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TO: Members of the State Board of Education
FROM: Nancy S. Grasmick, ^{Nancy} State Superintendent of Schools
DATE: June 23, 2009
SUBJECT: Maryland's Longitudinal Data System

PURPOSE:

To provide State Board members with an introduction to longitudinal data systems and an overview of Maryland's current status and future plans. MSDE is committed to providing Maryland educators and policy makers with meaningful data with which to continually improve the education of Maryland's students.

BACKGROUND:

As states continue to strive to meet the requirements of *No Child Left Behind* legislation and Department of Education data reporting requirements, the need for an efficient longitudinal data system (LDS) that supplies schools with linked historical data on student performance has become clear. In addition, states need state-of-the-art data warehouses and reporting mechanisms to meet the reporting challenges of EdFacts, the mandated comprehensive reporting system developed by the U. S. Department of Education.

Maryland has always assumed a progressive stance in the collection, validation and reporting of data. Maryland established its first Educational Data Warehouse (EDW) in 1999 and today strives to achieve the ten Essential Elements and Fundamentals for P-12 Longitudinal Data Systems established by the Data Quality Campaign.

Because of the advancement in technologies and efforts of MSDE to move forward with tracking students over time, the current educational data infrastructure (people, processes and technologies) is in need of modernization. Additionally, Maryland must take action to increase the capacity of its systems to automate the collection and validation of additional data to meet the expectations of its stakeholders who require more information in the decision-making process. MSDE also needs to meet the demands of the stakeholders for more timely reporting and advanced analysis of their own data, with tools and processes which they directly control. The stakeholders include participants at all levels: state, district and school. Their increasing data demands include such categories as student level course information, grades, assessment results, and special services information, and the seamless access and reporting of this information both longitudinally and across school and district boundaries.

In the absence of any state funding to support the development of its data system, Maryland has sought and received federal funding to begin development initiatives to meet these additional needs and requirements. To date, the state has received two federal grants, in 2005 one for \$8 million and in 2009 one for \$6 million. Other states estimate a longitudinal system costs at minimum \$30 million to develop, and approximately \$10M per year to support and maintain.

Accomplishments to date

- Development and implementation of a unique student ID system;
- Establishment of engaged and functioning internal stakeholder group representing all MSDE program offices;
- Completion of internal and external stakeholder needs assessments;
- Initiation of a state-funded project to standardize and update data collection and reporting methodology (with an emphasis on EdFacts data file requirements) to further improve data quality, integrity, and validity;
- Increased ability to edit and verify local data submitted to the state;
- Increased awareness and support on the part of the State General Assembly and Institutes of Higher Education of the benefits of a longitudinal data system; current discussions about how to extend the system into higher education and workforce using the unique student identifier.

EXECUTIVE SUMMARY:

Maryland has a long way to go to meet the expectations of USDE in relation to data reporting requirements. This year, in order to receive stimulus funding, the Governor signed assurances that Maryland would make significant progress in meeting the essential components. As of this date, that progress will be totally limited by what is possible with the federal grant funds received, as no state funds are forthcoming. This year, the legislature did pass two bills that will assist MSDE in moving ahead with its longitudinal data system. House Bill 587 authorizes MSDE to assign teacher IDs for use in linking teacher and student data. This cannot be implemented until funding is secured. The second was House Bill 588, authorizing MSDE to develop a voluntary course coding system so that data can be collected on student course participation and performance. This is included in the scope of work for the recently awarded grant, and MSDE will be implementing this data collection in the next five years.

Maryland's LDS is being designed specifically to inform decision-making at a variety of levels (state, school system, and school building). As stated previously, the State Superintendent of Schools has been discussing the system with a variety of stakeholders (State Board of Education, Governor's Commission, Maryland General Assembly) and highlighting the increased capacity Maryland will have to improve student achievement, make data-driven decisions, and monitor the success of policies and programs. There is keen interest from these groups in data that will inform Maryland policies to address challenges such as dropouts, truancy, the achievement gap, predictors of success, identification of successful interventions (such as Early Childhood programs), class size and middle school course requirements.

Maryland has a long-standing policy regarding the confidentiality of student data according to the Family Education Rights and Privacy Act (FERPA) regulations in that only aggregate data are reported beyond the firewall. However the future availability of individual student historical data is of special interest to schools to help them to more efficiently meet the needs of their transient student populations. A significant goal of the proposed system is to provide authorized educators with restricted access to student data through a sophisticated management system. Stakeholders at the school system and school level will assist in determining the rules for secure individual student data access that meet current state and FERPA regulations but allow needed access to student records for authorized staff.

