate the extent of variation, and even department chairs reported less variation across sections than we found in an analysis of the teacher surveys.

A second purpose relates to the formal policies that influence curricular stratification within schools. If policymakers are concerned about differential learning opportunities, information is needed on student assignment policies and how they differ across schools. For example, what role do test scores, grades, teacher recommendations, and student and parental preferences play in assignment decisions? How difficult is it for students to change their course levels, and under what conditions do such shifts occur? We found that this information can be reliably obtained from eithe the principal or head counselor.

Finally, school-level case studies can place indicator data in a richer and more valid context, and thus help in interpreting trends in aggregate data. For example, SRA case studies identified movements towards more heterogeneous grouping in schools, and how teachers are adjusting to these trends in their content coverage and classroom activities.

Transcript Data

In each school in the SRA sample, the transcripts of students who were ninth graders in 1982 (1983 for Georgia), 1986, and 1988 were sampled. These three class years were selected because those who graduated in 1986 in California and 1987 in Georgia represent the last class to graduate before state-mandated increases in course requirements took effect; the class of 1989 was one of the first classes under the new requirements and allowed us to examine course-taking by a class that took U.S. history the prior year; the class of 1991 provided an opportunity to examine the previous year's course-taking in lower-level math and algebra I.

Each transcript was coded to include student background (gender, ethnicity, birth date, grade-point average, standardized test scores, number of absences). An attempt was also made to collect data on students' socioeconomic status, but this effort did not produce consistently reliable information, so it was not used in any of our analyses. We did obtain data on which students qualified for free or reduced price lunch. While this measure tends to provide an accurate count of the number of low income students in rural high schools, it is not reliable for urban high schools because a significant number of students who qualify, out of embarrassment or for other reasons, do not sign-up for the program. We also had information on which students were living in single-parent households. This measure was reasonable reliable for six of the seven sample schools, but the seventh schools, as a matter of policy, only entered one parent's name on the student record whether the child lived with one or two parents.

For each course (in mathematics, social studies, English, science, foreign language, vocational education, fine arts, and miscellaneous[4]), the academic level was coded using seven categories:

- *Remedial*--instruction aimed at remediating basic skill deficiencies
- *Regular/basic*--academic material presented in a manner suitable for students who will end their formal schooling with high school, emphasizing exposure and basic competencies

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[4] Included in the miscellaneous category are: physical education, driver's education, health and sex education, computer literacy (as opposed to computer programming and computer science classes which are included in mathematics), and ROTC.

- *Applied/vocational*--content focused on students' possible vocational objectives, emphasizing applications in the work setting
- *Heterogeneous*--material appropriate for students with a variety of abilities and educational objectives
- *College preparatory*--curriculum that gives students academic skills and breadth of exposure sufficient to prepare them for college-level work[5]
- *Honors*--college preparatory content, but enriched or accelerated
- *Advanced*--covers material which prepares students for advanced placement examinations[6]

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[5] The distinction between college preparatory and heterogeneous levels is based more on the kind of students in each class than on course content. Since heterogeneous classes include students who are college-bound, their content must meet the standards for college-prep courses, but also be appropriate for students of other ability levels and educational aspirations. The major difference between the two course categories is that college-prep denotes courses which include *only* students identified as achieving at a level qualifying for college admission, while heterogeneous classes include students with a range of ability levels.

[6] Four additional pieces of information were coded on each course:
- whether it was intended for a special population such as handicapped or limited-English-proficiency students when the course was taken
- when the course was taken
- the grade a student received
- whether it was taken at the school under study or was credit transferred from another school

The coding of all this information was based on in-depth interviews with school staff, a review of course handbooks and other materials, and follow-up telephone inquiries as needed for clarification.

Courses were coded with one of these level designations for two related reasons. First, it was a way to differentiate among sections of courses such as U.S. history or English where the same title may mask significant variation in content and academic rigor within individual schools and also across institutions. Second, some course titles have consistent meanings within a particular school but differ across schools. In these instances, the level designation clarifies the nature of the course to those outside the school and helps in standardizing course definitions. For example, one school in the SRA sample offered world history at the college prep level and geography at the basic level. The difference in subject matter focus was less important within that school than the fact that the two courses were used to track students who all needed to meet a social studies requirement. In another school, however, a course with the title "world history" might be offered to students at the basic and honors levels as well. Without the level designation, important differences in course content would go unrecorded in an indicator system based on only standard course titles.

The utility of this additional piece of information varies with the subject. In mathematics and science courses, the title typically conveys some information about course content and rigor, so the level designation may provide little additional information. However, for classes which all students must take--senior English, U.S. history--the level designation yields critical information.

Adding a level designation to a transcript coding scheme is not without its difficulties, and we encountered several in conducting the SRA transcript analysis. First, the SRA categories were defined to represent different levels of academic rigor in course content. However, content may become confounded with school placement policies if, in some schools, courses are categorized primarily by the ability levels of the students taking them, rather than by their content. A second problem is that while maintaining consistency in course categorizations within schools is fairly easy, keeping that consistency across schools is more difficult. A basic course in one school, for example, may not have the same level of academic rigor as it does in another. Although we found that the SRA scheme distinguished among courses far better than did standard titles, in a few instances a college prep course in one school was closer in content to the basic rather than the college prep course offered in another school. Part of the reason for this lack of equivalence in all cases is that some schools are more differentiated than others. For example, in a school with no honors or AP classes, the college prep courses may have higher levels of academic content than in one with the additional course levels.

Despite the challenges they present to indicator designers, transcript analyses illustrate two important uses of benchmark data. The first is their role in the indicator design process. For example, in the SRA project, we used the transcript analysis to develop and test measures of course levels. If we found these measures to be valid in coding transcripts, they could then be tested on other data collection instruments such as teacher surveys. One test of their validity is whether the level of a course a student took in one year accurately predicts to the level of the next year's course, once other relevant factors such as student gender and ethnicity, the school attended, standardized test scores, and course grade were taken into consideration. Statistical analyses showed that initial course level, along with test scores, course grades, and the school attended, were significant in explaining student course levels from one year to the next.

A second use of transcript data is in special studies--such as the exploration of reform effects. For example, teacher surveys only allow characterizations of student composition at the level of sections. If policymakers and educators are interested in which students are taking which courses, transcript analyses can provide a much more complete picture of the learning opportunities afforded different students by using individual level data. Transcript data can show the curricular paths through high school of vocational as compared with academic students, of minority students, and of boys as compared with girls.

Transcript data are also a way to augment cross-sectional survey and enrollment data by tracing course-taking patterns over time by student cohorts. The capacity to do this is particularly important in a time of major changes in coursework policies. In the SRA sample, we found that the total years of coursework in a subject did not change significantly for eleventh graders in the pre- as compared with the post-reform student cohort. Only for science courses in the California schools did the average number of years taken increase by at least half a year (from an average of 1.5 to 2 years). English was typical of the other subjects: the average number of years taken by eleventh graders in the Georgia schools remained at 2.9 for both cohorts and 3.1 for those in the California schools. These data are elaborated below.

Course Materials

This last type of data was the most problematic. We had originally hoped to collect sample assignments, as well as course syllabi and final exams. However, the pre-test indicated that such an effort would be burdensome to teachers, and would be difficult to interpret validly (e.g., is the collected assignment really a typical assignment for the third week of the semester or is it a teacher's "best" or "most difficult" assignment?). Consequently, we decided only to request a copy of each surveyed teacher's syllabus (asking how much was covered in last year's class) and a copy of his or her final examination. Even this limited information was difficult to obtain. Only about half the sampled teachers were able to provide both pieces of material because many do not retain syllabi and exams from one year to the next. Requesting final exams may also over-estimate the extent to which teachers rely on a multiple choice format. In one of the seven schools in the SRA sample, we were also able to collect a sample of the tests that teachers administered throughout the year. We found that teachers were more likely to ask students to elaborate the steps they used in solving mathematics problems or to answer essay questions in social studies on these tests than on final examinations. Of the 79 final examinations we reviewed, 47 percent were multiple choice, with mathematics examinations as likely to be multiple choice as social studies ones.

Case Histories of Reform Effects

The main question of the present analysis is whether state-mandated coursework reforms produced *differential* effects upon students particularly between students at risk of dropping out of school versus others. Many studies accumulating over the years suggest strong relationships between these characteristics and subsequent school-leaving and/or failure. At-risk populations will be considered here to consist of three subsets of students: those with low grades; those with low test scores; and those whose socioeconomic or ethnic backgrounds tend to be predictive of low grades and low test scores.

As described above, the School Reform Assessment Project collected several kinds of data that bear upon this question. Interviews with administrative personnel and teacher questionnaires both solicited responses to this issue; and analyses of student transcripts permit detailed tracking of course-taking patterns among various subsets of the student population. Each of these kinds of evidence, however, must be examined and understood in terms of the context of the particular schools from which they were solicited, since the actual implementation of coursework reforms differed across states and across schools within the states. Accordingly, the present discussion begins by reviewing the seven subject schools from this perspective. These case narratives also have their own stories to tell about reforms and at-risk students.

A first and fundamental fact to bear in mind as we proceed with this review is a salient finding of the SRA project: as reported in McDonnell et al. (1990). "The total years of coursework" in most academic subjects "did not change significantly for eleventh graders in the pre- as compared with the post-reform student cohort." Only in the discipline of science, and only in California, did the vast wave of legislative reform that precipitated the SRA project produce any noteworthy change in this area: post-reform high schoolers in California had taken an average of two years of science by the end of eleventh grade, as compared with one and a half years for their pre-reform counterparts. In disciplines other than science, in both California and Georgia, such course-accountation effects were negligible. The number of years of English, for example, taken by the end of eleventh grade, was 2.9 for both pre- and post-reform students in Georgia, and 3.1 for both groups in California.

One might not expect to find differential effects on course-taking patterns among various subsets of the student population when there are few or no discernible effects upon the population as a whole. Of course we recognize in principle the possibility that the absence of effects in the population as a whole actually only masks differential effects of the kind we are interested in: that is, it is conceivable that subgroups of students did undergo differential effects of coursework reforms, but did so in opposite directions.

The seven subject schools that agreed to participate in the SRA project are categorizable along any of several dimensions. For purposes of the present analysis, the most salient of these are the following: (1) whether the school is located in California or Georgia; (2) whether it is located in an urban, suburban, or rural community; (3) the ethnic composition of its students; and (4) in two schools) the school's size. Based upon these criteria, we designate the subject schools as follows:

CAUW
CAUM
CASW
CARM
GaSW
GaRWsm
GaRWlg

where 'U', 'S', and 'R' indicate urban, suburban, and rural, respectively; 'W' indicates predominantly white; M indicates predominantly minority (Black, Hispanic, and Asian). (The tags 'sm' and 'lg' indicate small (< 1000) students and large (>1000) students for the two rural Georgia schools.)

California School Cases

CAUW: In CAUW [School 1], several changes in the curriculum occurred subsequent to 1984, although the initiative for and the nature of these changes seems to have originated more at the district level than with the state. It is important to note that California's course-taking mandates were received by school districts that had been left on their own for 20 years to decide most graduation requirements--the two-course math requirement was already in place in many districts. In math in particular, much of what occurs in the classroom is driven by the district requirement that students pass several proficiency tests, devised at the district level, for almost every math course offered. And in this district three years of math are now required for graduation, and a common sequence of math courses is in the Process of being introduced for all students. The combination of these two innovations--three years and a common sequence--

will, when fully implemented, entail that all students take math through Algebra II. The common sequence is not yet entirely implemented, and it is not entirely clear what portions of it have and have not been put into practice. It is clear, however, that basic math sections were reduced from 17 to 5, General Math has now been eliminated, and that the number of sections of Algebra I has increased from 5 to 15. Increases have also occurred in the number of sections of Algebra II and of Geometry. Pre-algebra, consumer math, and career math remain options for students not ready for Algebra I. Some instructional innovations have also occurred to accompany these curricular changes. These include increased use of the calculator and of math manipulatives, and more cooperative learning, and less lecture.

According to both interviews with administrators and the teacher questionnaires, the effects of these changes on at-risk students has been pronounced. Lower achievers are spread more evenly across more sections of math, rather than being concentrated in only a few sections of general math. Some of the new courses into which AT-RISK students are being placed are courses in the college-prep sequence. Although the wider distribution of AT-RISK students is generally applauded, the down side is that the pace of instruction in the affected college sequence courses is slowed, with less material covered and more time spent on review.

In the social studies, the district plans just as comprehensive a set of changes as in math, if not more so, but these remain for the most part for the future. To date, the only major change with possible relevance to at-risk students is the addition of economics as required by SB 813, California's 1983 omnibus school reform bill. The major curricular consequence of the introduction of economics as a course required for graduation for all students was the elimination of several social science electives, including sociology, psychology, and anthropology. An additional change in the social studies, apparently unrelated to the foregoing, involves U.S. History. There, the "advanced" level of instruction, intermediate between the regular-risk and the AP levels, has been eliminated.

The only reported effects of these changes on at-risk students that the regular sections of U.S. History now have a more heterogeneous mixture of students, and additional sections of AP History have been added. A note on the possible consequences heterogeneous history instruction appears in the next school's discussion.

CAUM: In CAUM [School 4], our sources of information regarding curricular innovations give the general impression of a substantial quantity of change. However, upon closer inspection, it is not at all clear to what extent these changes reflect state- mandated reforms, much less when exactly these changes were (or will be) implemented. In math, three years are now required, and the instructional approach is supposed to emphasize problem-solving and manipulatives. Basic math has been renamed general math.

