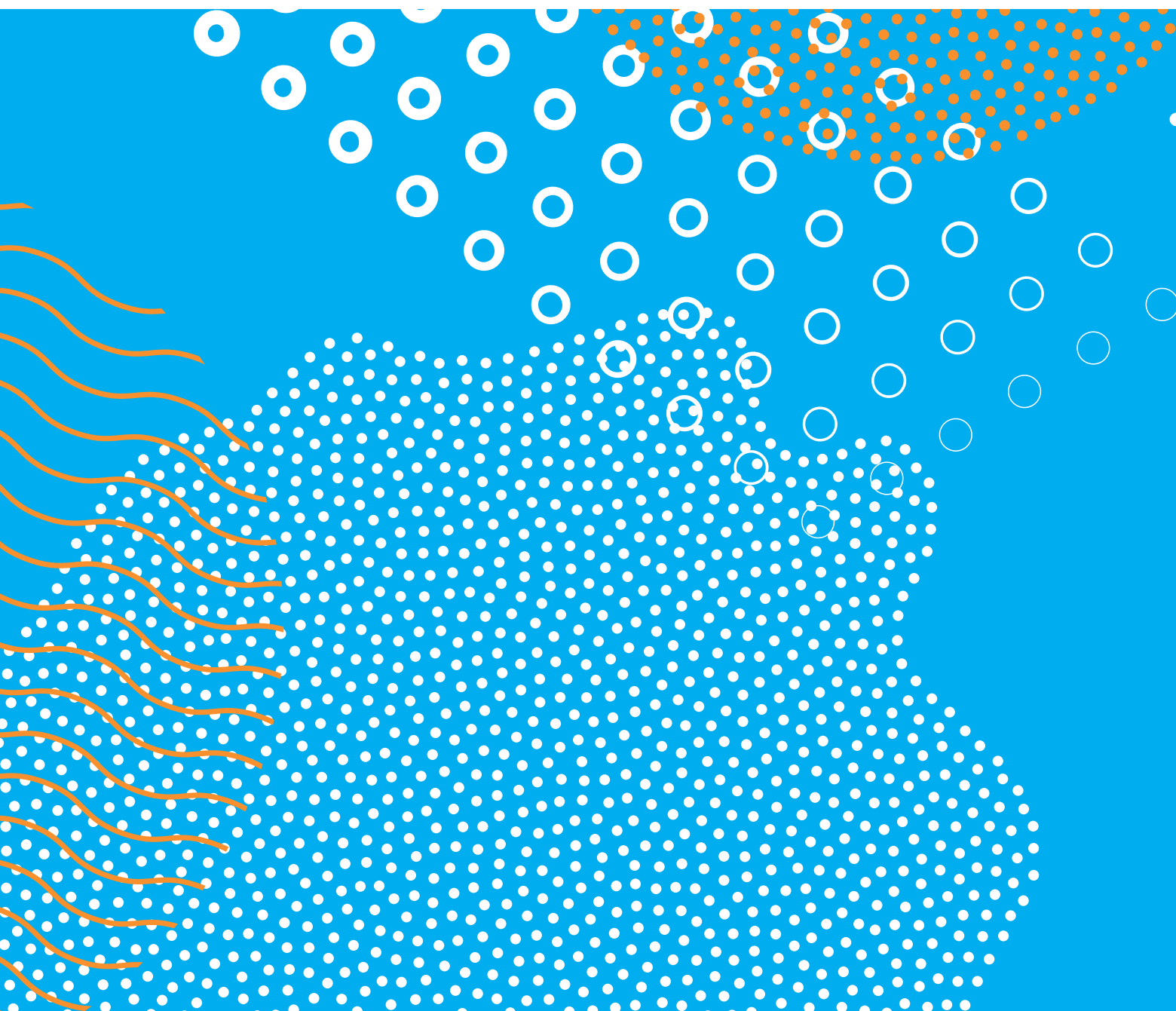


SHIFT HAPPENS

@Pima Community College –
The Future of Working and Learning



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Foreword



Lee D. Lambert, J.D.,
Chancellor, Pima Community College

Pima is a vastly different college today than in July 2013, when I arrived as Chancellor. In 2013, the Higher Learning Commission had placed Pima on probation, its second such sanction of the College since its founding in 1969. The community was demanding the recall of four of the Governing Board's five members. Pima had run aground.

