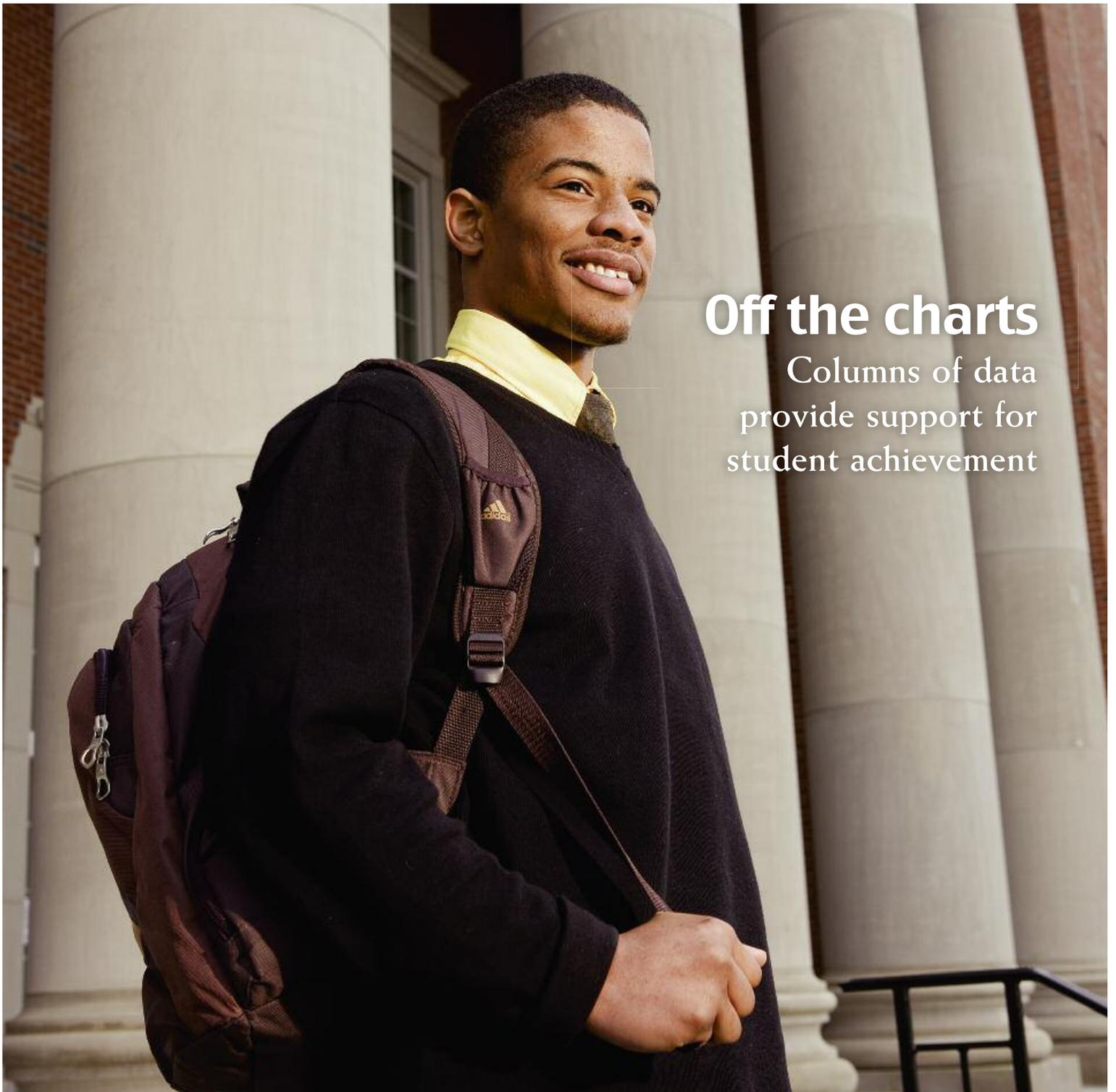


LUMINA FOUNDATION

FOCUS™

Spring 2010



Off the charts

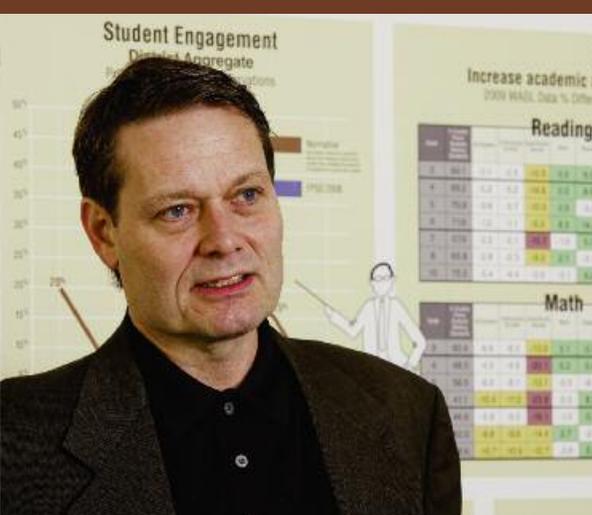
Columns of data
provide support for
student achievement



Better late than never: Page 4



From seeker to adviser: Page 9



Devoted to data...and to kids: Page 14

On the cover: Anthony Franklin, a first-year student in culinary technology at Central Piedmont Community College in Charlotte, N.C., hopes someday to open a chain of restaurants. Officials at the college are using data-driven programs to forge a recipe for his success.

PRESIDENT'S MESSAGE

In some ways, college completion is a numbers game, one in which students seem to succeed more by chance than by design. Those who are fortunate enough to be born in the right zip code, to supportive families earning comfortable incomes — these are the ones for whom college success is all but assured.

But for others — *tens of millions* of others in today's increasingly diverse student population — success is a real gamble. Low-income students, first-generation students, working adults, students of color ... they all face daunting odds as they pursue postsecondary education.

These days, as the nation seeks to recover from its economic troubles and build a strong, secure and sustainable future, we can no longer afford to let these students gamble and lose. Labor economists, employers and social scientists have made it clear that a well-educated citizenry is vital to our collective well-being. Without college, no American can reasonably expect a middle-class lifestyle; and if the middle class erodes, society's sands shift beneath us all.

At Lumina Foundation, we are absolutely convinced that the nation must increase its level of educational attainment. That's why we have committed ourselves to a "Big Goal" for college completion: By the year 2025, we want 60 percent of Americans to hold high-quality degrees or credentials — a significant increase over the current college-completion rate of 40 percent.

If that goal is to be achieved, students must be fully prepared for college. Completion rates must increase significantly. The higher education system must be more productive so it can serve far more students. And to make all of these things happen, we have to change the game. We must make the numbers work *for us*, not against us.

Unfortunately, we can't even clearly *see* the numbers right now.

Institutions — even entire sectors of the education system — too often operate independently of each other, maintaining discrete student-record systems. This makes it difficult to trace a student's progress through higher education and into the workforce — and that disconnection hampers efforts to improve the system. Only by systematically collecting and analyzing student-performance data can experts pinpoint where and why students drop out, devise ways to improve their performance, and thus enhance their chances of success.

Fortunately, some states and institutions are looking closely at the numbers and using them systematically to guide their improvement efforts. Without doubt, this drive to collect, analyze, use and share student-performance data is accelerating nationally. And that's what this issue of *Lumina Foundation Focus* is about: highlighting the trends — and trendsetters — in this vital area.

Organizations such as the Data Quality Campaign, the National Center for Higher Education Management Systems and the State Higher Education Executive Officers association have long championed this effort. And, as you'll see in this issue of *Focus*, it's an effort that is affecting the lives of students all over the nation. For example:

- In Frankfort, Ky., you'll read about Gregg Muravchick, a 30-year law-enforcement veteran whose career path was blocked until a state database identified him as a good candidate for Project Graduate, a degree-completion program for returning adults.
- In Charlotte, N.C., you'll meet Kiara Palmer, a second-year student at Central Piedmont Community College who credits much of her academic success to the college's data-driven approach to student support.
- In Tacoma, Wash., you'll read about school district administrator Tim Stensager, who focuses relentlessly on achievement data as a means of clearing the path to college for *all* students in his district.

These examples — and countless others playing out on campuses and in state policy discussions all over the nation — illustrate the potential of student-performance data to help boost achievement and, ultimately, to improve lives. We hope this issue of *Lumina Foundation Focus* highlights that enormous potential and encourages states, institutions and policymakers to do all they can to capitalize on it.

It's time to make those numbers add up to student success.