Math A, an informal look at algebra and geometry, has been introduced at a level intermediate between general math and Algebra I beginning with the school year 1988-89.

The only discernible consequences of these curricular changes appeared in remarks reported on two or three teacher questionnaires: that courses in general math and in Math A now are more repetitive, more remedial, and cover fewer topics.

By far the major single curricular change in CaUM as a whole has been the elimination, effective 1988-89, of basic classes in all disciplines. In math, as noted above, the impact of this change has been minimal: what were once called basic math classes are now called general math, and much the same content is taught. In other disciplines, by contrast, the effect has been devastating. The Principal and Head Counselor report the incidence of D's and F's in the neighborhood of 40%. In U.S. History, the admixture of at-risk and even illiterate students into the regular level courses has produced what one participant called "a deadly situation." Here the history department chair and teachers note an unproductive situation in U.S. history classes. High achieving students tend to boredom and disengagement while under-prepared students are absent or leaving school altogether. The history classes at this school have not succeeded in finding ways to reach and teach such mixed groups of students.

The social studies department chair at CaUM reported an additional, apparently unrelated, change in the way U.S. History is taught. According to this administrator, state curriculum frameworks have moved the starting point for this course forward by 300 years, from 1600 A.D. to 1900. (Why this doesn't show up in other schools has not been ascertained yet.) Since textbook publishers are not eager to follow suit without seeing if this change is going to stick, teachers who are highly text-dependent are limited to about half the usual number of chapters available for their use.

CASW: In CASW [School 2], administrators do not report significant changes in the math curriculum, although the principal reported that, in accord with SB 813, the state's comprehensive 1983 reform law, two years of math rather than one year are now required for graduation, a definite case of state policy impact. This change has apparently resulted in some reshuffling of course titles and topics in math classes prior to Algebra I. Another unrelated change has to do with whether to offer honors level classes for Algebra I and II. Currently this is not being done, although it had been up until four or five years ago, and may be reintroduced again in the future.

The principal reports that these changes have brought a greater demand for general math and pre-algebra classes, and a diminished demand for upper-division math [why the latter?]. Otherwise, actual effects upon students, not to mention differential effects, appear negligible.

The principal change reported in the social studies curriculum in CASW is the SB 813-induced transition from one semester to one year of US History. This change has been coupled by the much increased emphasis on the twentieth century that appears in the state curriculum framework; now teachers try to get into the twentieth century by the ninth week of the year, or by the end of the first semester at the latest. Ninth grade social studies has changed from an emphasis on geography and Western Civilization to the study of World Cultures. In the twelfth grade, economics has replaced the former semester of social studies.

CARM [School 3]: In CARM, pre-algebra has been changed to Math A, with greater emphasis on manipulables and on probability. More students now take Algebra II than formerly, in order to meet college entrance requirements; this means Algebra II is accepting more students of lower ability, which is slowing the pace of instruction. One of the two required years of math can be met by means of courses in elective/vocational areas, e.g. agricultural math, industrial math; 200-400 students choose this option each year.

The number of years required in the social studies has *decreased* since 1984, from four to three. According to the social studies department chair, this is a direct consequence of the increased math requirements. The year that was lost is the ninth grade sequence: one semester geography, one semester focusing on careers, drugs, and drivers education.

Economics is now required, preferably taken in the first semester of the senior year, in order to be more fully prepared for the CAP test or statewide 12th grade assessment. A course in marriage and family has been dropped to make room for the economics class.

Other social studies curricular changes noted on one or two teacher questionnaires: fewer social studies electives; U.S. History and world history each were increased from one semester to one year; the government class now gives more attention to state and local issues.

Georgia School Cases

GaSW [School 8]: The Georgia state-mandated system of changes, known collectively as Quality Basic Education (QBE), entails, among many other things, that students who score in the bottom quartile on the California Achievement Test (CAT) enroll in remedial math, causing a substantial increase in the number of such sections offered--by one account, a five-fold increase.

QBE entails different course requirements for different kinds of diplomas offered to Georgia high-schoolers--e.g., 45 hours math for the college prep diploma, 35 for general or vocational diplomas. More sections of advanced level courses have been added, and the content of 11th grade general math has been upgraded.

At present, at least 7 quarters of math are required for graduation, but this requirement can be met without taking any algebra. A variety of sequences are available for the more capable students.

In the social studies, BE has made a one-quarter course on state and local government required for graduation, and taught according to prescribed objectives. GaSW has made room in the curriculum for this course by dropping career education as a requirement.

Two additional courses are now required for graduation: economics in 12th grade and political science in 9th grade. Because these courses are now tied to graduation, greater effort is made to ensure students pass tests, including a more lenient grading policy. Most courses are taught at a minimum of three different levels; U.S. History is offered at basic, regular, accelerated, and gifted levels. Differences among levels are pronounced: basic levels typically entail mechanical seat-work tasks at about a seventh-grade level of difficulty.

The overall effects of QBE on teachers, students, have been significantly decreased morale for both. All parties feel the fun has gone out of school, replaced by excessive demands, mechanical routines, and vast quantities of paperwork.

GaRWsm [School 6]: In order to help students cross the hurdle of state competency tests, remedial math has been added to the curriculum. Also, a few sections have been added of other math courses, e.g. geometry, algebra. Second-year general math now includes more topics, including topics from algebra and geometry. About 60% of 9th grade students enroll in Algebra I--the rest in general or remedial math, depending on test scores.

In the social studies, a one-semester, 9th grade course in economics has been added, and the former requirement of career planning has been dropped. Economics is taught in combination with civics. Course differentiation does not exist except at the 10th grade level, where vocational students take geography, whereas general or academic students may choose between geography and world history.

GaRWlg [School 7]: College requirements and local initiatives have induced greater enrollment in math courses, including at the remedial level for purposes of passing the GTBS. Enrollment in the advanced math sequence, including AP calculus, has doubled. A two-year course in Algebra I has been designed for slower students, enabling them to earn the college prep diploma. A course in applied math--intermediate in difficulty between general math and Algebra I--is in process of development, emphasizing practical applications for students headed for technical schools; but this will come too late to affect our transcript cohorts.

In social studies, a required sequence in government and free enterprise has been shifted to the ninth grade, so that students will be freer to take social studies electives when they are older. According to the Department Chair, however, ninth grade students are too young to profit from the study of free enterprise; and an elective course on Asia has had to be dropped to make room for it. Similarly, enrollment of seniors in psychology and sociology has also declined.

On the other hand, with increased university entrance requirements, more students are taking regular level courses, rather than basic level, e.g. in U.S. History. Also, world history is now a required course for graduation, and in order to make basic and developmental levels passable, lectures have been much reduced (students can't take useful notes), and testing occurs more frequently on less material.

Summing Up--Case Narratives

The school case narratives are suggestive of certain effects of standards raising reforms on at-risk students or potential school dropouts. One is that adding years to course-taking requirements in mathematics can stretch-out a repetitive basic mathematics program over additional years, as it did in some schools in our sample. A further probe of this effect will be to more definitively account for topic coverage in 3 course basic programs in comparison to two course basic programs offered previously.

An alternative response to added requirements in both math and history is evident in some districts; this is to try to eliminate basic section of classes and to incorporate would-have-been-basic students in higher level offerings. Some teachers report great difficulty reaching the spread of students in these new classes. A follow-up activity will be to conduct follow-up interviews with more of our respondents in September 1990 to achieve a more seasoned reading of how such course heterogeneity has played out in sample schools. We also hope to sort out the sources of the push toward heterogeneity--is this a move to conform to the social pressures against curricular tracking, or is it a by-product of added course requirements and classroom staffing needs? Our follow-up interviews with district officials, department chairs, and teachers should help with this inquiry.

Teachers' Qualifications and Course Assignments

Coursetaking requirements have potential if not probable effects on patterns of teacher assignment. In this section of our exploration, we examine teacher qualification across courses populated by students differing in preparedness and thus risk statuses. While gains in students' scores on standardized tests by no means exhausts the meaning of effectiveness, that remains the dimension most commonly studied, as well as the one of greatest sensitivity for policymakers. With regard to that dimension, it has been demonstrated that variation in teacher effectiveness exists, is measurable, and its sources traceable (Brophy & Good, 1986; Medley, 1979). Teachers' knowledge of subject matter begins to show demonstrable correlation with achievement in certain courses at the secondary level.

Our approach to exploring teacher qualifications was to operationalize the construct in terms of three readily collectible kinds of information: whether teachers were certified in their respective disciplines; in what disciplines they held major or minor Bachelor's degrees; and their years of full-time classroom experience. This information was solicited on the teacher questionnaires.

We begin here by taking a broad view. Our pool of respondents to consists of 73 math teachers and 63 teachers of U.S. History or Government. As a first step, these two broad groups may be compared along two basic dimensions: whether they are certified in their respective disciplines; and whether their Bachelor's degrees correspond with the disciplines they teach. These data are given in Figures 1 and 2.

FIGURE 1^b

As is evident in Figure 1^b, certification among social studies teachers is almost universal; but it is by no means so among teachers of math. Clearly this discrepancy is noteworthy in itself. At the least it can be said that this result corroborates a prevailing impression that qualified teachers of mathematics are in relatively short supply.

Figure 2 further reinforces this impression. While the fraction without an appropriate degree among teachers of social studies is less than a quarter, in math it rises nearly to half, or to 40% if one accepts science and engineering majors as equivalent in training in mathematics. This result coincides not only with prevailing impressions, but with the fact that mathematics graduates in the nation at large are becoming a vanishing breed: college graduates entering the teaching profession from mathematics and the physical sciences combined dropped from 1266 in 1981 to 427 in 1985. The corresponding numbers for the humanities and social sciences combined are over ten thousand and growing (OERI, 1987).

FIGURE 2

This general overview suggests a distinct disparity between the qualifications of teachers of social studies as opposed to teachers of math. This difference is reflected in the analysis pointed to at-risk students that follows, for henceforth we shall treat the two groups of teachers separately (rather than in comparison with one another); and we shall treat each group with different questions in mind. With regard to the social studies, our guiding question will be: Are the qualifications of teachers in a single discipline of the social studies, viz., U.S. History, as well matched to teacher assignment as in the social studies as a whole? With regard to mathematics, our guiding question is this: Does the incidence of lack of certification or appropriate Bachelor's degree fall in an even distribution across students, courses, and schools? Or does it concentrate in identifiable areas?

As a first approach to isolating areas of weakness in math qualifications, the distribution of certification among teachers is disaggregated by school, as shown in Figure 3.

FIGURE 3

The fact that 13 of the 17 non-certified teachers are clustered in two schools does suggest a high degree of concentration in specific locales, notwithstanding that the two schools occur in different states and in different residential categories (urban and rural). The sample size is too small, however, to do more than suggest specific general conclusions and many more questions remain. Even if weakness in math qualifications is concentration in a minority of schools, how does that weakness appear in terms of actual courses students take?

FIGURE 4

Figures 4 and 5 address this question by considering the pool of 310 math courses taught by the 73 teachers, and disaggregating by course (rather than by school). The first point of note in Figure 4 is that, whereas only 76.7% of the math teachers are math certified (from Figure 1), 83.2% of math courses are taught by certified teachers. This difference offers compelling evidence that the assignment of math courses among math teachers is controlled in part by math certification; so that the impact of the scarcity of qualified math teachers is accommodated in part by appropriate course assignment.

FIGURE 5

Figure 5 displays the same kind of disaggregation--by course rather than by school--but now with respect to whether or not the teacher's Bachelor's degree is in math or math education. Here the extent to which teacher qualifications influence course assignment is even more pronounced. Overall, the fraction of courses taught by teachers qualified by this criterion is not much more than half. Even more striking is the manner in which particular courses are distributed among teachers with and without, just as it was in connection with certification (Figure 4). As we move up the scale, the balance tips from a bare majority of classes taught by teachers without math degrees (pre- Algebra), to a slight majority taught by those with such degrees (Algebra 1). The proportion of classes taught by the more qualified teachers continues to grow, on the whole, as we continue to move up the scale.

In order to highlight the trends already noted, Figure 6 combines the data from Figures 4 and 5 into a single display, and collapses the eleven course categories into three. In addition, Figure 6 gives the result of an expanded criterion of qualification by Bachelor's degree, by showing math courses taught by teachers with majors in any science or in engineering. What is striking about these data when displayed in this manner is not only that both indicators (certification and degree) show increases at each level; but also the sharp shifts that occur between levels A and B in the case of certification, and between levels B and C in the case of degrees. Thus it appears not only that both kinds of qualification influence assignment among math courses, but also that they do so differentially, with certification tending to serve primarily to distinguish Level A (Basic Math) from all other courses, while Bachelor's degree serves rather mainly to distinguish Level C (Algebra II and Above) from all other courses.

FIGURE 6

It seems clear that the indicators employed in this analysis, particularly when used in combination with one another, are capable of revealing where weaknesses in math qualifications tend to be concentrated. One further refinement in the picture that has already emerged appears in Figure 7. Here again, the unit of analysis is the number of sections in each of the three major course levels A, B, and C. Now that variable is plotted against years of teaching experience. The dramatic disparity between levels for years 1 through 5 is fully matched by the remarkable uniformity among levels for all years thereafter. Clearly years of experience plays a decisive role in assignment of math courses among math teachers, but only in one narrow regard--the heavy concentration of Basic Math among the very inexperienced; thereafter, it plays no role whatsoever.