Today, Pima is a national leader in Board governance, employee development, workforce development and many other areas. This "Shift Happens" report will touch on several elements of Pima's transformation. What I hope readers will recognize is that the bold new practices and initiatives described in the report could not have occurred without the courage to change the top of the organization. Our Governing Board – the popularly elected voice of the community – has a clear vision for the College, based on the needs of its constituents, the diverse residents of Pima County. The community expects a College committed to access, success and equity for all our students; a College that is responsive to the needs of our employers; and a College that productively engages with our K-12, university and community partners.

Additionally, the Board has established a policy governance framework clearly distinguishing its role and responsibilities from

that of the CEO. With my role well-defined, I came to Pima with a simple strategy aligned to three key principles: engagement, alignment and outcomes. I listened a lot, seeking to understand before being understood; Stephen Covey's time-tested habit has proven essential to our long-term success. Based on what I learned, I began describing the steps Pima would take to transform its culture. We developed expectations for administrators, emphasizing open and honest communications; fair, reasonable and consistent application of policies and procedures; involvement of those impacted by decisions; accountability; and the role of leadership and management. We created a Mission Fulfillment Framework to supply the data and evidence underlying substantive change proposals. Innovations are analyzed against external forces and trends, such as technology, customer (student) expectations, changing demographics and the policy landscape. Our bias toward challenging the status quo is balanced by a realistic understanding of the consequences of action versus inaction.

To close, I want readers to understand that without a North Star of overarching values, these processes become mere tests of administrative prowess. Pima's North Star is a commitment to student success, community engagement and diversity. It drives external collaboration and internal change. It keeps us focused on a mission to transform all students – no matter where they came from, no matter what they need to overcome – into an engaged citizenry equipped with the skills and knowledge to remain relevant in a rapidly changing world.

If we fulfill our mission, everyone benefits.



Jamai Blivin,
CEO, Innovate+Educate

Innovate+Educate joined forces with Pima Community College after Dr. Merrilea Mayo (our lead researcher), Lee Lambert, David Dore and I met over lunch at the National Association of Workforce Board (NAWB) meeting in March, 2019. It was here that we talked about the SHIFT Happens 2 paper I+E had released the previous month. (Available online at innovate-educate.org). Over lunch, we talked with Pima Community College Chancellor Lee Lambert and President David Dore about the shift happening at their own institution, and how to write about the implementation of SHIFT Happens 2 through the lens of a living, breathing institution.

Thus, SHIFT Happens @ Pima Community College.

It has been an honor to work with Chancellor Lambert and his leadership team over the last few months. The environment and attitude at Pima stems from a leader willing to be disruptive, who sees where the puck is headed, and works fervently to get in front of it. For anyone in education (K-12 through post-secondary), philanthropy, or workforce, we all know how unfathomable it is to re-think education in an entirely new view, one that is focused on the working learner, the quickest route to completion, and the greatest path to in-demand jobs - all at once.

There are always leaders that see farther into the future than the rest of us. Whether one is leading a growing company, raising a child or running a large college, it takes courage to change something that is “working now” but won’t be working in the near

future based on futures thinking. This “SHIFT Happens @ Pima Community College” work made me reflect on the strength of Chancellor Lee and his leadership team in the principles of leaders and seeing the future differently.

First, they understand that the unthinkable will happen, often. The team saw that the traditional student population, the traditional funding for higher education and the technology impacting learning would be shifting so quickly that it would be difficult to catch up without addressing all of this at once. Overseeing the changes they have put in place has been, admittedly, a difficult feat, but at this writing, the unthinkable is happening. Negative sentiment is spreading across the Country with respect to the time to degree, the cost to degree, and particularly the degree’s relationship to employment outcomes.

Second, they understand that David will often defeat Goliath. I can imagine the decision making process it took to shut down buildings, reduce the number of College Presidents, and still feel powerful, yet not “bigger.” Pima Community College has become nimbler, leaner and most likely will come out on top because of their thinking and their courage to reduce.