Jamie P. Merisotis
President and CEO
Lumina Foundation for Education





TH

Mariana Becerril and her mother, Lourdes Lopez, are mapping a route that leads to a bright future. Mariana, a high school sophomore in Tacoma, Wash., participates in a data-focused college-preparatory program called Navigation 101.

E DATA DRIVE

To arrive at student success,
colleges must follow the numbers

By John Pulley

Mariana Becerril, a sophomore at Franklin Pierce High School in Tacoma, Wash., wants to earn a four-year college degree, "maybe a master's," and work as a crime scene investigator. "That's my dream job," says Mariana, who moved here from Mexico City with her parents and younger brother. "I watch a lot of CSI."

Holding tightly to that goal, Mariana takes part in a school program that aims to keep her pointed in the right direction. Known as Navigation 101, the program uses intensive guidance counseling, weekly peer-group meetings, parental involvement and self-assessment projects to raise educational attainment in a school district with large numbers of immigrants and students from low-income families.

A key aspect of the program is its comprehensive reliance on data to track students' performance and progress. Before Navigation 101, Franklin Pierce students who went to college required remedial work at rates that were among the highest in the state. Today, they are on par with their peers. On the basis of those data-corroborated results, school districts across Washington State are adopting the Navigation 101 program.

THE DATA DRIVE

"I don't want to just be someone else in the crowd," Mariana says. "I want people to look at me and say, 'Even though she had obstacles, she overcame them.'"

On the other side of the country, Anthony Franklin, a first-year student at Central Piedmont Community College, in Charlotte, N.C., studies culinary technology.

"My passion is cooking," says Anthony, who may have inherited his love of food from his aunt, the proprietor of Big Mama's House of Soul restaurant, a Pittsburgh eatery renowned for its Georgia peach sweet potato pie. At 20, though, Anthony is determined to follow his own path. "I really like Asian cuisine," he says.

Anthony arrived at Central Piedmont from West Charlotte High School, a public school known more as a gateway to trouble than as a producer of college-ready graduates. No matter. Anthony is less concerned about where he came from than where he is going. He dreams of opening a restaurant — a collection of restaurants, actually.

"You have to believe in yourself, that you can be somebody in life," he says.

Central Piedmont's leadership believes in him, but educators recognize that self-will and optimism aren't enough to overcome obstacles to success — in the classroom or the workplace. As such, the college is refashioning policies and programs with an eye toward improving students' educational attainment and their chances of earning a good living. Many of those modifications were sparked by insights gleaned from assessment of student-achievement data.

Five hundred miles northwest of the Central Piedmont campus, in Frankfort, Ky., data-driven innovation is redefining college for a student who'd been there decades earlier but failed to seize the opportunity.

Gregg Muravchick briefly attended Michigan's Wayne State University on a football scholarship in the early 1970s, but dropped out after injuring his back two weeks into fall practice. He attended off and on for decades, in fact earning 123 credits from a handful of colleges — but no bachelor's degree — while working full time in law enforcement.

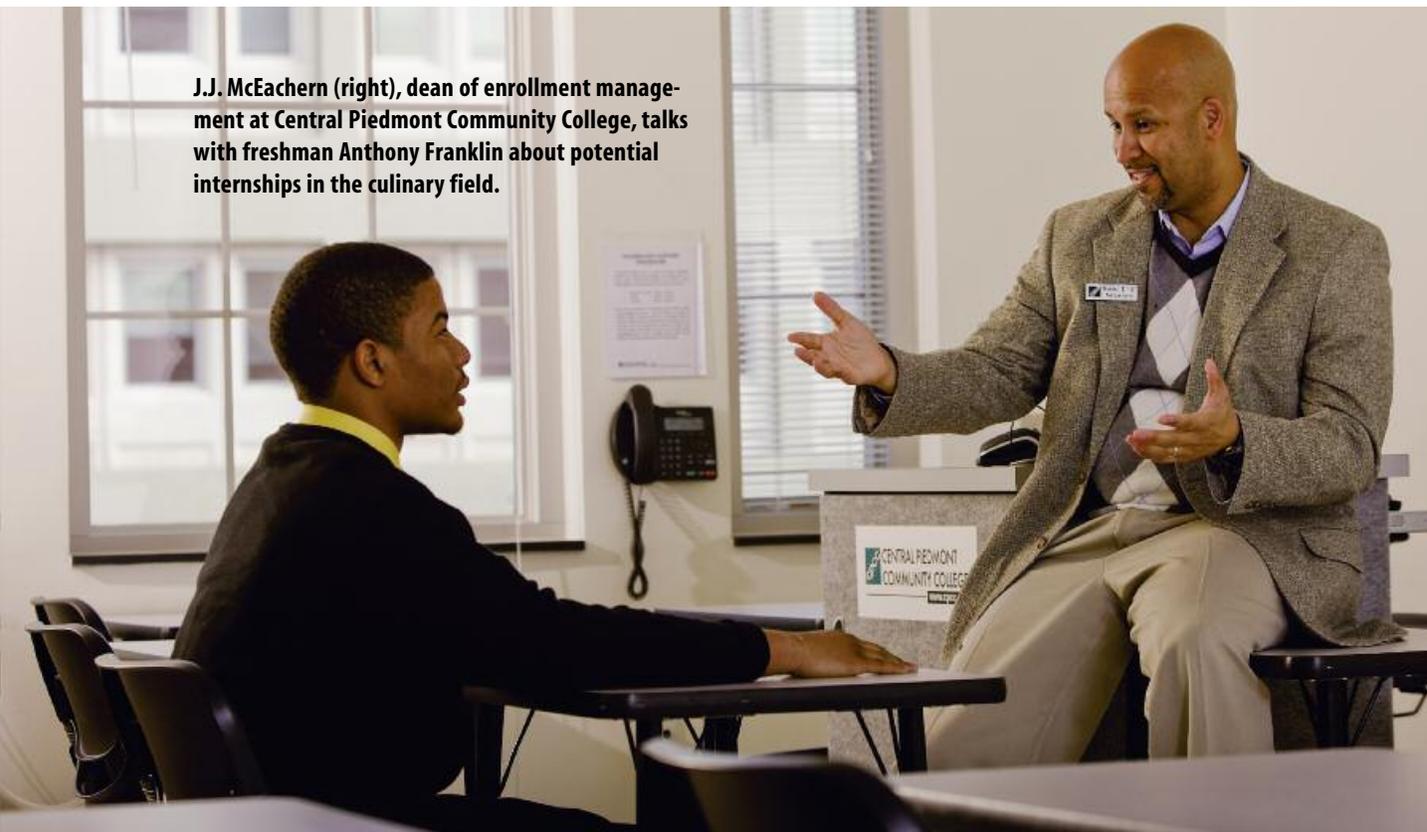
He didn't think it mattered, really. In fact, he'd come to believe that his 30 years of police work would qualify him to lead a law-enforcement division, so when the chief of police job opened up in Dewitt, Iowa, he went for it.

The experience was a "real eye opener" for Gregg, who found himself up against less-experienced candidates who nonetheless had better education credentials.

"I was competing with guys who had master's degrees," recalls Gregg, who called his lack of a degree "a stumbling block" that kept him from becoming chief. "You don't get in the door," he says, "unless you have that piece of paper."

Shortly after that letdown, Gregg learned of a new program in Kentucky called Project Graduate. It encourages former students with 90 or more college credits to return to school. The initiative mined and matched databases to compile a roster of eligible candidates. Gregg signed up, mastered his fear of calculus and finally, at age 54, earned his degree.

J.J. McEachern (right), dean of enrollment management at Central Piedmont Community College, talks with freshman Anthony Franklin about potential internships in the culinary field.





Gregg Muravchick of Frankfort, Ky., — a 30-year law-enforcement professional whose career path was blocked by lack of a college degree — broke through that barrier thanks to a program called Project Graduate.

A burning ‘desire for analysis’

Mariana, Anthony and Gregg are data points on a powerful trend line.

Across the 50 states, K-12 and postsecondary institutions are dramatically increasing their reliance on student-specific data to inform and improve strategies for educating students. This student-level data (often called “unit record data”) is essentially a student’s comprehensive record, including some demographic and personal information as well as the academic record of courses taken and dropped, grades earned, degrees awarded, etc.

Use of this data to drive decision making — a trend made feasible by technological innovation (and made imperative by global competition) — is revolutionizing

the educational infrastructure, from preschool through lifelong learning, proponents say.

“In recent years, there has been more demand to have data-driven policy at many levels,” says Al Lind, vice president of information and technology at the Kentucky Council on Postsecondary Education. “The desire for analysis has jumped the firewall.”

