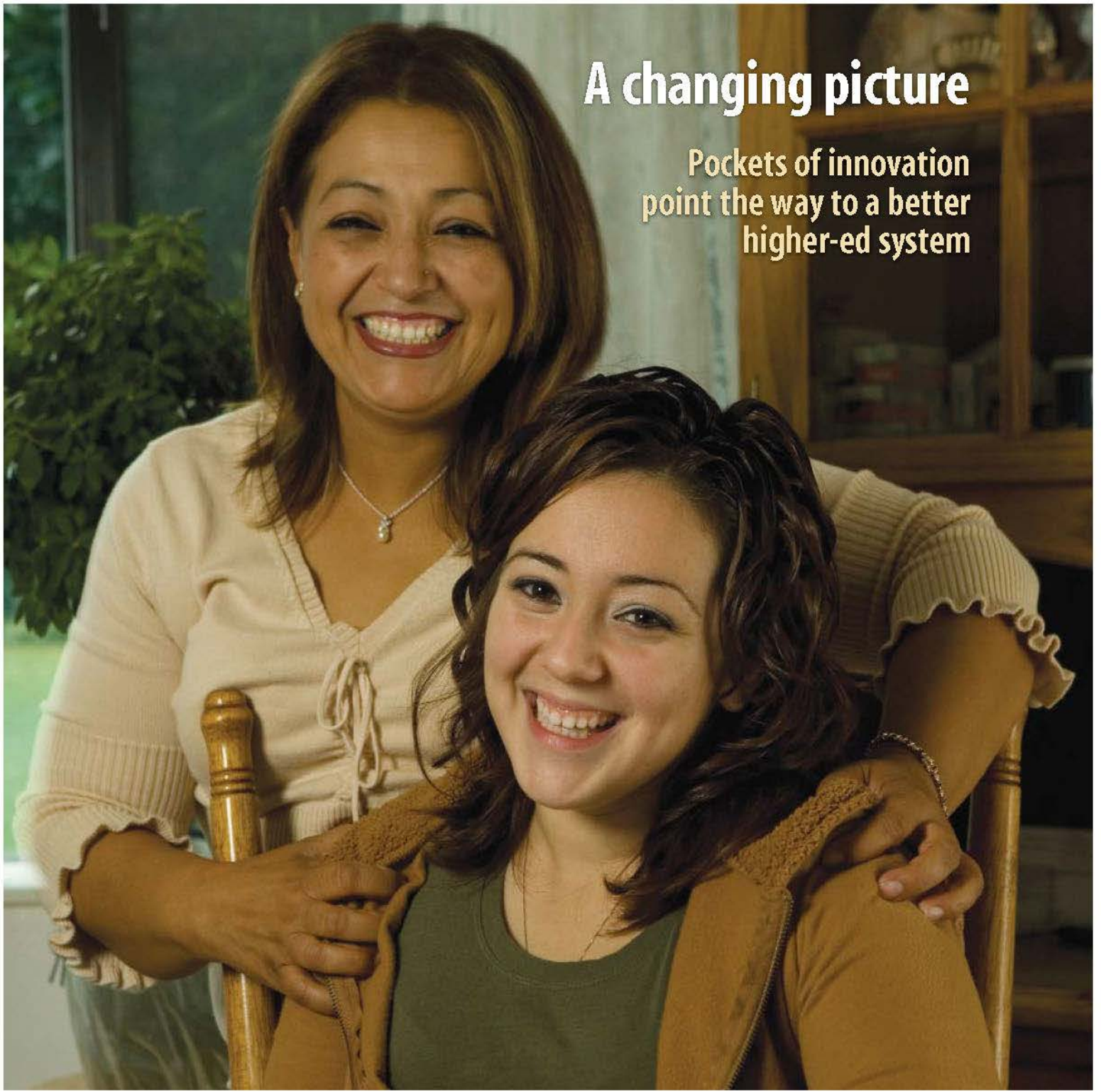


LUMINA FOUNDATION

FOCUS™

A changing picture

Pockets of innovation
point the way to a better
higher-ed system





Better alignment in California: Page 2



Georgia libraries, global links: Page 8



Starting early in Utah: Page 12



New methods in Missouri: Page 20

PRESIDENT'S MESSAGE

Our system of higher education has inestimable value. For many decades, it has been widely and properly praised as the key to individual prosperity and as the driving force of American progress. In many ways, postsecondary education has been the engine that has propelled our nation to greatness.

Today, however, that engine is slowing. Like it or not, American higher education is no longer the unquestioned global leader, no longer the envy of the world. In fact, according to figures from the Organization for Economic Cooperation and Development, the United States – once the world leader in degree attainment – is now eighth among countries in the percentage of 25- to 34-year-olds who hold two-year and four-year college degrees. On this measure, while the U.S. has maintained the status quo in terms of educating its citizens, other countries have raced past us. It's a disturbing and dangerous trend, and experts in economics, education and social policy are nearly unanimous in calling for changes that can help reverse it.

In its recent report, the Commission on the Future of Higher Education says it is "imperative that the nation give urgent attention to improving its system of higher education." The commission, impaneled by Education Secretary Margaret Spellings, lays out a plan that Spellings called "the beginning of a process of long-overdue reform."

The plan calls on institutions, policymakers and the public to embrace and promote changes that will make our nation's colleges and universities "more accessible, more affordable and more accountable, while maintaining world-class quality." Clearly, strides must be made in all four of those areas if we hope to turn things around.

The good news is some of these strides are already being taken. At institutions all over the nation, innovative people are using new methods that make higher education cheaper, faster – and yes, even better – than ever before. This issue of *Lumina Foundation Focus* is all about that challenge. The stories on these pages – profiles of four innovative projects and the real-life students they benefit – are points of promise in higher education.

At Lumina Foundation, we hope to assist in the birth of a new era, one in which high-quality, affordable postsecondary education is available to all who seek it. To that end, we at Lumina have set a concrete goal: By the year 2020, we want this nation to lead the world again in degree attainment among young adults.

It's a challenging goal – one that will require the United States to produce at least 7 million more degrees than the current pace will generate – but it's a goal we are embracing. In fact, we're planning a major, multiyear initiative aimed directly at achieving that goal. We have allocated more than \$25 million for the initiative, called Making Opportunity Affordable (MOA), and we'll be sharing more detailed information about it in the next few months.

Until then, we share these promising snapshots, and we look forward to your continued partnership along the road to greater student success.