Thirdly, they realized their demographics (and all student demographics) were shifting rapidly. And, that demographics affects destiny. They realized that the majority of their student population were working learners, and needed different types of course structures. They realized that they could nimbly provide to industry in the region in a much more collaborative, outcome-oriented way.

The goal of this paper is to encourage more leaders to Shift. The unthinkable will happen. It’s just a matter of time.

Executive Summary

This paper chronicles the transformation of Pima Community College from mid-2013 to mid-2019. Pima began its journey as a traditional community college, focusing on fresh high school graduates looking for pathways to a 4-year degree. With the arrival of Chancellor Lee D. Lambert in July, 2013, it began to address the decline of its traditional business model, and the increasingly non-traditional nature of its student body, the vast majority of whom were trying to combine school with work. In response, the college took on a wholesale remodeling effort. This paper details the ways in which Pima reinvented its mission and strategic planning processes, data tracking processes, student cost elements, administrative structure, personnel policies and practices, business model (in particular, finding new revenue sources outside of state apportionment funding), program offerings, online course delivery, and physical plant. The net result was Pima's transformation into something more like a regional talent fulfillment center, where students and incumbent workers would return multiple times throughout their lives to grow new skills for better jobs, gaining a variety of credentials and certifications along the way. In the process, it became less of a degree fulfillment center, where students would come once at age eighteen to clock two years of seat time and leave with a degree or transfer credits, never to be seen again. Both routes would continue to be supported, but the shift that happened (and continues to happen) positions Pima to meet the future of working and learning.

Introduction

In February 2019, Innovate+Educate published **Shift Happens 2**¹, a report that chronicled the many ways in which traditional higher education models were giving way to approaches, tools, and services that are designed to target so-called “working learners” and “learning workers.” Working learners are students struggling to complete a degree while simultaneously holding down 20+ hour a week jobs. Learning workers typically already have a job and a four year degree, but they have a track record of consuming additional education in bits and pieces. Their motivation is not to get another degree, but to gain specific skills that allow them to advance in their jobs

Shift Happens 2 showed that the combined working learner and learning worker populations represent four times more students than the traditional student population. By sheer dint of their demographic size (and hence purchasing power), they are dramatically shifting the economic and learning paradigms within higher education. Innovations such as online courses, nanocredentials and microdegrees, credit for prior learning, and mastery-based education are suddenly taking off in large part due to the demand of this segment. Some of these innovations (massively open online courses, as well as more traditional online courses targeted to working learners) have seen 500-900% enrollment growth in the last 5-10 years.² Far from sounding a death knell for higher education, there was a corner of renaissance and prosperity, fueled by nontraditional learners whose sole requirement was that learning be more compatible with work.

Adapting to these new populations is potentially profitable but requires institutions to change substantially. Putting a few courses online is not enough. New mission statements, new website navigation and visuals, new budget allocations, new data collection, new reporting processes, new administrative structures, new student services, new assessment processes – all and more are necessary. Few traditional institutions have made the leap, and those that have, such as Southern New Hampshire University and Western Governors University, ended up being viewed as some kind of purple unicorn that few others could emulate.

Pima's Demographics

Pima Community College is a solid example in part because its position and demographics are fairly typical of community colleges everywhere. Pima Community College serves Pima County, i.e., the region around Tucson, Arizona. Its annual enrollment of 36,168 studentsⁱ is spread across 5 campuses, shown in **Figure 1**, along with a centralized online program. An additional 5,800 students enroll in Adult Basic Education services offered at Pima and affiliate locations. The college offers about 150 programs. Programs are constructed either to lead towards an occupationally relevant certificate or Associate's degree, or lead to transfer to a four year degree institution. The student-to-faculty ratio is 19 to 1. The student body is 45% Hispanic, 70% part-time, 53% female, and has an average age

i . All enrollment numbers are for the 2017-2018 academic year



of 28. At \$84.50 per credit-hour, Pima's 2019-2020 in-state tuition is the third-lowest among Arizona's 10 community colleges. The full cost of attending Pima Community College is fully in line with other community colleges in the area, at about \$88 per credit hour. On the surface, Pima could be any community college in the Southwestern US.

