Teacher «» Student
Data Link Project

Roster Verification White Paper

April 30, 2013

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This paper has been developed by the Center for Educational Leadership and Technology (CELT) for the Bill & Melinda Gates Foundation. While the data and analysis contained in this document were used to inform the Bill & Melinda Gates Foundation, the report is not a representation of their current grant-making strategy.

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Teacher-Student Data Link Project Description

The Teacher-Student Data Link (TSDL) Project is funded by the Bill & Melinda Gates Foundation and conducted by the Center for Educational Leadership and Technology (CELT) with guidance and dissemination support from the Data Quality Campaign (DQC). This project is a cross-state, collaborative effort focused on developing a common, best practice framework for a *Teacher of Record* definition and business processes for collecting and validating linked teacher and student data. This important initiative brings five states together to leverage their collective experiences, knowledge, and resources to determine a common approach to one of the most critical components of their data systems and a key step in using accountability data to increase student learning.

In support of the TSDL project, CELT initially assisted the Arkansas, Florida, Georgia, Louisiana, and Ohio Departments of Education — and three of the local education agencies in each state — in conducting a comprehensive review of the data collection, verification, storage, and reporting processes and systems related to linked teacher-student and assessment/outcomes data. CELT's fieldwork and study extended to the school districts and the schools in order to assess how they collect data and verify its quality. CELT made sub-grant awards to pilot SEA/LEA teams and provided ongoing technical assistance for implementation of model definition framework, business processes, and short-term recommendations.

This white paper includes lessons learned, critical success factors, models, use cases, and recommendations for Roster Verification Systems and processes. It is part of CELT's work to disseminate and support best practices. The white paper provides guidance for policies, processes, and data systems from the classroom to the state level as a way to increase the validity and reliability of the alignment of teacher and student data.

Preface

This paper examines the role of roster verification in supporting a high quality teacher-student data link, the processes being used by school districts and state education agencies to verify rosters, and best practices for roster verification to support the various uses of the Teacher-Student Data Link (TSDL).

Teacher-Student Data Link

An effective teacher-student data link (TSDL) is an essential component for state and local education agencies (SEAs and LEAs) and is important to the day-to-day operations of a school. This link is foundational for such routine school operational tasks as tracking attendance, issuing grades, and maintaining student schedules. It is also critical for such strategic tasks as tracking student achievement, planning professional development, and assessing program effectiveness. Figure 1 shows examples of the many purposes for which such a link is key.

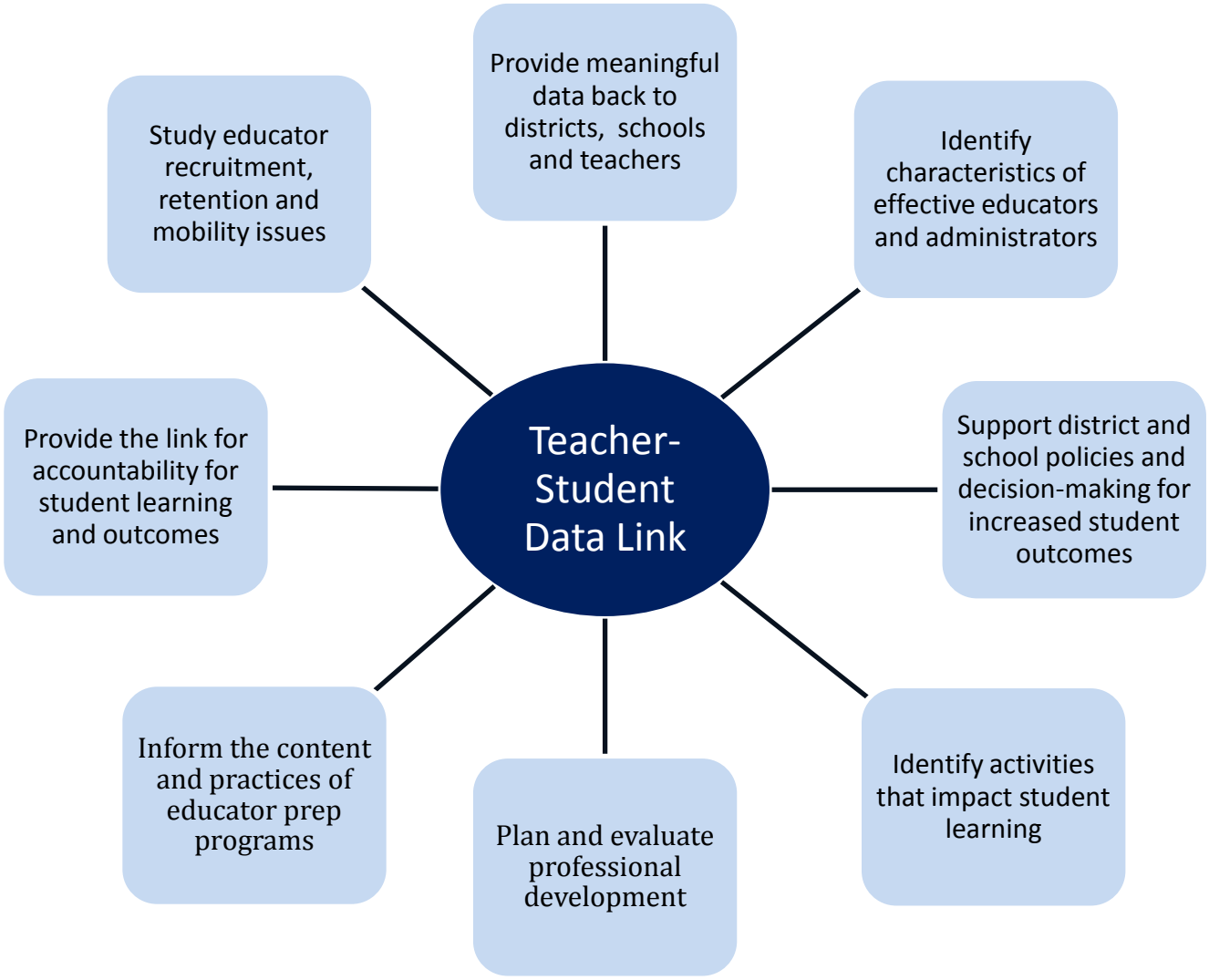

Figure 1. Examples of TSDL Uses

At present many education agencies are unable to effectively connect students and teachers in accurate and meaningful ways to meet the information needs. Today, more than ever, district and school administrators cannot risk having invalid data with questionable alignments to teachers and programs. They need accurate information based on reliable and linked data.

The foundation for an accurate TSDL system is being laid by the states. During the last decade, SEAs and LEAs have established viable systems for creating and maintaining a unique student identifier from pre-K to grade 12 (and in some states into higher education and the workforce). They have begun to collect data on courses taken by students and taught by teachers, the leveraging of unique student IDs, common course codes, and teacher IDs to establish connections between teachers and students. States are developing clear definitions for "Teacher of Record" to more accurately capture the increasingly complex staffing patterns and instructional roles present in schools, such as contributing professionals and team teaching. These efforts are resulting in better data to connect teachers and students that can begin to meet a wider range of purposes such as described in Figure 1 above. The full Teacher-Student Data Link process model is found in Appendix C. Even with this progress, there remain many issues with this linkage.

Concerns include:

- Student schedules are not always kept up-to-date on a regular basis. This results in operational issues at the school level and inaccurate aggregate data as this information moves up the chain to the district and state level.
- The periodicity with which teacher and student data is collected varies in state agencies from once a year, a few times per year, weekly, or daily. Infrequent collections result in gaps in knowing exactly how many days per year a teacher actually taught a specific student.
- Teachers don't always have confidence in the quality of the linkage, and are concerned when such data is used for high-stakes purposes, such as school accountability, planning professional development, or evaluating teacher effectiveness.

Why Roster Verification?

CELT has identified a number of components to be included in the planning and implementation of a valid TSDL, with practices at the school, district, and state level that continuously vet the accuracy of this linked data. Appendix A shows the ten components of an effective TSDL. The inclusion of effective process and practices related to these components will result in an accurate TSDL; however, field experience shows us that often these practices are not fully developed or implemented, and the quality of the linkage remains suspect, even at the local and school level. To address these issues and foster confidence and credibility for the data as it is used for high-stakes purposes, we recommend a focused process to ensure the accuracy of the TSDL: the roster verification process.

Roster verification is the process by which a teacher and supervisor confirm that the class roster is correct or report discrepancies for correction.