Despite the most severe recession in 30 years, the potential of permanently held, or “longitudinal,” data systems to improve educational results has loosed hundreds of millions of dollars from government and philanthropic sources. Because many of those funds are one-time grants, the push to advance student unit record systems may be a once-in-a-generation opportunity to improve education.

A fix is sorely needed. Just as electronic health records promise more effective and personalized medical care,

longitudinal data systems (those that keep student-level data for at least six years) can help us diagnose and fix the nation's educational arteries. Right now, that system hemorrhages postsecondary students at an alarming rate. Only about half of those who enroll in four-year programs graduate within six years, and only two-thirds ever earn a degree.

Historically, much of the information in higher education has been collected and analyzed from the perspective of the individual institution: enrollment totals, students per classroom, graduation rates, dollars spent per student, etc. We know comparatively little about what happens to students as they move from K-12 into college, as they transfer among different postsecondary institutions, and as they enter the workforce.

Lagging college-completion rates prove that problems exist, of course. And statistics show that certain

groups of students (low-income, first-generation, and minority students) are less likely than other groups to attain their educational goals.

But because there is no reliable way to track the progress of *individual* students, educators and policymakers know far too little about the specific problems these students face. Lacking good data, the experts rely on conventional wisdom to address those problems.

The goal is to flip that formula, says Hans L'Orange, vice president for research and information resources at SHEEO, the national association for the 50 State Higher Education Executive Officers and their staffs. The goal is "to make decisions based on data rather than anecdote," L'Orange insists. "Without data, you're just a person with an opinion."

"There are things you just cannot address without being able to look at what happens to students as they move through higher education," he says.

Ideally, educators would have access to information generated by a longitudinal data system of student unit records that would capture educational information throughout a person's life and link it to other databases. Such a matrix of high-quality data would provide a clear, comprehensive picture, the equivalent of an MRI of our educational system. At present, the view is like a snapshot taken inside a closet.

Put another way, poor collection methods and ineffective sharing of information among multiple, separate organizations creates a meager array of disconnected data points — random pixels that form no discernible picture.

Many factors can impede the data drive: incompatible systems, the inability to track the movement of students across state lines, onerous legal impediments, privacy concerns, the fear of unintended consequences — sometimes even an inability to analyze or act on data.

Not surprisingly, then, implementation of systems to capture, analyze and use data in decision-making proceeds at an erratic pace — particularly at the state level. States with direct control of educational systems (Florida, Texas and California, for example) tend to be further along in their use of data than states with weak central control, such as Pennsylvania.

With data at their disposal, educators could determine what policies and programs work, discern patterns of remediation and decide what steps to take to help more students persist and graduate.

"We need the data," says Marcia Conston, vice president of enrollment and student services at Central Piedmont Community College. "Until we have accurate data that will lead us to good rational decisions, I don't see how we can effectively operate to improve student success."

A dearth of data

If you're shopping for a plasma television or a toaster oven, a wealth of comparative data is only a few mouse clicks away. Yet prospective students are hard pressed to make well-informed college choices, even



Marcia Conston, vice president of enrollment and student services at Central Piedmont Community College, insists there's no substitute for reliable data to assess and improve student performance.

though postsecondary education is among the most expensive — and most important — purchases most of us ever make.

A different scenario is within reach, says Aimee Guidera, executive director of the Data Quality Campaign (DQC). She imagines a day when a student who is choosing a college can easily determine:

- The percentage of an institution's students who graduate in four years.
- The number and percentage of students from his or her own high school who succeeded at the institution.
- The rate at which these students take remedial courses.
- How many of these graduates find jobs in their field within a year of graduation.

To answer these and other questions, it will be necessary to link student data collected and housed by K-12, postsecondary and workforce systems — entities that haven't traditionally shared their data. This "siloes" approach has created a dearth of consumer information unheard of in any other market.

"We expect to have (data) when we buy a car, a house or when we go online for a date," says Guidera. We need "to get people (educators) to realize that they can't do their jobs and be successful unless they have access to this information."

By DQC's own measure, there is a long way to go. The organization's annual survey, released in January, found that only seven states have taken just four of the 10 steps DQC sees as vital in using data properly to improve student success (see accompanying list). The good news is that "every state is on the right path to have an incredible treasure trove of longitudinal data," Guidera says. Unfortunately, she adds, "building the data system is the easy part," and it's just the first step.

She says the next phase of DQC's effort will be to encourage educators to use the information in the best way to improve outcomes. Even if you have the best data warehouse in the world, she points out, "who cares if you're not doing things to turn it into information and ensure that the people who need it have access to it and that people have the training to use it?"

"Once we've built the car, how do we drive?" Guidera asks. The real key, she says, "involves changing human behavior. This is where true value comes in."

Data maven Davis Jenkins couldn't agree more.

Jenkins — a senior researcher at the Community College Research Center at Teachers College, Columbia University — says that, while many in higher education understand that data collection and analysis constitute a powerful tool, far too few are using that tool properly.

"In too many cases it's not being undertaken at the state or college level with a view toward improvement," says Jenkins. "Too often, the focus is simply on accountability. If the focus is on compliance rather than empowering and informing, nothing will change... The goal is to use data to motivate and guide continuous and systemic improvement."

Ten state actions to ensure effective data use

1. Link state K-12 data systems with early learning, postsecondary education, workforce, social services and other critical agencies.
2. Create stable, sustained support for robust state longitudinal data systems.
3. Develop governance structures to guide data collection, sharing and use.
4. Build state data repositories (e.g., data warehouses) that integrate student, staff, financial and facility data.
5. Implement systems to provide all stakeholders with timely access to the information they need while protecting student privacy.
6. Create progress reports with individual student data that provide information that educators, parents and students can use to improve student performance.
7. Create reports using longitudinal statistics on school systems and groups of students to guide school-, district-, and state-level improvement efforts.
8. Develop a purposeful research agenda and collaborate with universities, researchers and intermediary groups to explore the data for useful information.
9. Promote educator professional development and credentialing to ensure educators know how to obtain, analyze and use data appropriately.
10. Promote strategies to raise awareness of available data and ensure that all key stakeholders, including state policymakers, know how to obtain, analyze and use the information.

— Source: *The Data Quality Campaign*

A patchwork of problems

Even when systemic improvement is the goal, as it is in places such as Central Piedmont Community College, patchwork data systems can limit an institution's — or a state's — effectiveness.

Colleges in North Carolina collect student unit records and store them in a data warehouse. A built-in query function allows stakeholders — administrators, instructors and state policymakers — to mine relevant information. Unfortunately, the database “doesn't connect to K-12 systems” that feed the state's 58 community colleges, says Terri Manning, Central Piedmont's associate vice president for institutional research and director of the Center for Applied Research. She said there is movement afoot to connect the dots, to link K-12 and postsecondary data.

To compensate for that lack of coordination, Central Piedmont regularly shares with area high schools the test scores and academic records of former students who attend the college. Typically, the data are shared in aggregate form. The reports, a snapshot of the readiness of former high school students to do college-level work, provide data points that high schools can use to guide improvement efforts.

The college has also begun testing local 10th graders for basic proficiency in math and English and sharing those results with schools. Armed with that data, high schools have two years to develop necessary postsecondary skills before their students enroll in college.

The college doesn't link to North Carolina employment data, and that makes it difficult to determine how well the college is meeting a cornerstone of its mission.

“Our goal is workforce development,” says Gilda Rubio-Festa, associate dean of community development and outreach. But without employment data, “we haven't been as successful at tracking (that). The hardest thing is keeping track of students after they leave us.”

Some states link student unit records to federal unemployment data, which tracks wages and field of employment. The information is meager and, at times, flawed. A nurse employed by a logging company, for example, might be listed as a forestry worker.

Rubio-Festa says a robust longitudinal data system would allow the college to answer fundamental questions, such as: “Are we giving you the skills to meet your goals? Did you get that good job?”

A good job — no, a rewarding *career* — is certainly important to would-be restaurateur Anthony Franklin. But he has his work cut out for him. In some ways, he is typical of kids from his high school, 98 percent of whom are African American. Of those who enroll at Central Piedmont, 81 percent need at least one developmental course. Anthony, who tested into the lowest level of math proficiency, needs three.

Anthony is clearly motivated to buck those trends. He moved near the college to get away from old friends and to develop self-discipline. As a result, he “became more goal oriented,” he says. On a brisk February afternoon, he shows up for his 25-hour-a-week job at the campus print shop wearing a sweater over a shirt and tie.

Despite his resolve, though, Anthony faces significant challenges — and Central Piedmont is helping him face those challenges, using data to implement and alter programs that can boost his chance for success.