Martha D. Lamkin

Martha D. Lamkin
President and CEO
Lumina Foundation for Education



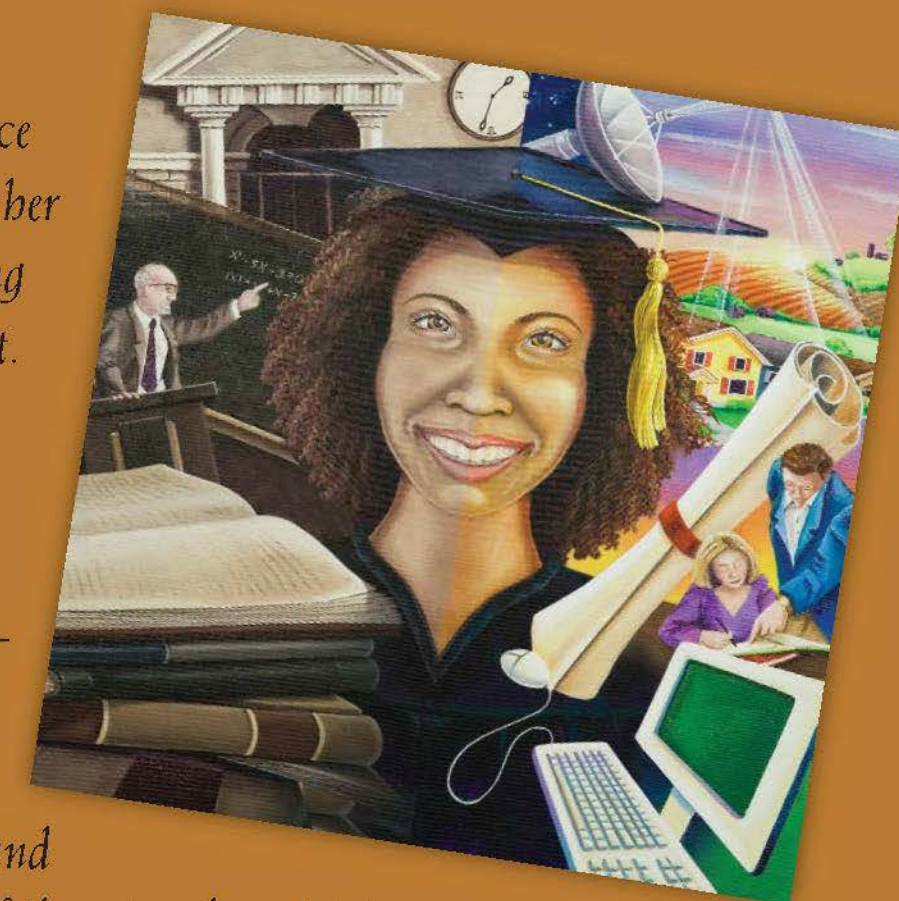
Calls for reform – once muffled in American higher education – are becoming louder and more frequent.

Rising college costs, falling rates of degree attainment, questions about the quality of student learning, growing gaps in success rates between white students and students of color – all of these trends point to an increasingly accepted fact: Change is vital if we hope to have a postsecondary education system that meets our future needs.


Fortunately, change is under way. At institutions all over the nation, innovative concepts and programs are being tested and implemented. These efforts are still more the exception than the rule. They are disparate and often small-scale, and no single effort can claim to be "the answer."

Still, because these efforts show promise, they merit attention – if only as a way to stimulate the ongoing conversation about higher-education reform.

This issue of "Lumina Foundation Focus" features four of these conversation starters, four provocative images that help compose higher education's changing picture.



On the cover: Martha Macias (top), a Mexican immigrant who never finished school herself, is committed to making sure that her daughter, Johanna, becomes the first in the family to attend college.



California effort focuses on early intervention and high school-college alignment

Johanna Macias, 17, stands in a cotton field near Firebaugh, Calif., with her father, Delfino Macias, a farm-equipment mechanic in the Central Valley. "My dad really motivated me to be good in school," Johanna says.

Johanna Macias is on the road to college, but her road isn't straight, and it's not exactly the road less traveled. In fact, it's one that Johanna, a 17-year-old high school senior, traverses over and over again, thanks to a recurrent roadblock: mathematics. Fortunately, Johanna has a good guide – math teacher Carol Bitter. And Bitter, backed by nothing less than the entire California State University system, does all she can to help Johanna reach her destination.

For Johanna, the journey starts at Kerman High School, a group of low-slung cinder-block and pre-fabricated buildings on a dusty campus 18 miles west of Fresno in California's Central Valley. The Valley is all about agriculture: acre after green acre of cotton and grape fields, orange trees and almond groves.

The rhythms of nature support Kerman's 11,200 residents, and they rule the lives of those who harvest, process and transport the Valley's crops. It's a cycle of back-breaking labor and poverty – one that is all too often repeated one generation after the next. If that cycle is to be halted, it will start with fathers such as Delfino Macias, an unschooled mechanic who has instilled in his daughter an unwavering belief that she will be the first in her family to graduate from high

school and also the first to earn a college degree.

Through an innovative initiative known as the Early Assessment Program (EAP), the California State University system is playing a huge role in helping Delfino Macias realize that dream for his children. And it began with a test Johanna took during her third year at Kerman High School.

The 15-question test, called the STAR exam, is given on a voluntary basis to every high school junior in the state as part of the mandatory California Standards Exam. The STAR test is a key component of the EAP because it helps gauge students' readiness for college-level math and language arts. If students intent on continuing their education exhibit weaknesses in those areas, the EAP kicks in during the senior year with special classes, software and tutoring.

"The whole point is that seniors know when they come back to school in August what they need to do by May to get ready for college," explains Esmeralda Ortiz, co-coordinator of the program at California State University, Fresno. That early-warning system can go a long way toward eliminating the need for remediation during the freshman and sophomore years at college.



Martha Macias (center) has high hopes – and high standards – for both of her daughters, 16-year-old Martha (left) and Johanna, 17. Both girls attend high school near Fresno, Calif.



Victor Olivares, director of the Fast Forward to Academic Success program at Fresno State, and Esmeralda Ortiz, co-coordinator of the Early Awareness Program at the university, have seen early-intervention efforts pay off on their campus.

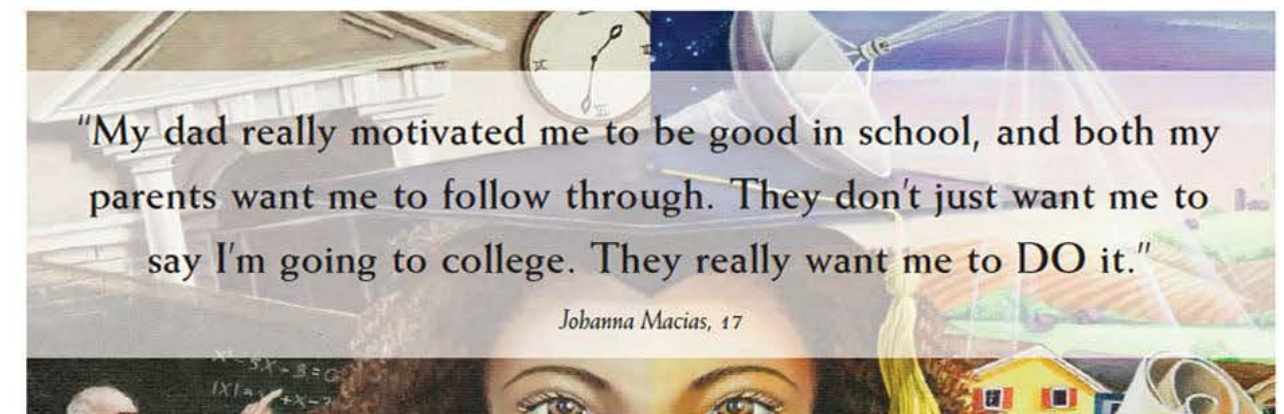
The system is by no means fully adopted in California. For one thing, the EAP score is not factored into the admission process at Cal State's 23 colleges and universities. What's more, neither the University of California (UC) system nor the state's community colleges are participating in EAP. The program, now in its third year, is an outgrowth of a statewide initiative aimed at eliminating remediation by 2007. That goal won't be fully reached until the community colleges and the UC system embrace the effort. Nevertheless, EAP is expected to have a huge and positive impact on the state's public higher education institutions and the students they serve.