As a key partner in the Teacher-Student Data Link Project, the Data Quality Campaign (DQC) has incorporated promising practices into their annual survey to help ensure that the data and the teacher-student link accurately capture the complex connections that exist in schools. Roster verification is one of the key recommendations. Based on survey results released in 2012, DQC determined that 22 states have put roster verification methods in place. See Appendix C for the details on all 50 states, the District of Columbia, and Puerto Rico and their status on four promising practices:

1. Whether the state has a teacher-of-record definition
2. Whether the state's teacher-student data link can connect more than one educator to a particular student in a given course
3. Whether the state has in place a process for teacher roster verification
4. Whether the state collects data linking teachers and students multiple times per year

DQC strongly agrees that a roster verification process is needed for data quality and to provide an assurance to teachers, administrators, and other stakeholders that decisions are based on valid, reliable, and fair information. They emphasize that it is important to give teachers and principals an opportunity to verify their student rosters and submit corrections. Further information can be found in the Data Quality Campaign references listed at the end of this paper as well as in their *Analysis of State Promising Practices in TOR and TSDL* included in the appendices.

Class Roster Verification– Key to the Teacher-Student Data Link

The class roster is the list of students who are scheduled to be in a course section with a specific teacher and is based on the students' schedules.

The primary link between students and teachers is in the course-section assignments maintained in a class roster (see Figure 2 below). Students receive a schedule at the beginning of school, or upon enrollment, that lists their courses and teachers. The courses are often described in a common course catalog at the state level. Assuming that the teacher assigned to the course has sole responsibility for instructing the student on the standards listed for the course, one might conclude that the teacher listed is the individual who is accountable for teaching that student these standards.

Roster verification is the process by which a teacher and supervisor confirm that the class roster is correct and/or report discrepancies for correction. In cases of high-stakes usage of the teacher-student data link, the process logs the validation to indicate that the data is correct and suitable for the intended purpose.

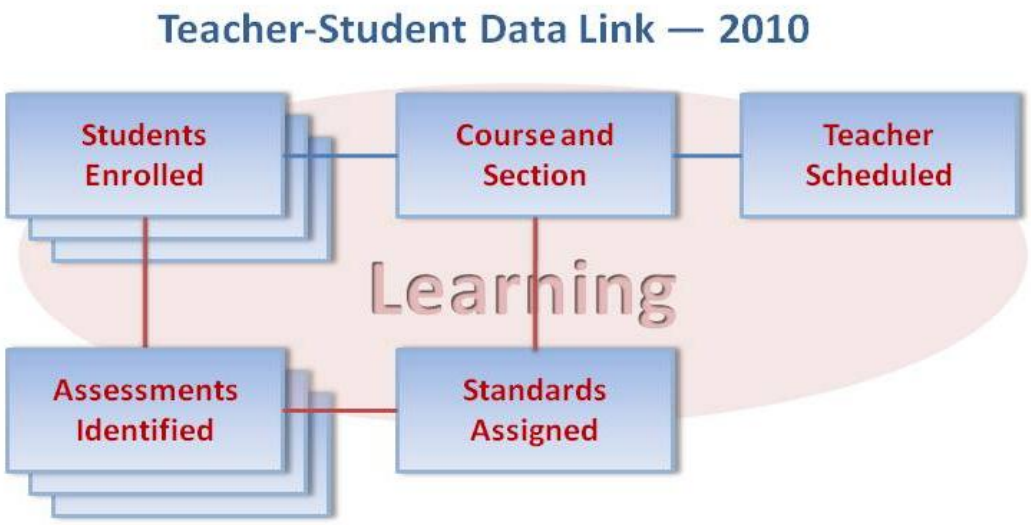

Figure 2. Making the link between students and teachers.

For some cases in which roster verification is used, a single point-in-time roster verification process is sufficient; however, when the data is to be used to attribute student outcomes to a teacher, a view of the TSDL over time is needed. Whether or not an individual student or teacher is scheduled or present for a particular day's learning activity is not always captured accurately in data systems. Discrepancies occur because of issues such as student or teacher absenteeism, relocation, pullout, or unrecorded schedule changes. Changes to the assigned teacher occur because of substitutes, co-teaching arrangements, pre-service teaching assignments, and other situations. These changes are often not captured in the data systems being used to determine the teacher-student link. The intent of some types of roster verification tools is to capture a more accurate record of the time a teacher influences the learning of a student. It recognizes that class rosters and teacher assignments change over time, and makes provisions for capturing the changes to improve accuracy.

When to use roster verification and what method to use

Some of the most important uses of the teacher-student data link require strong confidence in the data. A well-designed and implemented roster verification process will establish that confidence. Whether or not the process needs to be event-based, conducted over multiple points in time, or continuous to establish trust, depends on the circumstances and uses of the data.

For example, if teacher professional development decisions are made, in part, based on student outcomes data, then it is important that the data reflect the correct set of students assigned to the teacher over time. This is a case where having a single point-in-time snapshot of the students

and teacher linked through a class is not sufficient; however, if the data is being used for a point-in-time use, such as to confirm the students assigned to a teacher's course-section on the day a test was given, then a single point-in-time roster verification process will do the job. Roster verification is effective when teachers and other stakeholders have confidence that the roster data reflects reality to the level of granularity sufficient for the intended use.

Schools, school districts, and state education agencies are implementing a variety of processes for roster verification that range from once-a-year event-based models, to multiple events, to daily processes in which data is captured automatically from source student information systems and verified as part of existing teacher responsibilities, such as taking attendance. A promising approach uses data captured by student information systems for embedded verification which results in improved data quality over time. As shown in Figure 3 below, the class attendance sheet or grade book, combined with the schedules of group of students assigned to the course-section, yields a list of the students actually present for a learning activity.

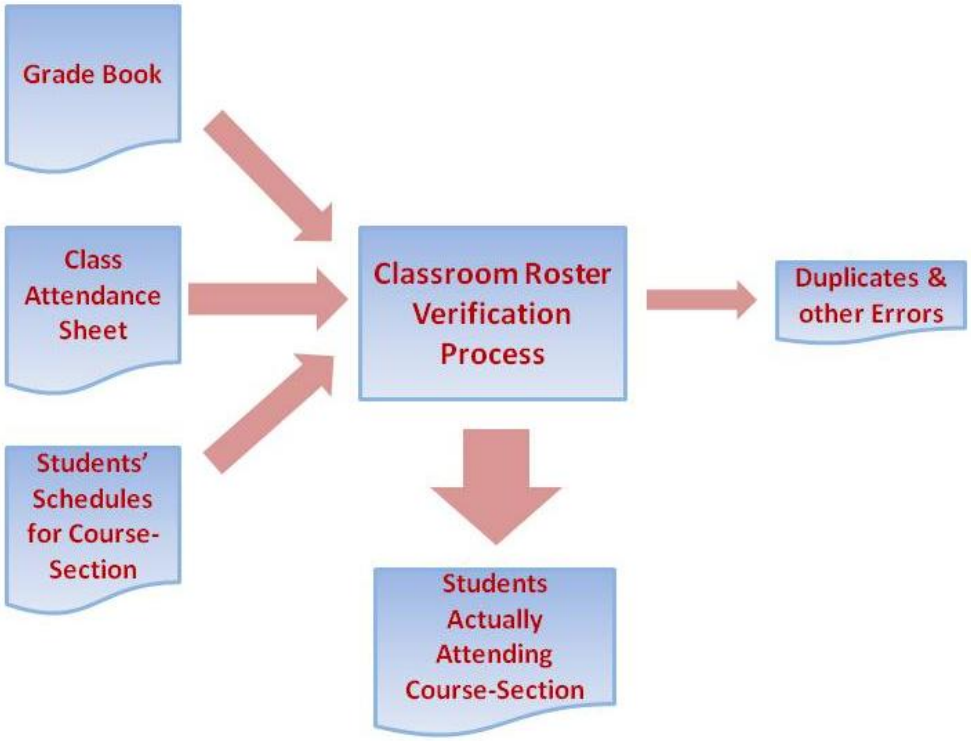

Figure 3. Classroom Roster verification
(The Center for Educational Leadership and Technology, 2011)

A sample schematic of an LEA TSDL data extract with roster verification is provided in Appendix A.

Roster Verification Process Models

CELT's research has identified three models for roster verification although there are variations of each model within states and districts to accommodate specific policies, laws, or technical capabilities. The three basic models that have been identified are:

1. Verification for a single event, such as testing or once-a year cycle
2. Verification at multiple times during the year, such as in conjunction with state attendance reporting deadlines
3. Verification embedded into ongoing processes, such as taking attendance

Outlined below are examples of several state and district models that have been either developed in-house or through contractual services. Currently, the majority of states and districts are using the event-based approach with specific processes and timelines to be followed using historical data collections. Several states whose data systems have the capability are piloting roster verification as part of the daily routine; i.e. embedded in ongoing processes that are fully automated. For example, taking attendance could include a roster verification function of noting which students do not belong on the roster as well as which students are absent. This would also allow attendance data to be used to determine a percentage of time a student received instruction from the teacher.