From the data, administrators have learned that instructors haven't always taught the skills that students were supposed to master in a given course. They found that many students who had trouble with English also failed math courses. (Math has its own language, a language peppered with polysyllabic words such as integer, algorithm, numerator. It makes sense that students with poor English skills would struggle here as well.)

College officials also identified the course that students were most likely to have taken immediately before dropping out: CIS 110, a required introduction-to-computers course. Further inquiry revealed a two-part problem with the computer class:

First, younger students, so-called digital natives, were fail-

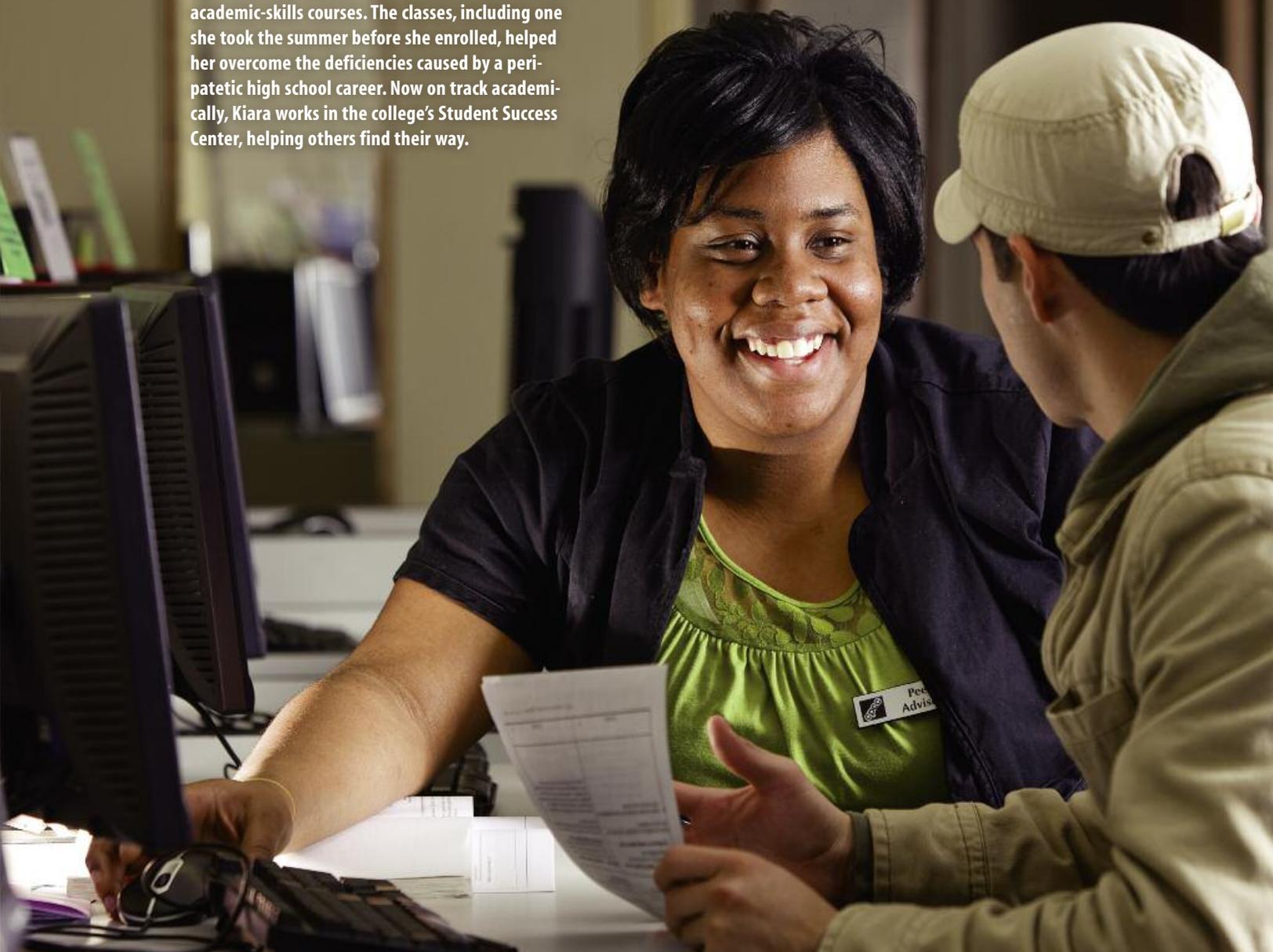
ing the course because it began with instruction on Microsoft Word, an application that most kids have used for years. Assuming that the class would be a cakewalk, overconfident students frequently stopped attending class and, when faced with more challenging material, ultimately failed.

Second, many who failed CIS 110 were displaced workers who were returning to college after long absences from the classroom and little familiarity with computer applications. Too often, these former millworkers and factory laborers found themselves in over their heads.

The college's response was to reorganize the syllabus and also to introduce a remedial class that prepares students

Central Piedmont is testing local 10th graders for basic proficiency in math and English and sharing those results with schools. Armed with that data, high schools have two years to develop necessary postsecondary skills before their students enroll in college.

Kiara Palmer, a second-year student at Central Piedmont, is living proof of the value of the college's academic-skills courses. The classes, including one she took the summer before she enrolled, helped her overcome the deficiencies caused by a peripatetic high school career. Now on track academically, Kiara works in the college's Student Success Center, helping others find their way.



for CIS 110. The moves seem to be working. A recent survey found that fewer students taking the computer course were getting D's and F's and fewer were withdrawing from the class.

Based on insight gleaned from data, the college has taken other actions, shortening the deadline for dropping classes and mandating prerequisites for many more courses. Under the old policy, the drop period extended to three-quarters of the academic term. Now, students must drop classes with two-thirds of the semester remaining. With a narrower window of escape available to them, students are more likely to persist.

To further help students who arrive unprepared for college, Central Piedmont offers a number of programs aimed at students such as sophomore Kiara Palmer. Kiara's parents split up when she was 6. Before college,

she attended nine schools. To compensate for skills she didn't pick up during her vagabond academic career, Kiara has taken a series of academic-skills courses offered by Central Piedmont, beginning with a class taken the summer before she enrolled.

"It was an eye-opener," says Kiara, who discovered that "things I thought I knew, I didn't."

In the past, colleges tended to embrace such programs without knowing how well they worked. Central Piedmont "had a lot of anecdotal information" about the effectiveness of the skills programs but lacked solid data for assessing them, says Laura Bazan, director of academic-skills courses. "There was a lot of lip service." Today, armed with five years of data, she knows that students who take skills courses stay in school longer than those who don't take them.



Arthur Box played basketball for Kentucky State University in the early 1970s but left school without finishing his bachelor's degree. Thanks to Project Graduate — a state-funded program that encourages Kentuckians with at least 90 college credits to finish their studies — Box is no longer “haunted” by his lack of a degree. In fact, his grandchildren were on hand for his college commencement.

A ‘new’ Kentucky home

The world is changing in ways that make the Industrial Revolution look like a minor protest. A global technoshift is killing old industries, creating new ones and realigning others. The blue-collar era of good low- and no-tech jobs is behind us.

The local impact, says the Kentucky Council on Postsecondary Education, is “the most dramatic economic and social transformation in Kentucky’s history.” In response, state legislators mandated in 1997 that the state double the number of Kentuckians with bachelor’s degrees by 2020. In the first decade of Kentucky’s push to reach that audacious goal, the state increased by 62 percent the number of residents with degrees and credentials. Per capita income soared 22 percent.

Impressive — until you consider that, at that rate, it will take Kentucky 150 years to reach the national average in per capita income, according to a forecast by the Kentucky Science and Technology Corporation.

Eager to crank up the rate of degree attainment, the council forged a plan to encourage Kentuckians with 90 or more college credits to finish what they had started. The program, called Project Graduate, seemed easy to implement, at least in theory: Identify eligible candidates, get them excited about returning, and then provide the support they need to reach the finish line.

And it would have been relatively easy, if only the state had had a high-quality longitudinal database of student records to draw on. But it didn’t. Simply identifying students who had earned 90 credits was a struggle. The council’s database included students who had died.

THE DATA DRIVE

Available records for *living* students didn't distinguish between the courses they had completed and those they had failed or dropped.

"For a long time, we only collected enrollment data at the beginning of semesters," says Heidi Hiemstra, the council's senior associate for research and analysis. "There was a long legal struggle to get institutions to allow us to collect that data."

Assembling a reliable roster of eligible students became a time-consuming slog that involved a lot of back and forth between the council and Kentucky's public post-secondary institutions. The payoff came when the council merged that database with information held by the Department of Motor Vehicles. Armed with accurate mailing addresses, the council was finally able to make contact with Project Graduate's prospective participants.