Figure 1. Pima Community College's campus locations. As described below under *Why Did Pima Shift?*, the Community Campus near downtown Tucson is currently (2019) in the process of being vacated and sold.

Why Did Pima Shift?

SHIFT Reason #1 financial situation

The financial picture at Pima had a hand in driving the innovations in progress. Whereas the state of Arizona had been paying about \$1,000 in support for each full-time student equivalent (FTSE) through 2009, that support dropped precipitously during the recession. By 2012, the state support was down

to \$250 per FTSE, and it eventually went to zero in 2016 for Pima and Maricopa Community Colleges, the two largest districts in the state. During the same time frame, state aid for capital outlays dropped from about \$3.25 million a year to zero. In total, state aid which had supported about 12% of Pima's total budget, plummeted to 0% (see **Figure 2**). There was no sense that state support would rebound if the economy improved. This was a

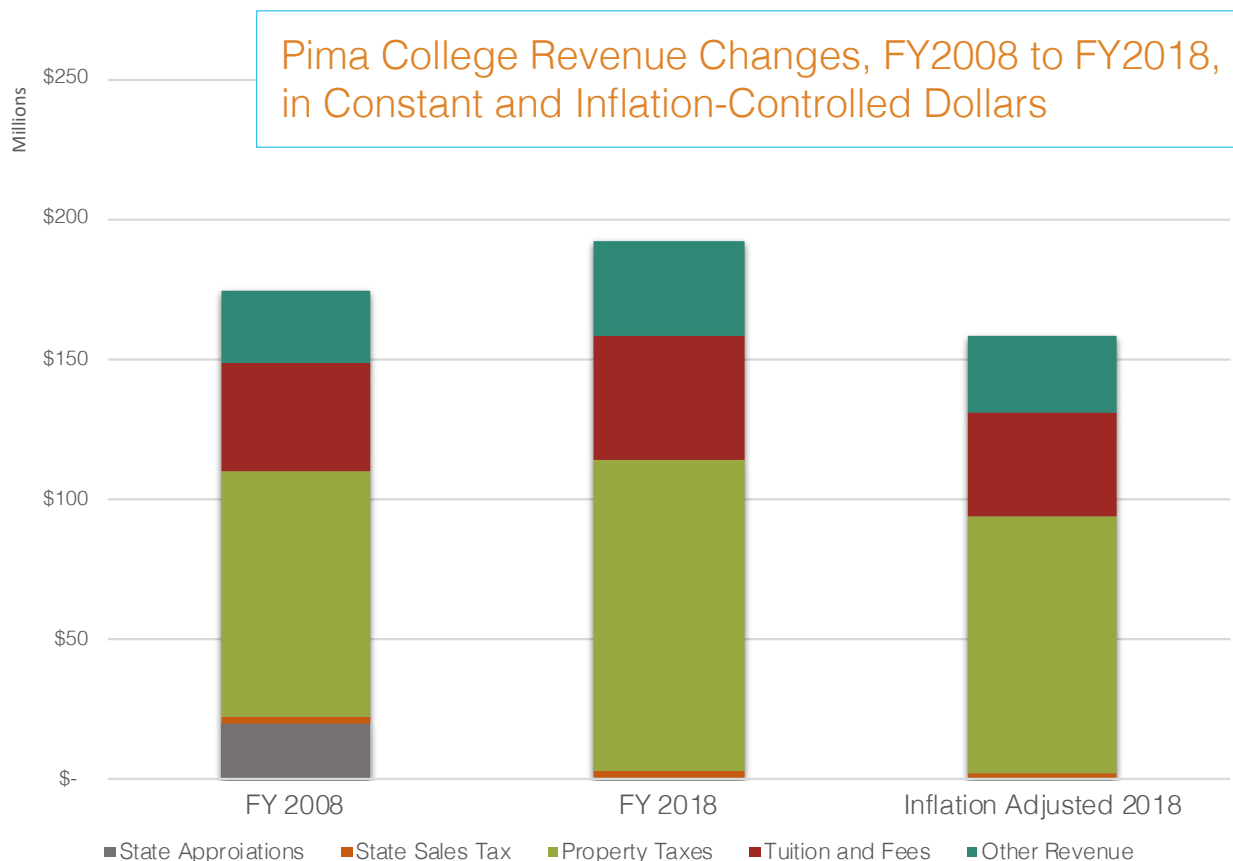


Figure 2. Revenue in 2008 vs. 2018. By 2018, state appropriation funding (grey) had been almost completely zeroed out.