Statewide Implementation

The following states participated in the TSDL project to select and implement, through pilot projects, one or more of the models for roster verification. Each state, with CELT's assistance, first conducted a comprehensive review of the data collection, verification, storage and reporting, and business processes and systems associated with the teacher student data link.

Arkansas

Two models of roster verification, one event-based and one embedded, were piloted in Arkansas. The first is a process to verify that the state has accurate student roster data before test labels are generated for the state's summative assessment. The test vendor uses data from the state to pre-encode a student identifier on each answer sheet for the paper-and-pencil tests. The greater the accuracy and timeliness of the data sent to the test vendor, the greater likelihood that the student will receive a pre-encoded workbook on the day of testing; and there is less chance for errors when answer sheets are scanned and test results attributed to students. For this purpose, the Arkansas Department of Education created an online tool that allows teachers to verify rosters. Figure 4 shows the verification tool that a teacher would use to verify her class roster. The tool was piloted in 2011 and will be available to verify accuracy of the students on each class roster prior to future test label generation.

In this case, the verification process is event-based because it is linked to a common event - the administration of the summative test. Every teacher in the state is given the opportunity to verify their class rosters during a period prior to the event, factoring in the lead time required by the vendor to generate the test labels. If any errors are found, corrections are made in the source

student management system, and the corrected data is uploaded nightly to the state system. As a result, test labels more accurately reflect the class rosters on the day of testing, except for rare cases when student class enrollments and/or teacher assignments change between the time the rosters are verified/corrected, the vendor generates the labels, and the actual date of the test. It is important to note that this can be done on a statewide basis because Arkansas has a statewide enterprise system (APSCN) that captures student-level data from school districts in real time.

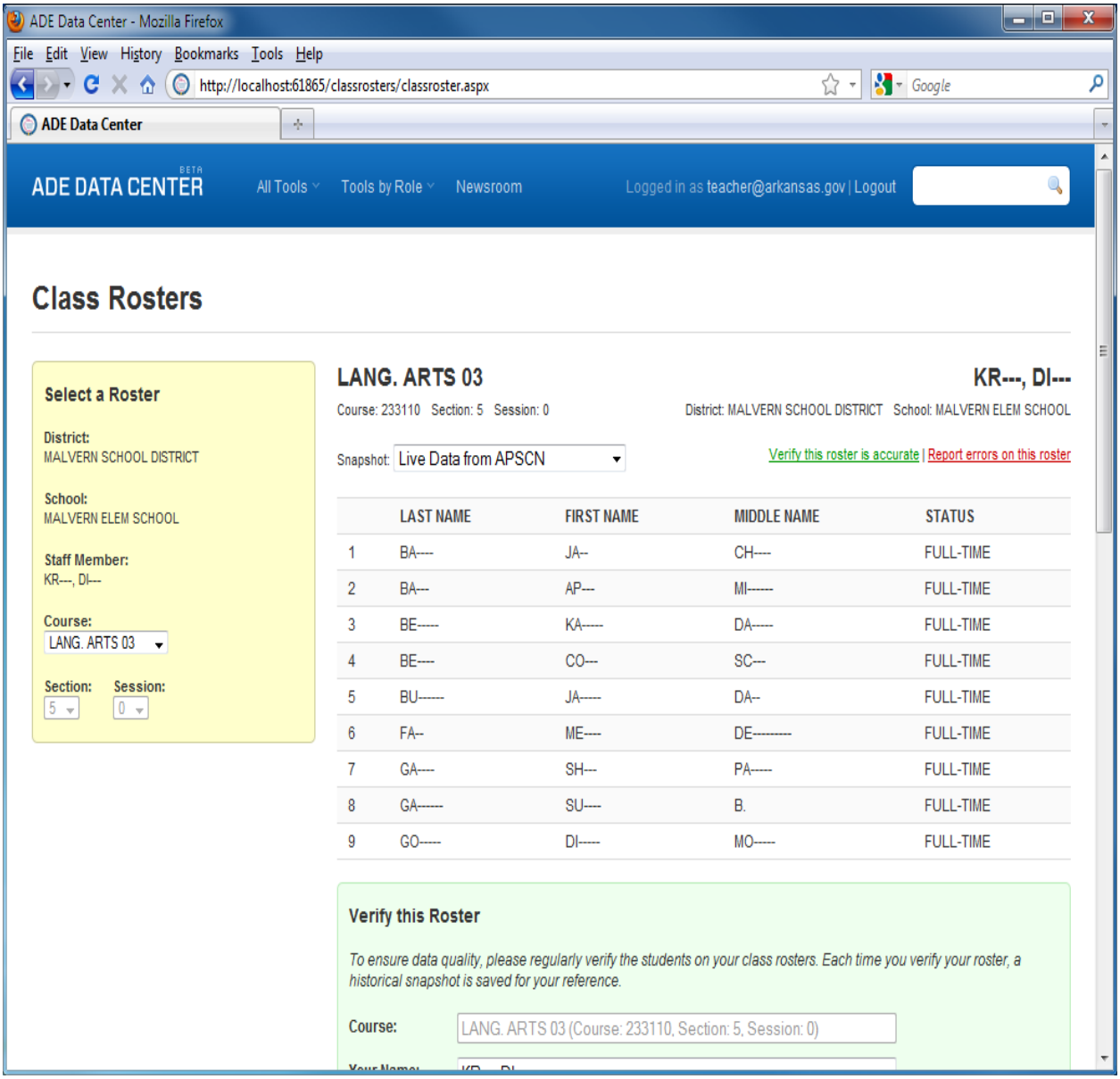

Figure 4. Class Rosters

A second roster verification process developed and piloted by the Arkansas Research Center (ARC) falls in the "embedded" category. ARC developed an application that enables teachers to verify their rosters on a handheld, mobile device before they access other mobile applications. The corrected roster can then be used by the teachers for applications such as the local assessment application and data visualization tools that reside on the handheld device. The same correction process exists as in the event-based model. Accurate rosters are then available not only for test labels but also for use in data visualization tools.

Arkansas' developed its tools using open source applications; and, therefore, they are available to other interested states.

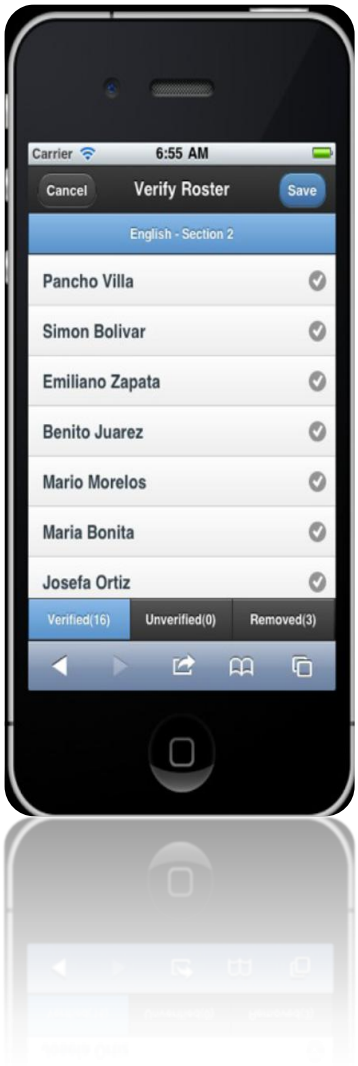

Figure 5. Arkansas mobile Roster verification (design mock-up)

Florida

Florida statute requires the State Board of Education to establish a process to permit instructional personnel to review the class roster for accuracy and to correct any mistakes relating to the identity of students for whom the individual is responsible. To accomplish this requirement, the Florida Department of Education developed an online roster verification tool that allows districts, schools, and teachers to view and verify class rosters. They piloted the tool with several districts and schools in the fall of 2011, and made revisions to the tool based on the feedback received from participants. The tool was very well received. Among the 347 teachers who responded to a survey of the tool's use, 91% reported the process was easy or very easy. The improved tool has been made available to all districts.

This tool provides teachers with an opportunity to confirm that the information is an accurate reflection of the class roster at that time. The tool allows the option of adding students who are missing from a teacher's class roster and removing students, if necessary, who were not part of the roster. Although the current pilot is a single-event model with verification coinciding with the last state attendance collection period in 2013, the ultimate goal is that the data would be verified three times a year to coincide with the three states' attendance collection events.

Although the tool is available for any Florida school district to use, districts are also free to develop their own SIS-based system, or use a manual system. Some districts chose to develop and use their own system, and a few other districts have chosen a more manual, paper-based system. School districts that have invested in their own roster verification methodology are required to adhere to specific data reporting standards so that statewide data is comparable.

The Florida Roster Verification tool is not available for use by other states because it has been customized for Florida's systems and to be specifically responsive to their statutes. However, documentation on the model and the guidebooks could be used by other states to inform roster verification process development. The guidebooks include detailed information for the classroom, school, and district levels.

