

UC LMRI

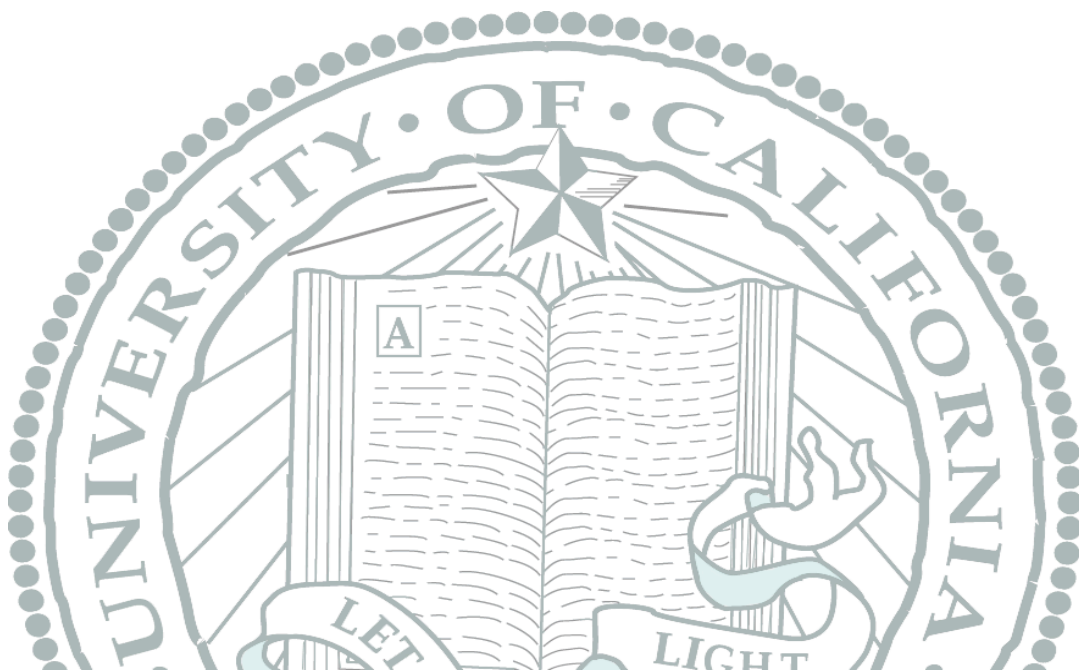
**The Feasibility of Developing a California Education
Longitudinal Study**

Phillip Kaufman
MPR Associates

September 2002

University of California

LINGUISTIC MINORITY
RESEARCH INSTITUTE



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The University of California Linguistic Minority Research Institute
Policy Report 2002-1

This report was produced as part of the UC LMRI Faculty Steering Committee's research initiative to develop a comprehensive, longitudinal database that can be used to study the educational progress English Language Learners. This report was produced with funds from the UC Linguistic Minority Research Institute, the UC All Campus Consortium On Research for Diversity (ACCORD), and the UC Office of the President. The author would like to acknowledge the helpful comments of Russell Rumberger and an anonymous reviewer.

About UC LMRI

The University of California Linguistic Minority Research Institute (UC LMRI) was established in 1984 in response to the California Legislature's request that the University of California's Office of the President pursue "...knowledge applicable to educational policy and practice in the area of language minority students' academic achievement and knowledge," including their access to the University of California and other institutions of higher education. The UC LMRI was first established as a research project and then became a Multi-campus Research Unit (MRU) in 1992. To carry out its mission, the UC LMRI has undertaken a number of activities in four related areas:

- funding research of UC faculty and graduate students;
- commissioning research syntheses in key policy areas;
- providing research training for pre-doctoral and postdoctoral students;
- disseminating research findings to researchers, practitioners, and policymakers.

For more information, visit the UC LMRI website at: <http://lmri.ucsb.edu/>.

About UC ACCORD

UC ACCORD, All Campus Consortium On Research for Diversity, is an interdisciplinary, multi-campus research center devoted to a more equitable distribution of educational resources and opportunities in California's diverse public schools and universities. This distinctive UC voice serves as an information and research clearinghouse and catalyst for promoting the delivery of high-quality, equitable schooling to all students. ACCORD harnesses the research expertise of the University of California to identify strategies that will increase college preparation, access, and retention. Policymakers, researchers, teachers, outreach staff, and students all benefit from this source of reliable information for equitable education policy and practice.

For more information, visit the UC ACCORD website at: <http://ucaccord.gseis.ucla.edu/>.

About the Author

Dr. Phillip Kaufman is a Senior Research Associate for MPR Associates in Berkeley, California. After receiving his Ph.D. degree in Social Psychology at The Claremont Colleges, Dr. Kaufman worked for the National Center for Education Statistics (NCES) from 1984 to 1988. He joined MPR Associates in 1988. He currently is working with NCES on two national longitudinal studies, the National Longitudinal Study of 1988 (NELS:88) and the Education Longitudinal Study of 2002 (ELS:02). His primary interest is in at-risk students and high school dropouts.

Executive Summary

This paper explores the feasibility of collecting longitudinal survey data on students within California schools as a way of supplementing the information California currently collects on its students. Hopefully, this paper will be the start of a process that will lead to the institution of what we in this paper tentatively call the California Education Longitudinal Study (CELS). After demonstrating the feasibility of a CELS during a briefing with policymakers in Sacramento on April 27, 2001 (see Appendix B), my presumption is that California will either contract with other outside consultants familiar with data collection operations or use current state government staff to develop a full written design of CELS. This design should lead, in turn, to either an in-house data collection or a data collection by a survey research firm familiar with large-scale longitudinal surveys.

I argue in this paper that collecting longitudinal data on students in California's elementary and secondary schools is not only feasible, but also advisable. I contend that tracking individual students throughout their educational careers, rather than relying on single snapshots of all students provided by administrative records, provides a more direct and understandable way of assessing the effectiveness of California's schools.

Using the NELS:88 data I show examples of contextual data that can be collected and turned into information useful to educational policymakers and practitioners. Key variables include both cognitive and non-cognitive aspects of schooling, as well as educational attainment, college completion, and labor market success.

I also outline several key issues that will need to be addressed before a design for CELS can be established. These include:

- Linkages with other state and national data collection activities (e.g., California Student Information System--CSIS);
- Data system design;
- The possible burden of data collection on students, parents, teachers, and administrators;
- The cost of CELS;
- Confidentiality; and
- Data management, including the use of the Internet

In the end, I maintain that these issues can be resolved to the State's and the public's satisfaction. I also contend that the benefits of having better and richer data on California's students outweigh the costs that will be associated with CELS.

Introduction

Recently the State of California has been instituting a number of reforms in an effort to improve the educational performance of California's students and schools. These reforms, carried out by a number of different agencies, consist of a wide variety of individual efforts including:

- Class size reduction;
- The end of social promotion;
- Implementation of high-stakes high school graduation exams;
- New investments in teacher professional development;
- Modifications to bilingual education;
- The end of affirmative action; and
- A major expansion of outreach activities by the University of California to improve the future UC eligibility of educationally disadvantaged students.

Without reliable and accurate data on students, teachers, and schools, the impact of these reforms will be difficult to detect. For example, with current data one cannot determine if students receiving three years of class size reduction gain more than students receiving only one or two years. One cannot determine if students retained in grade improve their performance in later years; that is, do students who are retained later "catch up" to their peers? Without better data, it will be difficult to determine in any direct manner if UC outreach programs are reaching their intended audiences. The University will be able to continue to monitor the characteristics of entrants, but will be unable to tie any changes in those characteristics to policy initiatives.¹

Thus, without investing adequate resources to collecting accurate and comparable data, these kinds of questions will go unanswered and the State will not know if the almost \$40 billion investment in schools has led to the educational outcomes that these reforms promise. The current State data system has serious weaknesses for tracking the academic progress of its students. Current reports on California's students rely only on aggregate cross-sectional data on schools' students. However, tracking individual students throughout their educational careers,

¹For an additional view on the need for better education data in California see the attached article: Brian Stecher, "For School Reform, We Need Better Data," *Los Angeles Times*, September 11, 1999.

rather than relying on single snapshots of all students, provides a more direct and understandable way of assessing the effectiveness of California's schools.²

Fortunately, the State has committed itself to improving its educational data systems. One way in which the State is doing this is by exploring the feasibility of an electronic tracking system to exchange electronic student transcripts between Local Education Agencies (LEAs) and to postsecondary institutions, and to transmit electronic data to the California Department of Education to meet state reporting requirements. This system, known as California School Information Services (CSIS), has the potential to provide some of the data on individual students that policy makers need to make informed decisions about educational policy.³ However, this improvement alone to the State administrative record system may not be adequate to fully monitor the full range of reforms in the State. This is due to some inherent weaknesses of administrative record systems as a tool for policy research. These weaknesses are discussed next.

Administrative Data Systems

The continued development of computer technology has made the use of data systems based on administrative records much more practical today than in the past. The ability to track students electronically via a common student identifier has the potential to provide rich and timely data on the educational progress of students within and through California's educational system. For example, in several other states students are identified in the state data system by their social security number. Consequently, analysts within the state departments of education are able to track students by social security through the K-12 system and the postsecondary system. Merging these education data with the unemployment insurance (UI) data allows analysts to follow former students into the workplace. Thus, in theory, these new electronic tracking systems have the potential to vastly improve the information available to policymakers on California's schools. However, I am somewhat pessimistic that, in fact, this potential will be realized in the near future.

²For example, a recent study of the effectiveness of class size reduction in California points out the need of longitudinal data, "One important issue that cannot be resolved is the inability to follow individual students over time." (Christopher Jepsen and Steven Rivkin, *Class Size Reduction, Teacher Quality, and Academic Achievement in California Public Elementary Schools*, San Francisco: Public Policy Institute of California, 2002, p. 43). For a similar perspective on longitudinal data nationwide see the attached article: Chrys Dougherty, *More than A Snapshot*, Education Week, May 2, 2001.

³Information on CSIS is available from their website at: <http://www.csis.k12.ca.us/>.

I have several reasons for being pessimistic. First, my colleagues and I have some experience working with state data systems for a project for the National Assessment of Vocational Education (NAVE). Our experience with these administrative record systems indicate that, in practice, creating a longitudinal data system out of a system of administrative cross-sectional records can be difficult. One of the largest problems is that anomalies in the data are not apparent in a one-year cross-sectional report of aggregated data from that student's (or those students') school, but only come to light when one tries to match students from one year to the next. For example, we have seen instances in which a match of social security numbers result in students who appear to change from male to female from one year to the next or from one age from one year to the next.