By resolving problem areas while in high school, students can avoid spending valuable time and tuition dol-

lars on remedial courses. And less remediation means colleges and universities can speed students' paths to graduation, a cost savings for the institutions as well.

EAP's most lasting benefit, however, is in showing students like Johanna what it takes to succeed in higher education. And that is exceedingly important at schools such as Kerman, where 19 percent of the students – 65 percent of them Hispanic – are in families below the poverty line, and where 58 percent qualify for free or reduced-price lunches. Last year, just 30 percent of Kerman's graduating seniors moved on to four-year colleges or universities.

Fortunately, efforts are under way to improve those numbers. "Our theory is to give them help early and hope everything falls into place," says Victor Olivares,



Johanna Macias, 17



Roxanne Villaluz, a tutorial and academic coordinator at Fresno State's Learning Resource Center, helps Adan Herrera and other students stay on track to succeed. Adan, a freshman, says the Fast Forward program "put him in a very good spot" to do well in college.

director of Fast Forward to Academic Success, an ambitious college-preparedness program developed by Fresno State to complement EAP.

Johanna Macias was a seventh-grader when she first realized she wanted to go to college. By the time she reached high school, she had decided to pursue a degree in communications so she can become a radio journalist.

The odds are against her. Johanna's parents, both Mexican immigrants, never finished school. An older brother dropped out (though he later earned a GED). Delfino Macias, who repairs tractors, trucks and other agricultural equipment, made sure his two younger children – Johanna and her sister – didn't take the same path.

"My dad really motivated me to be good in school," says Johanna. "And both my parents want me to follow through. They don't just want me to say I'm going to college. They really want me to DO it."

Johanna's score on the STAR exam showed that she has the aptitude to succeed in college. But further testing, an assessment exam administered by Fresno State's Fast Forward program, revealed a deficiency in math. She had problems with geometry – problems that

brought her to Carol Bitter, a teacher for whom failure is not an option. Bitter's tutelage – combined with a software program that walks students through math problems from inception through comprehension – keeps Johanna on the road much taken.

"Mrs. Bitter notices whenever I have a problem with a question, and she keeps putting it up there on the board. And she'll ask me, 'Do you get it?' And I'll say, 'Yeah, I kind of get it.' She'll say, 'Keep working on it.' And the question goes back on the board again," says Johanna.

There is a method to her teacher's obsession.

"If they understand it here, then it can save them money (on remedial courses) once they get to college. It (the EAP/Fast Forward package) gives them a year to figure it out," said Bitter. "And it works both ways by letting them know if they are really prepared for or want to go to (a four-year) college. It's maybe a wake-up call that ... they should look at developing vocational skills instead."

Olivares believes Fast Forward is key to whatever success EAP realizes in the Central Valley. Fresno State established the program to expand EAP's effectiveness

A CHANGING PICTURE

in the poor, rural areas from which it draws most of its students. Without the software and support provided by programs like Fast Forward, he predicted, "EAP in and of itself will not yield the same level" of student success that Fresno State has seen so far.

Under Olivares' guidance, Fast Forward reaches deep into surrounding high schools in myriad ways, starting with professional development that shows teachers how to help students rise to the challenge of college-level work. Fast Forward also offers in-school classes and after-school primers to prepare students for college and for life on campus. Students who pass the in-school class automatically earn three college credits if they enroll at Fresno State.

Once Fast Forward students arrive at Fresno State, they get more information about college success in courses that include the bonus of a free laptop computer. In exchange for Fast Forward's efforts on their behalf, students in the program must fulfill a community-service requirement and write a report about the experience.

It's a small price to pay, says Fresno State freshman Adan Herrera, who enrolled in the Fast Forward course as a senior at Firebaugh High School, 45 minutes north of Fresno, and continued in the program after enrolling in college.

"It made us aware of the environment, what it's like to go to college, how classes are set up, how to manage our time, study and increase our study habits," recalls Adan, the youngest of five siblings. His parents are both Mexican immigrants with a third-grade education, yet – surprisingly – all five of the Herrera children attended college.

Adan, 17, insists that Fast Forward students "are not as 'lost' as most freshmen who might have come to a campus only once. I know it put me in a very good spot. I'm familiar with the campus, I know where to find what I need, the counselors and tutoring labs, and I know what I need to do to succeed."

Officials say that, without the foundation established in the high schools, Fast Forward and EAP cannot succeed at the college level. An important key is to help teachers align high school lessons with on-campus realities.

"There is a gap between what is expected of a high school student and what is expected of a college student," says Ortiz, Fresno State's EAP co-coordinator. "Our goal is to give the students and the high schools an idea of what is expected in college."

Although EAP has been in place only three years, Olivares is already seeing the gap narrow at Fresno State, especially in math scores. Prior to EAP and Fast Forward, he says, between 80 percent and 90 percent of low-income Fresno State freshmen from certain high schools were failing math. That figure has now dropped below 50 percent. Olivares insists that progress is a direct result of the decision to combine EAP with Fast Forward, a concept that other Cal State schools are thinking about implementing on their campuses.

"We can observe every student profile and status," he points out. "We can tell where they need help. And we're not taking a shotgun approach to addressing the problems anymore. We can tell teachers: 'Don't worry about six areas; worry about these three specific areas.'"

Though still in its formative stages, the Early Assessment

Program gets cautious praise from California's secondary school community. The first students to take the STAR exam and follow through with EAP courses as high school seniors are now college sophomores. Time and completion rates will demonstrate whether the program is truly effective.

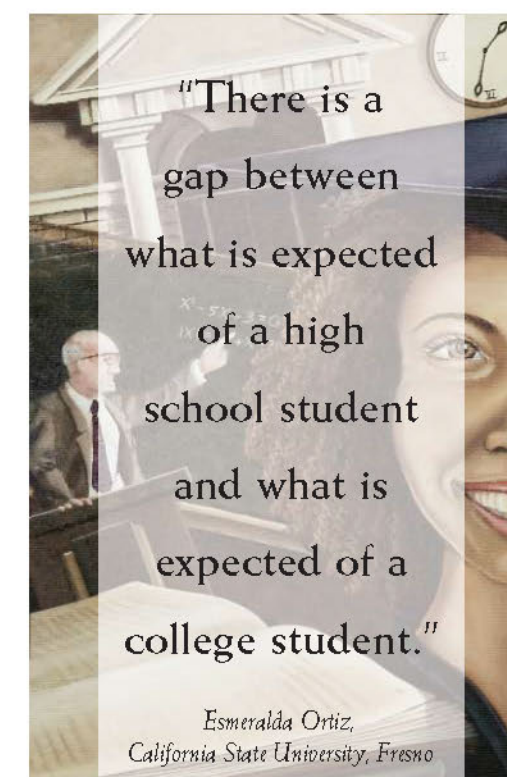
Right now, there are not enough data to truly prove the program's effectiveness, and, according to Rebecca Sanchez, learning director at Kerman High School, it "does not seem to be a predictor" of how well students will do in college.