FIGURE 7

Taken together, the foregoing results demonstrate that Level A (Basic Math) is unique among the three broad levels of math courses, in that it suffers the relative absence of all three teacher variables considered: certification, math degree, and years of experience. Level B (pre-Algebra and Algebra I) suffers the relative absence only of teachers with math degrees. Level C is immune from all three weaknesses.

Our point of departure in examining the link between qualifications and assignments among social studies teachers was the relatively high percentage of certification and appropriate major in this pool as a whole. Our question, accordingly, was whether that pattern would remain as pronounced among the narrower subset group of teachers of U.S. History. Figure 8 shows that a Bachelor's degree in History is more prevalent among teachers of U.S. History than among social studies teachers generally, but not by a very substantial margin. Indeed, if one were to accept the more restrictive criterion that qualification to teach U.S. History requires a major in History, the fraction of qualified teachers is barely half. Even if one accepts a second BA or minor in History as an essential equivalent, the number of teachers qualified by this criterion rises by only one, to 18 of 33.

FIGURE 8

In studying the qualifications of teachers of math, we found that analysis by course rather than by teacher could give a greater resolving power and stronger focus. The corresponding manipulation for U.S. History, however, as shown in Figure 9, is remarkable most for its similarity to the distribution shown in Figure 8. The implication is that among those who teach any courses at all in U.S. History, the number of such courses taught is not at all influenced by whether the teacher's degree is also in History. Here, then is a point of complete absence of linkage between qualifications and course assignment.

FIGURE 9

To investigate this matter further, we have recourse to another category of information, one not employed in our analysis of mathematics courses. Social studies and math stand in sharp distinction in several respects, one of which is this: math courses are intrinsically hierarchical, in the sense that the development of student abilities is closely linked with the students' advancement through an established sequence of courses. Social studies in general, and U.S. History in particular, display the reverse tendency: since all students take U.S. History, enrollment in that course per se gives no information at all about a student's ability. This is not to say, however, that schools do not segregate ("track") History students according to ability; on the contrary, differentiation among levels--enriched, typical, and remedial--is commonplace. Accordingly, teachers were requested, when giving current class schedules, to indicate as well to what level each class is oriented.

Figure 10 shows that the pool of courses available for this analysis is slightly less than the 100 U.S. History courses taught by all teachers who participated in the study, indicating that in a few cases information about course level was not provided. Nevertheless, the data presented is sufficient to display a definite trend. The proportion of total courses taught by teachers with a major or minor in History--54 out of 97--differs by barely a percentage point from the proportion of teachers with such a degree--18 @ut of 33. By contrast, the assignment of enriched, typical, and remedial courses shows a distinct correlation with whether or not the teacher's degree is in History. Qualification by college degree is evidently not, after all, an entirely overlooked factor in the assignment of courses among teachers of U.S. History. Given that a teacher teaches U.S. History at all, the sheer quantity of such courses he teaches if influenced not at all by whether he majored in History; but the probability that the student in an enriched class will encounter a History teacher with a History major is more than fifty percent greater than the corresponding chance at the remedial level.

FIGURE 10

Whether this result is evidence of the shrewd management of scarce resources, or of a subtle and insidious form of discrimination, is a matter for policymakers.

Summing-Up: Teacher Qualifications and At-Risk Students

Our examination of teacher credentials and course assignments in our sample schools suggest that teacher qualifications tend to be inferior in lower level courses--noncredentialled and non-major teachers are more likely to be found in basic classes. The possible importance of this to issues regarding standards and at- risk students is that where students are relegated to added years of basic-level math, their relative exposure to less qualified teachers as a part of their high school experiences may increase. An important follow-up inquiry in our remaining interviews will be to explore whether the loading of less qualified teachers in basic classes tends to be aggravated by the imposition of coursework standards, and under what sorts of policies and contextual conditions would such effects be anticipated.

Student Transcript Analyses

We have undertaken transcript file analyses for this project. The key to unmasking possible reform effects on at-risk students will be to examine course-taking paths and successes of students by available risk-statuses--particularly low initial school achievement. We have randomly drawn samples of 75 ninth graders in each of three cohorts for all seven schools. The earliest cohort was the class of 1986 or 87, a pre-reform requirement cohort. A comparison cohort with relatively complete high school course information is the class of 1989. Our class of 1991 is available for examination of early high school experiences.

Some initial runs of comparison cohort analyses from the transcript samples are summarized in tables contained in Appendices B, C, and D. Appendix B shows changes in course-taking by course and by state across the 86/7 and 89 student cohorts. A primary conclusion of this probe was that overall course taking did not increase except in science in California schools. There were significant differences across schools; given the case narratives above which described both different state policy responses AND different local policies at school sites, local differences are not surprising.

Appendix C show the percentages of students in each school who remain at the same mathematics course-level (basic, regular, honors) in moving from one grade to the next. Included in the percentages of students remaining at grade level are those who move to heterogeneous (E) classes. A next step in this probe is to differentiate these movements by risk-status of student, and to see if differences emerge for at-risk students in the pre-versus post reform environments. This analysis must be done on a school by school level, since the policies possibly affecting at-risk students differ from school to school.

Appendix D shows a detailed display of student movement from math, social studies, English, and science courses from one grade to the next across all sample schools. For the purposes of our exploration, these analyses like those above must be disaggregated by student risk status and by cohorts in the pre- versus post- reform settings. These efforts will occupy the coming months of the project.

Overall Summary Comments

This paper was intended to provide a set of working notes based on our explorations of relationships between increased standards for high school graduation and the educational fortunes of at-risk students--students whose achievement and or background characteristics signal increased chances of school failure and dropping out. We reviewed a collected set of analyses undertaken by project staff. As noted in the introduction, specific analyses for publication could be carved out from these materials as they are supplemented by follow-up and continued work, and in response to reviewer reactions.

The portraits that emerge are suggestive of certain effects of standards raising reforms on at-risk students or potential school dropouts, but we have not yet gotten to the bottom of the stories that our data base can inform. The work has suggested continued discussions with sample respondents, both for clarifications and to revisit issues now augmented by their added experiences since the original interviews. And additional work of untangling the transcript data is possible given the scope and richness of the data files. Since work continues with this material, as additional products are produced they will be forwarded to OERI.

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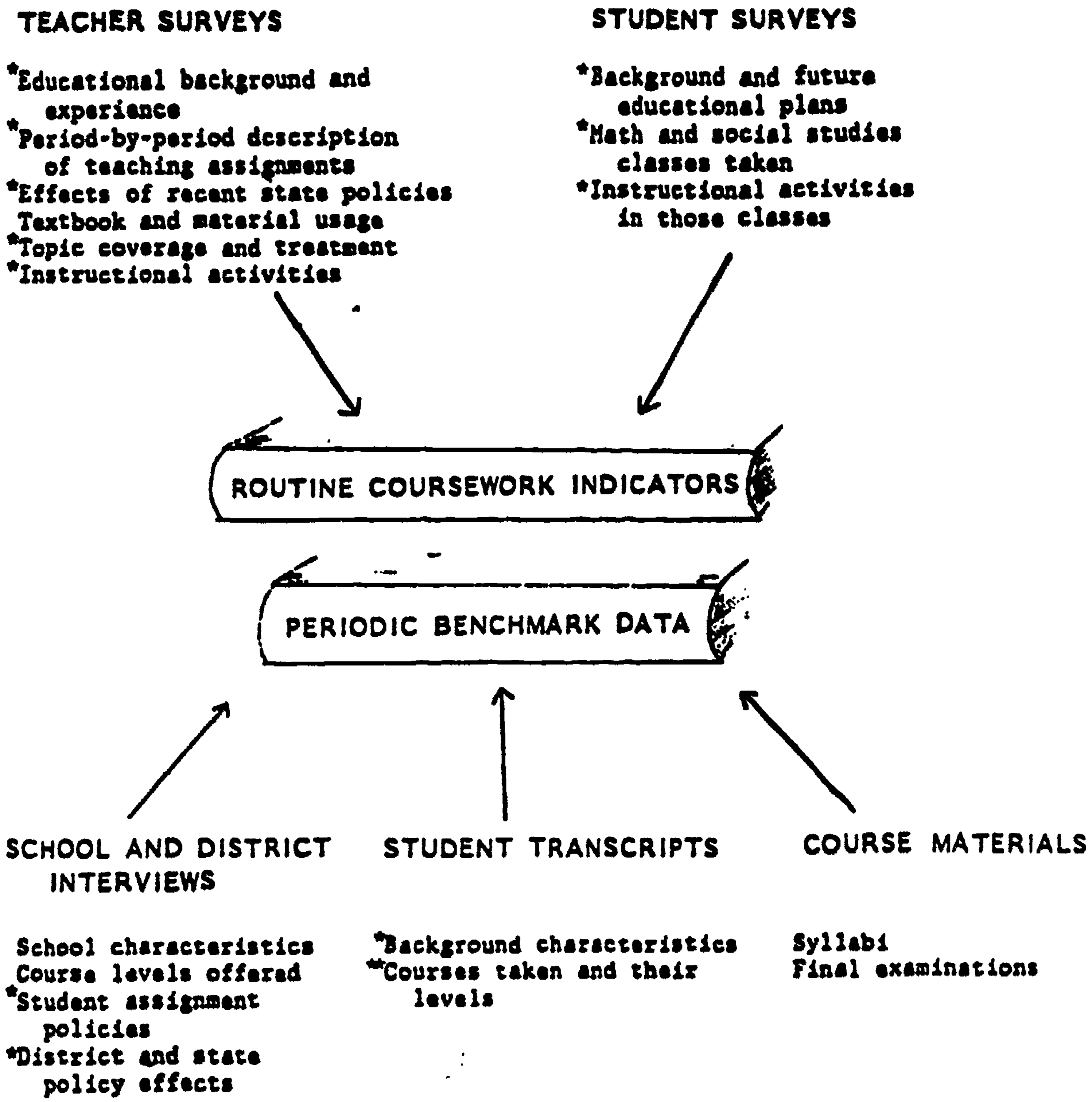
Clune, W. H., White, P., and Patterson, J. 1989. The implementation and effects of high school graduation requirements: First steps toward curricular reform. New Brunswick, N.J.: Center for Policy Research in Education.

Mc Donnell, L. M., 1988. Coursework policy in five states and its implications for indicator development. Working paper. Santa Monica, CA: The Rand Corporation.

Mc Donnell, L. M., Burstein, L., Ormseth, T., Catterall, J. S., and Moody, D., 1990. Discovering what schools really teach: Designing improved coursework indicators. Draft report # WD-4714. Prepared for CRESST-UCLA/OERI. February.

Figures 1a-10

Figure 1a. SRA Data Sources



* Sources of particular relevance to standards and students at-risk.