Furthermore, the quality of these administrative data is dependent on the staff at the local school entering the data correctly. The accuracy of this data entry is consequently uneven and there are not always the kinds of edit controls in place that would exist if a survey research firm were doing the work. For example, we have seen instances where school staff has mistaken date-of-birth fields with current date fields—yielding students who are 0 years old. Quality control is a constant struggle in large-scale surveys—even with highly trained staff.

Our experience working with these data has also shown that there are vast conceptual differences in data collected for administrative purposes and those collected for research purposes. Administrative records are collected for the purpose of accountability—traditionally for financial accountability and lately for school performance accountability. The data elements that are available in such systems are thus restricted to a fairly narrow range—test scores, absences, formal disciplinary actions, diploma or degree attainment, etc.

Despite these limitations, creating student longitudinal records from administrative data could offer huge advantages over our present data system in California. The University of Texas at Dallas Texas Schools Project has created several cohorts of student longitudinal records in cooperation with the Texas Education Agency that have been used for a large number of research studies (see Appendix A for a more detailed description). Augmenting administrative data with survey data would provide even richer and more useful data with which to study the vast array of educational issues in California.

Longitudinal Survey Data

As I show below, a wide range of individuals and institutions in California would benefit from having comprehensive, longitudinal data on students as they progress through elementary and secondary school and prepare for higher education. This database, tentatively called California Education Longitudinal Study (CELS) could be used for three important purposes: (1) to monitor the academic progress of California's students through school, (2) to help assess the impact of the many reform activities that are being implemented across the state, and (3) to generate fundamental knowledge about some of the source of disparities in student performance in California.

Monitoring the academic progress of California's students through school. Currently, student achievement is reported at the school aggregate level. Changes in a school's grade-by-grade performance can be tracked with the current data system. For example, one can compare the test scores of last year's 8th grade class in Central Middle School against this year's 8th grade class in Central Middle School. However, it is not possible to track the progress of Central Middle School's 8th grade students over time. For example, it is not possible to measure the growth in performance of last year's 8th grade class through the current school year. More importantly, it is not possible to track the progress of a cohort of 8th grade students all the way through the K-12 system into and through postsecondary education.

Assessing the impact of the reforms activities. Specific reforms require detailed data on those reforms. For example, in the evaluation of California's Class Size Reduction (CSR) program, researchers used survey data to supplement the data from the state's administrative record data system. These questionnaires asked teachers and school administrators about their attitudes about CSR and about changes in curriculum, instruction and student behavior. These survey data were a critical part of the evaluation of the program. Without the survey data, researchers may have been able to determine if class sizes were reduced, but would have been unable to determine if actual classroom practices had changed as a result.

A longitudinal data system such as proposed below, would allow the state to customize questionnaires to obtain data relevant to specific school reforms. For example, if an ongoing

system of longitudinal data were in place, questions on the teacher or student questionnaires could be targeted over a period of time to explore particular reform questions.

Generating knowledge about some of the source of disparities in student performance.

CELS would give state policy makers and researchers a vehicle for exploring basic knowledge about the sources of variation in student performance within the state. Currently, national datasets are used to examine some of these issues. (I describe one of these datasets below) However, it is not clear that one can always generalize from national data to situations within a particular state. In particular, the relationships between student characteristics and academic achievement within the nation may not mirror those relationships within the state. For example, the particular interrelationships between the characteristics of Hispanic students within California and the California school system may not be the same as those interrelationships within the nation as a whole.

The purpose of this paper is to address the feasibility of incorporating such a longitudinal study of students into the California school data system. I have two main goals in this paper. One goal is to describe the benefits of collecting survey data on some portion of students to supplement the administrative record system. Throughout the paper I will use the National Education Longitudinal Study (NELS:88) data set collected by the National Center for Education Statistics (NCES) to illustrate the kinds of data that could be collected by CELS. The second goal of this paper is to outline several issues that will need to be addressed in designing a CELS for California. The overriding theme of this paper is that there will be inevitable tradeoffs between cost and coverage of the CELS. The more elaborate the design of the survey, all things being equal, the higher the cost will be.

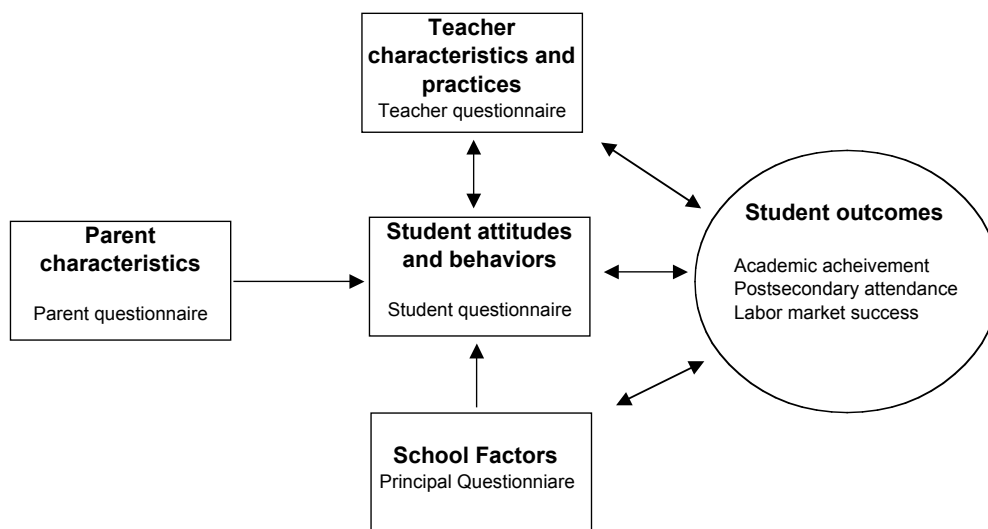
Types of data that would be collected by CELS

A wide variety of factors affect student learning. These include the quality of instruction, the academic and social climate of the school, class size, the rigor and intensity of the curriculum—factors all associated with the formal aspects of the school system. However, research on educational outcomes consistently demonstrates that about 60 to 70 percent of the variance in student outcomes can be traced to factors *outside* the purview of this formal school

system.⁴ Other studies have shown that the *informal* aspects of schooling can also have substantial effects on educational outcomes. These informal features of schooling include the attitudes, beliefs, and behaviors that students bring to school and that are shaped by their experiences while at school.⁵

However, the formal and the informal aspects of school can interact in important ways. For example, students’ prior attitudes and experiences in school affect their reactions to the programs and policies enacted by school personnel. Therefore, to fully understand differences in educational outcomes—including differences in the impact of various reform efforts—it is important to know something about both the formal and informal aspects of schooling. Figure 1 below shows a graphical representation of these factors.

Figure 1—Variables affecting student outcomes



⁴ See, for example, Valerie E. Lee and Anthony S. Bryk, "A multilevel model of the social distribution of high school achievement," *Sociology of Education*, 62 (1989): 172-92; and Russell W. Rumberger and J. Douglas Willms, "The impact of racial and ethnic segregation on the achievement gap in California high schools," *Educational Evaluation and Policy Analysis* 14 (1992): 377-96.

⁵ For example, see Lee and Bryk, op cit.; and Russell W. Rumberger, "Dropping out of middle school: A multilevel analysis of students and schools," *American Educational Research Journal* 32 (1995): 583-625.

The national surveys use several tools to collect such data. These tools include student surveys, student administrative records, parent surveys, teacher surveys, and principal surveys. I will briefly touch on each of these below.

Student surveys

Most of the data collected by national longitudinal surveys rely on student questionnaires. While some of these data can be obtained from school administrative records—such as basic items about the gender, race/ethnicity, grades, attendance patterns etc.—many of these data can only be collected by surveying students directly. For example, survey questionnaires ask individual students a wide variety of questions that go beyond basic demographic information, including their attitudes about school; the academic support they feel they receive from their parents, school officials and other adults; their educational and occupational aspirations and expectations; and their feelings of academic competency. These surveys also probe students on the attitudes and beliefs of their immediate peer group and their perceptions of school crime and safety. These data have proved to be invaluable in explaining and describing the subsequent academic achievement of students.

Student surveys also are important sources of information on the outcomes of education—including postsecondary access and persistence and labor market outcomes. While descriptive information on these outcomes can be collected in an electronic tracking system (e.g. by linking social security numbers to unemployment insurance data systems or the state higher education data systems), it is difficult without individual survey data to know much about the context of these descriptive data. For example, it might be possible to know that a student is enrolled in a community college part-time and is employed part-time, but without asking the student, one will not know why the student is enrolled in the community college—is she there for recreational coursework, career coursework, or is she planning to transfer to a four-year college? If she leaves the community college without obtaining any credential or degree, how is one to know if this is a positive or negative outcome without knowing her original intent at enrollment?

One would also not know much about the job she has beyond some rather simple descriptive data—is she working part-time because she is going to school or is she working part-

time because that is the only job she can find? How satisfied is she with her current job? How do her educational experiences relate to her current job status?

Student surveys also allow the State to provide policy-makers with better descriptive information on its students. For example, one of the most critical outcomes of education is whether or not students finish high school. Even with the California School Information Services (CSIS) on line, providing reliable estimates of dropout and completion rates in the state will be a challenge. While CSIS will be able to track a large proportion of students within the state, some portion of students will still slip through the system. Some will move out of the state and be lost to the system; some will be highly mobile and resistant to the best efforts to track them with administrative records. A longitudinal data set that tracks every student, regardless of where they go, will provide better estimates of what proportion of students in California graduate from high school.⁶

Sample surveys can also help provide a constant check on the quality of the data coming from CSIS. Much like the post enumeration studies that are conducted by the Bureau of the Census, an added advantage CELS would be to estimate the errors in the data reported through CSIS, estimate their biases, and provide a way of adjusting for non-response.

Student administrative records

While students themselves are better informants on some kinds of data, they are less reliable informants on the specific courses they have taken in school and the grades that they have earned in those courses. The longitudinal studies therefore collect these data directly from schools from the administrative records that schools keep on their students. Generally, these data are contained on the students' transcripts. The data collected and recorded include names of courses taken, grades, credits earned, and absences. (For CELS, transcript data may be available through CSIS. Other student level data might also be collected from the state administrative record system, including SAT-9 scores).

⁶ With longitudinal survey systems, students are asked questions about their current place of residence and telephone number; their mother's residence and telephone number; their father's residence and telephone number; plus the residence and telephone number of a close friend. All of this information is subsequently used to track the student over time.