Georgia

In Georgia the State Department of Education has provided a "tunnel" through which educators can log onto their local student information system; and, through the local system, get access to a rich set of data hosted by Georgia's Longitudinal Data System (GLDS). As part of that project, the state provides a feedback loop to improve the accuracy of class roster data over time.

One reason for placing the GLDS link, or "tunnel" connection, on district SIS systems was to prepare for a roster verification process. Giving the classroom teacher access to valuable data, used on a regular basis, provides the opportunity for teachers to catch discrepancies in rosters and notify school staff to correct the data in the local student information system. The "tunnel" can also support a formal classroom roster verification tool hosted by the state within the "tunnel." The formalized process will support school districts' emerging uses of the TSDL. For example, under Georgia law districts are required to factor the academic achievement gains of students into the teachers' annual evaluation. Verified class rosters improve quality and trust that the data will reflect student growth of the right students, and will be attributed to the right teachers.

Georgia's approach is an excellent example of the variations in models and processes that states select in order to ensure that their approach meets the needs of their schools and districts. Through the development of the "tunnel" and the GLDS, the technological infrastructure is in place to successfully implement any of the three models of roster verification.

Louisiana

Louisiana has developed a process of roster verification called Curriculum Verification and Results (CVR), and a custom-built reporting portal in which principals and teachers can view overall results. The CVR enables teachers to verify their rosters. Teachers can check to make sure that all students listed were in their class for the required length of time, and that no students were omitted from their rosters. The CVR process is event-based, and occurs once a year. Teachers, principals, superintendents, and data managers are able to indicate if a student was not in a class, or moved from the class during the year, as shown in Figure 6 - *Louisiana's Curriculum Verification and Results Reporting Portal* (see page 14). The process includes checks and balances for quality assurance. The portal also provides reporting related to the value-added results calculated using the TSDL, as shown in Figure 7 - *CVR Report* (see page 15). The Curriculum Verification and Results (CVR) Reporting Portal Implementation Guide is available through the TSDL website at www.tsdl.org under TSDL Reports and White Papers.

Louisiana's Teacher Preparation Program Assessment Model (TPPAM) uses value-added data to measure the effectiveness of teacher preparation programs by linking student growth measures to their teachers, and to the colleges and universities that trained those teachers. The value-added data also supports the Teacher Advancement Program (TAP) to guide professional development and improve teacher effectiveness. (Louisianna Department of Education, 2010)