To truly realize the benefits of a longitudinal data system, Maryland will need significant funding to develop its system, and then to commit significant additional funding to support the software, hardware and personnel required to maintain the system.

Additional details on Maryland's Longitudinal Data System can be found in the attached paper and on the MSDE Fact Sheet 83, which is also attached.

ACTION:

For information only, no action required.

NSG:lw



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LONGITUDINAL DATA SYSTEM FOR EDUCATION IN MARYLAND

Fact Sheet
83

May 2009

What is a Longitudinal Data System for education?

A longitudinal data system for education tracks student participation and performance throughout the student's education and work career, including courses taken, grades achieved, test results, attendance, and movement from school to school and school system to school system. The data system also includes teacher data without personally identifiable information, providing reports about teacher preparation programs, professional development, etc.

What are the benefits of a Longitudinal Data System for education?

A longitudinal data system provides the ability to monitor individual student and subgroup achievement to better ensure that progress is being made. It maintains a student's educational record to help schools more quickly meet the educational needs of students who are transferring from school system to school system. It improves the quality of the data collected and reported, makes the data more accessible and, at the same time, protects the privacy of individuals. A longitudinal data system provides a better basis for sound instructional and policy decision-making. Implementation of the longitudinal data system will allow Maryland to meet the federal regulation that requires states to report and hold schools accountable for a cohort graduation rate, tracking students from the time they enter grade nine for the first time until they graduate.

What is the status of a Longitudinal Data System in Maryland?

Maryland has in place three of the 10 essential components identified as critical to the implementation of a longitudinal data system for education by the Data Quality Campaign, a national collaborative initiative working to encourage and support efforts to develop and use longitudinal data to improve education.

What components of the system does Maryland already have in place?

Maryland has already completed the following three components:

Component 2: Student-level enrollment, demographic and program participation information

Component 8: Student-level graduation and dropout data

Component 10: State data audit system assessing data quality, validity and reliability.

In 2009, Maryland will add Component 4: Information about untested students and the reasons they were not tested.

What components will be added next and when?

A \$6 million federal grant (over five years) will provide funds for Maryland to put three more components in place by 2014. They are:

Component 1: Student data connected across and databases using a unique student identification number

Component 3: Ability to match individual students' test records from year to year to measure academic growth

Component 6: Student-level transcript information, including information on courses completed and grades earned.

What will it take to implement the student-level transcript information?

Component 6, the student level transcript information, requires the state to have standardized course codes at all levels: elementary, middle, and high. Maryland will work collaboratively with school systems to come to a consensus on a voluntary course coding system. School systems will be able to use the course coding system or provide information linking local courses to the state's coding system. School systems will have need sufficient time to prepare for collecting data on courses taken at all grade levels. It may take up to five years for full implementation of this component.

Will there be a teacher identifier system?

Component 5 calls for a teacher identifier system with the ability to match teachers to students. In 2009, the Maryland General Assembly passed legislation allowing the State Department of Education to assign each teacher a unique state identification number. This identification number will allow MSDE to link a teacher's data (years of experience, certification, degrees, training, etc.) without using personally identifying information such as name and Social Security number. Linking teacher and student data will ultimately be required to meet federal data reporting requirements and will provide policymakers and educators with such information as quality of teacher preparation programs and the need for specific professional development. Presently there is no specific timeline for Maryland to implement this component, but sources of funding are being explored.

What about the remaining components?

Component 7, Student level college readiness test scores, focuses on data related to such college readiness tests as Advanced Placement, International Baccalaureate, SAT, and ACT. Student performance on these exams are good indicators of whether students are prepared to succeed in postsecondary education and work. Maryland currently has no timeline for implementing this component.

Component 9 is the ability to match student records between the P-12 and higher education systems. Maryland has had preliminary discussions with the Maryland Higher Education Commission concerning possibilities for extending the data system into higher education and ultimately, the workforce; however, no timeline has been set and sources of funding will need to be identified.

Maryland's Longitudinal Data System

Background

For over 20 years, the Maryland State Department of Education (MSDE) has used an education data warehouse to report the results of its accountability system. The State has developed processes to collect data from local school systems, which has been occurring for many years, but have allowed systems to develop their own data systems to track student performance and inform instruction at the local level. The capacity and sophistication of the local school system's data systems has varied, but some do have longitudinal systems. The current state data warehouse does not link student data over time or across the various data collections received from the local school systems.