These data have been used by researchers to look at the relationship between course-taking and academic achievement and the relationship between student characteristics and courses taken. Transcripts allow one to look not only at the specific courses that students have taken, but also the sequencing of courses.

Parent surveys

While a good deal of data can be collected from students directly, students are not always the most reliable sources of data on their families. This is especially true of younger children. For example, one of the most interesting variables in studying the persistence and attainment of college students is the educational achievement of students' parents. In particular, students whose parents did not pursue higher education can have a difficult time negotiating the higher education system.⁷ So-called "first generation" students have lower persistence levels and lower attainment levels than do students whose parents can help them keep on track for college enrollment—make sure they take the right classes, take the SAT, etc. Again, students, especially young students or low socioeconomic students, do not necessarily know their parents' educational attainment. These data are best collected from the parent directly.

Another important explanatory variable is socioeconomic status (SES). Typically in national surveys, this variable is measured by combining several variables reported by the parent, including some sensitive items such as income and things in the home (number of books etc). While students are unreliable sources of information on their parents' education, they are even more unreliable when trying to report their parents' income level. While this item is sensitive for parents, with proper confidentiality assurances, the national surveys are able to collect reliable data from the vast majority of parents. This variable is important to describing and understanding the effect of educational reforms on students—reforms that are at times targeted specifically at economically disadvantaged students and/or schools with large numbers of disadvantaged students. Without collecting accurate data from parents on their socioeconomic status, policy-makers and researchers are forced to use proxy measures to capture and control for the effects of SES. The most common proxy measure is eligibility for the federal free or reduced-price lunch

⁷ See Bowen, 1999. *The Shape of the River*.

program. These data are self-reported by the student and generally vastly underestimate the number of economically disadvantaged students.

Teacher surveys

There is a great deal of information that teachers know about their students that are not captured by report cards or other administrative records. Teachers can provide valuable data on student attitudes and behaviors in the classroom—data that can help explain other outcomes or can be seen as outcomes of education itself. Teachers can provide contextual information on the performance of students in their charge that go beyond the scores on standardized test that are routinely administered by the state. For example, in NELS:88, teachers were asked which individual students in their class performed below their ability and which students the teacher thought were at risk of failing in school.

Teachers are also the best source of information on what actually is happening within the classroom. Despite the best efforts to impose reform from above, how and if teachers implement those reforms is crucial to reforms having an impact on student outcomes. Measuring the enacted curriculum focuses on curriculum content and teaching practices as they are actually taught in classrooms, rather than what is formally required. This can only be captured by observing or asking teachers directly what they do in their own classrooms.

Furthermore, by linking teacher data with student data it will be possible to measure the impact of individual teacher characteristics and practices on student outcomes—both immediate and long term outcomes. Linked data could also be used to measure the impact of teacher professional development efforts.

Historically, educators have raised legitimate privacy concerns in linking teacher and student data. Some have felt that such data could be used to evaluate teacher performance in a naive and unfair manner. Such a simple-minded accountability system could also lead to unjust teacher compensation structures.⁸ However, as I discuss below, confidentiality issues (for teachers and for students) can be overcome with proper procedures and data structures. With

⁸ Brian Stecher, “For School Reform, We Need Better Data,” *Los Angeles Times*, September 11, 1999

these procedures in place, students can be linked with teachers without actually identifying teachers or students by name.

Principal surveys

While teachers can speak knowledgeably concerning their own classrooms and their own behavior, school principals are generally better informed about the school as a whole. For example, the longitudinal studies have used principal questionnaires to collect data on general school policies and practices (e.g. discipline policies), and school crime and safety issues (e.g. incidence of crime, policies about school safety).

Principals are also in a position to describe the organizational structure of the school, whether the school is departmentalized, the nature of decision-making at school, etc. The principal can also answer questions about course offerings in terms of the types and breadth of courses offered as well as kinds of Advanced Placement (AP) classes offered at school.

Examples from NELS:88 data

In this section I present a few examples drawn from the NELS:88 data that show a glimpse of the kinds of information that can be collected through longitudinal studies. While this presentation is in no manner a comprehensive treatment of the data, it is hoped that it provides a quick snapshot of the kinds of data that can be collected from a CELS. It is targeted at those readers not already familiar with the NELS:88 data. A more extensive discussion of all of the issues that can be addressed by NELS:88 can be found in *National Education Longitudinal Study of 1988 (NELS:88) Research Framework and Issues*, available from the National Center for Education Statistics at <http://www.nces.ed.gov/pubsearch/pubsinfo.asp?pubid=9603>.

Description of the NELS:88 data

NELS:88 began with a nationally representative cohort of eighth graders in 1988 and followed them every two years until 1994, at which time most of them had been out of high school for two years. (The latest follow-up to NELS:88 was in 2000—six years after most of the cohort graduated from high school—but these data are not yet available.) The full NELS:88 dataset contains over a thousand variables from the student, parent, teacher, and school

administrator surveys. These data have been used to explore a wide variety of educational issues including at the secondary level:

- Achievement growth as related to student background and curriculum factors;
- The distribution of opportunity to learn across student groups;
- School climate;
- The characteristics of student at risk of school failure;
- Parent and community involvement;
- Family support for education;
- Student mobility; and
- High school completion.

At the postsecondary level, issues include:

- Access and choice through the application process to college;
- College entry rates;
- College education experiences;
- Persistence and attainment;
- Student financial aid; and
- Community College transfers.

Issues concerned with the economic outcomes of education also have been explored with these data including:

- Transition from high school to work;
- The effect of GED credentials on economic outcomes;
- Job satisfaction and educational achievement;
- Timing of entry into the workforce; and
- The relationship between work and postsecondary education.

To illustrate how longitudinal data can be used by California educators, I return to these three themes using the NELS:88 data as examples.

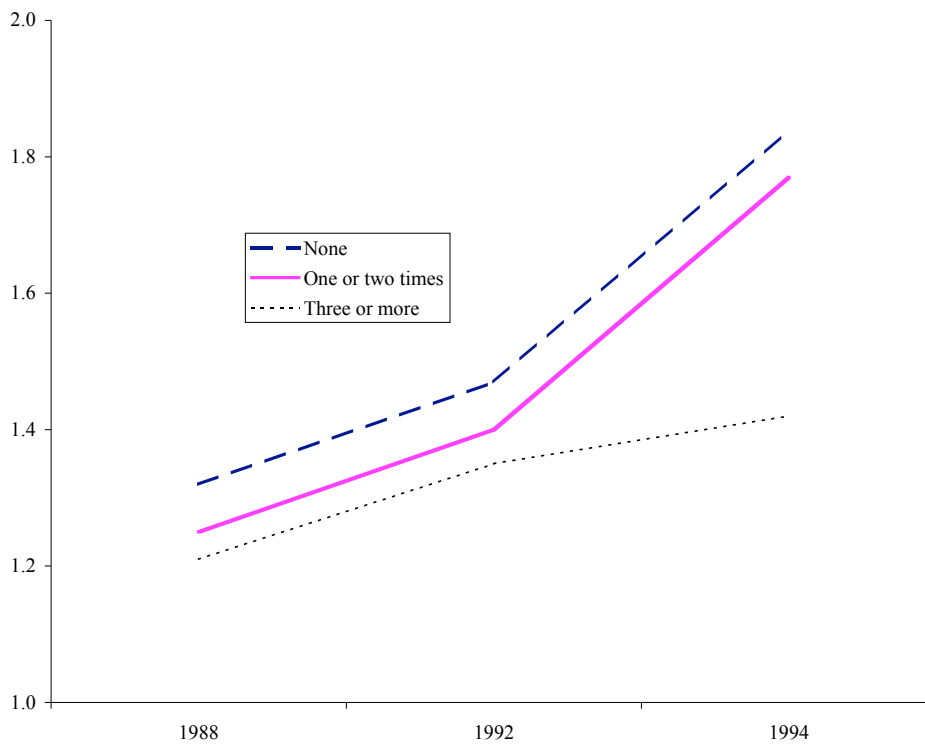
Goal 1: Monitoring academic progress of students through school

As part of NELS:88, students' academic achievement in several core subjects were assessed. These assessments were repeated in the first two follow-ups so that analysts could monitor the academic progress of sampled students. Figure 2 below shows changes in the reading achievement of the eighth-grade class of 1988 as they progressed through school. The reading assessment was constructed so that a student's achievement could be expressed in normative terms (i.e. standardized scores) or in criterion referenced terms (i.e. proficiency levels). In reading, three proficiency levels were supplied: 1) simple reading comprehension, 2) ability to make simple inferences about the author's main thoughts, and 3) ability to make complex inferences.

Figure 2 shows that the level of the student's reading progress was associated with the level of the student's mobility. In this figure, mobility was measured by the number of times that a student changed schools since the eighth grade (except for normal progression from middle to high school). This was measured by asking both students and their parents this question. This kind of information is generally not available in student administrative records, although CSIS might be able to collect information on the mobility of students who stay within the state. Thus student and parent survey data are required to collect these data.

Figure 2 shows that students who did not change schools from 1988 to 1992 had slightly better tested reading skills in 1988 than did students who often changed schools. However, the learning trajectory for less mobile students was much steeper than for highly mobile students. By 1992, students who had not changed schools at all or had changed only once or twice were, on average, reading at higher levels than students who had often changed schools.

