Developing and Using Curriculum Indicators in School Reports and Profiles

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Council of Chief State School Officers

Session: SIG on School Indicators and Profiles
AERA Annual Meeting, April 28, 2000

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Objectives

A 1998 survey of state accountability and indicator reports showed that 39 states now have school-level reports, and almost all states have a state or district- level report (CCSSO, 1999). Many large districts have their own designs and methods of reporting key indicators of schools, classrooms, and student learning. An analysis of the contents of the state reports showed that 37 states include at least one indicator of curriculum, instruction, or school climate, such as course enrollments or types of programs/services offered (Blank, 1999). However, these are broad groupings of types of indicators.

Our more detailed analysis of the indicators in current reports reveals that very few states systematically aggregate and report curriculum indicators, either in order to explain achievement level of schools, or as a separate indicator of school processes or programs. We address three questions on the development and use of indicators of curriculum in reporting:

1. How can the use of data on course-taking in core academic subjects be improved to provide better indicators of trends that can be related to standards and achievement results?

2. How can curriculum indicators be analyzed and reported to be useful to teachers, administrators, and the public?

3. What models are available for developing and reporting indicators on curriculum content, or "enacted curriculum?"

Importance of Research

States and districts typically have several limitations in developing and using indicators of curriculum. Schools, districts, and states use course codes for purposes of establishing common curricula, assigning credit to high school courses, and collecting aggregate data on patterns of enrollment. Comparability of course titles and aggregation of codes across schools and districts are two immediate problems in using course classification systems for developing curriculum indicators. Many states and districts collect course data. However, many agencies do not have a systematic approach to categorizing and analyzing the data, and do not regularly report the data. Some do not have clean, edited data upon which analyses and indicators would be based. The data are reported as part of management information systems, but educators and policymakers may not have analytical models that provide efficient, easily interpretable indicators.

Possibly the main reason more course enrollments indicators do not appear in indicators reports is the difficulty of interpretation, particularly in relation to accountability. First, course enrollments may be viewed as a measure of school process, not a measure for which educators want to be held accountable. However, most of the state indicators and reports are not solely produced for the purpose of accountability-- i.e., measuring the performance of the school or district, with possible sanctions, rewards, or staffing changes based on the measures. Course

enrollment indicators may be selected as an accountability measure, but for educators and administrators they are probably best viewed as evaluative information for analysis, program review, and planning.

Course enrollments in core academic subjextgs e are effective indicators for secondary schools when they provide comparisons– change over time, in relation to other schools, or in relation to a state or national expectation. These uses require careful analyses, aggregation across schools and districts, and a means of storing and retrieving data systematically by school, and possibly student characteristics. Report cards/profiles for elementary schools would not include course data, thus course data have limited use, but instructional time by subject may be a useful proxy measure at the elementary level.

Course data have limitations. Aggregate totals, e.g., the percent of students taking biology, may show little relation to achievement scores, partly because very high percentages of students take the course and it is difficult to explain what makes a difference for achievement scores. Many states and districts use only indicators of advanced placement or advanced course enrollment, because there usually is consistency in the curriculum across schools and because it is an easily interpretable indicator of meeting high standards or expectations for learning.

Another issue in use of curriculum indicators is the problem of space and inclusiveness. Course enrollments could include many subject areas. Use would required selection on a few content areas or courses. Consensus is needed on courses/areas that are most central for indicator purposes. The meaning of the indicators is not straightforward-- e.g., what does it mean for students to simply be enrolled vs. completing the course vs. course grades. Student achievement scores are found in almost all reports. The number of system wide tests are limited and a summary metric for current status and gains over time can be portrayed in relatively small amount of space.

Given these issues with course enrollment indicators, what are several options for their use in reports and profiles? Various strategies and approaches to curriculum indicators will be the main thrust of the paper, based on CCSSO experience in managing a multi-state indicator system.

Strategies and Models for Curriculum Indicators

One approach to having consistent, reliable, comparable indicators is for states or districts to use a standard coding and categorization procedure based on a research-based hierarchy and structure. The National Center for Education Statistics uses a classification system for their data collections on curriculum, and some states have adopted the same system. The science-math indicators report of CCSSO is based on cross-walk system of course categorization across states to produce set of indicators based on course levels (Blank & Langesen, 1997, 1999). The indicator is the course level denoting how far students have proceeded in the secondary curriculum, and not the separate course. A common categorization system allows a state or district to group different courses under one heading, and the indicator traces progress in the overall total under the heading.

A second approach is to use data obtained from an external source that does not rely on a system wide data base. The AP data for example can be derived from the publisher of the materials. The National Assessment of Educational Progress (NAEP) can provides some course data, or assessment providers can report data collected directly from students, e.g., college entrance tests. The disadvantage of this approach is the limited amount of data and limited number of students counted.

A third strategy is to select course levels and indicators that are important measures for the state or district, and to determine how the data should be reported to be meaningful. For example, if the requirements for graduation is three year high school mathematics, then a consensus process is needed among administrators and teachers to determine what courses meet the expectation (e.g., any 3 math courses in the catalog or only courses at the level of Algebra 2 or higher). Or, if improvement in student achievement requires a student to be proficient in writing, then a course indicator should focus on the total having a writing experience in a course. Only selected indicators are needed-- those providing the best information about progress of students in relation to system goals for improvement.