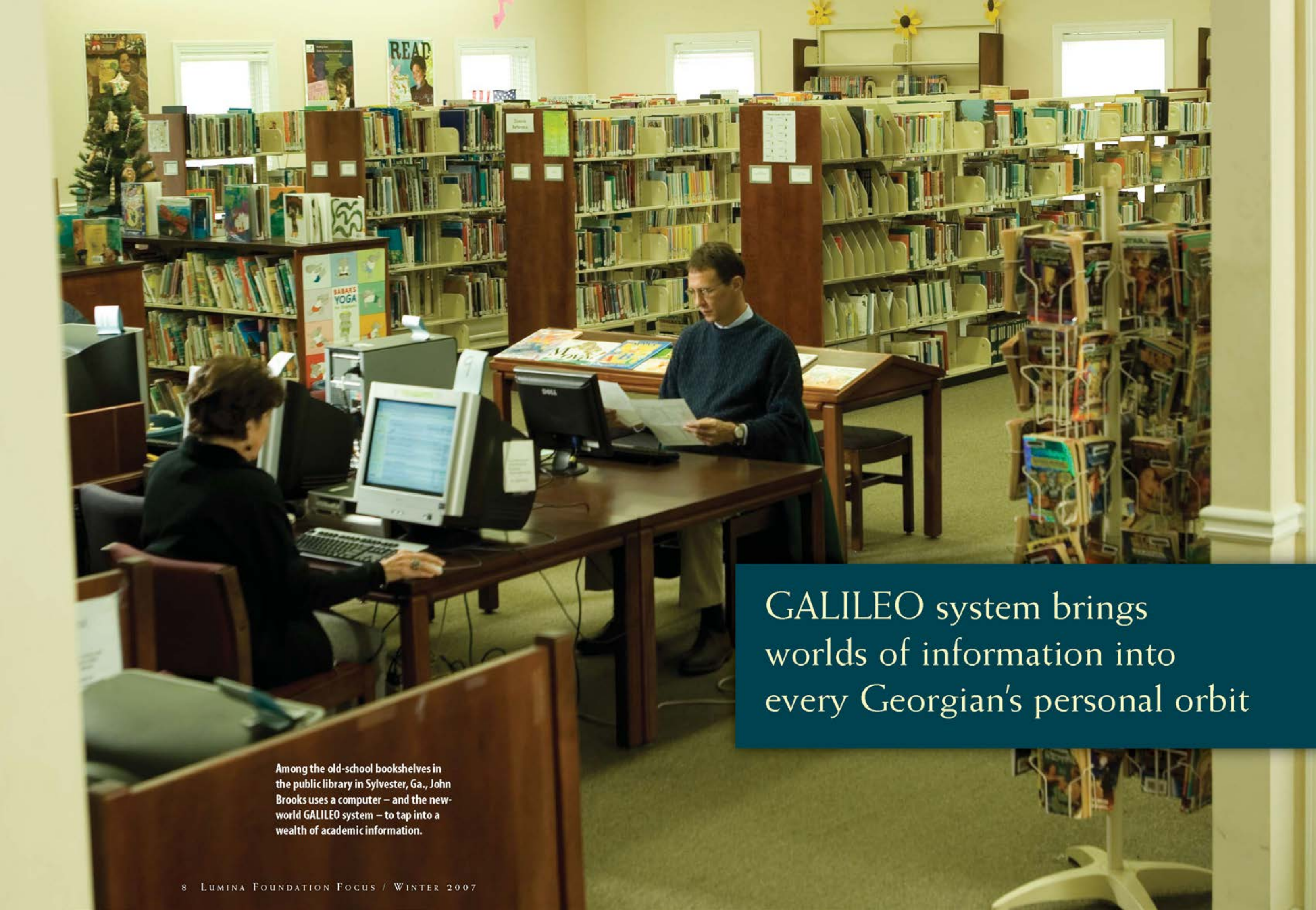
Bitter points out, however, that exposing seniors to college-quality work gives them a glimpse of their potential for success in higher education. "It's a push sometimes to get them to learn more about the material, but knowing they

can do it here is an extra little carrot to make them work harder," she said.

Johanna Macias wasn't always happy about grinding through the same geometric equations until she got them right. But, midway through her senior year at Kerman High, she came to appreciate the lessons delivered by Bitter and perfected by a Fast Forward software program that – just like her teacher – refuses to accept an incorrect answer.

Come June, the first phase of Johanna's journey, the one that runs through Mrs. Bitter's classroom, will end. And she'll embark on another journey, this time on a road not taken by anyone in her family – the trip across the stage to receive a high school diploma. Two months later, Johanna plans to be at Fresno State, where a new path – even multiple paths – will stretch before her, leading to a world of potential.





GALILEO system brings
worlds of information into
every Georgian's personal orbit

Among the old-school bookshelves in the public library in Sylvester, Ga., John Brooks uses a computer – and the new-world GALILEO system – to tap into a wealth of academic information.

At 43, John Brooks is old enough to recall when research required knowledge of the Dewey decimal system and meant hours combing through the *Readers' Guide to Periodical Literature* and stacks of academic journals.

With age comes perspective. "I remember going through all those books, looking for the same thing that I get now in a matter of minutes or seconds," says Brooks.

Now enrolled as a nontraditional student in a graduate psychology program at the University of Alabama at Birmingham (UAB), Brooks has yet to research a single journal article at the campus library.

That's not surprising. Brooks, a former racehorse trainer, lives 375 miles from the UAB campus. His home is in Sylvester, Ga., population 6,000.

As a tuition-paying distance learner, Brooks has permission to log into UAB's library. He chooses not to. Instead, he stays closer to home – in a cyber sense – by clicking into an innovative data-access system known as GALILEO, operated by the University System of Georgia.

"If you need a basic article, or if you need something more in-depth, this is where you find it," says Brooks.

GALILEO, an acronym for Georgia Library Learning Online, transports Brooks and thousands of other Georgia residents to a world far beyond the southeastern United States.

It's a world of information and data – once open only to scholars – now suddenly available to every Georgian, from the urban precincts of Atlanta and Savannah to hamlets like Sylvester, 60 miles due south of Macon.

"It's not unusual for university library systems to share databases," says Susan Hildreth, president of the Public Library Association, an affiliate of the American Library Association. "But GALILEO is unique because it serves

both the general public and the academic communities. A lot of other states have pieces of what they are doing in Georgia, but not the extent of the services that GALILEO makes available to all different types of libraries."

And that is precisely what the system's founders had in mind. "We wanted to set it up so the smallest libraries would have comparable holdings to the largest libraries," says Merryll Penson, executive director of library services for the University System of Georgia, which oversees the program. "This way, a student at a small two-year college ... can take advantage of the resources that a large university would have."

Actually, Penson understates the case. As librarians across the state enthusiastically attest, GALILEO's reach extends far beyond Georgia's system of community colleges.

"It allows small towns the same level of service as Athens, Rome and Atlanta," says Sandy Hester, head librarian at Fitzgerald-Ben Hill County Library in Fitzgerald, Ga. "We have the exact same access as the bigger cities and the colleges. It's a great field leveler. Our high school students have the opportunity to write the same quality papers as other high school students across the state because they have access to the same materials."