Figure 2—Reading proficiency of 1988 eighth graders in 1988, 1992, and 1994 by student mobility

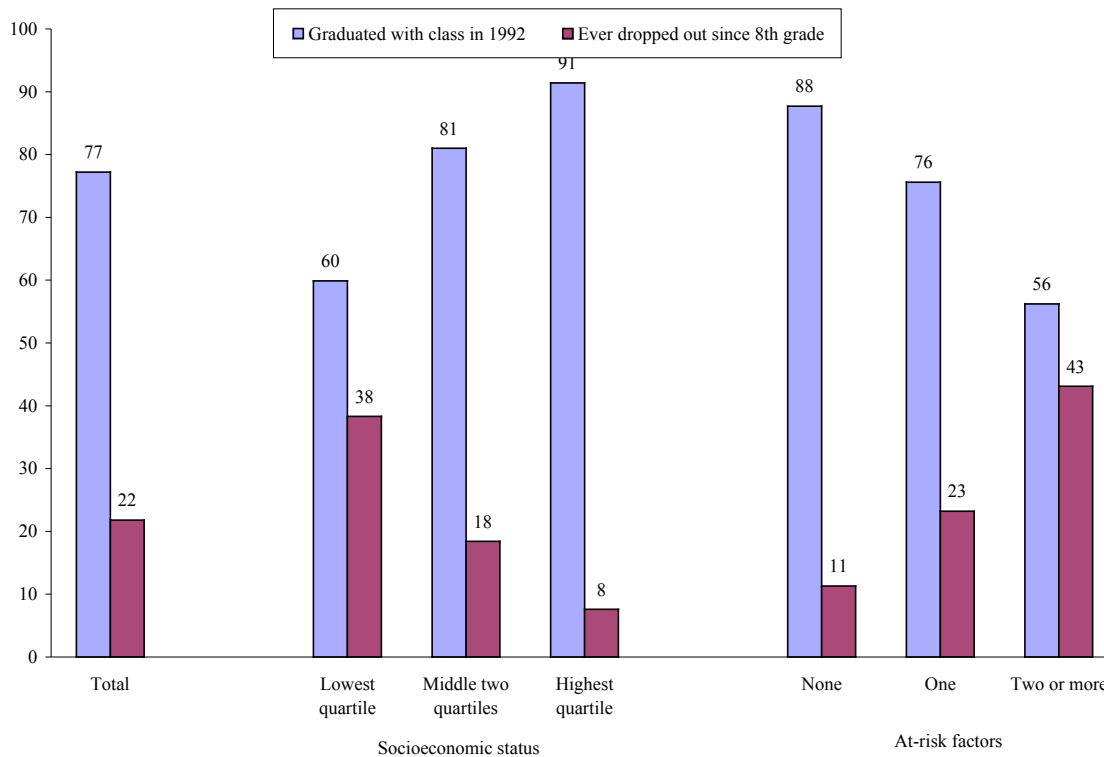


Source: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988.

Figure 3 below shows another form of student progress by displaying the 1992 high school completion status of the eighth-grade class of 1988 drawn from the NELS:88 data. The socioeconomic status (SES) variable shown in this table is a composite variable comprised primarily of items on the base-year parent questionnaire. The at-risk variable is also a composite variable and is based on items from the student and the parent questionnaires. It is important to note that only by surveying students and their parents could one collect the data that are involved in these variables—administrative records do not, and in many cases cannot, contain this type of information.

The data in Figure 3 show that about 77 percent of the eighth-grade cohort graduated on time. About 22 percent dropped out some time during the 4 years from 1988 to 1992. (As an aside, the NELS:88 data show that 81 percent of 1988 eighth graders in California finished on time compared with 75 percent of eighth graders in the rest of the country.)

Figure 3—High school completion and dropout status of 1988 eighth graders in 1992



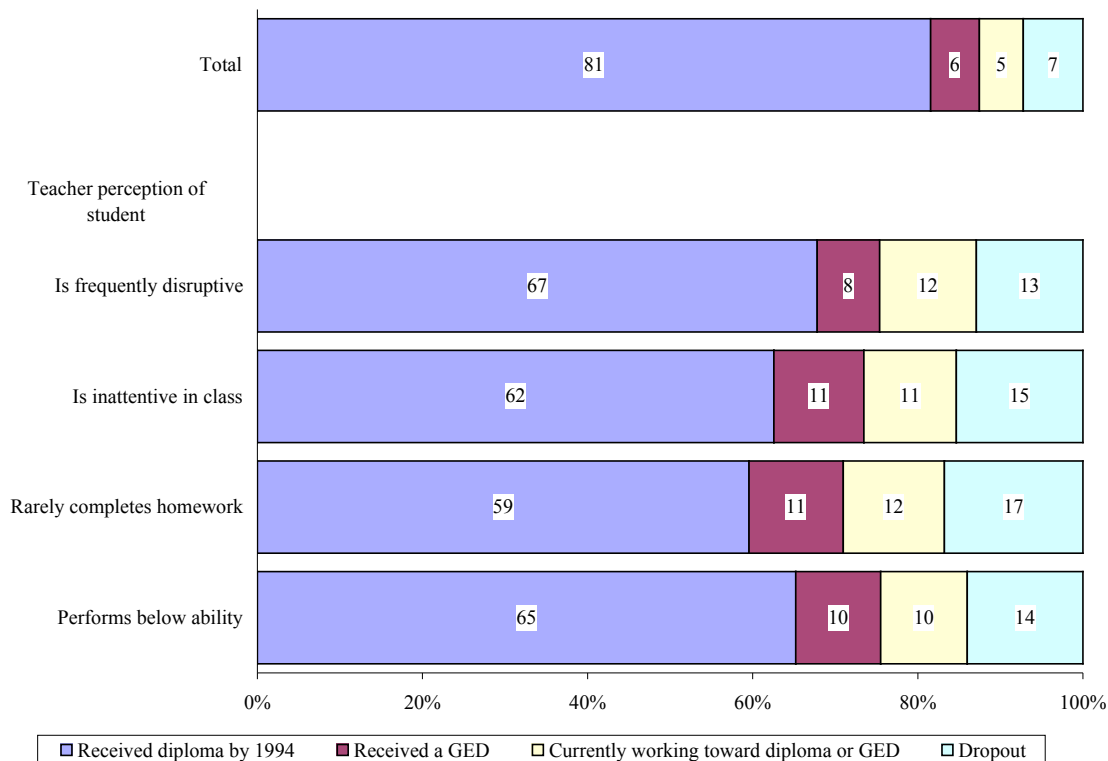
NOTE: At-risk factors include living in a single parent home, having parents with low education levels, having a sibling that dropped out, being 3 or more hours alone at home during weekdays, limited English proficient, and having low family income.

Source: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988.

Figure 3 also shows that these rates varied considerably by SES and at-risk status, with over 90 percent of high SES students graduating on time and only 8 percent dropping out of school at some time between 1988 and 1992. Only 56 percent of students with 2 or more risk factors graduated on time while over 40 percent dropped out at one time.

Figure 4 shows the high school completion status of the eighth-grade cohort of 1988 in 1994—two years after scheduled graduation from high school. These data show that by following students after their scheduled high school graduation, one learns that some portion of this cohort completed high school late by either earning their diploma or getting a GED. In 1994, about 81 percent had a high school diploma, while 6 percent had GEDs.

Figure 4—High school completion and dropout status of 1988 eighth graders in 1994



Source: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988.

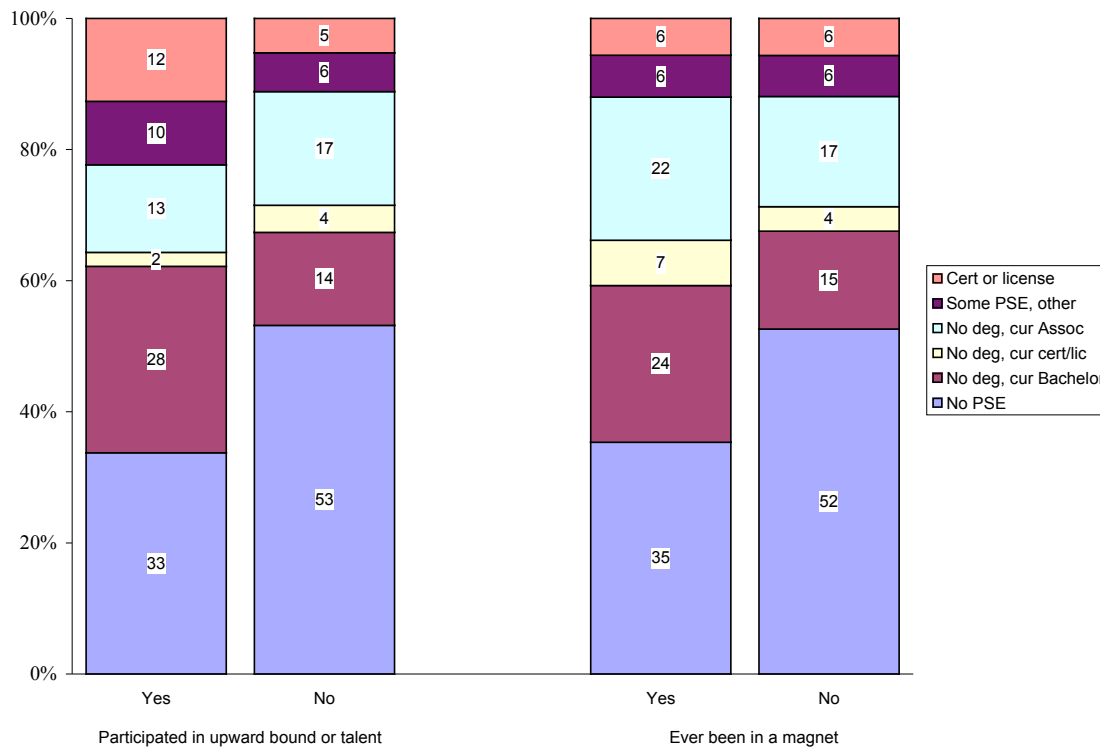
Figure 4 also shows that teachers’ reports of student behavior as far back as the eighth grade can be powerful predictors of later outcomes. Almost twice as many students whose eighth-grade teachers said were disruptive, inattentive in class, or performed below their ability, were dropouts six years later in 1994. These students identified with problems in the middle grades were also more likely to have earned a GED than other students and were also more likely to still be struggling to get their high school credential than other members of their cohort.

Goal 2: Assess the impact of the many reform activities

Longitudinal data can also inform policy makers on the success of various reforms efforts. For example, Figure 5 shows the postsecondary experiences of the eighth-grade cohort of 1988 as of 1994—again, two years after most of them graduated high school. Among low SES eighth graders who had participated in a program such as Upward Bound or Talent Search during high school, about 28 percent were enrolled in a bachelor’s program in 1994. Only about 14 percent

of low-SES students who reported not participating in this type of program were enrolled in a bachelor’s program, and about 53 percent had no postsecondary experience at all by 1994.

Figure 5—Postsecondary experience of low-SES 1988 eighth graders in 1994



Source: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988.

Low-SES students who reported to have been in a magnet program shared similar rates of success. In 1994, about 65 percent had some postsecondary experience—with about one fourth currently enrolled in a bachelor’s program. In contrast, over half of low-SES students who did not participate in a magnet program had no postsecondary experience by 1994.

Of course, these descriptive statistics may mask other confounding factors that may contribute to these results. For example, those enrolling in Talent Search or Upward Bound likely have other characteristics that lead to their educational success beyond mere participation in these programs. However, with the contextual data available from longitudinal surveys some of these confounding factors can be held constant, thus providing more solid evidence of program success than simple descriptive statistics.