Since its inception, the program has helped colleges award degrees to several hundred former college dropouts. One of them is Arthur G. Box, who first enrolled at Kentucky State University in 1971 on a basketball scholarship. He earned an associate's degree in 1976, the year before the death of his father, who was set against his son working in the foundries. Box promised his father that he would graduate, and over the years he earned many college credits, but he didn't

keep the promise of a bachelor's degree—until recently.

"It always haunted me," says Box, a state employee. When he finally received his diploma, his grandchildren were on hand to mark the occasion.

Hundreds more Project Graduate candidates are also earning degrees. Christopher Stewart, 42, enrolled at Western Kentucky University in the mid-1980s after concluding an uninspired high school career. "If you showed up and didn't cause too much trouble, they moved you through," recalls Stewart, who simply assumed he was prepared for college. "I had a high school diploma in hand, why shouldn't I be ready?"

Then reality struck. "I was very unprepared," he says.

Over the next decade, he switched colleges, bounced around academically while working full-time, and eventually earned 92 credits before dropping out in 1994. He made good money as a salesman for a masonry company. Then the housing market tanked, and last fall he lost his job. Unable to get decent-paying work, he took advantage of Project Graduate. He's thrilled to be back in school and looks forward to earning a four-year degree and landing a good job.

In the absence of reliable collection and storage, most data-intensive projects are onerous, costly one-off affairs. Kentucky's lauded High School Feedback



At age 42, Christopher Stewart, is back on campus — this time at Kentucky State University in Frankfort. Stewart attended Western Kentucky as a “very unprepared” freshman in the mid-1980s and spent nearly a decade earning 92 credits from Western and various other colleges before dropping out altogether in 1994. Today, after losing a sales job in the homebuilding industry, Stewart is grateful for Project Graduate because it gives him a second chance to earn a four-year degree.

Report required months of work by three full-time staff members, which is why the state released it only every other year. "We did what resources allowed us to do," says Lind, a council vice president.

The report was valuable to Kentucky's high schools, which relied on it to know which colleges their graduates attended, what they majored in and their remedial and developmental needs. The report identified areas of the state where students' high grade-point averages were out of line with their scores on college-admissions tests. The report also determined that "if students don't take certain classes (in high school), their odds of succeeding in college aren't good," says Charles McGrew, who led the council's data-collection effort before leaving to work at the Data Quality Campaign.

The report also made it apparent that Kentucky's math curriculum wasn't working in parts of the state, a revelation that shook things up. "School board members were coming in and holding superintendents and staff accountable," recalls McGrew. "They were hearing numbers they hadn't heard before. School board members had always heard that their districts were fine."

The report also identified districts that were doing unusually well, including economically depressed areas such as Estill County, whose students were performing better than their higher-income peers. Further investigation attributed the gains to an innovative educational philosophy installed by a new superintendent.

In the future, using data to assess programs should be easier. Kentucky has secured funds to create a unified K-20 data system and has submitted a grant application that would allow it to include workforce data as well. Having "a longitudinal data system in place makes this kind of report much easier to do," says McGrew. "You cannot have conversations about system-wide alignment unless you have longitudinal systems that talk to each other."

The Washington way

System-wide alignment is clearly a priority in Washington State — a priority set right at the top. Soon after taking office as governor in 2005, Christine Gregoire launched a comprehensive, 18-month review of the state's education system. The review, dubbed Washington Learns, led to recommendations seeking "to transform our entire education system (into) ... a world-class, learner-focused, seamless education system."

Subsequent legislation created a state Department of Early Learning and an Education Research and Data Center (ERDC). Lawmakers have asked ERDC staff to analyze learning across the P-20 spectrum, track enrollment and outcomes, develop long-range higher-education enrollment plans and do research on how students were moving between the various segments of the educational pipeline.

The center would look at the impact of course-taking patterns in high school on postsecondary completion, the progress of higher education's adult learners, and links between education and workforce participation.

The goal was clear: Washington would build a world-class, 21st century education system on a foundation of rock-solid data. For purposes of extracting, processing and maintaining that information, the state is creating a longitudinal student unit record system that proponents say will help immensely in assessing and improving educational effectiveness.

At present, "we know the basic factors ... but nothing like a comprehensive view of what happens to people as they move through the education pipeline," says Jim Schmidt, a staff coordinator with ERDC. With a longitudinal data system in place, "we could start to do basic research on program effectiveness."

Washington's political and educational sectors have already had some experience with data-driven decision

Educational erosion undermines our nation's future

Of every **100** ninth-graders in this country...



69 graduate from high school on time



38 enter college directly after high school



28 remain enrolled after their second year in college



only **20** graduate from college within six years



Source: National Center for Higher Education Management Systems (Based on Common Core Data from the National Center for Education Statistics, as well as Residency and Migration, Fall Enrollment and Graduation Rate Surveys from the Integrated Postsecondary Education Data System.)

making. Though those efforts relied on the data-mining equivalent of a pickaxe, they at least proved the value of using data to guide policy and spending.

In the 1990s, for example, Washington was losing jobs in depressed industries such as logging and aerospace. Eager to retrain its unemployed workers, the state allocated millions of dollars to its community and technical colleges.

"We wanted low-income workers to get higher-wage jobs and high earners to get jobs at a high percentage of previous wages," recalls Loretta Seppanen, associate director of educational services at the State Board of Community and Technical Colleges. "It was high stakes to know if the program worked."

That data showed it did. The program was able to "move people from logging into government and service-sector jobs" that paid higher wages to workers with appropriate skills in information technology, says Seppanen. The program has persisted because educators were "able to present information and assess complex statistical information" that inspired confidence among the state's decision makers.

During the course of the Washington Learns review, state officials stumbled on a local example of educators using student data to extraordinary effect. The messenger was Tim Stensager, assistant superintendent of Franklin Pierce Schools in Tacoma.

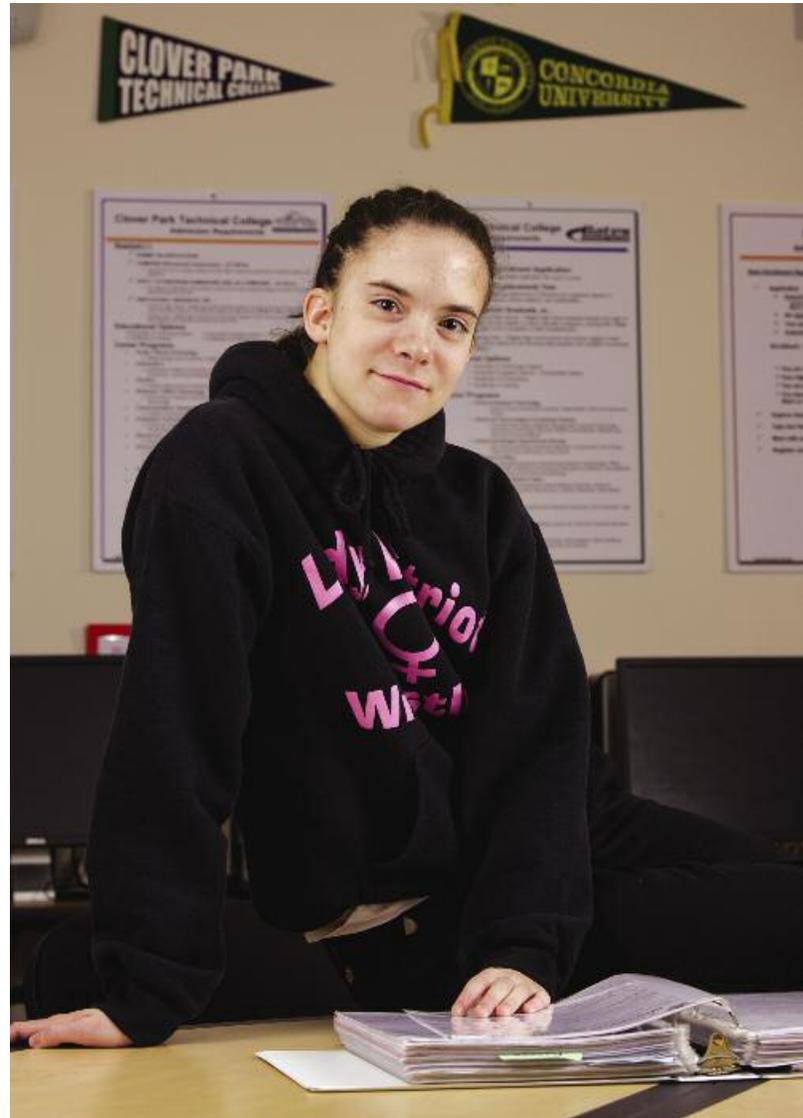
"Early in the process, Tim walked in with amazing statistics," recalls Carol Jenner, a senior forecast analyst at ERCD. "He illustrated the power of data and the level of detail necessary" to truly examine the education pipeline. You can look at graduation rates and test scores all day, she says, but to really assess behavior, you have to get down to student course-taking.