The genesis of GALILEO dates back to 1968, light years on the technology timeline – well before "google" was a verb, a noun or even a gleam in two geeks' eyes. Much like the formation of the World Wide Web, the initial idea was to provide an electronic forum that would allow librarians at public colleges and universities throughout Georgia to compare notes and share solutions to common problems.

What occurred nearly a quarter century later was equal parts serendipity and foresight. In 1994, Georgia went one step further than many other states when it dedicated

\$6 million toward integrating the databases of its university and college library systems. Not coincidentally, another technological trend was beginning to weave itself into the fabric of American culture: the Internet.

As Jayne Williams notes in *The Early History of GALILEO*, it was in the mid-1990s that Georgia seized on the idea of a comprehensive online library system that "would serve the entire population of Georgia, not only those formally enrolled in educational institutions." With remarkable speed, GALILEO was up and running in September 1995, slightly more than a year after the idea was first broached.

Merryll Penson strongly advocated for GALILEO from concept to roll-out. Elevated to the position of executive director of library services in 2000, she's an even bigger supporter now. The idea was to level the playing field, and Penson is among dozens of librarians across the state who say that GALILEO has succeeded beyond anyone's expectations.

GALILEO now includes databases at the state's leading comprehensive and research universities – the University of Georgia and Georgia Tech – as well as well-known private institutions such as Emory University and Morehouse College.

Through the years, it has become clear to both state and government officials that the system's benefits extend far beyond the data available to a stay-at-home graduate student in Sylvester or a freshman accounting major at Georgia State University.

"We don't say we are saving money, because we're spending money," says Penson. "But we are avoiding higher costs," she points out, because GALILEO allows individual institutions to share outlays for licensing fees, technical support and other expenses.

At Fitzgerald-Ben Hill County Library, GALILEO has provided a world-class asset on a shoestring budget. Serving the state's third-smallest county, the library operates on an annual budget of only \$300,000.

"Without GALILEO, we would be stuck forking over thousands of dollars in yearly subscriptions – or we simply wouldn't be able to provide this wonderful service to our patrons," says head librarian Sandy Hester.

There's another benefit, too: With community libraries competing simultaneously for public dollars and for the attention of patrons drawn by countless other diversions, GALILEO has become a means to get people in the building.

"You can't access it from home, so it has become a drawing card. It's a marketing tool for us," says Leigh Wiley, the librarian who introduced John Brooks to GALILEO during a visit to the Margaret Jones Public Library in Sylvester.

During its formative years in the pre-Google era, GALILEO didn't have to compete with the popular search engine. Even now though, Penson and other librarians insist that GALILEO is a heavy favorite in the information competition. It provides access to everything from the popular EBSCO academic database to



Sandy Hester, head librarian at the Fitzgerald-Ben Hill County Library in Fitzgerald, Ga., helps Berny Juarez (left) and his father, Rogelio, navigate the GALILEO system.

dissertations with titles such as "The ethnophysiology of the Tzeltal Maya of Highland Chiapas." Even Google has a tough time matching that range.

"It's an invaluable reference for reliable information," says Hester. "Patrons don't have to worry about the validity of the information they've found. They don't have the same worries as they do when they conduct searches on the general Internet."

Adds Penson: "The more serious kind of information for term papers or to conduct meaningful research is not free on the Internet. For students who know what is out there and what is reliable, GALILEO pushes them back to the library."

Sometimes, though, it isn't students who plumb GALILEO's troves. At Catoosa County Library in Ringgold, Ga., for instance, GALILEO gives genealogy buffs easy access to special journals and Web sites that typical online search engines either bury or fail to uncover at all.

"Twenty years ago, they had to go from library to library, searching for the information in card catalogs or on microfiche," recalls Catoosa County librarian Connie Haney. "Now they can come in and find everything they need."

For Penson, GALILEO is – on a personal level – a myth dispeller. It shatters the stereotype of libraries as musty bastions of old-school stodginess. In fact, it shows that libraries and librarians are positively cutting-edge.

"Librarians have played a tremendous role in helping people understand the value of technology," Penson says. "It's not the technology; it's what you can do with it."



John Brooks, a 43-year-old former racehorse trainer, lives in Georgia but is pursuing a degree in psychology from the University of Alabama, Birmingham.



At 18, Amanda Hoepfner is less than a year out of Brighton (Utah) High School, yet she's already a junior at the University of Utah in Salt Lake City – thanks to the state's New Century Scholarship program.

Utah program gives students bottom-line reasons to start college early

A CHANGING PICTURE

Amanda Hoepfner had a bit of an identity crisis this fall when she began her first year of classes at the University of Utah. Amanda, 18, a 2006 graduate of Brighton High School, was peppered with questions when she began commuting 10 miles north to the Salt Lake City campus.

Her classmates – nearly all of them juniors and seniors – kept asking: “Are you a transfer student?”

Initially unsure how to reply, Hoepfner finally came up with an answer that raised even more questions: “I am a transfer student. From high school.”

It’s true. This year is Amanda’s first on campus, but she’s actually a college junior, barreling at warp speed toward the bachelor’s degree she intends to earn by age 20. Then there’s the M.B.A. If all goes according to plan, she’ll have that degree in hand when she’s 21 – when she also hopes to launch a career in international sales.

Her classmates aren’t the only ones who don’t immediately grasp Amanda’s march through Utah’s system of

higher education; in fact, relatively few in the state are familiar with the program that put Amanda on a fast track toward a four-year degree.

But students, and especially parents, are starting to catch on to the advantages of the New Century Scholarship, an initiative that significantly reduces tuition while delivering high school graduates who have already earned associate’s degrees to public institutions across the state.

The premise is simple: Introduced in 1999, New Century gives high school juniors the option of enrolling for a nominal fee in college-level classes, offered by a local community college or, in some cases, by Utah State University. Students who complete the requirements for an associate’s degree by the September following their high school graduation can then transfer their credits – the equivalent of two full years of college – to a state college or university or to Brigham Young University, an independent college operated by the Church of Jesus Christ of Latter-day Saints. An added bonus: Tuition for New Century participants enrolled in those schools is reduced by 75 percent.

For those keeping score, that’s the first two years of college at no cost to students, and the remaining two years at just one-fourth of the sticker price.

Despite the deep discount, comparatively few Utah residents have taken the deal. From the program’s inception through 2005, just 1,162 students have taken advantage of it. That number is slowly rising. In 2005, 300 signed on. And at Salt Lake City Community College, where academic adviser Angela Hale used to see just one potential New Century applicant a week, it’s not unusual now for four or five students a day to ask her about the program, which is funded each year by state appropriation.

Utah Higher Education Commissioner Richard E. Kendell sees no reason why the program won’t continue its recent growth. “If the kids haven’t figured it out yet, the parents have,” says Kendell. “They’re sitting there with their checkbooks after they learn about (New Century) and saying, ‘You passed up what?’”

Michelle Hanks is one parent who caught on – very quickly – during a meeting with a guidance counselor as her son Tyler entered his junior year at Brighton High. Practically on the spot, Hanks decided that Tyler’s last two years of high school would, in effect, become his first two years of college. Then she told her son.