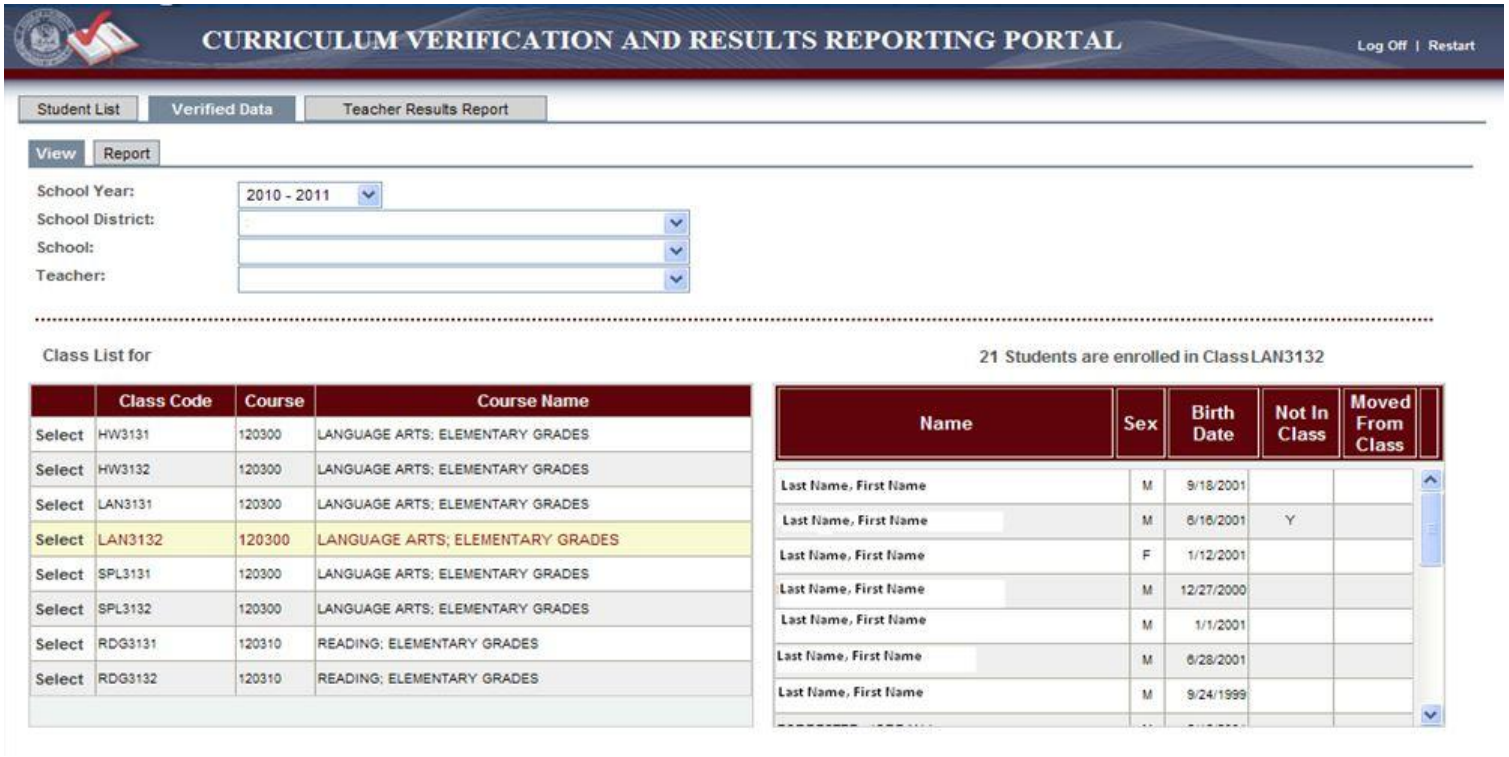

Figure 6. Louisiana's Curriculum Verification and Results Reporting Portal

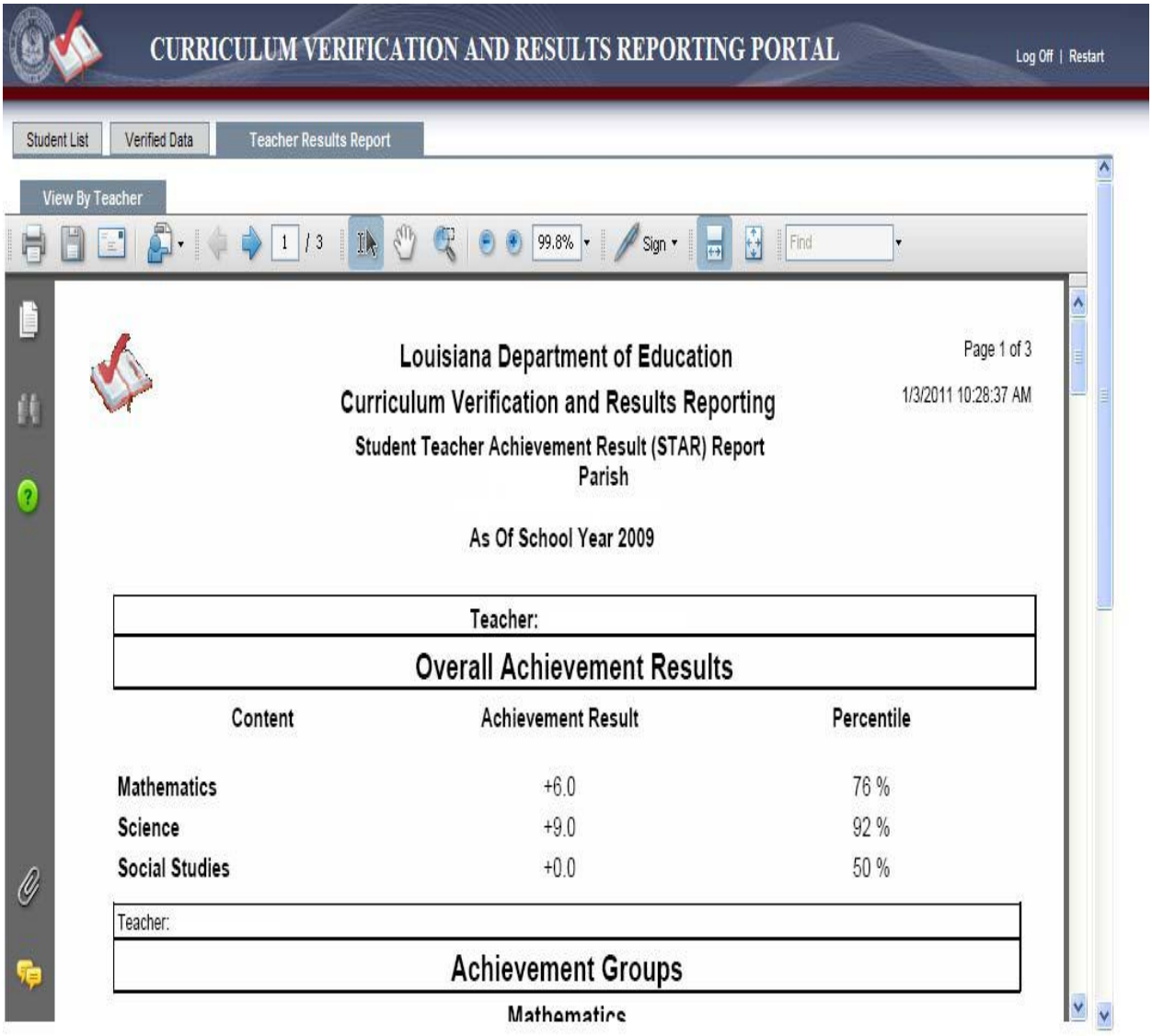

Figure 7. CVR Report

Rhode Island

In Rhode Island roster verification is used to ensure the accuracy of teacher/course/student (TCS) data, which will be used in the new Instructional Management System, Educator Performance Support System, and Growth Model Visualization data systems being developed under Race to the Top, as well as for educator evaluations. Districts in Rhode Island submit TCS data in English Language Arts (ELA) and mathematics for class rosters in grades 3 – 7. The Roster verification process only applies to principals and teachers in grades 3 – 7 who are considered Contributing Educators based on district policy or guidance. This is accomplished according to a set schedule, once, at the end of the school year. Teachers review and verify rosters, and principals review the data, investigate any issues, and provide the final sign-off for rosters for Contributing Educators. The Rhode Island Department of Education (RIDE) provides several support resources online including a guide, FAQs, video, PowerPoint, and help desk assistance to ensure teachers and principals are prepared to correctly verify rosters. (Rhode Island Department of Education, 2013)

School Districts' Implementation

School districts provided significant insight into how data collection and roster verification are used effectively for many uses, including high-stakes purposes. In these cases, the once-a-year cycle is generally used as the verification model to link students to teachers. Several examples are below.

School District Models

Chicago Public Schools, Los Angeles Public Schools, and Columbus Ohio City Schools are among the districts utilizing the Battelle for Kids (BFK) linkage process and online tool for principals and teachers to verify rosters as part of a process for calculating value-added scores. Principals and teachers verify the students that have been enrolled in each teacher's class, the dates the students were members of the class, and the percent of instructional time for which the teacher was responsible. A high-level diagram of this process is shown in *Figure 8. BFK Linkage Process.*

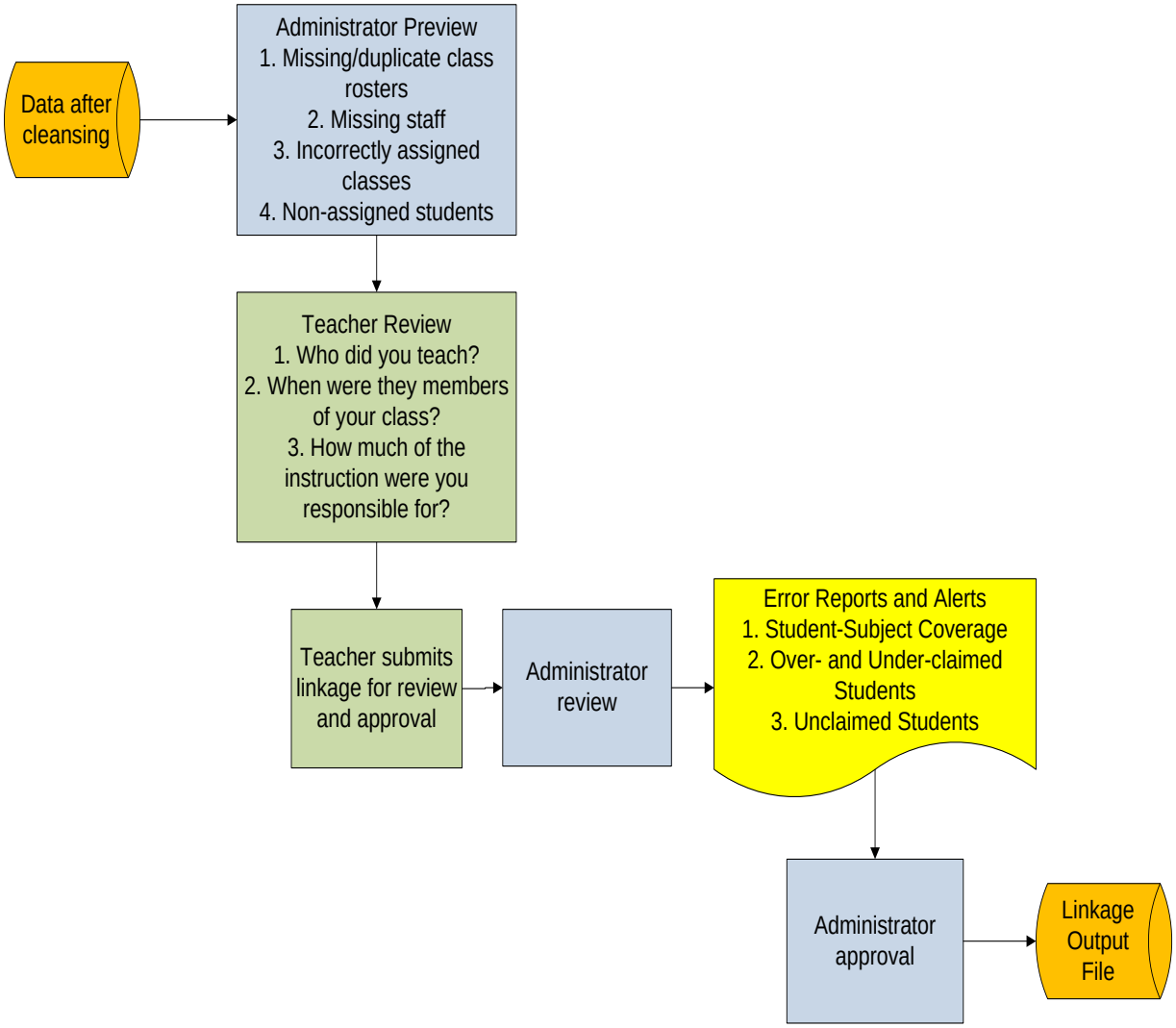

Figure 8. BFK Linkage Process

The above process is used by teachers and principals to document the estimated percentage of a student's instructional time with an assigned teacher.

The Delaware City Schools in Ohio utilized data from ACT Quality Core End-of-Course assessments, merged with additional data maintained by Battelle for Kids, to derive a value-added component. Rosters are reviewed for errors and corrected during an "open window" period prior to test administration, and then teachers and principals are given an opportunity to review and revise time and percentage of instructional time details after an initial set of value-added data is produced. The data becomes final after a review and approval process. See Figure 9. ACT Quality Core Methodology (Delaware City Schools, 2011)