permanent cut. To most, the cut had come as a surprise. To the Chancellor, however, the writing had been on the wall for some time, and he had both advised the Board as such and had begun, with the Board, to think through the alternatives.

Raising tuition to cover the difference was unthinkable, as Pima has long been committed to providing affordable college to all. A sudden surge in enrollments wasn't going to come to the rescue, either. Projections for future enrollments were all grim: demographers pointed out that the region – and, indeed, the US as a whole – was looking at stagnant numbers of graduating high schoolers for the foreseeable future.³ Worse, if the economy ever improved, then this population would begin to choose employment over community college, and tuition-generated resources would dwindle further (which in fact they did, starting in 2012). The only other significant sources of income were property tax revenue and state sales tax revenue but these alone would never be enough to support instructional costs. In fact, tax revenue was imperiled as well. It was directly tied, by legislation, to Pima's enrollment numbers. Flat or declining enrollment meant not only fewer tuition dollars, but limits on how much tax revenue could be spent on operations. Demographic trends portended a cut to not one, but two, of Pima's remaining funding sources.

Some difficult decisions were made: one of the six campuses, known as Community Campus, would be sold, with several of its programs redistributed to other campuses. The football team would no longer be supported. Other sports programs were slated for cuts. Six presidents, one for each campus, were consolidated to three, and then to two. Non-teaching staff contracts were reduced from 12 to 11 months per year. Hundreds of faculty, staff, and administrative positions were eliminated, mostly through attrition, though a few were reallocated to new programs as strategic reinvestments. Summer programs were consolidated onto two campuses. Departmental degree programs were cut for lack of enrollment. These

cuts were necessary in that they helped address some of the budget shortfall, at least temporarily. However, without a concurrent plan for growth, Pima would eventually die by a thousand cuts.

SHIFT Reason #2 economic opportunity

While the financial picture was grim, two trends pointed to a potential growth solution. The first was the very same improving economy that was causing dwindling community college student enrollments. The robust economy potentially opened the door to more collaboration with business, which arguably now had more cash to spend on supporting work-force-relevant student programs, financing joint facilities, or providing tuition reimbursement to employees. Partnering with business promised to be an effective countercyclical strategy, enabling Pima to weather downturns in enrollment every time the economy improved.

If enrollment (which is key to our institutional business models and sustainability) is tied to the economics of the country being bad, then we have to question the fundamental viability of our business model.

–Ian Roark, Vice President of Workforce Development

The second opportunity was simply the massive societal challenges few other community colleges seemed to be preparing for. What would it mean to be the first community college in the nation to create a technician training program for autonomous vehicles? For the Internet of Things? For the jobs that climate change or artificial intelligence would be creating (even as it destroyed others)? The Chancellor, with the support of the PCC Governing Board, felt strongly that Pima owed its students an education that would allow them to prevail in a rapidly changing world – a world where we are still anticipating the future of work and what it will look like. Too often, the middle, working, and poorer classes are left behind during societal upheaval, bearing the

brunt of economic dislocation. Shifting its offerings to meet future occupation and skill needs was therefore an imperative for Pima's mission. At the same time, such a move could future-proof Pima's own finances as well. If Pima could become more agile, it could latch onto future trends more quickly than its peers – and if it were able to offer high quality programs at low cost, it could keep that advantaged position, riding the wave of change as it rolled through.

Reorienting Pima to meet emerging societal needs would require the leadership to be widely read in areas outside higher education administration. It would again require engaging more closely with industry, since business and industry would be on the front lines of delivering solutions. Large-scale solutions might be discussed and debated in academia. They might be mandated or organized by government. However, the actual tools and services would have to be purchased from, or supplied by industry. With few exceptions (e.g., the development of the atomic bomb), industry had always been where technological rubber met technological road. Industry is where Pima would go, then, to understand the bleeding edge of how societal challenges were being addressed in practice, and to position its academic offerings accordingly.