Stensager has worked at the Franklin Pierce district for 25 years. His interest in data as a means of improving education was anything but analytical at first; in fact, it was purely emotional. He says it bothered him that the system was systematically abandoning so many students.

"Kids deemed capable, we gave them a prescription" for college success, he says. "The other kids? We gave them autonomy to figure it out on their own." Typically, that meant they got a job at a pulp mill, a fishery or with a logging crew. Stensager turned to data, meager as it was, because he "wanted to give all of the kids a fair shake."

Using internal graduation numbers and data compiled by an independent researcher, the school district began to develop a picture of what was happening to its students. It wasn't pretty.

About 15 percent of his students were going to technical and community colleges, where they tested into remedial classes at rates well above the state average. (Data on matriculation and academic performance of Franklin Pierce's students at the state's four-year institutions weren't available.) The numbers suggested that too few students were taking rigorous courses, and that too few of those who *did* enroll in those classes attained the skills the courses were designed to impart.



Aleaha Gregor, a senior at Washington High School in Tacoma, Wash., shows off the student portfolio she built as part of her participation in Navigation 101. Aleaha, who carries a 3.9 grade-point average, says the program "sets you up for success."

Armed with that information, Stensager and his colleagues set about turning the tide. They encouraged students to take more difficult courses. To meet the demand, the schools increased the supply of challenging courses.

"We used to offer one or two sections of chemistry," he says. "Now we have chemistry classes all day long."

The other part of the equation was Navigation 101, a counseling and mentorship program "meant to inspire and create aspirations" among students. Beginning in middle school, students in the program maintain portfolios of work that help them to set and maintain ambitious goals.

"It's like practice for your future," says Aleaha Gregor, a senior with a 3.9 grade point average "It sets you up for success."

Making the policy connection

When educators embrace data-driven policy, lawmakers often embrace them back.

Texas developed its system of student unit records 30 years ago. Initially, the system was set up to collect data that were used to develop funding formulas.

In the 1990s, the system used data collected from public schools to analyze the impact of different types of grant programs, looking at the backgrounds of high school students and how they performed in college.

Students who completed a course of study known as the Recommended High School Program "had a much higher college-completion rate," says David Gardner, deputy commissioner for academic planning and policy at the Texas Higher Education Coordinating Board. "Starting this fall, everyone who enrolls in a state university will have to have that as a minimum" entrance requirement.

The data also showed that "graduation rates for students receiving [state] grants are higher than those for similar students who do not receive them. Because of our ability to track data over time, we got a significant increase in funding for Texas grants," Gardner says. "Given the economy, that was surprising."

The impact analysis of grant money "led to creation of the data system we have today," says Gardner. When educators proposed linking high school and postsecondary data, the legislature upped the ante, insisting on creating a comprehensive, pre-K-20 system.

That longitudinal system has generated a few surprises. Educators in Texas learned that thousands of former students who were thought to have dropped out of high school had actually graduated and gone on to earn a postsecondary degree. These students were invisible to the old system because they had earned a GED or graduated from a private high school or left the state and returned.

"Student loss from public high schools wasn't as significant as we thought," Gardner says.

Texas' longitudinal data-collection system is expected to evolve to provide better insights into the state's education pipeline. More individual data on college performance is to be incorporated, allowing school districts to better assess the impact of particular initiatives — after-school enrichment programs, say — or to track the progress of specific student populations.

Officials also plan to enhance the system's ability to link educational attainment with employment outcomes. For example, the data might show how a student's decision to drop out of school in the ninth grade affects his income eight years later.

"We really need to do more analysis with the workforce data," says Gardner. "We'll do that more in the coming year."

Tim Stensager, assistant superintendent of Franklin Pierce Schools in Tacoma, Wash., focuses intently on student-achievement data as a means of improving the lives of at-risk or even average students. With data, he says, schools can "give all the kids a fair shake."

Data Dashboard 2008-2009

**FRANKLIN
PIERCE
SCHOOLS**

Mission Statement

To provide students with an engaging educational environment, built upon proven academics and high standards, resulting in successful and contributing citizens.

Goal 2

Maintain safe and caring schools
Percentage of Students who Feel Safe (Healthy Youth



Student Engagement

District Aggregate

Principals' Classroom Observations



Goal 1

Increase academic achievement of all students
2009 WASL Data % Difference: WA State v. FPSD, by subgroup

Reading

Grade	% Franklin Pierce Students Meeting Standards	All Students	Continuously Enrolled	Asian/Pacific Islander	Black	Hispanic	White	Low Income	ELL	Special Education
3	69.1	-3.1	-2.5	-12.5	3.3	8.5	-4.4	4.2	6.9	-3.2
4	69.2	-5.2	-5.2	-14.6	2.3	8.8	-7.0	2.2	5.7	-10.2
5	70.9	-3.8	-3.7	-12.3	2.3	-3.2	-3.2	3.2	0.6	-9.9
6	71.6	-1.2	-1.1	-9.3	8.3	14.2	-3.2	2.4	-30.7	-4.5
7	57.9	-2.2	-2.1	-15.7	-1.9	5.7	1.1	4.8	-6.6	-7.2
8	65.8	-2.8	-2.3	-9.3	2.1	-0.1	0.3	0.8	-21.3	-5.9
10	75.5	-5.4	-4.4	-0.5	-3.1	6.2	-5.3	1.1	16.6	-5.6

Math

Grade	% Franklin Pierce Students Meeting Standards	All Students	Continuously Enrolled	Asian/Pacific Islander	Black	Hispanic	White	Low Income	ELL	Special Education
3	60.4	-6.6	-6.0	-13.9	5.1	0.3	-8.4	0.3	-0.1	-9.2
4	60.2	-4.5	-4.9	-20.1	6.2	5.6	0.4	4.9	1.6	-3.6
5	60.2	-4.5	-4.9	-20.1	6.2	5.6	0.4	4.9	1.6	-3.6
6	60.2	-4.5	-4.9	-20.1	6.2	5.6	0.4	4.9	1.6	-3.6
7	57.9	-2.2	-2.1	-15.7	-1.9	5.7	1.1	4.8	-6.6	-7.2
8	65.8	-2.8	-2.3	-9.3	2.1	-0.1	0.3	0.8	-21.3	-5.9
10	75.5	-5.4	-4.4	-0.5	-3.1	6.2	-5.3	1.1	16.6	-5.6