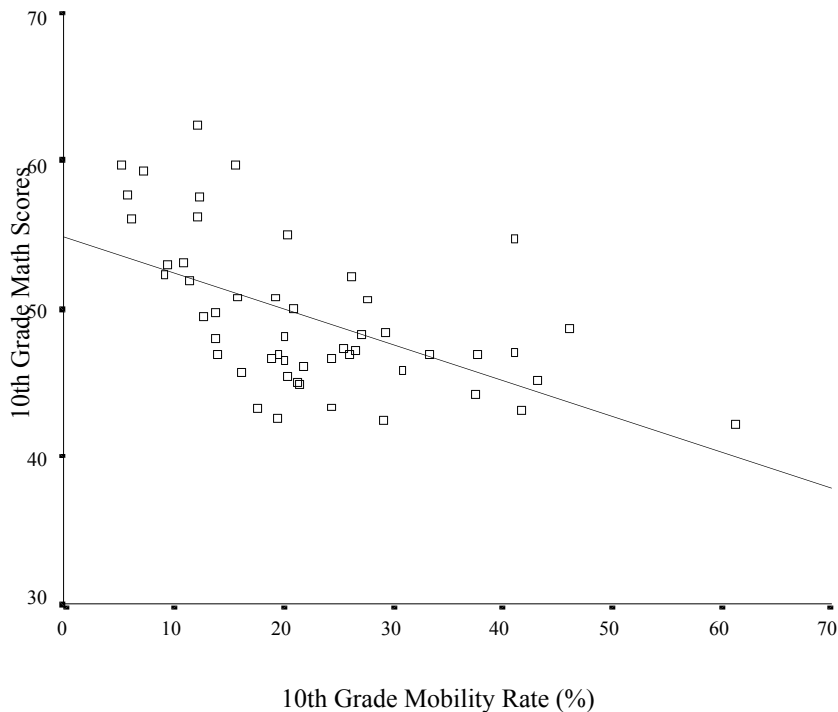
Goal 3: Generation of fundamental knowledge about some of the root causes of disparities in student performance in California

The previous example from NELS leads us to the third purpose of collecting longitudinal data. That is, with longitudinal data it is possible to do more sophisticated analyses of the various factors associated with student success and failure.

For example, Figure 6 below shows mathematics achievement for NELS:88 tenth- grade students in California aggregated to the school level (there were about 1,100 California eighth graders in NELS:88 and about 51 California high schools). This figure is reproduced from a study of student mobility conducted for Policy Analysis for California Education (PACE).⁹ The school means are plotted against estimates of the mobility rates of students within these schools. As the percentage of students who made unscheduled school changes increased, the average mathematics achievement of the school decreased. In their report, the authors use the California NELS:88 sample to explore the causes of this finding, concluding that high student mobility has consequences not only for mobile students, but also for non-mobile students. Using the school level and student level data available from NELS:88, they also conclude that more of the differences in mobility rates in California schools was due to school characteristics rather than the characteristics of students.

⁹ A summary of the report can be found at: http://www-gse.berkeley.edu/research/PACE/pace_mobility_final.pdf.

Figure 6—Relationship between 10th Grade Test Scores and Mobility Rates for California High Schools



NOTE: Student mobility rate equals the estimated percentage of 10th grade students who left school after two years. Test scores are the average 10th grade test scores in mathematics for sample students.
 SOURCE: Rumberger, R. W., Larson, K. A., Ream, R. K., & Palardy, G. A. (1999). The Educational Consequences of Mobility for California Students and Schools. Berkeley, CA: PACE.

Table 1 below shows another use of the longitudinal data from NELS:88. Rather than using the eighth-grade cohort from NELS:88, it uses the cohort of high school graduates in 1992 from NELS:88. It is taken from a report by Laura Horn at MPR Associates.¹⁰ It shows the pattern of postsecondary preparation and enrollment for students with different “at-risk” profiles. About 81 percent of 1992 high school graduates with no risk factors had, at the time they were surveyed in 1990, aspirations to obtain a Bachelor’s degree at some point in their lives (column 1, row 2). About 75 percent had these aspiration levels and took the requisite classes in high school to qualify for college (column 2, row 2); 73 percent had these aspirations and the requisite coursework and took either the SAT or the ACT test (column 3, row 2), etc. This resulted in

¹⁰ Horn, Laura J. (1998) *Confronting the Odds: Students At Risk and the Pipeline to Higher Education*. U.S. Department of Education, National Center for Education Statistics. NCES 98094.

about 58 percent enrolling in a four-year college by 1994. Among high-risk students (three or more risk factors), a much smaller percentage started out with aspirations for a four-year college degree and a larger proportion “fell out” of the pipeline at each step. This resulted in only about 9 percent enrolling in a four-year college by 1994.

Table 1—Percentage of 1992 high school graduates who progressed through each step in the pipeline to enrollment in a 4-year institution by 1994,¹ by risk status²

	Step 1	Step 2	Step 3	Step 4	Step 5
	10th-grade Bachelor’s degree aspirations	At least minimally prepared academically ³	Took SAT and/or ACT	Applied to 4-year institution	Enrolled in 4-year institution by 1994 ⁴
Total	65.8	55.5	52.4	46.7	40.3
Risk Status ²					
No risk factors	80.8	74.7	72.6	65.9	58.1
Any risk factors	55.7	44.2	40.3	35.0	29.5
One risk factor	63.9	54.5	51.1	44.8	39.3
Two risk factors	48.9	35.7	30.9	26.0	21.2
Three or more	38.8	23.0	18.8	16.2	9.7

¹To be included in the second through fifth columns, students must have been included in all previous columns.

²Risk factors include low SES quartile, average grades of C’s or lower from sixth to eighth grade, changed schools two or more times (other than natural progression), lived in a single parent family in eighth grade, had one or more older siblings who dropped out of high school, or held back a grade by 1988.

³Based on an index that measures the probability of being academically qualified for a 4-year college. A student is considered minimally prepared if he or she met at least one of the following five criteria: ranked at or above the 54th percentile in one’s class, had a GPA of 2.7 or higher in academic courses, had a combined SAT score of 820 or above (or ACT composite of 19 or higher), or scored at the 56th percentile or above on the 1992 NELS math and reading composite aptitude test.

⁴Percentages differ from table 5 because the students who did not have a Bachelor’s degree goal in the 10th grade (i.e., did not complete step 1) are not included (5 percent).

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study (NELS:88/94), Data Analysis System.

While these few figures show only a quick look at the data from NELS:88, the purpose of presenting these data was not to be exhaustive, but to illustrate the kinds of data that could be available if longitudinal survey data were added to the California Education Data System. These data could provide a long term view of the educational outcomes of California’s students and provide a textured portrait over time of the effectiveness of the state’s educational system—not only in terms of test scores, college access rates, and raw employment rates—but in terms of economic and educational outcomes that are more subjective and difficult to collect with only administrative records.

Design options for CELS

The previous section of this paper outlined the kinds of data that could be added to the California Education Data System by collecting longitudinal data on some portion of students. This next section discusses some of the issues that will need to be addressed in actually designing and carrying out such a data collection. These include:

- Linkages with other state and national data collection activities (e.g., CSIS);
- Data system design;
- The possible burden of data collection on students, parents, teachers, and administrators;
- The cost of CELS;
- Confidentiality; and
- Data management, including the use of the Internet

Linkages with other state and national data collection activities (e.g., CSIS)

One of the first decisions that needs to be made is whether or not to link CELS to current data collection efforts in the state. In the national longitudinal surveys, the only time they use existing data is to create their sampling frames (most commonly the Common Core of Data or the Quality Education Data). Once the samples of schools are drawn, these surveys use independent contractors to collect data on survey participants. Since data collection and student tracking are handled by a single entity, data are collected in a uniform and consistent manner across the nation. However, the burden of tracking survey respondents also falls on this single entity, adding to the cost of the data collection. Conceivably, this could be the model for CELS and CELS would be a completely separate data collection effort from CSIS.

However, if CSIS were instituted statewide, the burden of tracking students could be shared by CSIS and CELS. Based on the experience of other states with electronic student record systems, presumably CSIS would be able to track 90 to 95 percent of students who remain within California. CELS would need to track the 5 to 10 percent of students who were not tracked by

CSIS, plus those students who move out of state (although these may be able to be sub-sampled). Also, CSIS would collect basic demographic information on students within the state and would gather SAT-9 achievement data—thus decreasing the burden on students and the CELS data collectors. By providing basic locator data on students, CSIS would also decrease the rather substantial costs that the national longitudinal surveys incur in tracing individual students. This tracing would still be required for some subset of students that slip through CSIS, but a large share of tracing would be done by CSIS.

Data system design

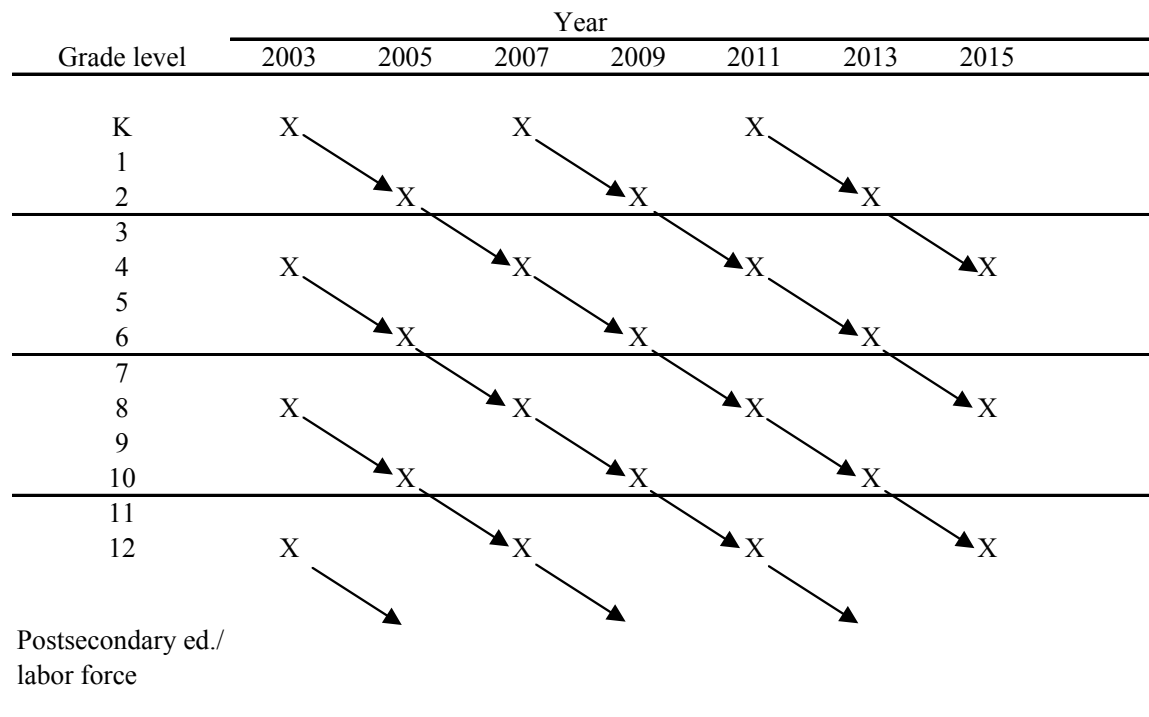
There are three main issues in the design of any longitudinal data system: 1) the number of cohorts drawn, 2) the grade level of each cohort, and 3) the periodicity of data collection. Obviously, other factors being equal, the greater the number of cohorts the greater the cost and the more frequently the data are collected the greater the costs.