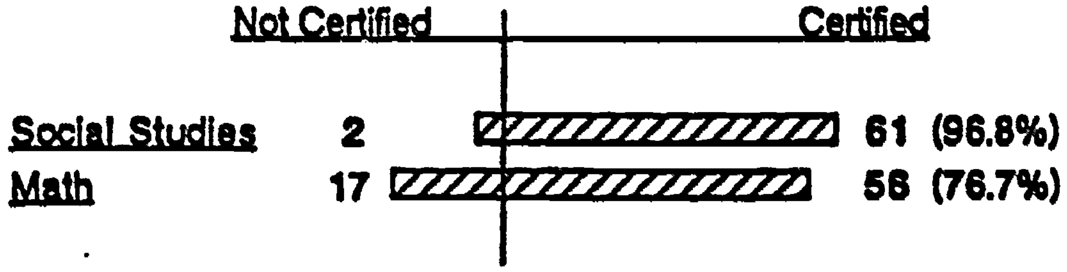


Figure 1b Certification Among Math and Social Studies Teachers

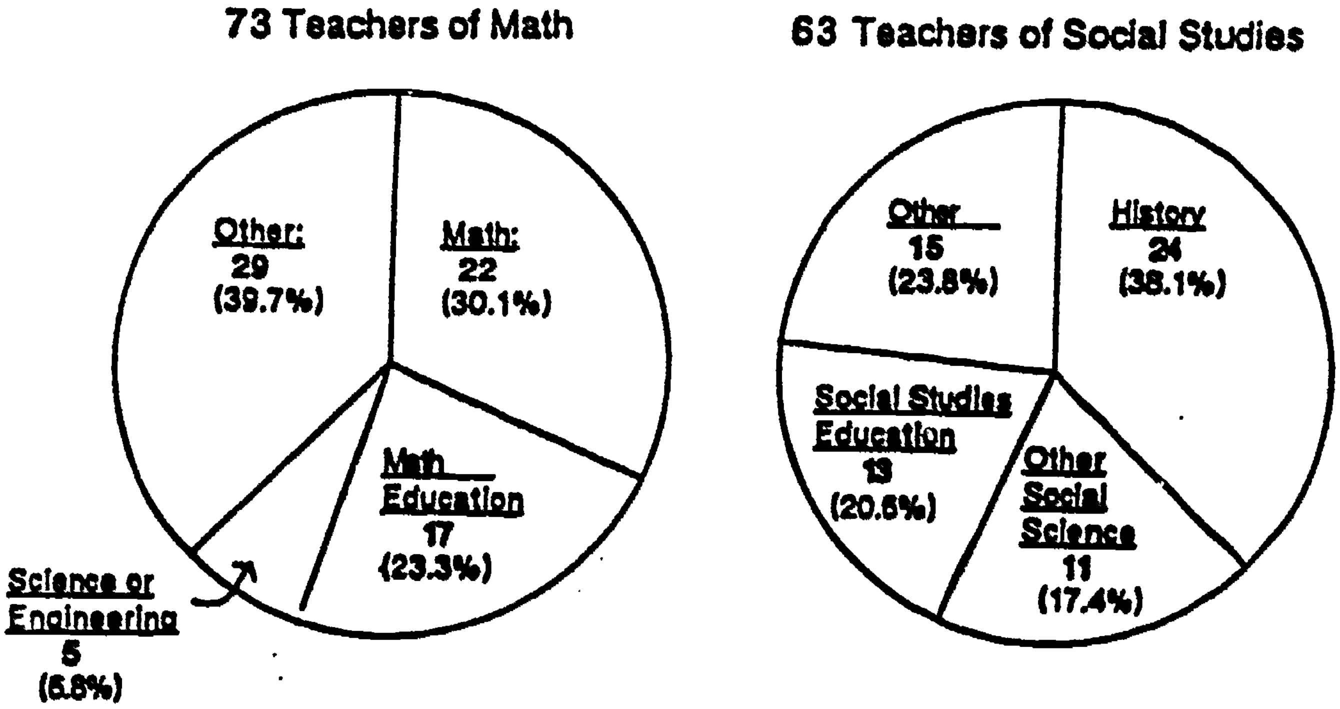


Figure 2: Distribution of Degrees Among Math and Social Studies Teachers

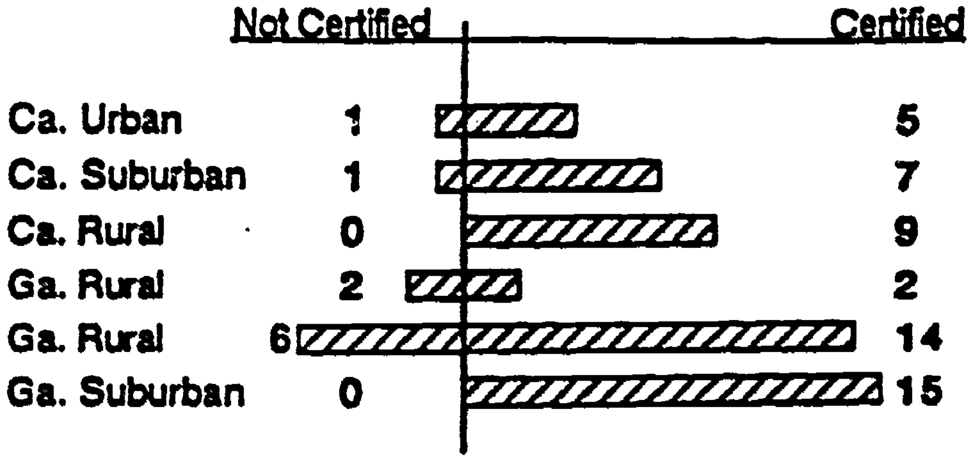


Figure 3: Certification Among Math Teachers by School

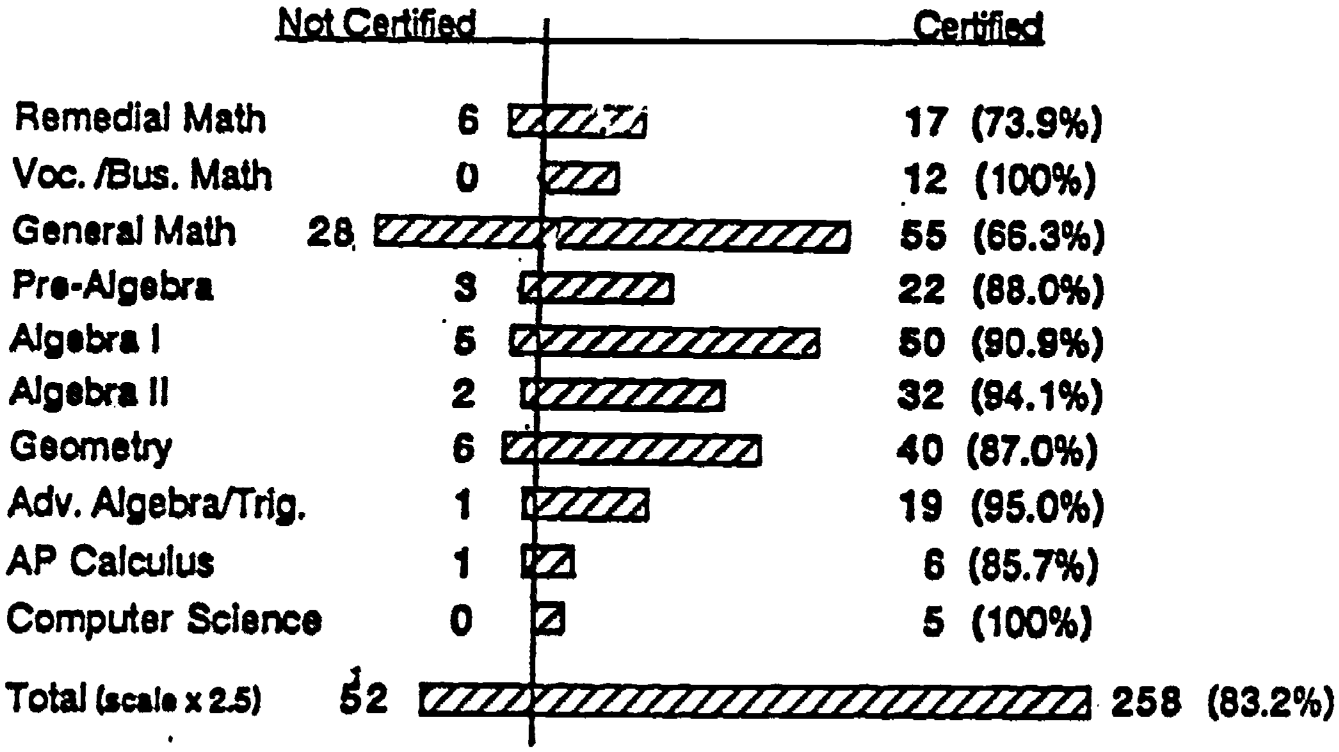


Figure 4: Distribution of Math Sections by Course and by Whether Teacher is Math-Certified

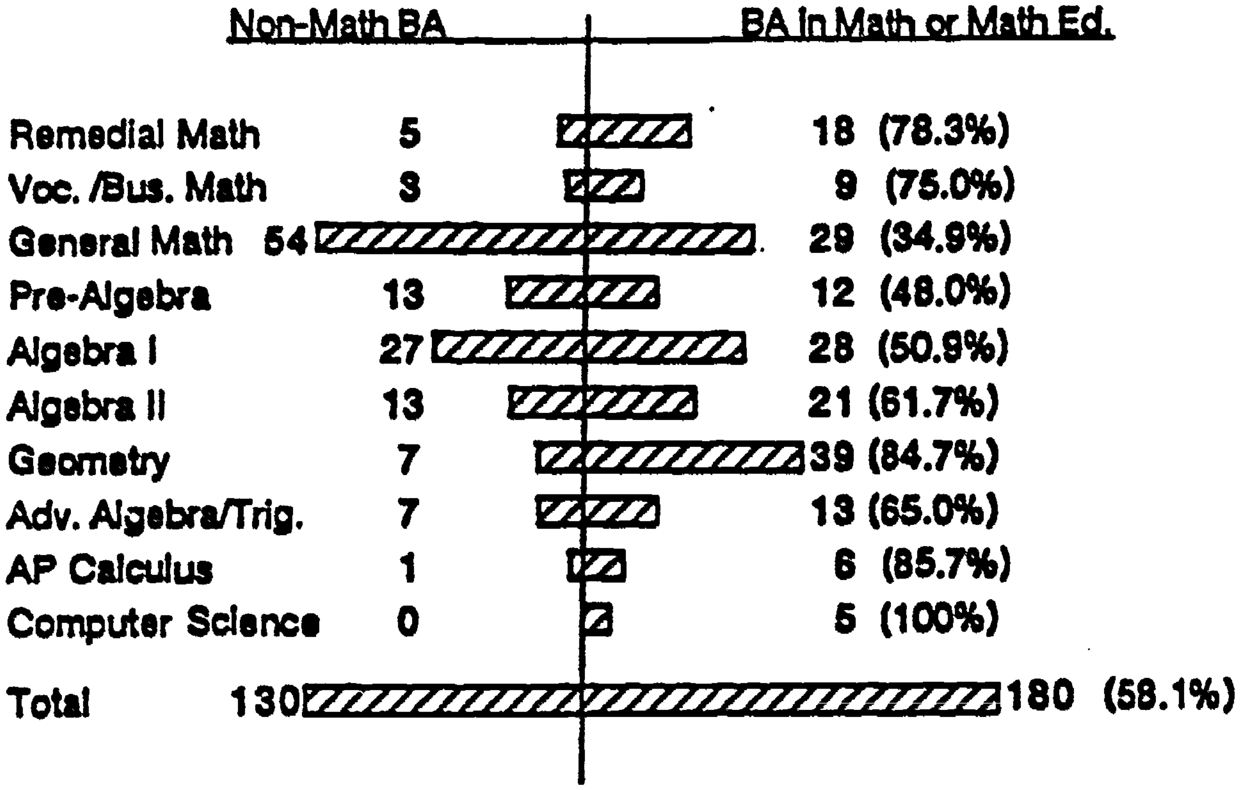


Figure 5: Distribution of Math Sections by Course and by Teacher's Degree

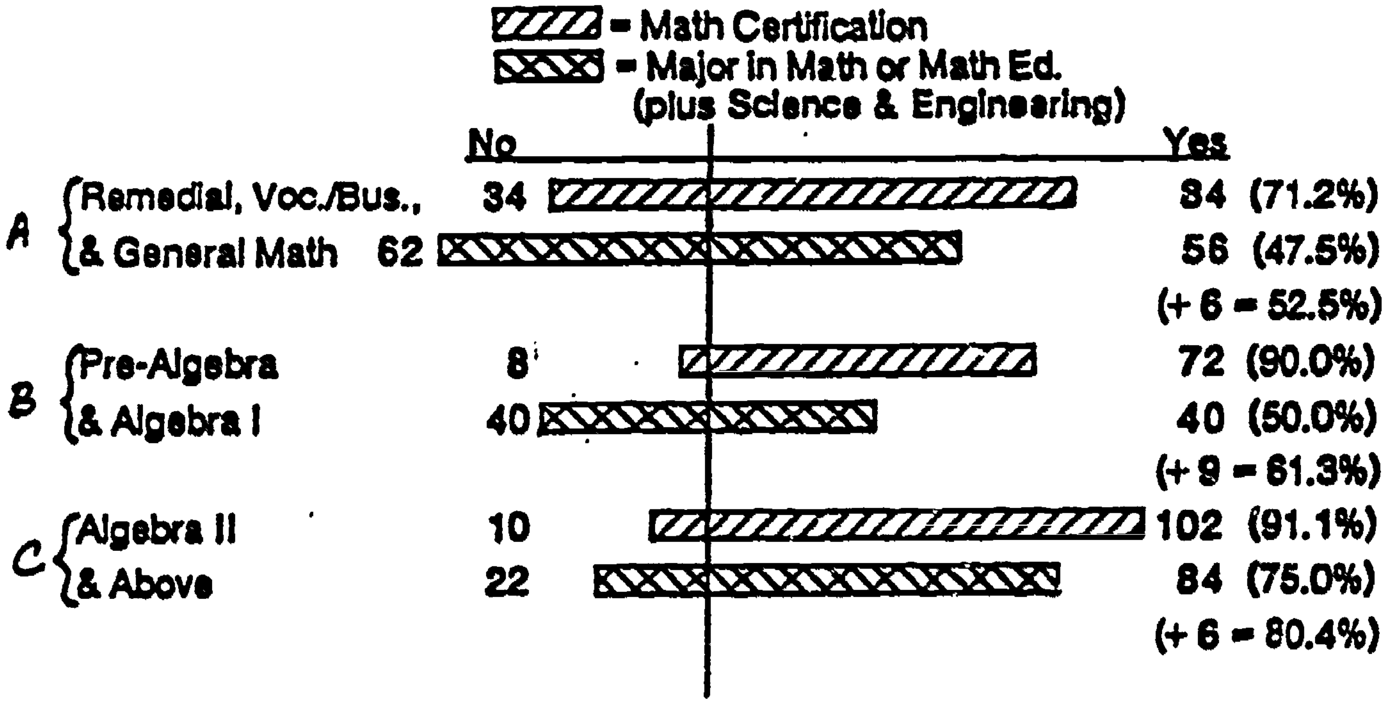
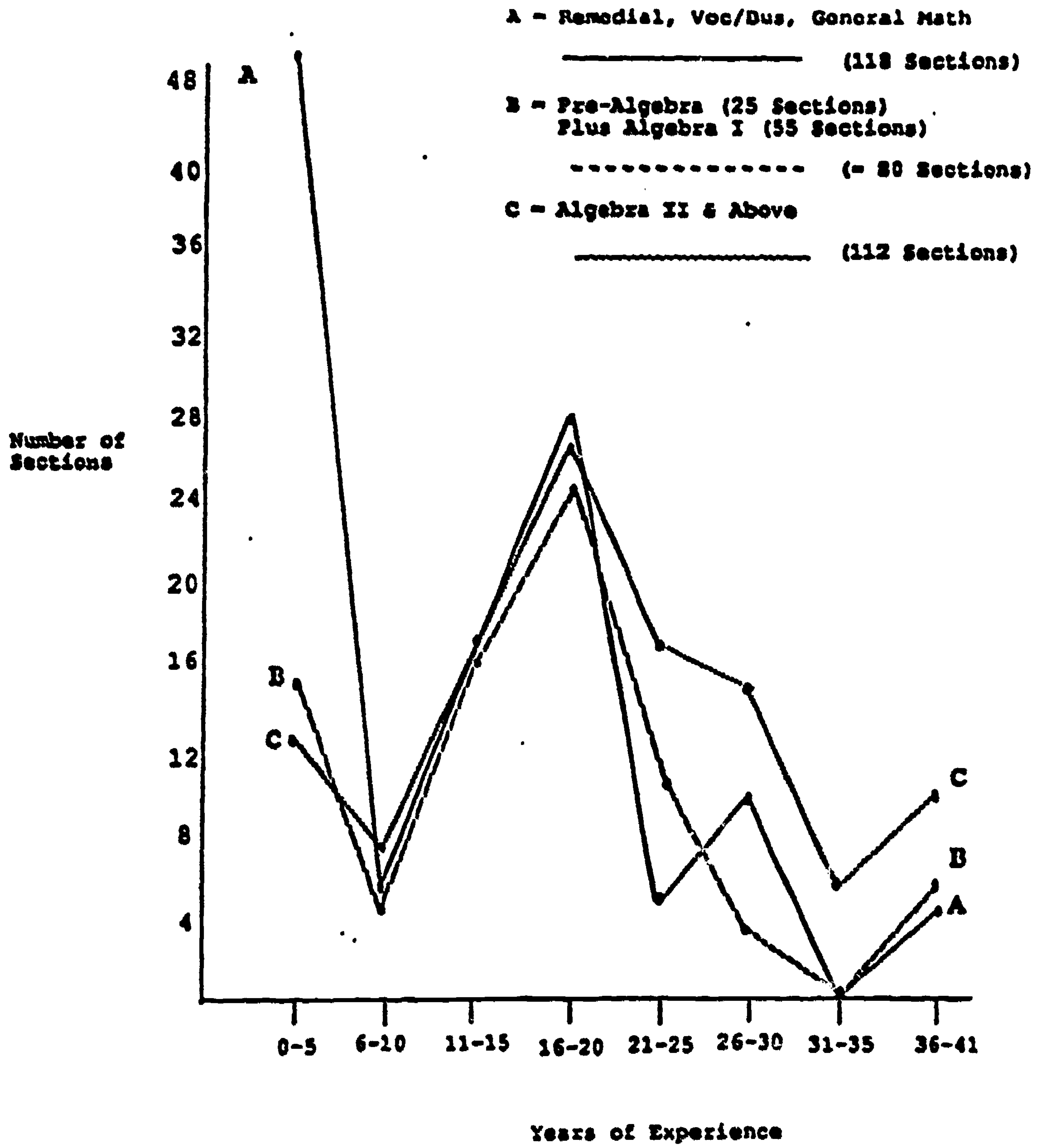