Goal 4

...s for success beyond h

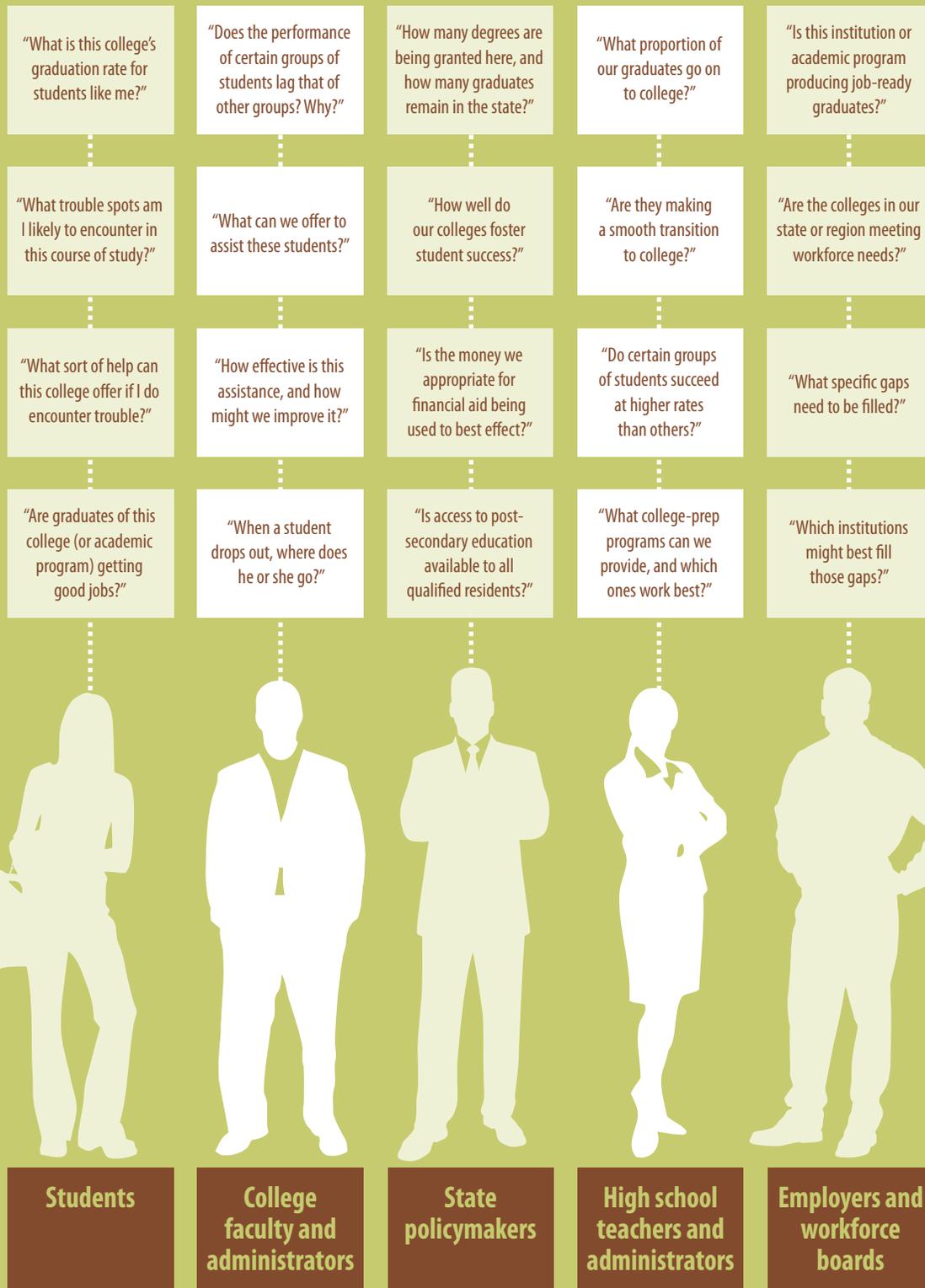
...right to Community/Technical College
...fter High School: WA State vs FPSD



...g Any Remedial Courses in
...munity/Technical Colleges

Inquiring minds want to know... what data can show

The push for improved collection, analysis and sharing of data on student outcomes isn't just something for number crunchers to care about. Robust and well-integrated systems for student records can help answer important questions in the minds of individuals from a variety of groups. For example:



The privacy issue

In an ideal world, the free exchange of data across sectors, agencies and state boundaries would make it simple to use longitudinal student data to improve education services and outcomes. In the real world, legal restrictions on the exchange of data and fear that shared data might be misused have impeded those developments.

Five years ago, educators and lawmakers who support data-driven policy mounted an effort to create a national database of student unit records. Opponents beat back the effort on the grounds that a national database would compromise privacy and security. Opponents argued that a federal database would violate the Family Educational Rights and Privacy Act of 1974 (FERPA), an increasingly anachronistic law that predates by two decades the online revolution that has fundamentally changed the way we do ... well, just about everything.

Swayed by private colleges and other interests that lobbied against the measure, Congress approved language in the 2008 bill reauthorizing the Higher Education Act that prohibits creation of a national database of student records.

Some observers charged that opponents of the database were less concerned about privacy than they were fearful that easy access to comparative information would dissuade students from applying to elite institutions. After all, they said, if a would-be engineer is choosing between a state university with an annual price tag of \$18,000 and a private college that costs \$50,000 a year, shouldn't the student be able to see data that show whether the employment ends justify payment of an extra \$128,000 over four years?

"If you know you want to be an engineer, why can't you get information about the success of those engineering schools?" asks Mark Schneider, vice president of the American Institutes for Research. He favors turning data warehouses into retail outlets for this type of return-on-investment information.

"I believe we should be creating (the equivalent of) amazon.com, where it's easy to roll up these kinds of transactions into something that someone other than a data wonk can understand," Schneider says.

Peter Ewell, vice president of the National Center for Higher Education Management Systems (NCHEMS), actually *is* a data wonk. In fact, his work at NCHEMS has been focused for two decades on student unit record data and the systems designed to house it. And he understands Schneider's frustration with the slow pace of change in this area.

He is among many experts in this field who say that the single most daunting obstacle to a high-functioning

longitudinal data system is mustering the political will to get it done. At present, all but eight states have some capacity to track data in the public sector, he says, but only about half of those drill down to the level of detail in a student's transcript.

In lieu of a national database, Congress approved funds that states could use to develop their own longitudinal systems. It's a move in the right direction, say Ewell and others, but the patchwork approach doesn't allow for tracking students who cross state lines to attend college or take a job. In a mobile society, that is a major failing.

"We have a great deal of capability within states of knowing who is going where, but that's the bulk of the action," Ewell says. "Going across state boundaries has been hard."

The mission of NCHEMS is "the development, refinement, coordination and use of student record data systems as a means of improving the delivery of high-quality postsecondary education, increasing college completion and ensuring better alignment between education and the workforce."

To illustrate how that goal is undermined when data are forced to halt at borders that are freely crossed by people, Ewell points to New Jersey. The two largest cities supplying that state's colleges are outside the state, he says: Philadelphia and New York City. Given the frequency with which people move throughout the region, an interstate data system is needed to accurately track and analyze education and workforce trends in the region. A similar situation exists in New England.

"State boundaries are arbitrary. People settle on both sides of a river," says Brian Prescott, director of policy research at the Western Interstate Commission for Higher Education (WICHE). "A state-specific data system will lose a lot of detail and capacity to understand the stock and flow of human capital."

Prescott also sees trouble brewing as the 50 states scramble to use what may be one-time federal funds for longitudinal data systems. He writes: "The intensity of simultaneous activities in this arena may result in efforts that are hurried and uncoordinated."

Fortunately, the ban on a national database does not prevent data sharing among individual states. WICHE is encouraging this trend, organizing a group of Western states (Washington, Oregon, Idaho and Hawaii) into a "human capital development data system." WICHE hopes the coalition will be a model for states in other regions to follow when building data-sharing cooperatives.

Beyond the issue of limited data exchange, current reporting methods just aren't very good, says Prescott. At a time when part-time, adult students constitute an

"If you know you want to be an engineer, why can't you get information about the success of those engineering schools?"

*Mark Schneider,
Vice President, American Institutes for Research*



SARAH STACY
Student Medical Assistant

Sarah Stacy is a senior studying biology and public health at The Evergreen State College in Olympia, Wash., and wants to be a doctor. Because Sarah transferred to Evergreen from the University of Washington, her progress will not show up in the database kept by the National Center for Education Statistics, which tracks first-time, full-time students. Evergreen is developing a data system to bridge such information gaps.

ever-larger segment of the college population, the federal government continues to focus mainly on first-time, full-time students when measuring success rates.

The federal privacy law, FERPA, also has a chilling effect, not only on the interstate sharing of data, but also on the exchange of data among agencies within a state, such as between an education agency and a state workforce entity. And some say that FERPA's chilling effect is more manufactured than real — that overly conservative interpretations of the regulation are needlessly hampering efforts to link relevant data.

"We worked out FERPA and (data) sharing years ago," says Brad Phillips, executive director of California Partnership for Achieving Student Success CalPASS. He and other experts insist that there is plenty of room within the law to allow for sufficiently robust data to be shared safely.

Rather than getting stuck in the FERPA quagmire, Phillips says, educators "need to talk about how data systems will be used. That is our mantra. You have to begin with why you want systems to exist in the first place. The other stuff you'll make happen."

Phillips founded the CalPASS program out of frustration. It was 1998, and at the time he was director of research, planning and academic services at Grossmont College, one of 110 community colleges in California. As a feeder institution for San Diego State University (SDSU), four miles away, Grossmont was regularly sending transfer students to the four-year institution, "but we knew nothing about what was happening to our students who went there," says Phillips.

Seeking answers, he went to SDSU and collected thousands of records of students who had attended Grossmont. Data in hand, he discerned patterns of course-taking at SDSU that correlated with areas of study at Grossmont and used those insights to modify programs at the two-year college.

More than a decade later, more than 7,700 schools and colleges in California participate in the CalPASS program, including all community colleges, two-thirds of public K-12 institutions and all but five institutions in the University of California and California State University systems. The system has collected more than 355 million records — courses taken, grades, test scores, awards and certificates — that track the educational experiences of some 30 million students.