Since the implementation of the No Child Left Behind Act (NCLB), states without accountability programs and data systems have begun to develop processes and tools using the most recent technology and methodology, including longitudinal data. A longitudinal data system (LDS) is a comprehensive data system linking student data across years. While MSDE has been meeting federal requirements until now using the current data warehouse system, the new NCLB regulations finalized in 2008 require a functional LDS with a minimum of four years of data to calculate the new graduation rate for the 2010-2011 school year. Additionally, NCLB and federal reporting requirements require that each state have a longitudinal data system, and federal stimulus money was awarded based on assurances that MSDE will work to achieve all ten essential components as defined by the Data Quality Campaign and adopted by the America Competes Act.

Complying with federal requirements is not the only reason Maryland must obtain the resources to increase efforts in LDS development. Good policy begins with access to accurate and useful data. Given the complexity of today's educational issues, good policy demands additional data. Legislators and stakeholders have asked reasonable questions that cannot be answered due to the limitations of the current data warehouse system. This lack of ability to respond with the requested information has been a source of frustration, and at times, has stalled the policy decision-making process.

Maryland's Status

The national Data Quality Campaign (DQC) Survey is based on the ten essential components of state data systems as defined by the Data Quality Campaign. The survey has been accepted by the U.S. Department of Education as the national standard and agreed to by the Council of Chief State School Officers (CCSSO). In 2007-2008, thirty-four states had between six and ten of the components included in their longitudinal data system; Maryland currently has four components.

The ten components are described in the table below. The component description has been shaded for easy identification as follows:

- Components Maryland has in place are shaded in **green**.
- Components that Maryland does not yet have but have been funded by the recent federal grant and are currently being planned for implementation are shaded in **blue**.
- Components that are shaded in **light blue** have not been funded and limited progress (if any) has been made.

Maryland's Longitudinal Data System

2008 Data Quality Campaign (DQC) Survey Results

| | | |
|---|--|--|
| COMPONENT 1 Statewide Student Identifier | A unique statewide student identifier that connects student data across key databases across years | |
| | Nationwide | 48 states have this element |
| | Maryland | Unique student IDs were assigned 2007-2008; federal grant funding has recently been secured to link the data across years and across data collections. |
| COMPONENT 2 Student-Level Enrollment Data | Student-level enrollment, demographic and program participation information | |
| | Nationwide | 49 states have this element |
| | Maryland | Maryland has this element |
| COMPONENT 3 Student-Level Test Data | The ability to match individual students' test records from year to year to measure academic growth | |
| | Nationwide | 48 states have this element |
| | Maryland | Federal grant funding has recently been secured to begin this process. |
| COMPONENT 4 Information on Untested Students | Information on untested students and the reasons they were not tested | |
| | Nationwide | 41 states have this element |
| | Maryland | Maryland has this element |
| COMPONENT 5 Statewide Teacher Identifier with a Teacher-Student Match | A teacher identifier system with the ability to match teachers to students | |
| | Nationwide | 21 states have this element |
| | Maryland | Maryland will need to pursue funding to develop a teacher ID system and a process to collect and link student and teacher data. |
| COMPONENT 6 Student-Level Course Completion (Transcript) Data | Student-level transcript information, including information on courses completed and grades earned | |
| | Nationwide | 17 states have this element |
| | Maryland | Maryland has just received federal funding to develop a voluntary standardized system of course numbers and to design and implement this data collection. This is a huge undertaking; the cost is expected to be around \$3 million. |

Maryland's Longitudinal Data System

2008 Data Quality Campaign (DQC) Survey Results

| | | |
|--|---|--|
| COMPONENT 7 Student-Level SAT, ACT, and AP Exam Data | Student-level college readiness test scores | |
| | Nationwide | 29 states have this element |
| | Maryland | Maryland will need to work with local school systems to first add this data into their own data systems. |
| COMPONENT 8 Student-Level Graduation and Dropout Data | Student-level graduation and dropout data | |
| | Nationwide | 50 states have this element |
| | Maryland | Maryland has this element and will continue to be compliant by moving to the NGA rate in 2011. |
| COMPONENT 9 Ability to Match Student-Level P-12 & Higher Education Data | The ability to match student records between the P-12 and higher education systems | |
| | Nationwide | 28 states have this element |
| | Maryland | The State Superintendent and the UM System Chancellor have collaborated for the past year and will continue. Maryland has offered to extend use of the unique student identifier system to institutes of higher education. |
| COMPONENT 10 A State Data Audit System | A state data audit system assessing data quality, validity and reliability | |
| | Nationwide | 45 states have this element |
| | Maryland | Maryland has this element, which is constantly being improved. |

Current Initiatives

With clear targets for the next generation of data systems, Maryland is well positioned to move ahead with the planning and collaboration that has already taken place. The DQC Ten Essential Components will serve as blueprint for future work.