Figure 6: Distribution of Math Sections by Course Level and by Teachers' Qualifications

Figure 7:

Distribution of Math Sections by Teachers' Years of Experience



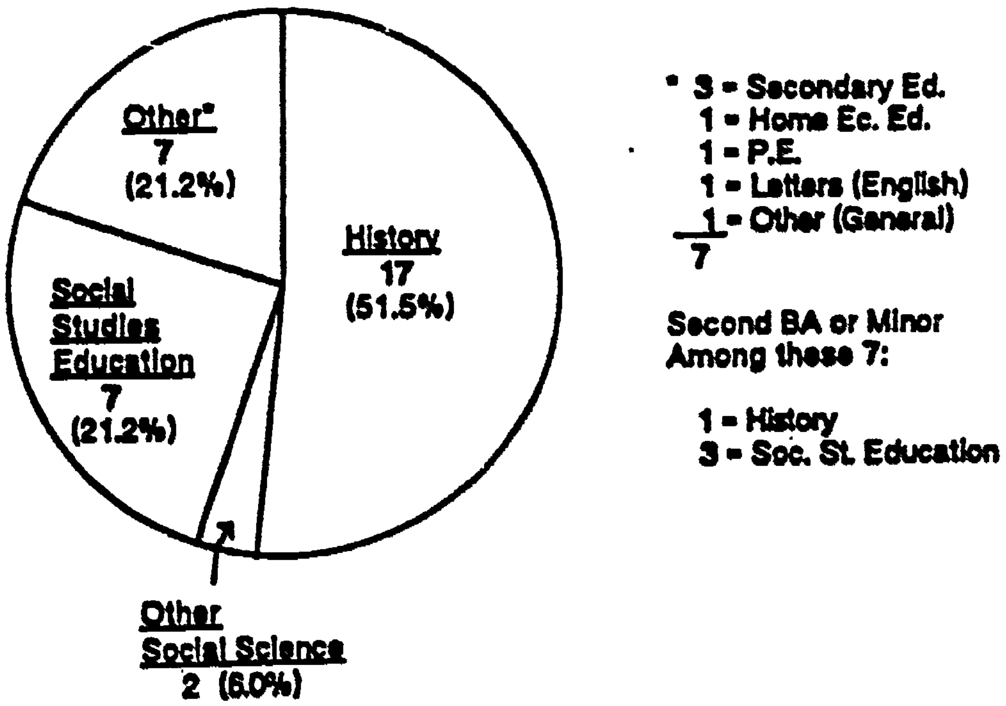


Figure 8: Distribution of Degrees Among 33 Teachers of U.S. History

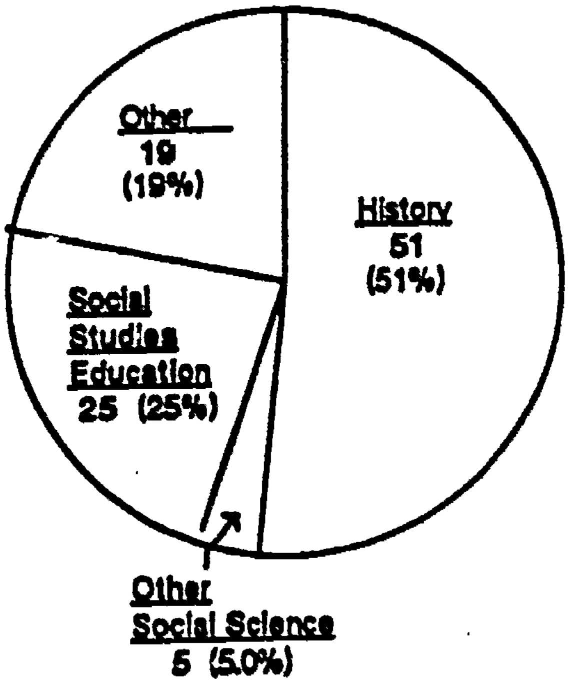


Figure 9: Distribution of 100 Sections of U.S. History by Major Degree of Teacher

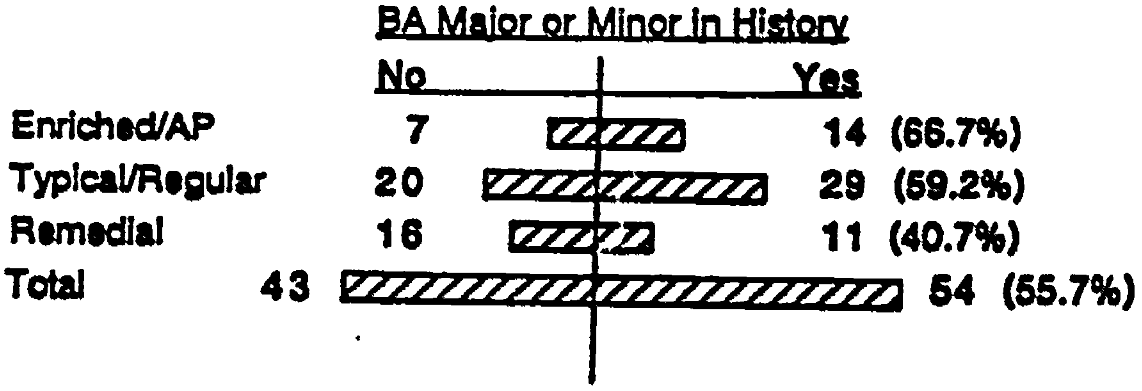


Figure 10: Distribution of Sections of U.S. History by Course Level and by Teacher's Degree

Appendices

APPENDIX A

SRA SAMPLE

Number of Schools - 7

California	4	Georgia	3
Urban	2	Suburban	1
Suburban	1	Rural	2
Rural	1		

Smallest school enrolls - 336 students

Largest three each enroll - 2,000 students

Number of teachers surveyed:

Mathematics	73
Social Studies	63

Response rate - 92 percent

Number of sections in the five course categories examined:

Algebra I and below	86
Algebra II	18
U.S. History	38
U.S. Government	28

Number of students surveyed:

Tenth grade	2,571
Twelfth grade	1,937

Response rate - 75 percent

Number of transcripts coded:*

Class of 1986/87**	511
Class of 1989	514
Class of 1991	516

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* 75 transcripts were sampled from the relevant ninth grade class at each school, but about 2 percent were deleted because either the transcripts were sampled from the wrong classes or were not photocopied in their entirety.

** The class of 1986 was used for the California schools and 1987 for the Georgia schools because they represent the last class to progress through high school before state-mandated increases in course requirements took effect.

Table of Cumulative Years Taken at End of 11th Grade: Means and Significances by State

1/9/90

* = .05 level ** = .01 level *** = .001 level

Subject & State	Mean Cumulative Years		Significance of Cohort, School, and Interactive Effects by State		
	Class of 86 or 87	Class of 89	Cohort	School	Cohort * School
Mathematics	86/87	89			
CA	2.633	2.694		***	
GA	2.571	2.455		***	
Social Studies					
CA	2.140	2.183		***	
GA	2.853	2.912		***	
English					
CA	3.079	3.111		*	
GA	2.927	2.895		***	
Science					
CA	1.467	1.998	***	**	***
GA	2.326	2.298		***	
Foreign Languages					
CA	1.215	1.373		*	
GA	0.550	0.708	*	***	
Vocational					
CA	1.918	1.795		***	
GA	2.274	2.500		***	***
Arts/Music					
CA	1.177	0.986		***	
GA	0.751	0.682			
Miscellaneous					
CA	3.666	3.266	***	***	
GA	2.471	1.967	***	***	***

Appendix B

Deviations by School 1/9/90

	Math		Social Studies		English		Science	
School	86/87	89	86/87	89	86/87	89	86/87	89
Serra	2.873	2.947	1.972	2.026	2.937	3.079	1.437	2.362
	0.625	0.379	0.386	0.229	0.573	0.448	0.609	0.715
Mirada	2.575	2.541	2.082	2.068	3.192	3.219	1.397	1.877
	1.227	0.815	0.417	0.585	0.832	1.021	0.682	0.532
Sanger	2.351	2.407	1.736	1.893	2.980	3.000	1.520	1.850
	0.902	0.853	0.824	0.691	0.854	0.780	0.866	0.758
Pasadena	2.750	2.870	2.816	2.790	3.213	3.145	1.515	1.877
	0.570	0.567	0.628	0.496	0.671	0.702	0.623	0.632
Atkinson	2.664	2.493	3.007	3.271	3.057	3.000	2.107	2.128
	0.647	0.673	0.640	0.711	0.386	0.241	0.441	0.479
Colquitt	2.294	2.153	2.658	2.585	2.744	2.669	2.337	2.203
	0.681	0.658	0.700	0.664	0.765	0.667	0.491	0.550
Griffin	2.718	2.657	2.871	2.833	2.957	2.975	2.526	2.530
	0.692	0.662	0.634	0.661	0.768	0.677	0.727	0.661

	Foreign Lang.		Voc Ed		Arts/Music		Misc	
School	86/87	89	86/87	89	86/87	89	86/87	89
Serra	1.324	1.408	1.937	1.730	1.070	0.895	3.507	3.164
	1.000	0.944	1.270	1.118	1.196	1.040	0.998	1.207
Mirada	1.185	1.363	2.247	1.829	1.705	1.432	3.671	3.397
	1.209	0.921	1.222	1.048	1.486	1.297	1.112	1.077
Sanger	1.061	1.107	2.243	2.443	1.162	1.050	4.189	3.450
	0.965	1.066	1.729	1.667	1.378	1.228	1.281	0.893
Pasadena	1.301	1.616	1.191	1.174	0.735	0.551	3.257	3.051
	1.175	1.075	0.942	1.064	0.975	0.768	0.857	0.613
Atkinson	0.171	0.464	2.400	3.414	0.821	0.550	3.136	2.014
	0.380	0.661	1.473	1.666	0.872	0.945	0.978	1.053
Colquitt	0.362	0.593	3.028	2.890	0.688	0.669	1.777	1.771
	0.700	0.785	1.707	1.483	1.047	1.101	0.917	0.868
Griffin	1.072	1.026	1.513	1.339	0.738	0.816	2.423	2.078
	0.889	0.954	1.099	1.223	1.135	0.973	0.959	0.933