There are a wide variety of possible designs—ranging from a rather simple one-cohort-one-follow-up design to more extensive designs. For example, one could design a study that surveyed one cohort of students and followed them up one or two times. This would be a “one-shot” survey that provides information on one cohort of students—much like NELS:88 provided information on the eighth-grade cohort of 1988.

A more comprehensive design might be built around an ongoing data collection effort that surveys and follows several cohorts of students on a recurring basis. As a starting point of discussion, I outline below such a design. It includes 4 cohorts of students—Kindergarteners, and 4th, 8th, and 12th graders. Data are collected on these cohorts every two years. Kindergarten is chosen as a starting point because this is the first year that children are exposed to the formal education system. Many educators see fourth grade as a critical junction in early schooling. At this grade level children should be making the transition from learning to read to reading to learn. It marks the middle point of elementary school. Eighth grade is also a critical transition for most children—both in terms of their academic development and their physical and emotional development. Finally, the 12th grade is simultaneously the culmination of secondary schooling and the beginning of postsecondary education. Higher education policy makers will be interested in this cohort as it is followed through college and into the world of work.

In Figure 7 below, I propose identifying Kindergarten, 4th, 8th and 12th grade cohorts and following them up every 2 years. In this design, the four cohorts are initially surveyed in 2003. Two years later in 2005, they are again surveyed when normal grade progression places most of the students in grades 2, 6, 10, and two years after high school graduation respectively. At this point the sample of students in these grades might also be “freshened;” for example new students might be brought into the 2nd sample to make them representative of the 2nd grade (since not all student will have made normal progression). In 2007, a new cohort of Kindergarten students would be added to the data system, and perhaps the 12th grade cohort of 2003 (followed-up in 2005) would be dropped from the system. I say “perhaps” because some higher education policy makers may want to follow this cohort (or a subset of them) further along in their postsecondary careers.

Figure 7—Schematic for data system design for 4 cohorts collected every two years



Sample design

Once a basic design has been chosen there are several decisions to be made about the design of the samples of students and/or parents and teachers. As with all previous decisions there are cost and respondent burden implications for each sample design option. The most efficient design would be a two-stage design where schools are sampled at the first stage of selection and students within schools are selected at the second stage. However, one of the issues to be resolved by any design is the number of schools that need to be sampled in order to have reliable estimates for key subgroups of the population. Previous experience with state samples from the national longitudinal studies and state National Assessment of Educational Progress (NAEP) suggest that at a minimum, a sample size of around 100 schools should be drawn for each cohort to ensure reasonable statistical reliability. (State NAEP averages about 225 schools per state, but require a minimum of 80 schools per subject.) Of course, in the design outlined above, the same school could be used for the K and 4th grade cohorts (and in rare circumstances for other cohorts as well). There are around 5,000 public schools in California that contain Kindergarten and 4th grades and around 600 that contain Kindergarten, 4th and 8th grades. Since there are only about 1,000 public schools that contain a 12th grade, the sample of 12th grade schools may be lower than 100 due to the rather large sampling fraction (100/1000).

A related issue is the number of students to be surveyed within schools. Should all students within a grade cohort be selected, or just a subset of students? The answer to this question may depend on whether or not CELS is linked to CSIS and the desired breadth/depth of the survey(s). Furthermore, a large number of students may need to be drawn within schools to have within-school sample sizes large enough to accurately assess school performance. This is particularly important in schools where there is a great deal of student mobility. That is, if there is a great deal of mobility within a particular school, the size of the longitudinal sample size for that school will consequentially shrink. While individual students within the original sample will be followed wherever they move, in most analyses, schools will no longer be “accountable” for these students.

Linkage to CSIS. If CELS is linked to CSIS then most likely a good deal of data can be collected through the CSIS system. As mentioned above, basic demographic information can be

gathered through the administrative record system. This reduces the overall burden on the respondent and the data collector (although it raises other issues that are discussed below). Presumably this link would allow one to ask more questions of more respondents at the same cost in terms of burden and the expense of data collection. In addition the link may enable all students within a grade cohort within each sampled school to be surveyed.

However, if CELS is not linked to CSIS and it is a stand-alone data collection effort, for the same cost in terms of burden and data collection expense, the number of survey respondents may necessarily be smaller. The process of sampling students may consequently resemble the sampling plan of the national longitudinal studies. In that case the sampling of students in CELS may look something like this: For the beginning cohorts (those first entering the data system), data would be collected on all of the students in a single classroom. For example, if a school has three Kindergarten classrooms all of the pupils in one of the classrooms would be selected. This would result in 20 or so sampled members from that school. For 4th, 8th, and 12th grades, in most schools the initial sample might be a subset of all students in the 8th and 12th grade (20 to 30 students per grade per school).

Depth and breadth of survey instruments. The size of the sample will also be dependent on the number of items that are chosen to be included in the survey instrument(s). There will be an inevitable tradeoff between the number and complexity of items asked and the number of respondents surveyed. For example, let us assume a burden budget per school of 45 hours. That could translate into several scenarios within a school including: 1) an hour and a half survey for 30 students; 2) a 60 minute survey for 45 students; 3) a 60 minute survey for 30 students and a half hour survey of their parents; or 4) a 30 minute survey of students, a 30 minute survey of their parents, and a 30 minute survey for their teachers.

Another issue in drawing a sample of schools (and their students) is whether or not to include independent and religious affiliated schools in the sample for CELS (the national longitudinal studies and state NAEP include these non-public schools). There are over 5,000 non-public schools in California enrolling over 600,000 students.¹¹ One of the arguments for including these private school students is that many of them will eventually enroll in California's

postsecondary system. One of the arguments against including them is that they are not part of the reform effort in the K-12 system.

The burden of data collection on students, parents, teachers, and administrators

Of major concern in any school based data collection is minimizing the burden to survey respondents and school administrators. School administrators already carry a sizable reporting burden to the state on their students. Minimizing any additional burden to school administrators should be of utmost interest to the designers of CELS.

In addition, some studies have suggested that survey length or respondent burden affects survey response. In general, the assumption in survey research is that the longer the survey, the more respondents will refuse to cooperate. This is of particular concern in longitudinal studies, where the size of the response burden of previous waves of the survey may have an adverse impact on the response rates for subsequent waves of the survey. The loss of sample members in subsequent waves of the survey can result in high overall non-response rates. This loss of sample is almost always a non-random event and introduces bias into the data and the inferences based on the data.

There is also some evidence that sensitive items, such as items on income or other items that are perceived to be overly intrusive, also can add to the perceived burden of the survey. These items can also affect later response rates as again, unfavorable experiences on one wave of the survey may impact an individual's likelihood of continued cooperation.

Once more, the experience with the national longitudinal studies is informative. Students in the NELS:88 base year survey spent on average about an hour filling out the questionnaire. Parents spent about 30 minutes and each teacher spent about 30 to 60 minutes. A school coordinator (usually the school counselor or senior teacher) who handled all data requests and all the logistics of arrangements for data collection spent about 30 minutes. Given the potential scope of CELS, these estimates may be an upper bound to the burden for participants.

¹¹ California Department of Education, *1999-2000 Data for Private Schools in California*
[Http://www.cde.ca.gov/privateschools/listreport.html](http://www.cde.ca.gov/privateschools/listreport.html)

Cost of CELS

The cost of CELS is clearly dependent on the eventual design of CELS. Linkage with CSIS will decrease the cost of CELS; increasing the number of schools and students will increase the costs, and so on. However, using the experiences of the national longitudinal studies, it is possible to make some rough estimates of costs. In 1988 the base year of NELS:88 cost around \$4.4 million. Inflating this figure using the current price index results in a cost of about \$6.5 million today. NELS:88 surveyed 26 students within 1,052 schools for a total of around 27,000 students—a cost of around \$6,000 per school. NELS:88 also surveyed one parent of all sampled students, the administrators of the sampled schools, and the teachers who were responsible for teaching the students in two of four subject areas. Furthermore, NELS:88 developed and administered academic assessments in reading, mathematics, science, and History/government. The development and administration of these assessments were fairly costly. Without the assessments, an estimate of the student component of the survey was perhaps around \$1.1 million (or about \$1.6 million in current dollars). Thus, the cost per school for NELS:88 without the assessment was around \$2,000 per school in current dollars.

Using the guidelines on the minimum number of schools outlined above (100 schools per cohort) a full NELS:88-like survey would cost about \$600,000 per cohort per survey wave or \$2.4 million per year for four cohorts (K, 4th, 8th, 12th) per survey wave. Assuming that CELS will use the SAT-9 scores for academic assessment, each cohort in CELS would cost substantially less—around \$200,000 per survey wave. All four cohorts would cost around \$800,000 per survey wave.

These are rather gross estimates and may overstate or understate the actual costs—although the estimates are most likely overstatements of actual costs since linking to CSIS may reduce the eventual cost of the survey system. More specific cost estimates would be a part of a project to actually design CELS.

Confidentiality

Californians, like other U.S. citizens, highly value their right to privacy and the privacy of their children and their school records. The Federal *Family Educational Rights & Privacy Act*

(FERPA) is designed to help protect student records from unwelcome intrusion. Other California laws also protect students' rights to have their personal information confidential and not released without their permission.