SHIFT Reason #3 recognition that their own students were now almost all working learners

In its Educational Master Plan⁴, Pima reflects that

The birth of the junior/community college concept is more than a century old (1901) and grew out of the classism and elitism that molded the modern research university. At that time, the university was far removed from small town America, and tuition exceeded a worker's annual wage. As the link between advanced education and social mobility became evident, voices grew louder for a solution that would address both physical and economic access to college learning. In other words, a "people's college."

The need to serve the "community" or "the people" meant that as its own demographics shifted, Pima had to shift as well. Nationally, 72% of college students now work while attending school.⁵ For Pima Community College, the working learner demographic is even larger⁶: 77% work while enrolled. About half (51.4%) of all students work more than 20 hours a week, and a quarter (25.6%) work 20 hours a week or less.⁷

Unfortunately, traditional higher education does not adequately serve working learners. Researchers funded by the Gates Foundation and Public Agenda found 54-71% of all students who drop out of college, say they are doing so in order to keep their jobs.⁸ Fixed daytime-schedule courses and large up-front tuition payments are simply not compatible with people's very real lives working long hours at sub-living-wage jobs. Nationally, the situation is not helped by the fact that federal financial aid is not given to students enrolled less than 50% time⁹, forcing students with no parental wealth to both attend school full-time and attempt to work full-time simultaneously, a near-impossible task.

Even though Pima had progressively modified its programming and services to accommodate working learners – e.g., putting more courses online – at some point, the institution needed to completely reconceptualize its user experience for this demographic. Taking away some of the stress associated with working learners' time and cost constraints was a start.

Pima also needed to address the main reason working learners came to college in the first place: to qualify for better jobs, to create better lives for themselves and their families. Fortunately, nearly every imperative the college itself was facing, called for closer industry alignment. This alignment would be leveraged to give Pima students privileged access to the best jobs in the region.

The SHIFT – An Overview

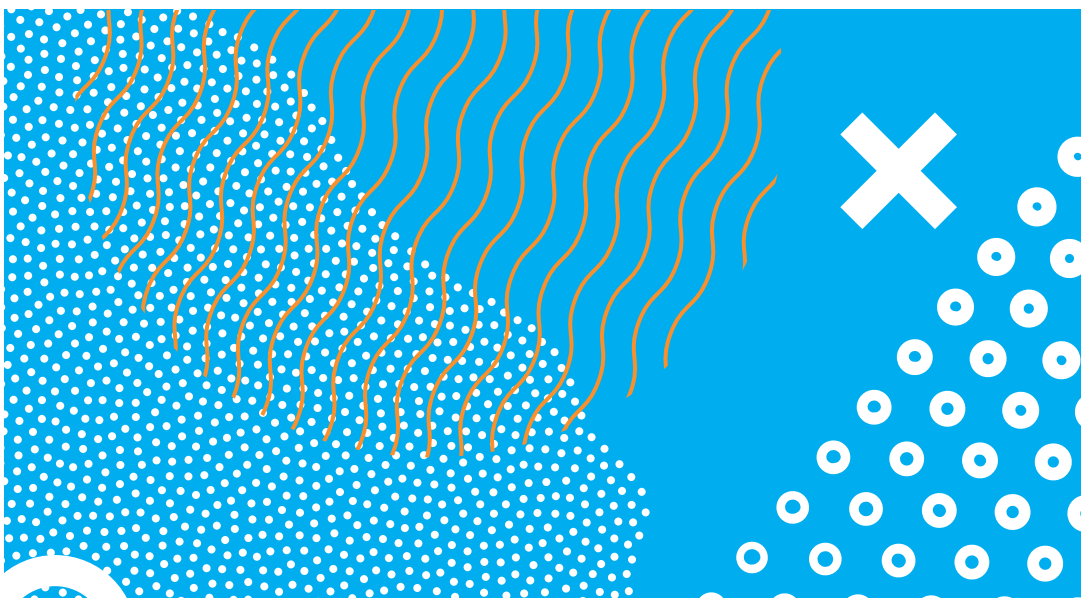
As Pima started to reconceptualize itself, it realized it was looking at wholesale system change. At the end of the road, the dual drivers of assuring financial stability and serving working learners would transform Pima into more of a regional talent fulfillment center, where students and incumbent workers would return multiple times throughout their lives to grow new skills for better jobs, gaining a variety of credentials and certifications along the way. It would become less of a degree fulfillment center, where students would come once at age 18 and leave with a degree or transfer credits, never to be seen again. Both routes would continue to be supported, but a shift was in progress.