A fourth strategy is disaggregation and tracking progress. Course taking levels that are consistently counted over several years can indicate change in the system or in the school curriculum. Progress of the curriculum can be inferred by the proportion of students that reach higher levels of enrollment. The levels need to be chosen to provide the best measures of progress, for example, percent of students taking pre-algebra in grade 7 or 8, to indicate readiness for high school mathematics. Data need to be available by school and by characteristics of schools, e.g. percent of students on free/reduced lunch. Progress needs to analyzed for different types of schools, with different students and teachers, not just for the average school or the average district. Finally, data can be analyzed by characteristics of students or teachers. Progress indicators may mean the degree to which minority and poor students reach higher levels of courses, or the degree to which students with less vs. more experienced teachers move into the next level of curriculum.

The presentation will demonstrate the use of these four strategies for curriculum indicators based on course enrollments. We will include indicators from CCSSO state indicator reports, based on collaboration with states and state information systems (Blank, et al., 1997, 1998, 1999), under projects supported by the U.S. Department of Education and the National Science Foundation. We will also review and analyze examples of state and district use of curriculum indicators in their indicator and profile reports.

Indicators of Curriculum Content

The approach to curriculum indicators that may be most desired but very difficult to obtain is to collect and report data on the content of what is taught and learned, often called the "implemented curriculum" in international studies (e.g., Third International Mathematics and Science Study (TIMSS)). Some states and districts have used brief content and instruction surveys in connection with state assessments. But the broad area of research on opportunity to learn and implemented or enacted curriculum has generally not been used as regular, periodic indicators at the school or district level. The paper presentation will provide examples of how

content indicators might be developed based on findings from a two-year study of the use of "surveys of enacted curriculum" in math and science that is being conducted with schools in11 states.

The Council of Chief State School Officers (CCSSO) was awarded a grant by the National Science Foundation (NSF) in 1998 to conduct a study of state systemic initiatives to reform mathematics and science education. The study focuses on developing and using a survey approach to analyze curriculum content and instructional practices as they are taught in classrooms. The "surveys of enacted curriculum" are completed by teachers and students to provide common, reliable measures of curriculum and teaching as well as school and classroom conditions, resources, and teacher background and preparation. The study is also analyzing state standards and assessment instruments as well as assessment results and other data. The survey approach and study design are the result of collaboration of CCSSO with the National Institute for Science Education at University of Wisconsin-Madison and 11 states that are participating in the two-year project.

The objectives of the development and use of surveys of enacted curriculum are to: (1) Analyze classroom practices and curriculum content in mathematics and science in relation to state standards and systemic reform strategies and goals, using common survey instruments and data collection procedures in selected schools across multiple states; (2) Determine the extent to which mathematics and science standards and initiatives are changing practice and curriculum in classrooms, and compare and contrast state reform models and strategies; and (3) Develop and test survey instruments and methods of analyzing and reporting data to determine their potential use in states and local districts in as tools for producing indicators of enacted curriculum, instruction, school and classroom conditions, and teacher preparation and professional development.

The survey designs build on the approaches used in TIMSS, NAEP, the National Survey of Science and Mathematics Education (Weiss, 1994), and the Reform Up Close study (Porter, 1994). A sample of schools and teachers were selected in 11 participating states, with the sample designed to compare "high reform" schools and average schools with similar size, student composition, and type of community. Survey data were edited and compiled centrally, and responses were aggregated and scaled based on content standards, policy initiatives and issues, and state indicator needs. Factor analysis was used to increase the reliability of data interpretation and use for target audiences– local educators, administrators, state specialists, and policymakers.

The presentation will provide examples of groups of items and scales that may serve as curriculum indicators, based on analysis of data from the study. Issues in data collection, analysis, validity, and reporting will be discussed in the session.

Summary of Curriculum/Instruction/Climate

	Curriculum				Instruction			Climate	
State	Courses Offered	Enroll Core Courses	Enroll Special Programs		Class Size	Time/Subject		Violence	Susp./Expul./ Other Behav.
Arizona	✔					✔		✔	✔
California					✔	✔			✔
Connecticut	✔	✔	✔		✔	✔			
DoDEA	✔		✔		✔				✔
Florida									✔
Georgia	✔		✔						
Hawaii			✔						✔
Illinois					✔	✔			
Indiana	✔		✔						✔
Iowa	✔	✔	✔		✔				
Kansas								✔	
Louisiana					✔				✔
Massachusetts	✔		✔						
Mississippi	✔		✔						
Nevada	✔		✔		✔			✔	✔
New Jersey			✔		✔	✔			
Oklahoma	✔		✔						✔
Oregon									✔
Pennsylvania	✔		✔		✔				
Rhode Island	✔	✔	✔		✔				✔
South Dakota	✔		✔		✔				
Texas	✔		✔		✔				
Utah	✔		✔		✔				✔
Vermont	✔		✔		✔	✔			
Wyoming	✔		✔						
Totals (25 states)	17	3	18		14	6		3	12