When only aggregate student data were reported from the districts to the state department of education the issue of confidentiality was not prominent. However, with the institution of a state-level individual record system these concerns become central to the success of the system. Whether the system is CSIS or CELS (or a combination of both), policies and procedures must be put into place to address the legal and ethical requirements related to individual educational data. These policies not only uphold the legal and ethical integrity of the data system, but can also improve the accuracy and usefulness of the data by reassuring parent, teachers, and students that the confidentiality of the data will be maintained. Proper policies and procedures should make it easier to gain cooperation with schools, teachers, and parents.

The National Center for Education Statistics in conducting longitudinal studies has long struggled with these issues. Their experience may be helpful in designing confidentiality requirements for CELS. For example, in collecting data on individuals, NCES has a variety of procedures in place to ensure the confidentiality of those records. (These standards are spelled out in detail in *NCES Statistical Standards* available at <http://www.nces.ed.gov/pubsearch/pubsinfo.asp?pubid=92021>.) Among those procedures are:

- Respondents must be told in a cover letter or similar instructions that response to the survey is voluntary and that all data collected will be kept confidential.
- All contractors (both data collectors and analysts) with NCES must submit a list of staff that will have access to confidential data. These staff members must take an oath of confidentiality confirmed by a notarized affidavit of nondisclosure.
- Data collectors working with longitudinal data are under the added burden to keep tracking information on respondents. This tracking information is known solely by the contractor and is not even provided to the government.
- Researchers outside of the federal government who want access to these data must also take the oath and must demonstrate that they have specific procedures in place to protect the privacy of individual data.
- Violations of confidentiality have serious consequences and are punishable by a fine of \$250,000 or 5 years in jail.
- In reports, care is taken so that individuals cannot be identified in tables. For example, cells within a table must contain at least three cases. Cells that contain less than three

cases must be collapsed with other cells or have the estimates within the cell suppressed.

- Before releasing the dataset, the data must conduct a disclosure analysis to ensure that individuals cannot be identified by outside analysis using any statistical routine. A Disclosure Review Board reviews each dataset before it is released.

With these guidelines and the procedures and policies already developed for California's education data, it should be possible to design extra procedures and policies that will assure the public of the confidentiality of these data.

Data management, including the use of the Internet

The Internet as a tool for data management has the potential to make CELS a more efficient and effective tool for school improvement. There are several ways through which this could happen: in data collection, in data management, and in data utilization.

Data collection. The Web is increasingly being used as a vehicle for data collection. Used frequently in marketing research, the Web is now being used by educational agencies to collect data formally collected over the phone or in person. For example, NCES is exploring the possibility of requiring all of their surveys to be conducted at least partially on the Web. In that way staff think they will get about 20 percent of respondents quickly and efficiently. Other, more traditional methods would be used to collect the data on those unable or unwilling to participate via the Internet—such as computer assisted telephone interviews. Advocates of Web based surveys argue that it will result in cost savings and will decrease the time it takes to turn the data around to the user.

CELS could make use of this type of data collection for both the collection of students within CSIS (if CELS is linked to CSIS) and/or those students who move out of state and need to be followed-up outside the CSIS system. Students and/or their parents could be asked to connect to a secure server where they could fill out a questionnaire on-line. Those who refuse or cannot access the web would be follow-up by telephone, by mail, and/or in person.

Data management. Many districts already have fairly sophisticated electronic student data systems. For example, UCLA's Center for Research on Evaluation, Standards, and Student Testing (CRESST) has developed a software package that provides student and teacher data

collection instruments and data management tools that schools use to perform self-evaluations. CRESST's *Quality Student Portfolio* (QSP) is being used by many schools to examine issues of student achievement and improvement, along with the issues of school safety, parent involvement, teacher professional development, curriculum and technology.

Another software system, *Schools Administrative Student Information Software* (SASI), has been developed by NCS Pearson Corporation. SASI keeps electronic records on individual students but also allows easy uploading to a district level database. The kinds of data that can be managed with SASI include student demographics, attendance, discipline, grades, schedules, health, and immunization records. SASI is one of the largest systems used in the United States to manage student records at the district level.

It seems possible that systems like these could eventually help in the management of data from CELS—especially if they were somehow linked to a master file on a central server in the state. For example, for those students who did not need to be followed out of state, data could be input directly to QSP or a similar system from their school site. These data could then be uploaded to the district and uploaded to a state site. In this manner a large portion of the data collection could be automated and simplified. Using these systems also has the potential for improving accuracy and decreasing costs.

Data utilization. Beyond cost and accuracy of the data, perhaps one of the most exciting features of a CELS embedded in school-based software like QSP would be in the potential for use of these data for individual school improvement. For example, in CELS sampled schools, schools could have access to the records of their own students, teachers, and parents. With these data they could produce reports (perhaps automated) on the longitudinal outcomes of these students—regardless of where they subsequently moved. If teacher data were collected by CELS, schools could also track changes in teacher practice—or individual teachers could follow changes in their own practice. Providing practitioners with access to their own data would increase the utility of the data for school improvement. It may also increase the likelihood that schools would agree to cooperate with data collection if school administrators and teachers thought that their school could directly benefit from the data in a timely manner.

Conclusions

There are a variety of individuals and entities that could make use of the longitudinal data from CELS. State educational officials could use the data to provide contextual information on students that would complement the data already being collected by districts and schools. Schools could use the data to help them in their efforts to continually improve the achievement of their students. Teachers could use the data to track the progress of their students and also chart changes in their own practices and pedagogy. Finally, the public would get a much richer, more accurate, and more useful portrait of the results of the immense investment that the State is making in the education of young people in California.

The knowledge and technology exists to design and implement a CELS—the national experience with NELS:88 demonstrates that. That is not to say that there are not issues that need to be resolved before a CELS can be established, not the least of which is the cost of the data collection. However, the cost of not conducting a CELS would be a lesser understanding of the impact of the current reforms in our State’s schools. A relatively small investment in CELS will help us know if the investments we are making in our schools are paying off.

APPENDIX A

Description of the Texas Schools Project

The University of Texas at Dallas (UTD) Texas Schools Project is a multiyear research project whose goals are to obtain a better understanding of the determinants of student performance with the long-term objective of providing a knowledge/research base to improve the performance of public schools. In spring 1999, the project broadened its scope to include an extensive program of research on minority access to Texas public colleges and universities.

John F. Kain, Cecil and Ida Green Chair for the Study of Science and Society at UTD, initiated the UTD Texas Schools Project in 1992 when he was a Visiting Professor at UTD. Prior to accepting a permanent UTD appointment in spring 1997, Professor Kain was the Henry Lee Professor of Economics and Professor of Afro-American Studies at Harvard, where the project was previously housed. It is now housed at UTD's [Cecil and Ida Green Center for the Study of Science and Society](#).

The Texas Schools Project began with the development of the Texas Schools Microdata Panel (TSMP), which created student longitudinal records for up to ten years for five cohorts of more than two million students in Texas beginning in 1989-90. The members of the youngest cohort were in Pre-K during the 1989-90 school year while members of the oldest were in third grade in the same year. The records included enrollment and attendance data, as well as standardized test scores. In addition to student data, TSMP includes individual data for all Texas public school teachers for the same nine-year period. For all grades and years TSMP linked these teacher data to individual students at the campus, grade and program [bilingual, ESL (English as a Second Language), special education, gifted and talented] level. For the seven grades/years individual student test scores were linked to their specific teachers, albeit with some error.

TSMP includes complete educational histories for individual students for all the years they attended Texas public schools. Use of these data has enabled more accurate and effective assessments of the performance of Texas schools than could be done with the fragmentary data that was previously available. These data have enabled researchers to develop a better understanding of the causes of low student performance.

For additional information, visit: <http://www.utdallas.edu/research/greenctr/TSP/>

Selected Publications and Working Papers based on the Texas School Project Data

(clicking on the title will bring up an acrobat version of that paper)

John F. Kain and Daniel M. O'Brien, "[Has Moving to the Suburbs Increased African American Educational Opportunities?](#)" January 23, 1998.

John F. Kain, "[Ethnic and Racial Differences in Graduation, Dropout Rates and Course Completions for Students Attending Texas Public High Schools](#)," June 4, 1998.

Steven G. Rivkin, Eric A. Hanushek and John F. Kain, "[Teachers, Schools and Academic Achievement](#)," July 2002.

Eric A. Hanushek, John F. Kain and Steven G. Rivkin, "[Does Special Education Raise Academic Achievement for Students with Disabilities?](#)" (revised) July, 2000.

Daniel M. O'Brien, "[Family and School Effects on the Cognitive Growth of Minority and Disadvantaged Elementary School Students](#)," November 18-20, 1998.

John F. Kain, "[The Impact of Individual Teachers and Peers on Individual Student Achievement](#)," October 29-31, 1998.

Sharon Leigh Wrobel and Daniel M. O'Brien, "[Assessment of Bilingual Education Programs in a Large Texas School District](#)," October 31, 1998.

John F. Kain and Daniel M. O'Brien, "[Minority Suburbanization in Texas Metropolitan Areas and Its Impact on Student Achievement](#)," March 4, 1999.

Eric A. Hanushek, John F. Kain and Steven G. Rivkin, "[Do Higher Salaries Buy Better Teachers?](#)," March 1999.

Eric A. Hanushek, John F. Kain and Steven G. Rivkin, "[The Cost of Switching Schools](#)," April, 1999.

John F. Kain and Dan O'Brien, "[Black Suburbanization in Texas Metropolitan Areas and Its Impact on Student Achievement](#) ," March 9, 2000.

Caroline Hoxby, "[Peer Effects in the Classroom : Learning from Gender Variation](#) ," July, 2000.

Eric A. Hanushek, John F. Kain, Jacob M. Markman, and Steven G. Rivkin, "[Does the Ability of Peers Affect Student Achievement?](#)," May, 2000.

Eric A. Hanushek, "[Evidence, Politics, and the Class Size Debate](#)," August, 2000.

Eric A. Hanushek, John F. Kain, and Steven G. Rivkin, "[How Much Does School Integration Affect Student Achievement?](#)," October, 2000.

John F. Kain and Daniel M. O'Brien, "[High School Outcomes and College Decisions of Texas Public School Students](#)", November, 2000.

M. Kathleen Thomas, "[Does the Centralization of Public Education Cause a Decline in Per Pupil Spending?](#)" September, 2001.

Kristin Klopfenstein, "[Advanced Placement: Do Minorities Have Equal Opportunity?](#)" Revised July, 2002.

Eric A. Hanushek, John F. Kain, Jacob M. Markman, and Steven G. Rivkin, "[Does Peer Ability Affect Student Achievement?](#)," Revised Aug, 2001.