To turn data into actionable information, CalPASS convenes gatherings of teachers (middle and high schools, community and four-year colleges) who work in the same discipline. "If we want to make changes to student behavior, we have to hit them where they live, the classroom," says Phillips.

The first of these gatherings, known as Professional Learning Councils, brought together English instructors.

It established a pattern of data-driven realization — an epiphany that has repeated itself with teachers from other disciplines.

"We show them data, and they freak out," says Phillips.

Secondary English instructors learned, for example, that students who take English all the way through 12th grade require remediation in college at the same rate as do students whose last English class was taken in 10th grade.

"The system allows you to point out problems and barriers to success," Phillips says, including misalignment of curriculum. For instance, the English teachers "learned that high schools teach 'literature,' community colleges teach 'writing and grammar,' and universities teach 'rhetoric and argumentation.'"

Apprised of those challenges, educators launched a multiyear effort to better align the skills students acquired in high school with the skills they were expected to have mastered upon entering college. Despite improvements, educators were perplexed when the data showed them that students taking the modified high school curriculum were testing into remedial

English at the same rates as before.

Further investigation revealed that students who tested into remedial English and were allowed to take regular English (if they had earned an A or B in the modified high school curriculum) performed well at the college level without remediation. The mystery was solved when educators realized that the 20-year-old test used to assess skill level was inadequate.

"The stupid test was keeping kids from being in the right level," Phillips says.

As a nation, we can no longer afford such inefficiencies. Global competition demands that more Americans enroll and succeed in higher education. Yet old obstacles continue to hinder progress toward those goals: misalignment between education sectors, stubbornly high remediation and dropout rates, chronically low levels of achievement among poor and minority students, who represent the fastest-growing segments of the population.

Fear, politics, parochial interests and cultural inertia have all stymied efforts to improve student success through the use of data. Too often and for far too long, financial resources and human potential have entered the education pipeline at one end and emerged, at the other, as an insufficient trickle of human capital. Leaks, gaps and blockages continue to go unnoticed and unaddressed.

Longitudinal data systems are a promising tool for fixing that pipe. In fact, many experts say they're an indispensable tool we must use to full effect.

John Pulley, a former staff writer for the Chronicle of Higher Education, is a freelance education writer based in Arlington, Va.

"If we want to make changes to student behavior, we have to hit them where they live, the classroom,"

*Brad Phillips,
Executive Director, CalPass*

The 'ideal' state postsecondary data system

Although each state's higher education system is unique, certain characteristics and functions are essential in an effective longitudinal data system. These characteristics and functions are listed below, grouped into four broad categories: student data, course data, operational characteristics, and data governance. The ideal state system is structured so that all four categories reinforce one another.

Student data

1. A unique statewide student identifier. A single, non-duplicated number that is assigned to and remains with a student throughout his or her educational career. While the Social Security Number (SSN) is currently used by most states and can function effectively as a unique identifier, states should take steps to ensure that it is protected, encrypted, and that an alternative identifier is eventually developed.

2. Student-level enrollment, degree-completion and demographic data for all public colleges and universities. At a minimum, the following data elements should be included:

Demographics:

- Gender
- Race/ethnicity
- Date of birth
- Citizenship
- Geographic origin (state, county, zip code, etc.)
- Residency

Student Enrollment/Completion Data:

- Degree-seeking status
- Credits attempted (full-time/part-time status)
- Credits completed
- Program major
- Degree awarded
- Degree field of study

3. Student-level financial aid data. Financial aid data can be difficult to obtain and use. Because they contain sensitive information about such things as family income, financial aid records require unusual attention to privacy and security. The manner in which financial aid records are kept also poses challenges because the typical record structure involves a student unit record for each financial aid source a student taps. For this reason, many state databases simply carry flags that indicate whether or not a student is receiving aid from a given source, or the total amount of support (or percentage of need) addressed by that source. Finally, in order to fully reflect the cost-of-attendance question, data will be needed about federal, state and institutional aid.

4. Student-level transfer data. A state's postsecondary student database needs to support calculations of transfer rates to and from different kinds of institutions, as well as support analyses of the impact of transfer on student progression, academic performance, and eventual degree completion. It should also be capable of disaggregation to identify which populations are affected.

5. Student-level persistence and graduation data.

A state's postsecondary longitudinal data system should enable the calculation of such measures as degree-completion and persistence rates. It should also be capable of disaggregation to identify populations at risk. The ability to report on the degree completion and persistence rate for all students, regardless of where they started and their part-time/full-time status, should be a minimum requirement.



Peter Ewell of NCHES.

Course data

6. Student-level data on (1) remediation and (2) developmental education participation and success. State systems should include the following data elements:

- Initial placement level in reading, writing and mathematics (at minimum "college-level" and "below college-level"). A student's need for remediation can then be analyzed.
- Participation in developmental reading, writing and mathematics (at minimum one level below college level).
- Successful completion of developmental reading, writing and mathematics (at minimum one level below college level).

7. Student-level course/transcript data. The utility of longitudinal records increases dramatically if they include details of academic performance for different kinds of students. Course-level detail should, at a minimum, include these data elements:

- Course/Section identifier (which can map to subject, department, etc.)
- Credits enrolled
- Credits completed
- Grade (or pass/fail indicator)
- Mode of instruction (e.g. online course)
- Credit / Non-credit status

8. Student-level data on assessed academic achievement. The issue of student learning — academic achievement in the form of demonstrated competence — is of growing salience for postsecondary education policy. Admittedly, providing such data can be a challenge because there is no single list of such outcomes or measures. Still,

many states want data of this kind for accountability and planning purposes, and it can be an important part of consumer information in choosing which college to attend. For all of these reasons, states should consider incorporating data on student learning outcomes into postsecondary databases.

Operational characteristics

9. Privacy protection for all individually identifiable student records. The Family Educational Rights and Privacy Act (FERPA) and other federal/state privacy protections obligate those who use student-level educational records to keep them secure. At the same time, privacy protection rules allow and encourage the use of student records in the aggregate to support research programs directed at improving instruction. This valuable resource should be used to the fullest extent possible.

10. The ability to match student records with K-12 data. If a state cannot or chooses not to create a single data system containing both secondary and postsecondary student records, it must move toward greater integration and alignment of its separate systems. Technical interoperability agreements between aligned but separate systems are a critical component. While the data issues between K-12 and postsecondary systems are frequently based on cultural differences and turf battles (e.g., who “owns” the data), agreement on technical standards and a common analytical culture can help foster integration.

11. The ability to match student records with employment data. Labor market outcomes for all students participating in postsecondary education are of considerable interest to state policymakers. For example, state leaders need to be able to align enrollment and degree-granting patterns with regional job markets and meet areas of high occupational demand. The most common data source for employment records are the Unemployment Insurance (UI) wage records maintained by all states. These contain quarterly data on individual earnings by industry, with individual records identified by SSN. The state postsecondary data system should be capable of matching enrollment records with these employment records in a secure environment, using the SSN as a key link.

12. Inclusion of independent and for-profit postsecondary institutions. Most established state postsecondary databases began with public institutions

only. This is because they were originally constructed to manage such things as enrollment-driven funding formulas, which required states to have accurate enrollment counts. Moving to longitudinal tracking, however, there are substantial advantages to including all institutions in a state regardless of control. States should make every effort to include as many institutions as possible in their state postsecondary databases.

13. A single state-level student unit record (SUR) system for all public institutions. Several states maintain separate SUR databases for different systems of postsecondary institutions (for example, one for four-year institutions and one for community colleges). While these may be effectively linked, the ideal system is designed around a single database environment to aid consistent data use and analysis. This also obviates security and confidentiality concerns associated with transferring records from one place to another.



Hans L'Orange of SHEEO.

Data governance

14. Data audit system to assess data quality, validity and reliability.

Without a well-designed and implemented data audit system, policymakers and the public cannot have confidence in the quality of the information produced. Accordingly, states need to ensure that the data elements they request from institutions are clearly and unambiguously defined, as are any rules or interpretations concerning the entry or

reporting of these data. Definitions and

reporting rules should be developed in consultation with institutions. Also, states need to establish regular data-checking or error-identification routines to audit the validity of submitted data.

15. Alignment with broader state goals, demonstrated usability and sustainability. State postsecondary systems should not exist in isolation; they must be aligned with a state's long-term development plans and goals for its citizenry. Only by becoming an integral component of a state's overall plan will a system be sustained over the long term. A system that merely collects data is useless; the only data of value are those that are used and are therefore continually analyzed and improved. Sustainability is developed as the data are used to address state needs.

Source: Peter Ewell, vice president of the National Center for Higher Education Management Systems, and Hans L'Orange, vice president of the State Higher Education Executive Officers.



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