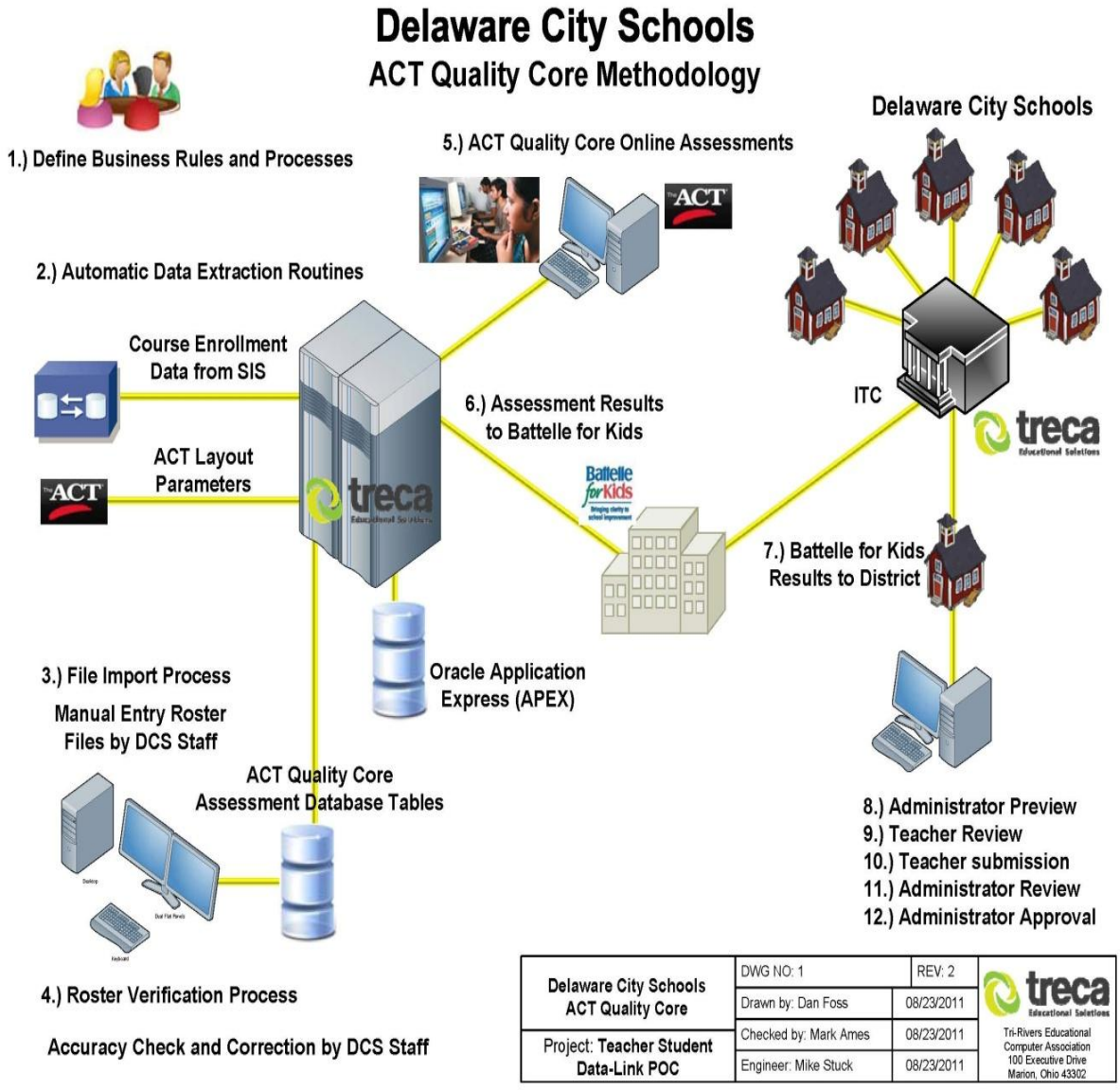

Figure 9. ACT Quality Core Methodology

Texas – Austin Independent School District (ISD)

Austin Independent School District also uses the Battelle for Kids BFK-Link tool and a once-a-year cycle for linkage in the May timeframe. The process allows teachers to attribute instructional influence on student academic progress and produces teacher-level value-added reports.

The process has three phases bounded by specific timeframes. For example, in 2011 the phases were as follows:

- Principals gain access to the linkage system to verify their staff list and staff's class rosters. (5 days)
- Teachers gain access to the linkage system to verify their class rosters and set linkage attribution,the students they taught, how long they taught them, and the percentage of instruction they provided each student. (1 Week)
- Principals have one last opportunity to review staff linkages before giving final approval. (3 days)

The Austin ISD linkage process includes:

- Establishing a roster of students taught throughout the year
- Indicating the month(s) when students are in and out of the classroom (i.e. mobility)
- Reporting the percentage of instruction a teacher has for a given student for a given subject (Battelle for Kids, 2011)

Student Information System (SIS) Based Processes

Absent a statewide effort to develop a roster verification process and tool, or the technological infrastructure to produce high quality data, numerous school districts have led efforts to create their own local and, primarily, manual verification process. Using the local SIS along with the appropriate policies, teachers and principals print a report from the SIS and manually verify rosters during key reporting periods, such as prior to summative and benchmark assessment events. Some districts in Florida, such as Escambia County, have chosen to use a manual system of roster verification.

Survey of SIS Vendors

In August 2102 CELT conducted a survey on roster verification of a select number of Student Information System (SIS) vendors within the Student Information Systems. Results from the survey indicate that vendors are beginning to include Student Roster Verification capabilities, usually through the teacher portal.

Capabilities may include designating the teacher of record, defining and capturing multiple roles for teachers and/or other professionals such as a contributing professional, capturing time taught (dosage), and assigning a percentage of responsibility. It should be noted that not all SIS vendors have the same features or flexibilities, and an analysis should be taken when selecting a vendor to ensure that the system has the needed capabilities to meet the business requirements for roster verification.

More than Roster Verification

As has been indicated, roster verification uses are varied depending on the state's or district's objectives and capabilities. In Arkansas some teachers verify rosters on demand using an iPhone application. They then can upload classroom assessments and get data visualizations to inform daily instructional decisions. Arkansas teachers and administrators also use a web-based process and tool to support other uses of the data link, such as ensuring accurate test labels.

In places like Columbus City Schools, Delaware City Schools, and Austin ISD, teachers and administrators verify rosters once a year, but include percentage-of-time information that may not be present or accurate in the source SIS. Education agencies like New York City Public Schools and the Louisiana Department of Education use the roster verification process to collect any missing details that are required to make the TSDL useful for the intended purposes. Georgia started by making useful data available to teachers and a benefit for teachers to ensure the accuracy of class rosters.

Below are other examples of processes and tools that verify more than just the list of students on a class roster, and that further broaden the capabilities and uses of roster verification.

New York City Public Schools

New York City Public Schools use an online tool, as shown in Figure 10**,** that asks a teacher to verify that the teacher taught the course, indicates if the course was an ELA or mathematics course, and verifies that the course was co-taught. Presumably, this kind of information already exists in the SIS Roster Verification database, but the source system may not capture the information at the level of granularity needed; or there may be known problems with the data quality in the source system. The roster verification tool, therefore, serves as a check on the data that gives meaning to the TSDL.

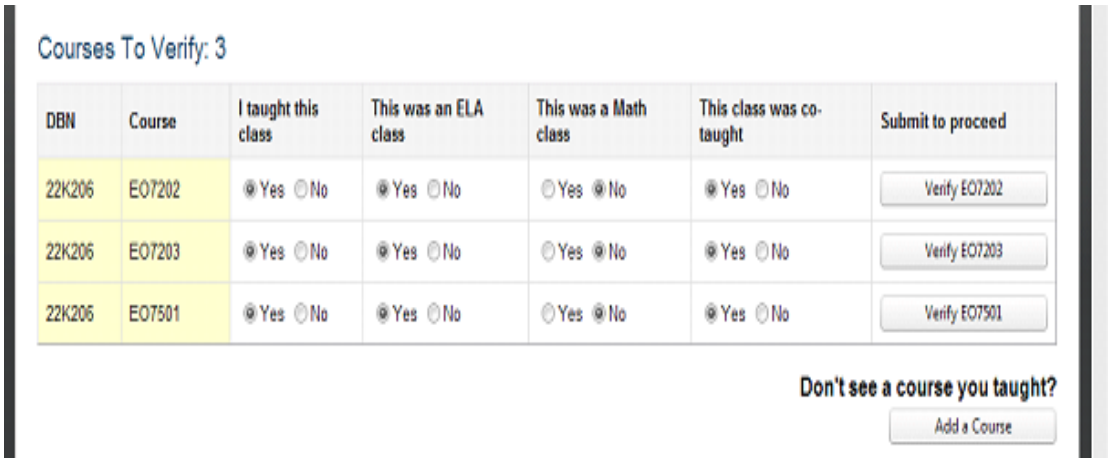

Figure 10. NYC tool, verifying more than just the class roster itself

The data to be captured as part of any roster verification process is driven by the intended use, policies governing that use, and the reliability of the source data. The process used in New York

City is similar to Rhode Island's draft process in that it verifies students at a course-grain timeframe; i.e., only students continuously enrolled in a course from October 31st through June are verified. In both cases the intended use is similar; i.e., "to inform teacher improvement and development," and "developing, supporting, and improving the effectiveness of our educators." In both cases, evaluation system policies limit the students included to those continuously enrolled in a course-section with the same teacher over a period of time. The policies that include only continuously enrolled students in the verified data set may be driven in part by limitations in existing data collection systems to collect more granular data.

New York City uses the roster verification process to collect additional information to verify untrusted details about which course was English Language Arts and Mathematics. This practice was essential to its teacher evaluation methodology. In the same way, Louisiana has used the roster verification process to collect additional details about students that move in-and- out of a class during the year.

From Verification to Certification

In many of the cases in which a teacher verifies rosters using an online tool, the verification event is also logged in a database, keeping a historical record that a particular person verified that a roster was correct on a specific day. In these cases, the logging data may be used for data quality assurance purposes.