“He had no idea what college was about – the requirements, the credit hours, none of it,” says Hanks.

Nor was he familiar with college courses’ traditional, and often trying, lecture format. “At first it was totally boring,” Tyler recalls. “I wasn’t used to a teacher talking all the time like that.”

He proved a quick study. Now in his last year at Brighton, Tyler spends his days taking college language, math and science courses online or via a telecommunications hook-up between a Brighton com-



Tyler Hanks takes college courses by day, yet still participates in extracurricular activities at Brighton High School, experiencing what he calls “the best of both worlds.”

A CHANGING PICTURE



In taking the New Century Scholars route, Amanda Hoepfner is following in the fast-track footsteps of her older brother, Danial. At 21, Danial already has earned more than 200 credit hours at the University of Utah and is ready to enroll in a graduate program at Ohio State University.

puter lab and lecture halls at Utah State or in classes taught at the high school and at Salt Lake Community College. College student by day, Tyler makes the transition back to high school student once Brighton’s final bell signals that it’s time for him to participate in varsity basketball and other extracurricular activities. As he says: “It’s the best of both worlds.”

Brighton guidance counselor Allyson Stoddard cautions that it’s not a world for everyone.

She characterizes Utah’s system as one that offers three basic options for students pursuing postsecondary education. High school students planning to pursue a trade are encouraged to enroll in concurrent vocational classes often offered in conjunction with a community college. Those who have professional aspirations and the required academic aptitude enroll in Advanced Placement classes and compete for scholarships and admission to top-tier colleges and universities. In gen-

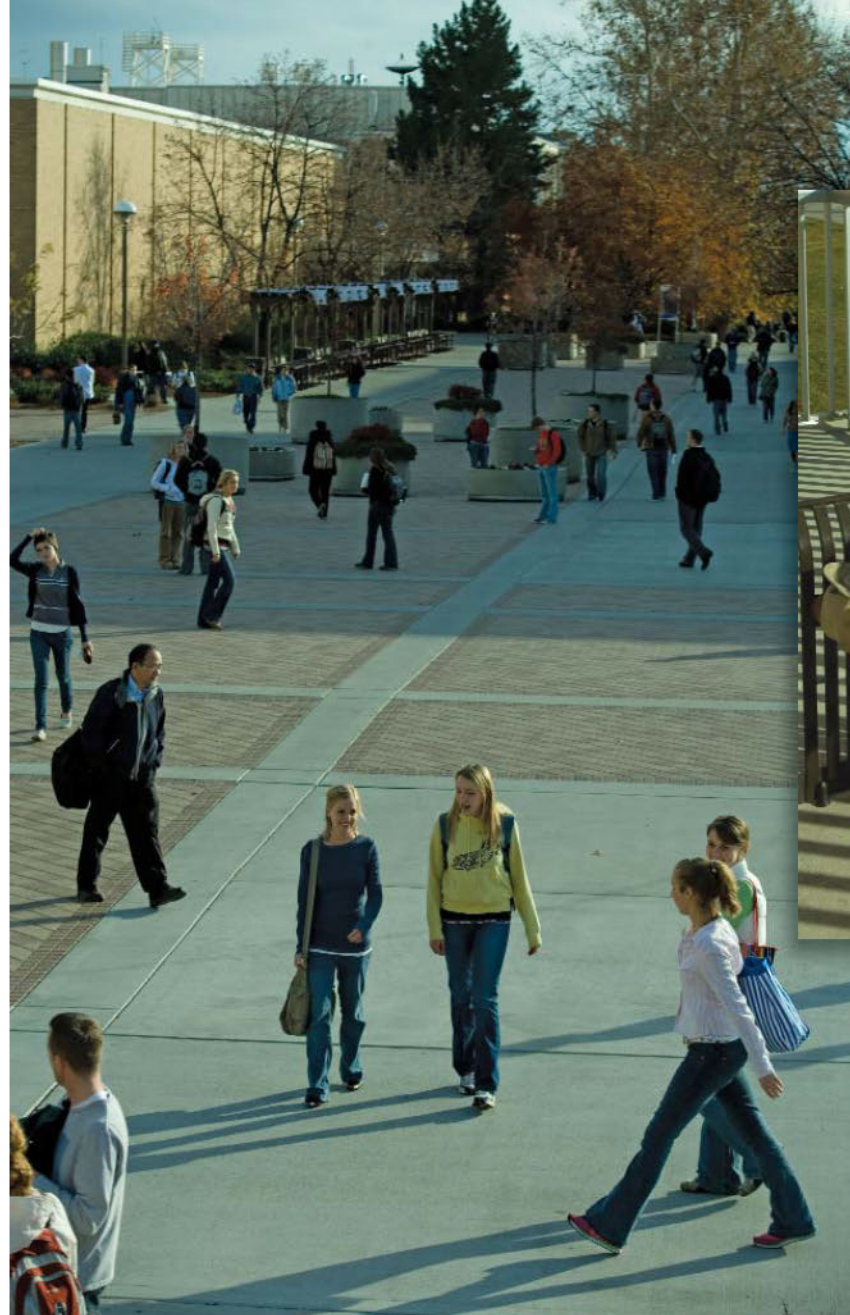
eral, the New Century Scholarship appeals to students between those two extremes.

“It’s mostly kids in the 3.0-3.5 (grade-point average) range,” says Stoddard, “the middle-of-the-road kids whose parents look at this and see the dollar signs.”

The attraction of the program is obvious, particularly for bright, ambitious students with an eye on the bottom line: It offers them the chance to wipe out mandatory college courses for a mere \$35 registration fee and then gives them a 75 percent discount when they arrive at a baccalaureate institution.

As New Century comes of age, Utah’s higher-ed commissioner hopes it will serve as an inducement to others.

“We are catching the kids who are self-motivated,” Kendell says. “But the real task is getting kids who are not necessarily motivated and get them engaged. The way to do that is to get them into concurrent classes so they can



Nursing student Shantelle Smith (above and far left) walks across the Brigham Young University campus with her roommate, Caitlin Smith. Shantelle arrived on the Provo campus with half of the credits she needs to graduate.

see what it's like. It's a way of expanding the net."

At Brighton High School, Amanda Hoepfner's family was among the first to see the advantage of teaming New Century with the Advanced Placement curriculum. Her brother, Danial, blazed the trail when he entered the University of Utah three years ago with 102 credit hours, 18 shy of the school's graduation requirement. College, he recalls with studied nonchalance, "was basically just someplace bigger to find my classes."

Danial, now 21, has amassed more than 200 credit hours at Utah. He also has enough cash – from the 75 percent discount, scholarships and grants (thanks to his high scores on A.P. tests) – to pay for the next phase of his education, a graduate program in politics and international studies at Ohio State University. For Danial, enrollment in Columbus was a mere formality. "I basically consider myself a graduate student right now," he said in September.

A prototypical New Century student, Brigham Young freshman Shantelle Smith enrolled in the program

because her parents grasped the financial and academic implications early on.

"My mom helped me a lot," Shantelle said on a bright September morning, just hours before attending her first BYU home football game. "I wouldn't have been able to do it without her. She knew what classes I needed to take and how all the extracurricular stuff fit in. If I didn't have my mom, I'm not sure I could have done it."

