Connecting Data With Results
By Marcy Lauck, San Jose Unified School District, California

In 1985, San Jose Unified School District (SJUSD) began implementing a comprehensive desegregation plan under the approval of a federal court order. The desegregation lawsuit, filed on behalf of Hispanic students, was based on racial imbalance at schools in the north end of the district. Residential patterns, in conjunction with the unique geographical configuration of the district, had significantly contributed to the racial imbalance in the schools.

SJUSD is 24 miles long and four miles wide, with the Hispanic population concentrated in the northern end of the district. One of the largest urban districts in California, SJUSD serves 32,000 students in 42 schools. More than half of the district's diverse student population is Hispanic, and 47% are socio-economically disadvantaged.

To avoid mandatory busing desegregation plans, the district devised an innovative remedy, called The Choice Plan, in which parents were granted a choice to select any school within the district. To assure the choices had a positive desegregative impact, the district expended significant resources for strategic placement of educational enhancements (such as magnet programs), parent outreach, student recruitment and staff training. With the advent of The Choice Plan and the need to monitor progress on the desegregation order came an added emphasis on capturing more accurate and detailed information on students' demographic characteristics and academic performance.

Capturing data

In 1986, for example, English language learners comprised 14% of the district's enrollment. In 2009, they comprised 26% of the enrollment. Such changing demographics present significant education challenges. New enrollment processes helped the district identify and digitally capture critical characteristics, such as students' ethnicity, language proficiency and eligibility for participation in federally funded programs such as Title I.

As a result, before accountability frameworks by state (academic performance index) and federal (adequate yearly progress or AYP) bodies became the norm, the district had done significant work to capture detailed, accurate information in its student information system. As the demographics of the district changed and schools began to implement innovative reforms, the need for comprehensive, site-based data analysis capabilities grew. Schools and teachers

began requesting greater access and autonomy with respect to their data so they could study the impact of their programs and processes on students' diverse needs.

A two-year data pilot with 16 volunteer schools that began in 1998 was met with resounding success. In the post-pilot evaluation, 100% of participating schools said this kind of easy access to data was critical to their learning mission, and 100% said they needed more training on the technology tools and analysis skills to make effective use of data.

The critical lesson learned from the pilot was that the district needed to centralize data sources and standardize file formats so all data could "talk" to each other. In 2000, data warehousing had moved into mainstream business practices but was not yet a significant part of the education landscape. TetraData Corp. in Greenville, SC, had just entered the data warehousing market for education. Its association with an SJUSD partner, Dr. Victoria Bernhardt of Education for the Future Initiative, brought it to the district's attention.

TetraData's warehouse and data analysis tools were a great match for the district's needs. Data needs and requirements had already been established during the pilot phase through extensive conversations with district and site administrators and teachers. In spring 2002, all district files were provided to TetraData and construction of the SJUSD data warehouse began.

While extensive validation processes occurred during the summer and fall with the district's technology services department, the district's cross-functional warehouse team created training and implementation plans, and provided regular progress updates at monthly administrator meetings. Although the goal is to eventually provide desktop and dashboard access for the entire organization, initial training roll-out targeted administrators and site data teams. In spring 2003, training for 700 district administrators and site data teams was launched.

Looking at the big picture

As use of data grew and schools identified other data they needed to effectively assess and support their students, the district focused on several key vendors and data sources that would enable a more comprehensive picture of student learning. In 2003-2004, the district added Edusoft to provide benchmark testing capabilities and Renaissance Learning's Renaissance Place to its stable of select district-supported software. Both programs brought formative levels of assessment to augment the high-stakes testing required by the California Department of Education and the U.S. Department of Education. They provide teachers with

information on how their students are progressing toward mastery of the standards they must meet to graduate to the next level of schooling.

Although EduSoft and Renaissance Place have strong internal reporting capabilities for the data they measure, the district wanted to have those data sources in the data warehouse to enable the deep analyses of comparisons between state and formative assessments, students' grades, attendance patterns, program participation, course selection, teacher education and the impact of professional development on students' success rates.

Sophisticated root cause and cohort analyses that had previously been the domain of statisticians and researchers became possible for schools to explore on their own with the use of the warehouse's data analysis tools. The district's warehouse currently encompasses 13 years of master schedules, attendance, discipline and every program in which students can be involved, from gifted and talented programs to benchmark test results and state assessments of students' mastery of standards to their progress toward English language proficiency.