When the TSDL is being used for high-stakes or high-impact purposes, it is important for teachers and other stakeholders to be able to formally certify/acknowledge that the data is correct. For example, many states are adopting policies that require teacher evaluation to include multiple measures that include at least some consideration of student outcomes as a "value-added score" or "student growth attribution" metric. In these cases, the teacher and evaluators want the highest level of confidence that the students factored into the value-added score were students assigned to the teacher. The process for verification can become a more formal "certification" process when there is strong confidence in the data.

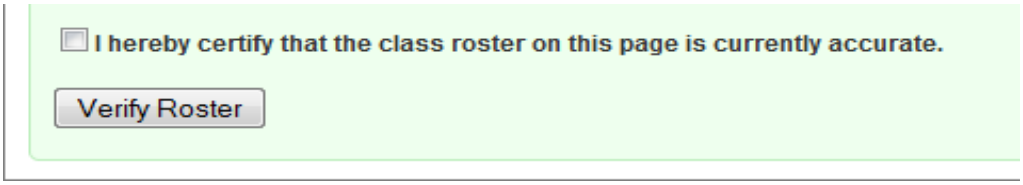

Figure 11. Example roster "certification" check box for point-in-time verification

The process steps for "certifying" a roster may be essentially the same as in an optional verification process. For example, Figure 11 above shows a simple check box added to a verification tool that allows a teacher or principal to certify a roster; however, the certification process is more formalized and thus should be accompanied by:

- Policies that define the timing, rules, or purpose of the certification process and intended use of the data

- A process by which data is captured and maintained about certification transactions (when, by whom, class roster version information, etc.)
- Auditing and reporting of verification/certification events

Summary

CELT's experience with the TSDL project confirms that roster verification is a key component in establishing a reliable, trusted teacher-student data link that can be used for many purposes including those that have high stakes. After a comprehensive review of current processes, infrastructure, needs, and capabilities, and with technical assistance from CELT, the states and districts piloted the three models with slight variations. The pilots and a review of other states' work revealed important lessons learned and key recommendations for implementing a strong roster verification process.

Lessons Learned and Key Recommendations

- When selecting a model, carefully consider factors related to:
  a. Intended uses of the teacher-student data link
  b. State/district policies and requirements
  c. Technological infrastructure and capabilities
  d. Available professional development and other resources
- No matter which model is chosen, it is recommended that a solid roster verification process be established. This process should include the following fundamental capabilities:
  - Allow teachers to verify/certify the accuracy of rosters, as well as submit corrections
  - Collect missing details needed for the teacher-student data link to be useful and trusted
  - Allow principals or other administrators to verify/accept rosters and changes as a check and balance
  - Minimize additional work on teachers and administrators
  - Log the verification transactions for auditing and "certifying"
  - Support the intended uses of the teacher-student data link
- The frequency and timing of the verification process should be determined based-on the data needs; i.e., how the data will be used.
- Policies and processes, such as data governance, should be carefully developed to support and align the roster verification methodology and teacher-student data links

- Appropriate professional development resources should be available to ensure teachers and administrators understand and use the process correctly. This may include videos, guides, help desk assistance, webinars, etc.

An emerging best practice for roster verification is to embed verification within daily processes such as within a student information system or learning management system. For example, a checkbox on an online attendance form within a SIS could allow a teacher to "certify" that the roster is accurate and provide additional options for correcting errors.

Wide-scale-use learning management/instructional improvement systems and adoption of competency-based pathways to learning may redefine how teachers and students are linked. The TSDL could be expanded beyond scheduled class time and include other "instances of learning" necessitating a new conceptualization of the teacher-student data link. Until then, the accuracy of class roster and the ability of teachers and principals to affirm that accuracy are critical success factors for the TSDL.

Additional information and updates are available through the TSDL website at www.tsdl.org.

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Resources

CELT – Teacher-Student Data Link Project:

http://www.tsdl.org

http://www.tsdl.org/RosterVerification.aspx

Data Quality Campaign:

http://www.dataqualitycampaign.org/files/TSDL_abstract.pdf

http://www.dataqualitycampaign.org/files/DQC_TSDL_7-27.pdf

Battelle for Kids:

http://www.battelleforkids.org/Services/link/link_copy1.html?sflang=en

http://www.youtube.com/watch?v=GdHANfU8LDY

http://www.youtube.com/watch?v=ag5kYR2BJHc

Arkansas

http://adesharepoint2.arkansas.gov/memos/Lists/Approved%20Memos/Attachments/309/Class%20Roster%20Verification.pdf

Louisiana

http://www.louisianaschools.net/topics/cvr_portal.html

New York

http://www.p12.nysed.gov/irs/teacher/

Rhode Island

http://www.ride.ri.gov/onis/rosterverification.aspx

http://www.ride.ri.gov/onis/Docs/RVTeacherFAQ.pdf

Appendix A: Teacher-Student Data Link Components

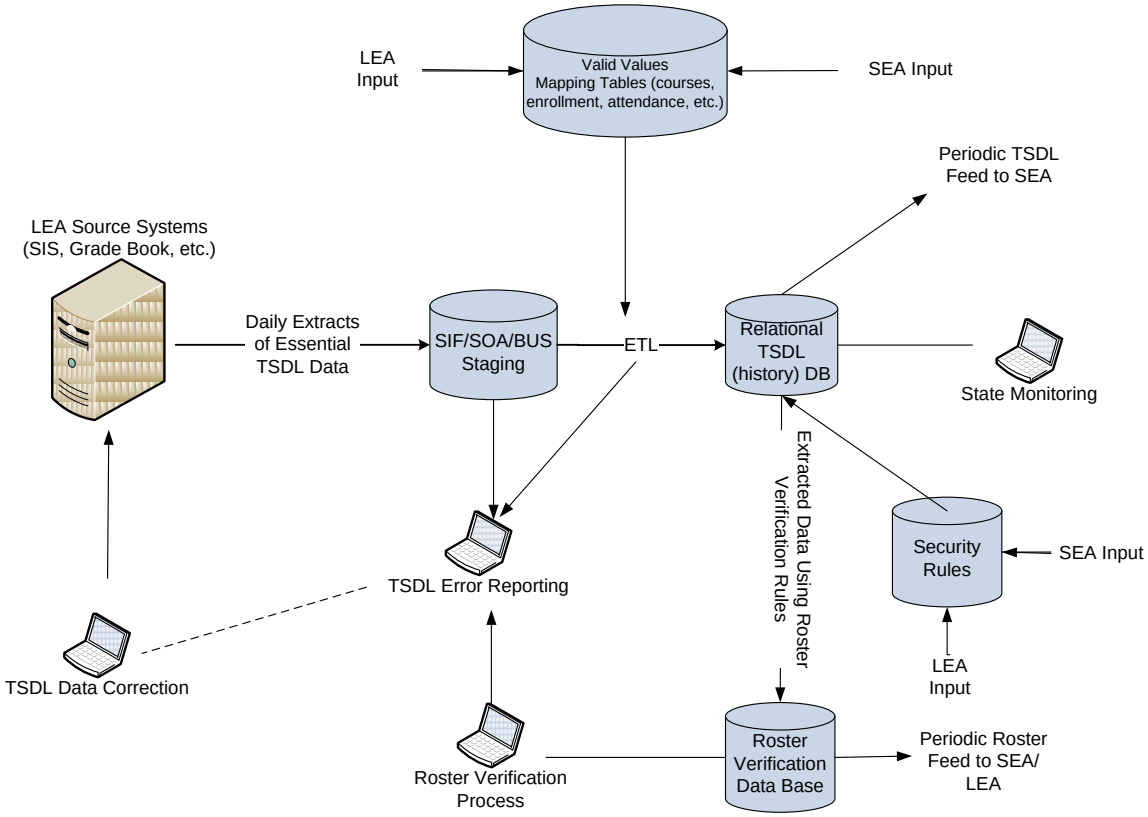
Ten Key TSDL Components

- Use and Purpose of TSDL
- Data Governance Structure
- Unique Student Identifier
- Unique Educator Identifier
- K-12 Course Scheduling with Common Course Catalog
- Daily Enrollment/Attendance for Students and Teachers
- Assessment and Outcomes Data
- Policies and Definitions for TSDL
- Data Linkages, Flow and Integration
- Interagency Data Systems

December, 2010

Appendix B: Sample Schematic of LEA TSDL Data Extract with Roster verification

The class Roster verification is a process of aligning the roster of students that is captured in the class attendance sheet, or grade book, to the list of students who are assigned to the course-section.



Appendix C: Analysis of State Promising Practices in Defining Teacher of Record

Analysis of State Promising Practices in Defining Teacher of Record and Linking Teachers and Students

The following data are from the Data Quality Campaign's *Data for Action 2011: DQC's State Analysis* and highlighted in DQC's factsheets: *Hot Topic: Measuring Teacher Effectiveness* and *Hot Topic: Improving Teacher Preparation*.