In order to develop a LDS, several prerequisite components must be in place, particularly a unique student identifier system that links student data across years/data collections and can track students across school districts anywhere within the state, and an updating of the data collection systems.

In 2005, MSDE received a federal grant that allowed for the development of the unique student identifier system, and Maryland students were all assigned a unique state-assigned student identification number (SASID) in the fall of 2007. This grant also allowed for the consolidation of local school systems' data collections. Maryland has chosen a web data collection method which is currently being implemented for several important data collections, including Title I and Title III. This data collection method has reduced the number of files local school systems must prepare and the level of redundancy of data reported to the state.

Maryland's Longitudinal Data System

This project will be completed several years after full funding is available. MSDE has received a \$6M grant of an original \$9M requested over five years to continue LDS development. While this requires a scaling back of scope of work, MSDE will apply for stimulus funding that is available to states to develop their longitudinal data systems. However, any federal funding Maryland receives can only be used for the development of the LDS, not for the support and maintenance of these systems. Maryland will have to commit significant state funding to maintain the state-of-the-art technical solutions required for the DQC essentials and the staffing to operate it. Without funding, Maryland can only make *limited* progress in implementing the system, although planning and collaboration with local school systems, higher education and other agencies will continue.

Next Steps

With the DQC essential components driving LDS priorities, the task ahead is massive. Many states have already developed LDS, and as a funding recipient, MSDE is part of a supportive network which regularly shares best practices, successes, and failures. MSDE has a vision and plan for its entire LDS and has divided the project into modules in order to realize new capacity from any funding received. While it is expected to take years and millions of dollars to realize the full benefits of the LDS, Maryland's next phase is to:

- Implement a warehouse structure to link student data across different data collections and across years [*DQC Components 1 and 3*]
- Continue to standardize and update data collection methodology [*prerequisite work and DQC Component 10*]
- Increase data collections beginning with student course and performance data (grades) obtained at all three levels (elementary, middle and high) [*DQC Component 6*]
 - This task is labor intensive and expensive but is a prerequisite to planning to initiate the unfunded development of data collections required to link student and teacher data or address the recent legislation requirements for reporting of class-size data.
- Obtain reporting resources necessary to provide timely access and useful information to policy makers (State Board, legislature, others)
- Increase staffing to support additional data collection and reporting requirements

Challenges

1. Developing realistic stakeholder expectations

Developing an LDS is a significant but exciting challenge. However, it will be difficult to mitigate the expectations of our stakeholders who want the data needed to make good policy decisions on behalf of Maryland's children while the LDS is being developed and implemented. Also, as more data becomes available, it will generate more questions than answers, potentially adding the need for even more capacity. MSDE must be prepared to assist local school systems to develop their capacity to analyze and use data, which will require additional staffing.

2. Obtaining funding and staff to sustain progress.

A major barrier to Maryland's success is funding and staffing. Although federal stimulus funding may be available to assist in the development, a key challenge is staffing for the Division of Accountability and Assessment. Acquiring staff with the expertise, time, and capacity needed to write grant proposals to obtain funding without jeopardizing the already heavy workload has been difficult. Given the current economic climate and limited resources, MSDE's progress will continue to be hindered.

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3. Identifying staffing resources to procure and monitor contracts

Because state salaries do not support personnel with the level of expertise to actually complete this highly technical work, MSDE must write RFPs, evaluate proposals and award contracts in order to accomplish the development work. Collaborating with contractors takes significant time, effort and consistent oversight and monitoring to ensure a high quality product.

4. Developing local capacity

New data collection systems will not only affect MSDE but local school systems, particularly those that do not currently collect the required data from schools. Systems with less sophisticated student management systems will need additional sources of funding to upgrade their own systems and train staff as well as additional lead time to meet new or added requirements.

5. Obtaining resources to sustain the system

Development of an LDS is only an initial step. A commitment to providing significant sustained resources to keep the system functional and maintained is essential to keep hardware and software licenses current and functioning. Additional staff will be required to manage and validate the multiple data collection elements, interface with locals, provide consistent standardized training as local school system staff changes, and provide access to the data.