Means and Frequencies of Same level or E after 10th g

	Course subject				
School	Math	SStu	Engl	Sci	Total
Serra	0.63	0.88	0.97	0.54	0.72
	151	24	151	138	464
Mirada	0.75	0.99	0.93	0.73	0.85
	132	143	146	143	564
Sanger	0.40	0.68	0.63	0.55	0.56
	140	131	144	113	528
Pasadena	0.48	0.84	0.76	0.60	0.68
	141	141	140	108	530
Atkinson	0.49	0.88	0.80	0.25	0.60
	138	125	138	134	535
Colquitt	0.49	0.68	0.60	0.53	0.57
	135	131	136	136	538
Griffin	0.71	0.88	0.82	0.79	0.80
	149	148	148	148	593
Total	0.57	0.83	0.79	0.57	0.69
	986	843	1003	920	3752

Means and Frequencies of Dropped subject after 10th gr

	Course subject				
School	Math	SStu	Engl	Sci	Total
Serra	0.06	0.02	0.03	0.31	0.11
	151	150	151	150	602
Mirada	0.16	0.00	0.06	0.26	0.12
	146	146	146	146	584
Sanger	0.27	0.03	0.03	0.20	0.13
	148	147	147	143	585
Pasadena	0.09	0.04	0.03	0.07	0.06
	145	145	145	141	576
Atkinson	0.29	0.04	0.00	0.72	0.26
	140	139	139	139	557
Colquitt	0.25	0.10	0.10	0.27	0.18
	146	146	146	146	584
Griffin	0.01	0.01	0.02	0.03	0.02
	149	149	149	149	596
Total	0.16	0.03	0.04	0.26	0.12
	1025	1022	1023	1014	4084

Means and Frequencies of Same level or E after 11th gr

	Course subject				
School	Math	SStu	Engl	Sci	Total
Serra	0.38	0.84	0.84	0.29	0.63
	66	69	70	38	243
Mirada	0.66	0.96	0.52	0.32	0.66
	59	73	65	37	234
Sanger	0.22	0.68	0.39	0.38	0.43
	54	72	72	48	246
Pasadena	0.34	0.83	0.79	0.46	0.61
	64	66	67	65	262
Atkinson	0.34	0.21	0.83	0.08	0.45
	53	70	70	12	205
Colquitt	0.25	0.65	0.69	0.26	0.48
	51	62	62	58	233
Griffin	0.59	0.71	0.77	0.33	0.60
	73	72	71	73	289
Total	0.41	0.70	0.69	0.34	0.56
	420	484	477	331	1712

Means and Frequencies of Dropped subject after 11th gr

	Course subject				
School	Math	SStu	Engl	Sci	Total
Serra	0.25	0.04	0.04	0.23	0.14
	75	74	75	74	298
Mirada	0.26	0.01	0.36	0.34	0.24
	73	73	73	73	292
Sanger	0.41	0.01	0.16	0.40	0.24
	74	74	74	72	294
Pasadena	0.38	0.01	0.04	0.33	0.19
	73	73	73	70	289
Atkinson	0.47	0.77	0.06	0.16	0.36
	70	70	70	70	280
Colquitt	0.39	0.15	0.13	0.54	0.30
	72	72	72	72	288
Griffin	0.19	0.23	0.03	0.54	0.25
	74	74	74	74	296
Total	0.33	0.17	0.12	0.36	0.25
	511	510	511	505	2037

Means and Frequencies of Same level or [illegible]

School	Course subject Math	SStu	Engl	Sci	Total
Serra	0.70	0.07	1.00	0.65	0.61
	148	134	148	60	490
Mirada	0.64	0.99	0.99	0.96	0.88
	146	144	146	26	462
Sanger	0.59	0.74	0.58	0.57	0.59
	140	19	147	58	364
Pasadena	0.76	0.97	0.90	0.25	0.86
	145	143	145	8	441
Atkinson	0.76	0.88	0.79	0.96	0.85
	140	138	139	136	553
Colquitt	0.61	0.73	0.74	0.78	0.72
	145	145	145	145	580
Griffin	0.86	0.87	0.91	0.80	0.86
	149	149	149	135	582
Total	0.70	0.76	0.85	0.79	0.77
	1013	872	1019	568	3472

Means and Frequencies of Dropped subject after 9th gr

School	Course subject Math	SStu	Engl	Sci	Total
Serra	0.00	0.83	0.00	0.06	0.22
	151	150	151	150	602
Mirada	0.10	0.01	0.00	0.01	0.03
	146	146	146	146	584
Sanger	0.05	0.03	0.02	0.08	0.05
	148	147	147	143	585
Pasadena	0.03	0.03	0.03	0.01	0.03
	145	145	145	141	576
Atkinson	0.01	0.10	0.01	0.04	0.04
	140	139	139	139	557
Colquitt	0.08	0.10	0.07	0.07	0.08
	146	146	146	146	584
Griffin	0.00	0.01	0.01	0.01	0.01
	149	149	149	149	596
Total	0.04	0.16	0.02	0.04	0.07
	1025	1022	1023	1014	4084

Appendix C

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```
Serra
9th grade| 10th grade course level (begin)
   course|
    level|  E    R    B    V    C    H  Total
---------+-----------------------------+------
       R |  0    1    1    1    0    0 |     3
       B |  0    2   26   12    7    0 |    47
       C |  0    0    5   10   48    1 |    64
       H |  2    0    1    0    4   27 |    34
       . |  0    0    3    0    0    0 |     3
---------+-----------------------------+------
    Total|  2    3   36   23   59   28 |   151
```

```
Atkinson
9th grade| 10th grade course level (begin)
   course|
    level|  R    B    V    C    .  Total
---------+------------------------+------
       R | 10    9    0    0    0 |    19
       B |  3   49    1    8    2 |    63
       C |  0    9    1   48    0 |    58
---------+------------------------+------
    Total| 13   67    2   56    2 |   140
```

```
Mirada
9th grade| 10th grade course level (begin)
   course|
    level|  E    R    B    C    H    .  Total
---------+-----------------------------+------
       R |  0    7    6    1    0    0 |    14
       B |  1    2   10   25    0   10 |    48
       C |  0    0    5   72    0    4 |    81
       H |  0    0    0    0    3    0 |     3
---------+-----------------------------+------
    Total|  1    9   21   98    3   14 |   146
```

```
Colquitt
9th grade| 10th grade course level (begin)
   course|
    level|  E    R    B    V    C    H    .  Total
---------+----------------------------------+------
       R |  0    5    1    0    0    0    0 |     6
       B |  1   19   38    7    6    0    8 |    79
       C |  1    2    4    1   41    0    2 |    51
       H |  0    0    0    0    6    2    1 |     9
       . |  0    0    1    0    0    0    0 |     1
---------+----------------------------------+------
    Total|  2   26   44    8   53    2   11 |   146
```

```
Sanger
9th grade| 10th grade course level (begin)
   course|
    level|  R    B    V    C    H    .  Total
---------+-----------------------------+------
       R |  1    4    0    0    0    1 |     6
       B |  0    9    6   21    0    5 |    41
       C |  0    0    5   70   10    2 |    87
       H |  0    0    0    3    3    0 |     6
       . |  0    2    0    6    0    0 |     8
---------+-----------------------------+------
    Total|  1   15   11  100   13    8 |   148
```

```
Griffin
9th grade| 10th grade course level (begin)
   course|
    level|  E    R    B    C    H  Total
---------+------------------------+------
       B |  0    1    9    2    0 |    12
       V |  0    1    1    0    0 |     2
       C |  3    4   10   95    0 |   112
       H |  1    0    0    2   20 |    23
---------+------------------------+------
    Total|  4    6   20   99   20 |   149
```

```
Pasadena
9th grade| 10th grade course level (begin)
   course|
    level|  E    B    V    C    H    .  Total
---------+-----------------------------+------
       E |  0    0    0    3    1    0 |     4
       B |  0   27    2   17    0    3 |    49
       V |  0    3    0    1    0    0 |     4
       C |  1    4    1   78    3    1 |    88
---------+-----------------------------+------
    Total|  1   34    3   99    4    4 |   145
```

Appendix D

MOVEMENT FROM 10TH TO 11TH GRADE MATH

Serra

10th grade course level (end)	11th grade course level (begin)							
	E	R	B	V	C	H	.	Total
E	0	0	0	0	0	1	0	1
R	0	2	0	0	0	0	0	2
B	0	1	9	3	19	0	3	35
V	0	1	1	10	9	0	3	24
C	1	0	0	8	48	0	2	59
H	1	0	0	0	5	23	1	30
Total	2	4	10	21	81	24	9	151

Atkinson

10th grade course level (end)	11th grade course level (begin)					
	R	B	V	C	.	Total
R	6	7	0	0	1	14
B	2	16	1	16	30	65
V	0	1	0	0	2	3
C	0	2	0	46	8	56
.	0	1	0	0	1	2
Total	8	27	1	62	42	140

Mirada

10th grade course level (end)	11th grade course level (begin)							
	E	R	B	V	C	H	.	Total
R	0	4	0	0	0	0	4	8
B	0	1	6	1	6	0	6	20
C	12	1	1	0	74	0	13	101
H	1	0	0	0	0	2	0	3
.	0	0	4	0	2	0	8	14
Total	13	6	11	1	82	2	31	146

Colquitt

10th grade course level (end)	11th grade course level (begin)							
	E	R	B	V	C	H	.	Total
R	0	3	4	0	0	0	7	1
B	1	0	18	5	11	0	22	5
V	0	3	0	3	0	0	2	
C	3	0	1	1	36	8	5	5
H	1	0	0	0	0	1	0	
.	0	0	0	0	0	1	10	1
Total	5	6	23	9	47	10	46	14

Sanger

10th grade course level (end)	11th grade course level (begin)					
	R	B	V	C	H	.	Total
R	1	0	0	0	0	0	1
B	0	5	2	3	0	6	16
V	0	1	2	1	0	7	11
C	0	4	8	38	24	26	100
H	0	0	0	1	10	1	12
.	0	0	0	2	0	6	8
Total	1	10	12	45	34	46	148

Griffin

10th grade course level (end)	11th grade course level (begin)						
	E	R	B	C	H	.	Total
E	0	0	0	1	0	0	1
R	0	1	5	3	0	0	9
B	1	1	10	6	0	0	18
C	12	1	8	78	0	1	100
H	2	0	0	18	1	0	21
Total	15	3	23	106	1	1	149

Pasadena

10th grade course level (end)	11th grade course level (begin)							
	E	R	B	V	C	H	.	Total
E	0	0	0	0	1	0	0	1
B	0	13	5	1	7	0	5	31
V	0	0	0	0	3	0	1	4
C	0	2	1	2	58	31	7	101
H	1	0	0	0	0	3	0	4
.	0	0	0	0	1	0	3	4
Total	1	15	6	3	70	34	16	145

MOVEMENT FROM 11TH TO 12TH GRADE MATH

```
Serra
 11th grade| 12th grade course level
     course|
level (end)|   E   R   V   C   A   .  Total
-----------+-------------------------+------
         E |   0   0   0   2   1   0 |     3
         R |   0   1   0   0   0   2 |     3
         B |   0   0   3   4   0   4 |    11
         V |   0   4   0   4   0   3 |    11
         C |   2   0   1  17   1  10 |    31
         H |   2   0   0   0   5   0 |     7
         . |   0   0   1   3   0   5 |     9
-----------+-------------------------+------
     Total|   4   5   5  30   7  24 |    75
```

```
Atkinson
 11th grade| rade lev
     course|
level (end)|   R   C   .  Total
-----------+-------------+------
         R |   3   0   1 |     4
         B |   1   1  13 |    15
         V |   0   0   1 |     1
         C |   0  15  18 |    33
         . |   0   1  16 |    17
-----------+-------------+------
     Total|   4  17  49 |    70
```

```
Mirada
 11th grade| rade lev
     course|
level (end)|   E   R   B   C   H   .  Total
-----------+-------------------------+------
         E |   0   0   1   4   1   4 |    10
         R |   0   1   0   0   0   3 |     4
         B |   0   0   2   0   0   3 |     5
         V |   0   0   0   0   0   1 |     1
         C |   7   0   0  21   1   8 |    37
         H |   0   0   0   0   2   0 |     2
         . |   0   0   0   1   0  13 |    14
-----------+-------------------------+------
     Total|   7   1   3  26   4  32 |    73
```

```
Colquitt
 11th grade| rade lev
     course|
level (end)|   E   B   V   C   A   .  Total
-----------+-------------------------+------
         E |   0   0   0   0   0   3 |     3
         R |   0   1   1   0   0   1 |     3
         B |   0   2   0   1   0   9 |    12
         V |   0   0   1   0   0   3 |     4
         C |   7   2   3   3   0   9 |    24
         H |   0   0   0   1   1   3 |     5
         . |   0   1   0   0   0  20 |    21
-----------+-------------------------+------
     Total|   7   6   5   5   1  48 |    72
```

```
Sanger
 11th grade| rade lev
     course|
level (end)|   B   V   C   H   A   .  Total
-----------+-------------------------+------
         B |   0   0   1   0   0   3 |     4
         C |   1   1   5   5   0  16 |    28
         H |   0   0   1   7   3  11 |    22
         . |   0   1   1   1   0  17 |    20
-----------+-------------------------+------
     Total|   1   2   8  13   3  47 |    74
```

```
Griffin
 11th grade| rade lev
     course|
level (end)|   E   B   C   A   .  Total
-----------+---------------------+------
         E |   1   0   2   1   1 |     5
         B |   0   3   1   0   6 |    10
         C |   6   8  30   6   7 |    57
         H |   0   0   0   1   0 |     1
         . |   0   1   0   0   0 |     1
-----------+---------------------+------
     Total|   7  12  33   8  14 |    74
```