All 50 states, the District of Columbia, and Puerto Rico self-reported their status on four promising practices:

- Whether the state has a *teacher of record* definition
- Whether the state's teacher-student data link can connect more than one educator to a particular student in a given course
- Whether the state has in place a process for teacher roster verification
- Whether the state collects data linking teachers and students multiple times per year

Their answers are captured in the table below.

- **Teacher of Record (TOR) Definition:** 25 states report a statewide teacher of record definition. DQC has highlighted in red the 10 states whose definitions reflect current promising practices: reflects instruction and is inclusive of multiple educators.
- **Strong Teacher-Student Data Link (TSDL):** The 13 States that answered yes to all four of the promising practices above (AL, AR, DE, FL, HI, ID, NY, OH, PA, PR, RI, TN, VA) are noted as ***Yes*** in the final column.

State	Teacher of Record Definition	Multiple Educators	Roster Verification	Collection of Data Multiple Times a Year	*Strong Teacher-student Data Link*
Alabama	The individual responsible for the instruction and assignment of grades in a given course/subject.	Yes	Yes	Yes	***Yes***
Alaska		No	No	No	***No***
Arizona	A 'teacher of record' directly instructs, evaluates and assigns grades to students in core academic subjects.	No	No	No	***No***
Arkansas	*A Teacher of Record is an individual (or individuals in co-teaching assignments) who has been assigned the lead responsibility for a student's instruction in a subject/course with aligned performance measures. AND A Contributing Professional is an individual who has been assigned the responsibility to provide additional services that support and increase a student's learning.*	Yes	Yes	Yes	***Yes***
California	The Teacher of record is primarily responsible for the delivery of instruction, assignment of grades and certification of attendance.	Yes	No	Yes	***No***
Colorado	*Educator(s) of Record: An individual or individuals who have been assigned responsibility for a student's learning in a subject/course with corresponding aligned performance measures in both state and local assessments. Contributing Professional(s): An individual or individuals who have been assigned responsibility to provide additional services that support and increase a student's learning in a subject/course with corresponding aligned performance measures in both state and local assessments.*	No	No	No	***No***
Connecticut	Certified teacher who has assigned responsibility for instruction and provides the students outcome for a report card or transcript.	Yes	No	No	***No***
DC		No	No	No	***No***
Delaware	*Teacher of record identifies the teacher or teachers who have responsibility for providing instruction to a given student in a given subject.*	Yes	Yes	Yes	***Yes***
Florida	*Florida defines "teacher of record" as the instructor or instructors responsible for providing instruction for a specific group of students. Operationally, it is the individual reported (teacher course format) with a group of students (associated student course formats.)*	Yes	Yes	Yes	***Yes***
Georgia		Yes	Yes	Yes	***No***

To find out more, visit www.DataQualityCampaign.org/stateanalysis/hot-topics.

Appendix C: Analysis of State Promising Practices in Defining Teacher of Record

State	Teacher of Record Definition	Multiple Educators	Roster Verification	Collection of Data Multiple Times a Year	*Strong Teacher-student Data Link*
Hawaii	*A Teacher of Record is one or more educators who has/have been assigned primary responsibility for a student's learning in a subject/course section with aligned student performance measures.*	Yes	Yes	Yes	***Yes***
Idaho	The teacher of record is defined as the person primarily responsible for planning and delivery of instruction, and assigning a final grade for any given course.	Yes	Yes	Yes	***Yes***
Illinois		No	No	No	***No***
Indiana		Yes	Yes	Yes	***No***
Iowa		No	No	Yes	***No***
Kansas		Yes	No	No	***No***
Kentucky		Yes	Yes	Yes	***Yes***
Louisiana		Yes	Yes	No	***No***
Maine		Yes	No	Yes	***No***
Maryland		Yes	No	Yes	***No***
Massachusetts		Yes	No	Yes	***No***
Michigan	The teacher-of-record is the certificated teacher who provides instruction, who tests and quizzes, who evaluates the pupil's performance and gives the pupil a grade. The on-site mentor may or may not be the teacher of record. The on-site mentor shall be a certificated Michigan teacher employed by the district. (Source: Michigan Department of Education, Pupil Accounting Manual, August 2010)	Yes	No	No	***No***
Minnesota		Yes	Yes	No	***No***
Mississippi		Yes	Yes	Yes	***No***
Missouri	Teacher providing direct instruction and is responsible for assigning the grade.	Yes	No	Yes	***No***
Montana		No	No	No	***No***
Nebraska		No	No	No	***No***
Nevada		No	No	Yes	***No***
New Hampshire	Person who assigns the grade.	Yes	No	Yes	***No***
New Jersey		No	No	No	***No***
New Mexico	The person named in the standard teaching contract who will be covering the class and teaching the students for a majority of the time. The contracted individual who performs all duties of a teacher.	Yes	No	Yes	***No***
New York	*A Teacher of Record is defined as an individual (or individuals, such as in co-teaching assignments) who has been assigned responsibility for a student's learning in a subject/course with aligned performance measures.*	Yes	Yes	Yes	***Yes***
North Carolina		Yes	Yes	Yes	***No***
North Dakota		No	No	Yes	***No***

Appendix C: Analysis of State Promising Practices in Defining Teacher of Record

State	Teacher of Record Definition	Multiple Educators	Roster Verification	Collection of Data Multiple Times a Year	*Strong Teacher-student Data Link*
Ohio (Strong roster verification system mitigates the once/yearly data collection)	*1. Primary assignment (one teacher): An Assigned Educator is the educator assigned to a student, usually for HQT assignment purposes. In some cases, this translates into the teacher responsible for assigning a grade.* *2. Precise accounting of instructional time for teacher-level Value-Added and other evaluation metrics including student growth in non-tested subjects: A Teacher of Record is an educator who is responsible for a significant portion of a student's instructional time (based on enrollment) within a given subject or course that is aligned to state assessments. The relevant Teachers of Record should represent the 100% proportion of a given student's instructional time for a specific subject/course.* *3. Multiple linkages: A Contributing Professional works with/has responsibility for a student and/or teacher, and should be specifically linked with relevant students. This is a yes/no flag to allow for simple and non-mutually exclusive linkages. Numerous educators could be linked to a student.*	Yes	Yes	No	***Yes***
Oklahoma		Yes	No	Yes	***No***
Oregon		Yes	No	Yes	***No***
Pennsylvania	*Teachers of Record: all public school teachers with primary responsibilities for direct instruction in one or more of the following core subjects: English, Reading/Language Arts, Mathematics, Science, Foreign Languages, Arts, and Social Studies.*	Yes	Yes	Yes	***Yes***
Puerto Rico	The Teacher of Record is defined as the primary teacher for the course and every class section.	Yes	Yes	Yes	***Yes***
Rhode Island	Teacher responsible for content instruction and determining student grades	Yes	Yes	Yes	***Yes***
South Carolina		No	No	Yes	***No***
South Dakota		No	No	No	***No***
Tennessee	*A student must have been present for one hundred fifty (150) days of classroom instruction per year or seventy-five (75) days of classroom instruction per semester before that student's record is attributable to a specific teacher. Records from any student who is eligible for special education services under federal law will not be used as part of the value added assessment. TCA 49-1-606(a)*	Yes	Yes	Yes	***Yes***
Texas	Teacher of record indicates that the teacher is responsible for the classroom, making the final decisions about the delivered instruction and the final outcomes for the students assigned to the class.	No	No	Yes	***No***
Utah	Teacher of record' for the purposes of this rule means the teacher to whom students are assigned for purposes of reporting for USOE data submissions.' A special educator assigned in an elementary school as the classroom teacher of record shall meet the NCLB requirements for the assignment. The teacher shall have: (1) a bachelor's degree; and (2) an educator license with an early childhood area of concentration; and (3) a passing score at the level designated by the USOE on a Board-approved subject area test. B. NCLB requirements do not apply to pre-K assignments.	Yes	No	Yes	***No***
Vermont		Yes	No	No	***No***
Virginia	The term Teacher of Record identifies the teacher who has overall responsibility for providing the student's instruction in the required curriculum and assigning the student a grade in that subject.	Yes	Yes	Yes	***Yes***
Washington		Yes	No	Yes	***No***

Appendix D: Teacher-Student Data Link Process Model

Teacher-Student Data Link (TSDL) PROCESS MODEL

Characteristics

- State course definitions and codes K-12
- Unique student and educator IDs
- State-defined roles for teacher of record and contributing professional

*** Initial TSDL Data: Student ID; Teacher/Contributing Professional ID and role; course-section ID and begin/end date.**

**** Ongoing TSDL Data: Course-section changes in student enrollment and teacher/contributing professional assignment with ID codes and begin/end dates.**