John F. Kain, "[Disruption versus Tiebout Improvement: The Costs and Benefits of Switching Schools](#)," Aug, 2001.

Eric A. Hanushek, John F. Kain, and Steven G. Rivkin, "[Why Public Schools Loose Teachers?](#)," Oct, 2001.

John F. Kain and Daniel M. O'Brien, "[Hopwood and the Top 10 Percent Law: How They Have Affected the College Enrollment Decisions of Texas High School Graduates](#)", December, 2001. (Microsoft word document)

Eric A. Hanushek, John F. Kain, and Steven G. Rivkin, "[New Evidence about Brown v. Board of Education: The Complex Effects of School Radical Composition on Achievement](#)," Dec, 2001.

John F. Kain, "[The UTD Texas Schools Microdata Panel \(TSMP \): Its History, Use and Ways to Improve State Collection of Public School Data](#)," Dec, 2001. (Microsoft word document)

APPENDIX B

Briefing on CELS

Sacramento, CA
April 27, 2001

AGENDA
Developing a California Education Longitudinal Study
First Floor Conference Room
1130 K Street Building, Sacramento, CA
Friday, April 27, 2001

- 12:30 Introductions
Jerry Hayward, PACE
Russell Rumberger, UCSB
Phillip Kaufman, MPR Associates
- 12:45 Summary of *The Feasibility of a California Education Longitudinal Study of Students*
Phillip Kaufman, MPR Associates
- 1:15 to 2:15 Discussion
- 2:15 to 2:30 Next steps
Russell Rumberger, UCSB
- 2:30 to 5:00 Follow-up meeting

List of Attendees for CELS meeting, Sacramento
April 27, 2001

Lynn Baugher, California Department of Finance
Russ Brawn, CSIS
Buzz Breedlove, Legislative Analyst's Office
Oscar Chaves, California Department of Finance
Neil Finkelstein, UCOP
Jim Foreman, California Department of Finance
Saul Geiser, UCOP
Jerry Hayward, PACE
Steven Ingels, Research Triangle Institute
Phil Kaufman, MPR Associates, Inc.
Dave Leveille, California Postsecondary Education Commission
Theodore Lobman, Stuart Foundation
Pat McCabe, CSE Policy and Evaluation Division
Roger Magyar, Republican Consultant to the Assembly Education Committee
Jeannie Oakes, UCLA
Russell Rumberger, UC LMRI
Jon Sonstelie, Public Policy Institute of California and UCSB
Mohammed Wardack, California Department of Finance

MINUTES

I Introductions

Jerry Hayward led introductions around the table. Russell Rumberger followed with a brief background to the feasibility study emphasizing the importance of longitudinal data in academic research and informing policy and practice. He believes California will benefit from a database system that would allow us to track students over time and that this benefit would transcend any specific segment of the education system. Three research groups in the University of California (UC Outreach Evaluation, UC All Campus Collaborative on Outreach Research and Dissemination, UC Linguistic Minority Research Institute) jointly funded the project. Based on his experience with Federal Government Surveys, both on the design side and the analysis side, Phillip Kaufman was asked to do a feasibility study to think about how the data could be used and identify some of the design issues. Written as a draft report.

II Summary of *The Feasibility of a California Education Longitudinal Study of Students*

Kaufman is an analyst at MPR Associates. His work primarily consists of analyzing data. He believes longitudinal data can be a valuable research tool not just for research papers and academic journals, but also for providing rich contextual information describing and helping us understand what is going on at all levels in the educational system (student level, school level, district level, and state level). While he is able to identify important issues in this process, neither he nor his firm does survey work. The feasibility study is the beginning of a process that will hopefully lead to a California Education Longitudinal Study of Students (CELS). Kaufman highlights some of the key features of his report.

List of Slides

- Slide 1. How Studies Get Support of Key Decision Makers
- Slide 2. Presentation Outline
- Slide 3. Uses of CELS
- Slide 4. National Education Longitudinal Study (NELS)
- Slide 5. Variables Affecting Student Outcomes
- Slide 6. Monitoring Academic Progress of Students Through School
- Slide 7. Assess the Impact of the Reform Activities
- Slide 8. Generate Knowledge About Student Performance
- Slide 9. Design Issues for CELS
- Slide 10. Linkages with Other State and National Data Collection Activities
- Slide 11. Data System Design
- Slide 12. Scenario
- Slide 13. Sample Design
- Slide 14. Confidentiality
- Slide 15. Costs
- Slide 16. Data Management: Internet
- Slide 17. Conclusion

III Discussion

Using or Adding onto the Current National Education Longitudinal Study (NELS)

Buzz Breedlove questions the possibility using the current NELS data on California rather than launching California's own study. Rumberger questions the accessibility of this "restrictive use data" and the generalizability of the results. Jon Sonstelie and Kaufman point out that the proportion of Californian NELS students is small especially when compared to the amount of variables.

Sonstelie suggests using an analysis in conjunction with the national survey or sub setting the national study with a larger sample. According to Steven Ingels, New York did this and there will be further opportunity to do this in the NELS 2002 sophomore cohort. However, Kaufman points out that the national study is only one cohort every ten years or so. Neil Finkelstein wants CELS to go above and beyond NELS with more California specific questions relating to policy and implementation that cannot be found in national data. In other words, things done in California should be the emphasis on the study. Jeannie Oakes: We need a California specific way of sampling.

Rumberger points out that the national study was designed to look at students but was ultimately used to look at schools. Also, the within-school sample should be bigger for program evaluation. Saul Geiser comments that the survey design seems too wetted to NELS and could be far more robust. For example, why limit it to a survey? Why not ethnographic and case studies also?

Confidentiality

Breedlove returns to the confidentiality issues brought up in Kaufman's presentation. With all the privacy and confidentiality concerns, how do we describe this to people to sell this idea? Kaufman: We need to assure people that the data can be masked so that a specific person cannot be identified or possibly not release the data at all. Lynn Baugher: It is a voluntary response so we must go extreme on the confidentiality to get people to agree to participate and take in account the effect on sampling. Steve Ingels discusses various confidentiality measures that can be taken before the data is released.

Influence and Inform Public Policy

David Leveille questions the linkage to financial and budget policy: CELS may be a good way to measure if recent policy and programs are achieving the intended results. Kaufman: Could be a good measure of the difference between official and actual curriculums. What are teachers actually doing; how well policy is being implemented; and are policies trickling down into the classroom? Leveille: Are we cost effective and how will the survey relate to legislators budgetary interest? CELS could evaluate what we are getting for the money put into these programs.

Organizational Structure

Breedlove: what's the optimal organizational structure to bring this project to fruition? Rumberger views CELS as benefiting a broad set of interests kindergarten through higher education. Therefore, locating CELS outside any specific organization will help all sectors feel like equal partners with a stake in the project and the outcome. In other words, it should be a structure to reflect joint interests. Kaufman counter argues that it should not be housed outside the government but rather would benefit at the state level if the State bought into the design and used the data. Theodore Lobman: Marketing-sell it to legislators and community leaders as a way to build public confidence in the state system. Breedlove would like to see it outside of the State "wants disinterested scholars" instead of people who have own interest in programs. Some other issues raised include: where the project is housed as relating to confidentiality and marketability (public confidence); and if housed in the State would the State's high stakes in the data results influence or suppress their dissemination? In addition, Leveille points out that it is more than just government; education, business, policy, and public all have an interest in the results of CELS. Rumberger: Possibly the project could be state funded but run outside government.

Breedlove: Could market this to legislators by looking at bills in the legislature and considering what questions are unanswered or could be better answered with this data? Geiser: Problem with this is that people want answers so quickly; officials want results before next election. Oakes: What about local counties? Have local counties participate in formation of questions by finding out what people want to learn from data and what the local community interests are.

V Follow-up Meeting

After a brief intermission all were invited to remain for a follow-up meeting to discuss some of the design and data issues.

List of Participants:

Neil Finkelstein, UCOP
Saul Geiser, UCOP
Jerry Hayward, PACE
Steven Ingels, Research Triangle Institute
Phil Kaufman, MPR Associates, Inc
Jeannie Oakes, UCLA
Russell Rumberger, UC LMRI

Local "Buy-in"

Oakes stresses the importance of local buy-in. CELS should be seen as a great tool that is not just for the State but also benefits local organizations. The within-school samples need to be bigger and include variability within to test quality differences within the school. Rumberger proposes a survey with a common core but 5% customized questions locally determined.

Connecting with CSIS

Linking to CSIS may create more problems than it solves. Ingels: CSIS has good info but for locating and tracking students it is not as helpful. It can give you all the easy ones but the hard one are the ones that cost all the money. Geiser: CSIS is not nimble but rather is still “spotty” and may not be up by time survey would be up. Also, participation in CSIS is not mandatory but voluntary. If we want to move quickly CSIS is mostly baggage. Rumberger asserts that there is no need to link with CSIS because the schools will already have all the information that CSIS could provide since they have to give it to the government anyway. Also CSIS only consists of California public schools.

Population and Incentives

Ingels: NELS surveys the “Parent or Guardian who is best acquainted with child’s education” (self-selected); teachers and administration are driven by the student sample. NELS also uses school records as part of transcript study courses, grades, test scores etc. 80-90% agree to do NAPE and 70% agree to do NELS. Once schools sign on there is almost no attrition even when students change schools and even though there is relatively little in it for the schools. Schools do not receive return data or financial incentives but do receive a copy of the report and help contribute to an understanding of the issues. Rumberger stresses the importance of incentives-especially giving the information back to the schools. Kaufman: possibly Web-based: user friendly and tech support. Oaks: As far as accountability, schools may not want this information public. Will this have an effect on participation?

Assessment

It was also generally agreed upon that there should be a measure of student achievement that is in addition to, and independent of, the State’s current achievement standard. Current standard tests only measure a particular point and do not measure change in a meaningful way. Also, there may be credibility problems with a state standard. CELS needs both official and independent assessments of student achievement.

Organization

Geiser reasserted that he thought the whole thing should be housed in the UC and possibly connected with their outreach programs “if you want to get it off the ground quickly.” Rumberger: This way it may have more credibility initially but once the consortia get to higher education UC would have self-interest in the evaluation and could therefore be easily discounted. In addition, this study has relevance to more than just academia. Business, state, and local agencies all have some interest in the results. We want “credibility and universality”. Perhaps UC could fund a design and have someone else implement it. Kaufman suggests bidding out to a survey research firm with experience and better cost estimates or send out a RFP for a panel of experts to help UC. Rumberger: Where will it have the most credibility the most support? UC should be a part of it but others should also be brought in.