```
Pasadena
 11th grade| rade lev
     course|
level (end)|   R   B   V   C   H   .  Total
-----------+-------------------------+------
         R |   0   0   1   1   1   6 |     9
         B |   2   0   0   0   0   3 |     5
         V |   0   0   0   1   0   0 |     1
         C |   0   1   2  12   5  12 |    32
         H |   0   0   0   0  10   7 |    17
         . |   0   0   0   0   0   9 |     9
-----------+-------------------------+------
     Total|   2   1   3  14  16  37 |    73
```

```
Serra
9th grade| 10th grade course level (begin)
   course|
    level|    E     R     C     .  Total
---------+-----------------------+------
       E |    8     0     0    84 |    92
       R |    0     1     0     0 |     1
       H |    0     0     0    41 |    41
       . |   14     0     1     1 |    16
---------+-----------------------+------
    Total|   22     1     1   126 |   150
```

```
Mirada
9th grade|grade levin)
   course|
    level|    E     R     C     .  Total
---------+-----------------------+------
       E |  133     1     5     0 |   139
       R |    1     2     0     2 |     5
       . |    1     0     0     1 |     2
---------+-----------------------+------
    Total|  135     3     5     3 |   146
```

```
Sanger
9th grade|grade levin)
   course|
    level|    E     R     B     C     .  Total
---------+-----------------------------+------
       E |    3     0     0     3     2 |     8
       B |    0     0     0     0     2 |     2
       C |    3     0     0     5     1 |     9
       . |    0     3    60    54    11 |   128
---------+-----------------------------+------
    Total|    6     3    60    62    16 |   147
```

```
Pasadena
9th grade|grade levin)
   course|
    level|    E     R     B     V     H     .  Total
---------+-----------------------------------+------
       E |   83     3     1     2    13     2 |   104
       R |    3     2     0     0     0     1 |     6
       B |    3     0     1     0     0     1 |     5
       H |    1     0     0     0    27     0 |    28
       . |    1     1     0     0     0     0 |     2
---------+-----------------------------------+------
    Total|   91     6     2     2    40     4 |   145
```

```
Atkinson
9th grade|grade levin)
   course|
    level|    E     R     B     C     H     .  Total
---------+-----------------------------------+------
       E |   55     1    10    35     1    13 |   115
       R |   14     0     1     0     0     0 |    15
       B |    2     1     0     0     0     1 |     4
       C |    2     0     0     0     0     0 |     2
       H |    0     0     0     0     2     0 |     2
       . |    1     0     0     0     0     0 |     1
---------+-----------------------------------+------
    Total|   74     2    11    35     3    14 |   139
```

```
Colquitt
9th grade|grade levin)
   course|
    level|    E     R     B     C     H     .  Total
---------+-----------------------------------+------
       E |   19     0     8     1     1     3 |    32
       R |    0    10     7     0     0     2 |    19
       B |    3     2    17     1     0     5 |    28
       C |   18     0     6    16     5     4 |    49
       H |    0     0     0     3    13     1 |    17
       . |    1     0     0     0     0     0 |     1
---------+-----------------------------------+------
    Total|   41    12    38    21    19    15 |   146
```

```
Griffin
9th grade|grade levin)
   course|
    level|    E     B     C     H     .  Total
---------+-----------------------------+------
       B |    0    13     4     0     0 |    17
       C |    2     2    81     8     1 |    94
       H |    0     0     4    34     0 |    38
---------+-----------------------------+------
    Total|    2    15    89    42     1 |   149
```

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MOVEMENT FROM 10TH TO 11TH GRADE SOCIAL STUDIES

Serra

10th grade course level (end)	11th grade course level (begin)				
	E	R	A	.	Total
E	20	0	0	3	23
R	0	1	0	0	1
.	88	1	35	2	126
Total	108	2	35	5	150

Atkinson

10th grade course level (end)	11th grade course level (begin)						
	E	R	B	C	H	.	Total
E	44	0	8	8	0	3	63
R	2	2	1	0	0	0	5
B	15	1	0	4	0	1	21
C	28	0	4	2	0	0	34
H	0	0	0	0	1	1	2
.	7	0	5	2	0	0	14
Total	96	3	18	16	1	5	139

Mirada

10th grade course level (end)	11th grade course level (begin)				
	E	R	C	A	Total
E	108	1	9	14	132
R	2	2	0	0	4
V	1	0	0	0	1
C	5	0	0	1	6
.	3	0	0	0	3
Total	119	3	9	15	146

Colquitt

10th grade course level (end)	11th grade course level (begin)							
	E	R	B	C	H	A	.	Total
E	0	8	13	12	7	1	3	44
R	0	5	2	0	0	0	6	13
B	0	6	22	5	2	0	2	37
C	0	0	1	14	0	0	4	19
H	1	0	0	4	6	7	0	18
.	0	1	1	2	0	0	11	15
Total	1	20	39	37	15	8	26	146

Sanger

10th grade course level (end)	11th grade course level (begin)						
	E	R	B	C	A	.	Total
E	2	0	0	0	5	0	7
R	0	2	0	0	0	1	3
B	4	0	52	2	0	2	60
C	5	0	28	19	8	1	61
.	2	0	4	1	7	2	16
Total	13	2	84	22	20	6	147

Griffin

10th grade course level (end)	11th grade course level (begin)				
	E	B	C	H	.	Total
E	0	0	2	1	1	4
B	0	11	4	0	0	15
C	1	3	83	1	1	89
H	3	0	8	29	0	40
.	0	0	0	0	1	1
Total	4	14	97	31	3	149

Pasadena

10th grade course level (end)	11th grade course level (begin)							
	E	R	B	C	H	A	.	Total
E	72	5	1	2	2	5	5	92
R	5	2	0	0	0	0	0	7
B	1	0	0	0	0	0	0	1
V	2	0	0	0	0	0	1	3
H	7	0	0	0	15	16	0	38
.	0	0	0	0	0	0	4	4
Total	87	7	1	2	17	21	10	145

MOVEMENT FROM 11TH TO 12TH GRADE SOCIAL STUDIES

```
Serra
 11th grade| rade lev
     course|
level (end)|   E    C    A    .  Total
-----------+--------------------+------
         E |  44    6    2    2 |   54
         R |   0    0    0    1 |    1
         A |   1    8    5    0 |   14
         . |   3    0    0    2 |    5
-----------+--------------------+------
     Total|  48   14    7    5 |   74
```

```
Mirada
 11th grade| rade lev
     course|
level (end)|   E    R    C    H    .  Total
-----------+-------------------------+------
         E |  59    0    4    1    1 |   65
         R |   0    1    0    0    0 |    1
         C |   1    0    0    0    0 |    1
         A |   4    0    2    0    0 |    6
-----------+-------------------------+------
     Total|  64    1    6    1    1 |   73
```

```
Sanger
 11th grade| rade lev
     course|
level (end)|   E    B    C    A    .  Total
-----------+-------------------------+------
         E |   1    5    6    1    0 |   13
         B |   1   30   14    0    1 |   46
         C |   0    1    1    0    0 |    2
         A |   1    2    5    3    0 |   11
         . |   0    2    0    0    0 |    2
-----------+-------------------------+------
     Total|   3   40   26    4    1 |   74
```

```
Pasadena
 11th grade| rade lev
     course|
level (end)|   E    R    V    C    H    .  Total
-----------+------------------------------+------
         E |  15    4    1   23    1    0 |   44
         R |   1    2    0    1    0    1 |    5
         V |   1    0    0    0    0    0 |    1
         H |   2    0    0    3    1    0 |    6
         A |   4    0    1    1    4    0 |   10
         . |   0    0    0    1    0    6 |    7
-----------+------------------------------+------
     Total|  23    6    2   29    6    7 |   73
```

```
Atkinson
 11th grade| rade lev
     course|
level (end)|   E    R    B    C    .  Total
-----------+-------------------------+------
         E |   5    1    5    2   39 |   52
         B |   1    0    0    0    7 |    8
         C |   1    0    1    0    8 |   10
-----------+-------------------------+------
     Total|   7    1    6    2   54 |   70
```

```
Colquitt
 11th grade| rade lev
     course|
level (end)|   E    R    B    C    H    .  Total
-----------+------------------------------+------
         E |   0    0    1    1    0    0 |    2
         R |   2    3    3    0    0    2 |   10
         B |   5    1    4    1    0    7 |   18
         C |   6    0    2    7    1    2 |   18
         H |   3    0    0    1    6    0 |   10
         A |   2    0    0    2    0    0 |    4
         . |   0    0    0    0    0   10 |   10
-----------+------------------------------+------
     Total|  18    4   10   12    7   21 |   72
```

```
Griffin
 11th grade| rade lev
     course|
level (end)|   E    B    C    H    .  Total
-----------+-------------------------+------
         E |   1    0    1    0    1 |    3
         B |   3    1    0    0    1 |    5
         C |  20    1    9    2   13 |   45
         H |   6    0    1   10    2 |   19
         . |   1    0    1    0    0 |    2
-----------+-------------------------+------
     Total|  31    2   12   12   17 |   74
```

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MOVEMENT FROM 9TH TO 10TH GRADE ENGLISH

Serra

```
9th grade| 10th grade course level (begin)
   course|
    level|     E     R     C     H | Total
---------+-------------------------+------
        E|    90     1     1     3 |    95
        R|     5     3     0     0 |     8
        B|     1     0     0     0 |     1
        C|     2     0     0     0 |     2
        H|    11     0     0    31 |    42
        .|     3     0     0     0 |     3
---------+-------------------------+------
    Total|   112     4     1    34 |   151
```

Mirada

```
9th grade| 10th grade course level (begin)
   course|
    level|     E     R     B     H | Total
---------+-------------------------+------
        E|    96     4     1    11 |   112
        R|     8    10     0     0 |    18
        B|     0     0     2     0 |     2
        C|     1     0     0     0 |     1
        H|     2     1     0    10 |    13
---------+-------------------------+------
    Total|   107    15     3    21 |   146
```

Sanger

```
9th grade| 10th grade course level (begin)
   course|
    level|     E     R     B     C     . | Total
---------+-------------------------------+------
        E|     0     0     1     1     0 |     2
        R|     0     1     0     0     1 |     2
        B|     3     5    56    11     2 |    77
        C|     1     1    42    22     0 |    66
---------+-------------------------------+------
    Total|     4     7    99    34     3 |   147
```

Pasadena

```
9th grade| 10th grade course level (begin)
   course|
    level|     E     R     B     H     . | Total
---------+-------------------------------+------
        E|    62     1     0     5     2 |    70
        R|     6     1     8     0     0 |    15
        B|    13     2     5     0     3 |    23
        H|     6     0     0    31     0 |    37
---------+-------------------------------+------
    Total|    87     4    13    36     5 |   145
```

Atkinson

```
9th grade| 10th grade course level (begin)
   course|
    level|     E     R     B     C     H     . | Total
---------+-------------------------------------+------
        R|     0    33    13     0     0     0 |    46
        B|     0     2    32     5     0     1 |    40
        C|     1     0     5    44     1     0 |    51
        H|     0     0     0     2     0     0 |     2
---------+-------------------------------------+------
    Total|     1    35    50    51     1     1 |   139
```

Colquitt

```
9th grade| 10th grade course level (begin)
   course|
    level|     E     R     B     C     H     . | Total
---------+-------------------------------------+------
        E|     1     5    16     0     1     0 |    23
        R|     1    27     3     0     0     4 |    35
        B|     0     8    31     2     1     4 |    46
        C|     0     0     3    11     2     1 |    17
        H|     0     0     4     4    15     1 |    24
        .|     0     1     0     0     0     0 |     1
---------+-------------------------------------+------
    Total|     2    41    57    17    19    10 |   146
```

Griffin

```
9th grade| 10th grade course level (begin)
   course|
    level|     E     R     B     C     H     . | Total
---------+-------------------------------------+------
        E|     0     0     0     1     1     0 |     2
        R|     1     0     2     0     0     0 |     3
        B|     1     1    10     0     0     0 |    12
        C|     3     1     1    73     3     1 |    82
        H|     0     1     0     3    46     0 !    50
---------+-------------------------------------+------
    Total|     5     3    13    77    50     1 |   149
```

MOVEMENT FROM 10TH TO 11TH GRADE ENGLISH

Serra

10th grade course level (end)	11th grade course level (begin)						
	E	R	B	C	H	.	Total
E	92	2	1	2	8	4	109
R	3	1	0	0	0	0	4
C	1	0	0	0	0	0	1
H	7	0	0	0	29	1	37
Total	103	3	1	2	37	5	151

Mirada

10th grade course level (end)	11th grade course level (begin)						
	E	R	B	C	H	.	Total
E	86	3	0	1	10	6	106
R	6	6	0	0	0	2	14
B	1	1	1	0	0	0	3
H	8	1	0	0	14	0	23
Total	101	11	1	1	24	8	146

Sanger

10th grade course level (end)	11th grade course level (begin)						
	E	R	B	C	H	.	Total
E	0	0	2	4	0	0	6
R	1	3	2	2	0	0	8
B	3	9	57	28	0	3	100
C	0	0	7	21	1	1	30
.	0	0	1	0	0	2	3
Total	4	12	69	55	1	6	147

Pasadena

10th grade course level (end)	11th grade course level (begin)							
	E	R	B	V	C	A	.	Total
E	44	17	12	3	3	3	5	87
R	0	1	2	0	0	0	0	3
B	2	7	6	0	1	0	0	16
H	15	0	0	0	0	19	0	34
.	0	0	0	0	1	0	4	5
Total	61	25	20	3	5	22	9	145

Atkinson

10th grade course level (end)	11th grade course level (begin)					
	E	R	B	C	H	Total
E	0	0	0	1	0	1
R	0	27	8	0	0	35
B	0	2	40	7	0	49
C	1	0	8	41	2	52
H	0	0	1	0	0	1
.	0	1	0	0	0	1
Total	1	30	57	49	2	139

Colquitt

10th grade course level (end)	11th grade course level (begin)						
	E	R	B	C	H	.	Total
E	0	0	0	0	0	1	1
R	1	27	5	0	0	10	43
B	1	5	25	14	8	3	56
C	0	0	3	12	0	1	16
H	0	0	0	4	16	0	20
.	0	0	0	0	0	10	10
Total	2	32	33	30	24	25	146

Griffin

10th grade course level (end)	11th grade course level (begin)						
	E	R	B	C	H	.	Total
E	5	0	0	1	0	0	6
R	1	0	3	1	0	0	5
B	0	0	8	3	0	1	12
C	8	3	4	59	4	1	79
H	2	0	0	5	38	1	46
.	0	0	0	1	0	0	1
Total	16	3	15	70	42	3	149

MOVEMENT FROM 11TH TO 12TH GRADE ENGLISH