During her four years at Brighton, Shantelle avoided A.P. courses and the rigorous, binding exams that accompany them. "I took community college (courses) because, if I did well, I was guaranteed credit. I knew if I took A.P., it wasn't guaranteed," she said.

Shantelle is by no means the exception, says Salt Lake Community College adviser Angela Hale. "A lot of students are steering away from A.P. because of the test they have to pass at the end of the year. It freaks a lot of them out," she says.

Initially, not even 60 college credits on her high school transcript made Shantelle a lock for admission

into her first-choice college. Wait-listed by BYU when she applied as a freshman, Shantelle reapplied as a transfer student – and was accepted. A nursing major at BYU, she arrived on campus with half the credits necessary to graduate. She's keeping her "options open" about the possibility of changing majors and transferring to a public college or university. With classic understatement, she calls the 75 percent discount "a good deal."

The only private institution in the state that accepts New Century scholarships, BYU is still a bargain thanks to subsidies from the Mormon church that are passed along to students in the form of low tuition and fees.

With a relatively small and manageable population and a strong family orientation, Utah is in many ways the perfect incubator for a program like New Century. Still, even though the program is clearly working in the relatively affluent suburban setting where Brighton High School is located, questions remain about the program's effectiveness in urban schools.

Kendell acknowledges that New Century is still a work in progress in inner-city schools. But he predicts that a new statewide system of early-college high schools – funded by the Bill and Melinda Gates Foundation as part of its nationwide network of such schools – will introduce the program's benefits to many more of Utah's low-income and underserved students.

In its attempt to make college more accessible and affordable for every young person in the state, Kendell said his agency, the Utah System of Higher Education, faces its greatest challenge in sparsely populated rural districts. "When you get a small high school with just

A CHANGING PICTURE



Brighton High School counselor Allyson Stoddard says parents "look at this (program) and see the dollar signs."

250 kids in it, it's difficult to justify getting even seven of those kids to take A.P. Calculus," he said.

That's where technology comes in. Utah State's presence at Brighton is a lab outfitted with microphone-equipped computers that allow students to participate in real-time lectures in courses such as American Civilization, Integrated Life Science and Introduction to Writing.

Once she got into the rhythm of college-level instruction, Shantelle Smith says, the learning was actually easier than in regular high school classes. She especially liked the telecom connection that allowed her to converse with Utah State professors 110 miles away, in Logan.

"I could talk over the microphone if I had a question," Shantelle recalls. "It was definitely different at first, and there was a lot more reading and a lot more studying. And I still felt like I was in high school; I don't feel like I missed out on high school at all."

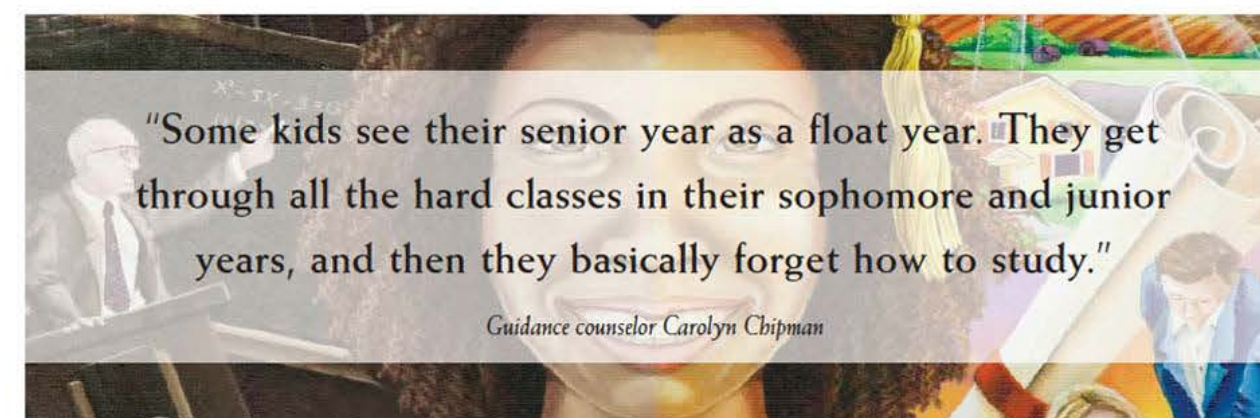
From personal observation, Brighton guidance counselor Carolyn Chipman knows that active engagement in the coursework is often what students miss the most about high school – especially in the 12th grade.

"Some kids see their senior year as a float year," she says. "They get through all the hard classes in their sophomore and junior years, and then they basically forget how to study and work during their senior year."

New Century tends to reverse that trend, Chipman says.

After observing first-hand the workload her son is tackling as he approaches graduation from Brighton, Michelle Hanks brushes aside the notion that the senior year has become superfluous.

"Not if you're doing this," she says.



"Some kids see their senior year as a float year. They get through all the hard classes in their sophomore and junior years, and then they basically forget how to study."

Guidance counselor Carolyn Chipman

Changing college courses can also change the course of lives

What Michelle Albin understood about algebra was enough to convince her to major in communications. Unfortunately, Albin admits that her algebra aversion is partly to blame for a career that, until recently, just didn't add up. After graduation from the University of Missouri at St. Louis (UMSL), she held a succession of post-graduation jobs – all unfulfilling and few having anything to do with her degree.

She has the right formula now, though, and it all started with a visit to a local drugstore to get a prescription filled. While there, Albin saw a "help wanted" sign and applied for a job as a pharmacist's assistant. She got the job, and it turned out to be her true calling – so true, in fact, that she re-enrolled at UMSL as a pre-pharmacy major – even though it requires a strong math foundation. Fortunately for Albin, the university's algebra program had also been reinventing itself during her absence.

The agent of change was the National Center for Academic Transformation (NCAT), an upstate New York think tank that has helped 60 colleges and universities across the country redesign an array of courses – from psychology to statistics, pre-calculus to Spanish.

Headed by former EduCom Vice President Carol Twigg, NCAT traces its beginnings to the mid-1990s, a period when forward-thinking institutions across the higher-ed spectrum recognized emerging technology as a tool to overhaul tradition-bound methods of teaching and learning.

"I think people are convinced that change is necessary," says Twigg. "The problem is they don't know what to do, and they don't have any alternatives to the way it has always been done. Our goal is to create models to show them how things can be done differently."

Twigg and her colleagues use **technological know-how** to plot this alternative route. As any student enrolled in a revamped course will attest, NCAT throws out the book – and in some cases, the lecture hall, too. The results are impressive:

- At the University of Central Florida (UCF), small, software-enabled learning groups solved a severe space crunch caused by a shortage of classrooms for an introductory course in American government. Students in the NCAT-engineered program demonstrated a marked improvement in academic achievement. In addition, UCF expects to save \$68,000 annually because of reduced demand on the university's infrastructure.
- At the University of Southern Maine (USM), students in an introductory psychology course save time, attend fewer lectures and come to class better prepared by taking required quizzes online. NCAT reports that students enrolled in USM's online program study more – and have scores averaging 10 percent higher – than their counterparts in the traditional, lecture-oriented program.
- At the University of Tennessee at Knoxville (UT), students in a redesigned intermediate Spanish course have 24-hour access to course materials, receive personalized e-mail feedback from instructors and are required to be physically present in class just once a week. The result? Test scores are up and costs are down. NCAT says the changes have resulted in savings of \$110,000 a year, allowing UT to enroll more than 500 additional students in the Spanish class.