Other data in the warehouse includes the number of community service hours high-school students have completed toward their graduation requirement, Renaissance Place data on students' grade-level reading scores and number of books read, student progress by standard and the California high-school exit exam results. Even physical-education data are included, as district physical-education teachers look at the impact of students' overall physical fitness on their academic performance and engagement with school. The data warehouse now provides more than 400 SJUSD-specific standard queries that administrators and school data teams can explore to determine, for example, how SJUSD students' Algebra I grades compared to the state's Algebra I test performance.

Some standard queries help schools identify students who, with targeted support, are good candidates to become part of the AYP proficient band. Extensive analysis of the efficacy of intervention programs enables the district to know how to best allocate personnel and fiscal resources. With the confluence of this data, site data teams are now able to know precisely with which standards students are struggling, what professional support teachers need to help them better meet students' needs and which students need additional support.

Using data to look at subgroups

With the upload of formative assessment data into the warehouse in 2004-2005, site leadership teams were able to look at how federal AYP student subgroups of Hispanic, low

socio-economic and English learners were performing prior to the state test in May. At Horace Mann Elementary School—a program improvement school with 70% English learners, 70% Hispanic and 70% low socio-economic status students—the school's leadership team was able to reorganize the school's instructional day based on never-before-possible data analyses.

As a result, by the end of the last benchmark exam in English language arts, 100% of first graders, including those whose primary language was Spanish, scored proficient on the test. The school achieved a 63-point gain on the state's academic performance index (API) and ranked in the top 10 schools in Santa Clara County for greatest gains on the API. English learners at Horace Mann scored double any other similar school in the district. As a result of its use of data, Horace Mann was the first SJUSD school to exit program improvement status.

With timely access to data, teachers can quickly identify students' strengths and challenge areas in the first months of each school year and can leverage existing resources to best support the schools' continued progress to meet state and federal targets. With six of 11 Title I schools having exited program improvement, SJUSD schools are among 5% of schools in California to have reversed their downward trajectory.

The district's Pioneer High School data team wanted to investigate the academic history of students getting D's and F's in Algebra I. Using the data warehouse analysis tools, they went back four and five years into students' academic records and found gaps. Those analyses led to recommendations to supplement the middle school math curriculum.

Use of the data warehouse in these ways puts power in the hands of schools and teachers to understand the impact of their work with students. Access to high-quality data and current work with continuous improvement strategies brings increased use of data districtwide. Cycles of inquiry—common data analysis processes tied to instructional planning—are used by all school staffs throughout the school year to engage in thoughtful analyses of their overall academic program and to identify target students in each of their classes. As a window into the performance of all of their students, teachers gauge their target students' progress on district benchmarks to determine areas for reinstruction.

The centralization of data has become increasingly important to measure progress toward the district's strategic goals. The data warehouse currently holds 13 years of longitudinal data and houses more than 80 million records, enabling the district to research the factors that promote student success and guide program improvement. Continued fine-tuning of continuous improvement efforts across the organization through the use of the Malcolm Baldrige National

Quality Award process has resulted in the district's achievement of the California Council for Excellence's silver-level Baldrige award.

The district's schools have been named California Distinguished schools 35 times, and 12 hold National Blue Ribbon Schools of Excellence honors. SJUSD is currently developing a statistical model for the early identification of students at risk of dropping out. Since the inception of California's API in 1999, SJUSD has gained 133 points on the state's index and has closed the achievement gap between Hispanic and white students by 37%.

In San Jose Unified's case, early results of how access to data can support systemic improvement confirm that data warehousing and analysis technologies provide the leverage this urban district needs to meet rigorous state and federal requirements.

Marcy Lauck is manager of continuous improvement programs for the San Jose Unified School District. She supports the implementation of strategic institutional change and data-based quality management processes throughout the district. Her responsibilities include the development, administration and expansion of the district's School Recognition Program, the data warehouse initiative and annual school climate surveys, as well as support for the district's Malcolm Baldrige National Quality Award initiative and the annual districtwide Community Conversations. For more about the San Jose Unified School District, visit www.sjusd.org/.