```
Serra
 11th grade| rade lev
     course|
level (end)|    E     R     C     H     A     .   Total
-----------+------------------------------------+-------
         E |   37     1     1     5     1     2 |     47
         R |    2     1     0     0     0     1 |      4
         C |    1     0     0     0     0     0 |      1
         H |    2     0     0     8     8     0 |     18
         . |    1     0     0     1     0     3 |      5
-----------+------------------------------------+-------
      Total|   43     2     1    14     9     6 |     75
```

```
Mirada
 11th grade| rade lev
     course|
level (end)|    E     R     C     A     .   Total
-----------+------------------------------+-------
         E |   13     0    11     3    21 |     48
         R |    5     1     0     0     3 |      9
         C |    0     0     0     0     1 |      1
         H |    1     0     1     4     1 |      7
         . |    7     0     1     0     0 |      8
-----------+------------------------------+-------
      Total|   26     1    13     7    26 |     73
```

```
Sanger
 11th grade| rade lev
     course|
level (end)|    E     R     B     C     A     .   Total
-----------+------------------------------------+-------
         E |    2     0     0     2     1     1 |      6
         R |    1     2     0     1     0     4 |      8
         B |    1     6     5     6     0     7 |     25
         C |    2     2     1    12    16     0 |     33
         . |    0     0     0     1     0     1 |      2
-----------+------------------------------------+-------
      Total|    6    10     6    22    17    13 |     74
```

```
Pasadena
 11th grade| rade lev
     course|
level (end)|    E     R     B     C     A     .   Total
-----------+---      -------------------------+-------
         E |    2     0     0     4     0     0 |     27
         R |   10     1     5     2     0     3 |     21
         B |    5     2     1     0     0     0 |      8
         V |    1     0     1     0     0     0 |      2
         A.|    4     0     0     1     4     0 |      9
         . |    0     0     0     1     0     5 |      6
-----------+------------------------------------+-------
      Total|   43     3     7     8     4     8 |     73
```

```
Atkinson
 11th grade| rade lev
     course|
level (end)|    R     B     C     .   Total
-----------+------------------------+-------
         R |    8     3     0     2 |     13
         B |    2    28     1     1 |     32
         C |    0     1    22     1 |     24
         H |    0     0     1     0 |      1
-----------+------------------------+-------
      Total|   10    32    24     4 |     70
```

```
Colquitt
 11th grade| rade lev
     course|
level (end)|    E     R     B     V     C     H     A     .   Total
-----------+------------------------------------------------+------
         E |    0     0     0     1     0     0     0     0 |
         R |    0    12     0     0     0     0     0     5 |     1
         B |    0     0     7     1     2     0     0     3 |     1
         V |    0     1     0     0     0     0     0     0 |
         C |    0     0     1     0    13     1     0     1 |     1
         H |    2     0     0     0     2     8     2     0 |     1
         . |    0     0     0     0     0     0     0    10 |     1
-----------+------------------------------------------------+------
      Total|    2    13     8     2    17     9     2    19 |     7
```

```
Griffin
 11th grade| rade lev
     course|
level (end)|    B     C     H     A     .   Total
-----------+------------------------------+-------
         E |    0     4     1     0     1 |      6
         R |    0     1     0     0     0 |      1
         B |    3     1     0     0     0 |      4
         C |    3    35     0     0     1 |     39
         H |    0     2    12     7     0 |     21
         . |    0     3     0     0     0 |      3
-----------+------------------------------+-------
      Total|    6    46    13     7     2 |     74
```

```
Serra
9th grade| 10th grade course level (begin)
   course|
    level|    E     R     B     H     .  Total
---------+------------------------------+------
       E |   22     0     1     0     5 |    28
       R |    0     2     0     0     0 |     2
       B |    2     0     0     0     4 |     6
       C |    1     0     0    12     0 |    13
       H |    1     0     0    10     0 |    11
       . |   57     0    14    16     3 |    90
---------+------------------------------+------
    Total|   83     2    15    38    12 |   150
```

```
Mirada
9th grade| 10th grade course level (begin)
   course|
    level|    E     R     B     .  Total
---------+------------------------+------
       E |   20     0     0     0 |    20
       B |    4     0     1     1 |     6
       . |   86     3    29     2 |   120
---------+------------------------+------
    Total|  110     3    30     3 |   146
```

```
Sanger
9th grade| 10th grade course level (begin)
   course|
    level|    B     C     .  Total
---------+------------------+------
       R |    0     0     1 |     1
       B |   11     9     8 |    28
       C |    5    22     2 |    29
       . |   41    25    19 |    85
---------+------------------+------
    Total|   57    56    30 |   143
```

```
Pasadena
9th grade| 10th grade course level (begin)
   course|
    level|    R     B     C     .  Total
---------+------------------------+------
       R |    0     1     0     0 |     1
       B |    0     1     3     2 |     6
       C |    0     0     1     0 |     1
       . |    1    52    49    31 |   133
---------+------------------------+------
    Total|    1    54    53    33 |   141
```

```
Atkinson
9th grade| 10th grade course level (begin)
   course|
    level|    E     R     .  Total
---------+------------------+------
       E |  130     1     5 |   136
       . |    2     1     0 |     3
---------+------------------+------
    Total|  132     2     5 |   139
```

```
Colquitt
9th grade| 10th grade course level (begin)
   course|
    level|    E     R     B     C     H     .  Total
---------+------------------------------------+------
       E |   19     2     0     8     1     1 |    31
       R |    1    21     5     1     0     4 |    32
       B |   10     4    22    10     0     3 |    49
       C |    0     0     0    17     0     1 |    18
       H |    0     0     0     2    12     1 |    15
       . |    0     1     0     0     0     0 |     1
---------+------------------------------------+------
    Total|   30    28    27    38    13    10 |   146
```

```
Griffin
9th grade| 10th grade course level (begin)
   course|
    level|    E     R     B     C     H     .  Total
---------+------------------------------------+------
       E |    0     0     0     1     0     0 |     1
       B |    0     1    10     5     0     0 |    16
       C |    3     0     3    73     5     1 |    85
       H |    0     0     0    12    21     0 |    33
       . |    0     1     2     6     5     0 |    14
---------+------------------------------------+------
    Total|    3     2    15    97    31     1 |   149
```

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```
Serra
 10th grade| 11th grade course level (begin)
     course|
 level (end)|   E    R    B    C    H    A    .  |  Total
-----------+---------------------------------+------
          E |  23    0    1   26    3    0   32  |    85
          R |   0    1    0    0    0    0    1  |     2
          B |   1    0    1    0    0    0   12  |    14
          H |   0    0    0   11   18    6    2  |    37
          . |   9    0    1    0    0    0    2  |    12
-----------+---------------------------------+------
      Total|  33    1    3   37   21    6   49  |   150
```

```
Mirada
 10th grade| 11th grade course level (begin)
     course|
 level (end)|   E    R    B    C    A    .  |  Total
-----------+----------------------------+------
          E |  48    0    0   34    7   20  |   109
          R |   2    0    0    0    0    2  |     4
          B |  13    0    1    0    0   16  |    30
          . |   2    1    0    0    0    0  |     3
-----------+----------------------------+------
      Total|  65    1    1   34    7   38  |   146
```

```
Sanger
 10th grade| 11th grade course level (begin)
     course|
 level (end)|   R    B    C    .  |  Total
-----------+------------------+------
          B |   0   37    4   16  |    57
          C |   0   19   25   12  |    56
          . |   2   13    8    7  |    30
-----------+------------------+------
      Total|   2   69   37   35  |   143
```

```
Pasadena
 10th grade| 11th grade course level (begin)
     course|
 level (end)|   R    B    C    H    A    .  |  Total
-----------+----------------------------+------
          E |   0    0    0    0    0    1  |     1
          R |   1    0    0    0    0    0  |     1
          B |   1   30   15    0    1    5  |    52
          C |   0    8   34    1    7    4  |    54
          . |   0    9   22    0    0    2  |    33
-----------+----------------------------+------
      Total|   2   47   71    1    8   12  |   141
```

```
Atkinson
 10th grade| 11th grade course level (begin)
     course|
 level (and)|   E    R    C    .  |  Total
-----------+------------------+------
          E |   9    0   25   98  |   132
          R |   0    0    0    2  |     2
          . |   0    1    0    4  |     5
-----------+------------------+------
      Total|   9    1   25  104  |   139
```

```
Colquitt
 10th grade| 11th grade course level (begin)
     course|
 level (end)|   R    B    C    H    A    .  |  Total
-----------+----------------------------+------
          E |   4   10    5    1    0    4  |    24
          R |   9    9    0    0    0   11  |    29
          B |   0   10    2    0    0   15  |    27
          C |   0    7   23    4    1   10  |    45
          H |   0    0    0   10    1    0  |    11
          . |   0    0    0    0    0   10  |    10
-----------+----------------------------+------
      Total|  13   36   30   15    2   50  |   146
```

```
Griffin
 10th grade| 11th grade course level (begin)
     course|
 level (end)|   E    R    B    C    H    .  |  Total
-----------+----------------------------+------
          E |   1    1    1    1    0    0  |     4
          R |   1    0    0    0    0    0  |     1
          B |   7    4    5    0    0    1  |    17
          C |  32    0    4   51    0    4  |    91
          H |   0    0    0   18   17    0  |    35
          . |   0    0    1    0    0    0  |     1
-----------+----------------------------+------
      Total|  41    5   11   70   17    5  |   149
```

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MOVEMENT FROM 11TH TO 12TH GRADE SCIENCE

Serra

```
 11th grade| rade lev
     course|
level (end)|   E    C    H    A    .   Total
-----------+------------------------------+------
         E |   2    2    0    0    5 |      9
         R |   0    0    0    0    1 |      1
         B |   1    0    0    0    1 |      2
         C |   0    5    0    1    9 |     15
         H |   0    9    1    0    1 |     11
         . |   3   11    0    0   22 |     36
-----------+------------------------------+------
      Total|   6   27    1    1   39 |     74
```

Mirada

```
 11th grade| rade lev
     course|
level (end)|   E    C    .   Total
-----------+-----------------+------
         E |   3    2   16 |     21
         B |   0    0    1 |      1
         C |   0    7    8 |     15
         . |   3    8   25 |     36
-----------+-----------------+------
      Total|   6   17   50 |     73
```

Sanger

```
 11th grade| rade lev
     course|
level (end)|   B    C    H    .   Total
-----------+----------------------+------
         B |   5    0    0   14 |     19
         C |   0   13    1   14 |     28
         H |   0    0    0    1 |      1
         . |   3    1    0   20 |     24
-----------+----------------------+------
      Total|   8   14    1   49 |     72
```

Pasadena

```
 11th grade| rade lev
     course|
level (end)|   B    C    A    .   Total
-----------+----------------------+------
         B |  12    3    0   14 |     29
         C |   6   18    2    9 |     35
         H |   0    1    0    0 |      1
         . |   1    1    0    3 |      5
-----------+----------------------+------
      Total|  19   23    2   26 |     70
```

Atkinson

```
 11th grade| rade lev
     course|
level (end)|   E    C    .   Total
-----------+-----------------+------
         E |   0    0    1 |      1
         C |   0    1   10 |     11
         . |   1    2   55 |     58
-----------+-----------------+------
      Total|   1    3   66 |     70
```

Colquitt

```
 11th grade| rade lev
     course|
level (end)|   B    C    H    .   Total
-----------+----------------------+------
         R |   1    0    0    7 |      8
         B |   4    0    0   21 |     25
         C |   0    6    0    8 |     14
         H |   0    1    5    3 |      9
         A |   0    1    1    0 |      2
         . |   1    0    0   13 |     14
-----------+----------------------+------
      Total|   6    8    6   52 |     72
```

Griffin

```
 11th grade| rade lev
     course|
level (end)|   E    R    B    C    H    A    .   Total
-----------+-----------------------------------+------
         E |   5    1    1    0    0    1   15 |     23
         R |   0    0    1    0    0    0    1 |      2
         B |   1    0    0    1    0    0    1 |      3
         C |  10    0    0    1    1    0   21 |     33
         H |   4    0    0    5    0    1    2 |     12
         . |   0    0    0    1    0    0    0 |      1
-----------+-----------------------------------+------
      Total|  20    1    2    8    1    2   40 |     74
```

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