Twigg is quick to deflect NCAT's success back to the colleges and universities that have welcomed the center to their campuses. NCAT is simply a facilitator, she

Admittedly math-challenged, Michelle Albin knows that expert help is on the way when she raises the red flag in the mathematics laboratory at the University of Missouri at St. Louis.

A CHANGING PICTURE

emphasizes; the real credit for institutional change rests with the institutions themselves.

"You have to let the people in the institutions make the decisions," Twigg says. "We give them the principles and the ideas and show them the tone they need to set in order to make the right decisions. All we do is streamline the process."

NCAT is now embarking on its most ambitious project yet: A systemwide makeover of selected courses for the University of Maryland system.

To see what lies ahead, Maryland's administrators, faculty and students can look to St. Louis – and Michelle Albin. Her transition from a twice-flunked math-phobic undergraduate to a student who moved beyond algebra to calculus can be traced directly to NCAT's arrival at UMSL in 2003. At that time, Albin represented the majority of first-year algebra students (55 percent) who were failing the course. Teresa Thiel, biology professor and associate dean of the College of Arts and Sciences, wonders what percentage of those students – despairing of never fulfilling the math requirement – departed UMSL and college, never to return.

"We had students walking off after failing algebra, and we don't know what happened to them," says Thiel.

Technology may have been the key to the two-year renovation of math education at UMSL. But the software program used in that renovation was just a small component of what amounted to a cultural transformation on the St. Louis County campus. The biggest change? All but eliminating the traditional lecture.

Michelle Albin attended lectures three times a week the first two times she took algebra. By her own admission (one supported by the two failing grades she received), she didn't learn a thing. For her third attempt, Albin's attendance in the lecture hall was required just once a week. On the other two days, she and her classmates reported to UMSL's new, state-of-the-art mathematics laboratory to receive one-on-one tutoring from professors and teaching assistants. Between visits, she was expected to prepare by following a software program, accessible from home, that walked her step-by-step through every equation. When she stumbled over the online instructions, she found help from humans in UMSL's math learning center simply by raising the red flag attached to each of the center's work stations.

The new algebra curriculum gave Albin a full week to complete homework assignments, and the tireless software worked with her on every problem until it was solved.

Under the old system, all students were expected to learn at the same pace. "Well, nobody can just pour information into your head," Thiel points out. "And, furthermore, this is math. There's only one way to learn math, and that's to do it."

Carol Twigg agrees. "Obviously, the old model worked to a certain extent," she says. "But the old model was developed when a minority of students went to college." Today, with college becoming a necessity for a broader swath of the population, new models are needed. "The old techniques of lectures, reading a book

and taking a test don't work as well," Twigg says. "Technology is growing in higher education. It's part of an evolution."

In some ways, that evolution clearly benefits students who are self-starters.

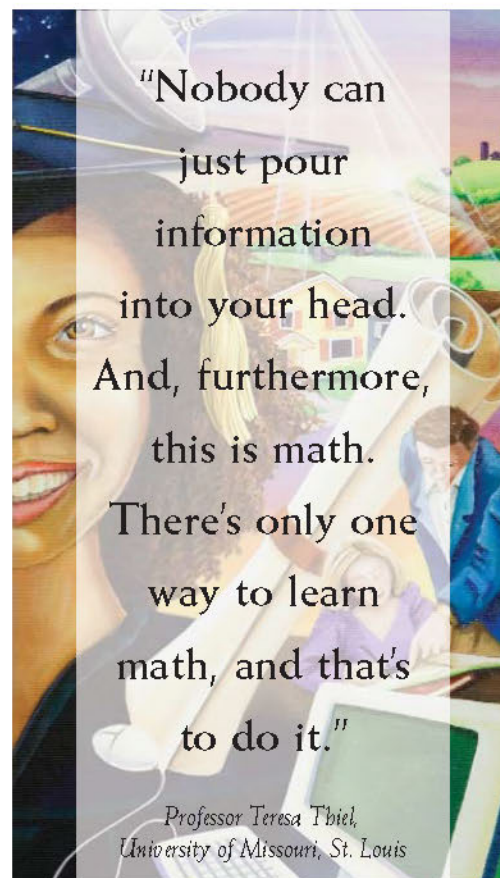
"I've always learned better by myself because when I sit in class I don't always pay attention," says UMSL business major Loequishia Lomax. "I'm a hands-on kind of person. I need to DO it to learn it."

So does Albin, it turns out. She admits now that she never liked lectures and was always reluctant to speak up in class. "I felt embarrassed about asking a teacher 10 times to help me with a problem that I just didn't understand," she says. "But my computer never gets annoyed with me."

As it happened, there was a faction at UMSL that was somewhat put off by the changes: faculty members who were intimidated by technology that they believed devalued their contributions and perhaps threatened their jobs.

Thiel is sympathetic. "It's a whole new way of teaching," she points out. Although the reforms caused an initial and understandable frustration because software didn't always work as advertised, the change soon gave the program much-needed uniformity. At a school where six different instructors once taught algebra six different ways, the new system got everyone on the same page, says Thiel.

In retrospect, she sees that forcing faculty to approach a well-worn subject in an entirely new way was the academy's equivalent of tough love. Thiel admits that some holdouts remain. "They still believe the lecture is the



To Teresa Thiel, biology professor and associate dean of the College of Arts and Sciences at UMSL, the university's revamped approach to teaching math has a clear payoff: increased student success.

best way to teach students and are resistant to the idea that a computer can teach just as well," she says. Still, with each successive semester, Thiel sees additional members of the staff coming around.

Citing what she calls a "textbook case of faculty resistance" to curriculum transformation at UMSL, Twigg characterizes the staff's acceptance of NCAT's reforms as nothing less than an "I've-seen-the-light moment."

Senior Lecturer Shahla Peterman, the instructor who springs into action when a red flag rises above a work station in the math learning center, doesn't miss lectures in the least.

"In class I used to ask students for the correct answer," Peterman recalls. "When no one raised their hands, I'd go down the list and call out a name, and they'd ignore me. This is much better."

The numbers prove it. The completion rate for students in the algebra course barely topped 50 percent before NCAT's changes were incorporated; 74 percent

now pass. In addition, NCAT estimates that the new curriculum has cut the cost of educating each algebra student from \$170 to \$119, a 30 percent reduction. The bulk of the savings, says Thiel, comes from cutting the number of lectures – a move that has allowed UMSL to double the size of each algebra section – from 35 to 70 students – because classes get team coverage in the new \$350,000 math learning center. Reform hasn't caused the dismissal of one faculty member, although attrition has reduced the staff ranks, and adjuncts are playing a larger role in teaching algebra.

To Thiel, though, the real economic gain isn't realized on campus. "One thing that can't be measured is the loss of a student who flunked algebra," she says. "If students can't succeed at math, then it limits their ability to contribute to society. But math is a major reason that students don't succeed, and this (system) is keeping more of them here. I don't know how you put a dollar value on that."

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