Were it to cover the entirety of Pima's extensive transformation, this report would be hundreds of pages long. Instead, the report briefly describes

a few change strategies in each of the following categories:

- Mission/Strategic Planning
- Real Time Data
- Student Costs
- Leadership Structure
- Revenue Streams
- Adult Basic Education
- Courses and Curriculum
- Online Course Delivery
- Campus Buildings

Hopefully within this list, other institutions will find strategies of value to aid their own shift towards serving working learners.



SHIFT: Mission/Strategic Planning

The shift towards addressing the needs of working learners, and simultaneously aligning more strongly with industry, began with Pima's newly developed mission fulfillment framework, which took approximately two years to complete. As part of this, the planning team gathered input from all possible perspectives – internal and external surveys, faculty and staff forums, community-wide “Futures Conferences,” and of course, review of regional and institutional data and trends. As one staff member noted, “We were endlessly talking to people for two years.” That framework formalized seven Core Themes critical to the College's mission: 1) Student Success, 2) Access, 3) Teaching and Program Excellence, 4) Student Services, 5) Community Engagement, 6) Diversity, Inclusion and Global Education, and 7) Institutional Effectiveness. Each theme had defined objectives. Each theme also had identified key performance indicators (KPIs) that could serve to quantitatively measure progress towards the objectives.

A thorough review of the college's current status on key performance indicators embedded in the mission fulfillment framework then helped identify several opportunities for improvement. These opportunities formed the basis of Pima's new strategic plan, which took another year to complete (see Ref 10 for a copy of the plan).

In contrast to earlier exercises – which often resulted in hundreds of less substantial objectives – the strategic planning team winnowed all of the input down to only four high level objectives for immediate action. One of these represented a major institutional commitment to raise the education level in Pima County. Three of the four high level objectives would ultimately orient the college towards serving working learners and their goals:

- Increase the percent of Pima County residents aged 25 and over who hold a post-secondary degree or certificate to 60% by 2030 (an initiative known as Achieve 60 Pima County)
- Improve student success
- Enrich the community through engagement

Each high level objective was further broken down into detailed objectives (up to 10). These had very specific goals with numerically defined thresholds of success. Persons, teams, departments, or combinations of the above, were assigned to execute each detailed strategic objective. This, too, was a departure from prior practice. Previously, strategic objectives had not been handed over to units for grassroots-level management. The success of the overall approach can be found in data collected at the one year mark, a sample of which is presented in the final section of this paper (page 39).

SHIFT: Real Time Data

In parallel with the development of the mission fulfillment framework and enhancements to the strategic planning process, an equally large effort was directed to data tracking. The Chancellor had insisted that real-time progress against the plan be continuously measured. Units of incremental progress would be relayed not only to leadership but also the individual departments, units, and teams responsible for implementation.

To enable the real-time measurement, the College engaged with an external consultant and, over three years, transitioned from a reporting system that ran pro forma reports against the College's student information system to a highly interactive reporting system leveraging a student success-focused data warehouse. The warehouse incorporated data on enrollment, grades, persistence, retention, and completion, along with Voluntary Framework of Accountability metrics, faculty information, and information from outside surveys relevant to student success (e.g., Community College Survey of Student Engagement). Because the Chancellor had always intended this quantitative tracking, each detailed objective within the plan had already been expressed in terms of quantitative goals and the Key Performance Indicators (KPI) needed to determine progress towards the goals. (See **Figure 3** for an example of "old" vs. "new" style objectives.) The new data system ensured it was possible to calculate those KPIs in real time.

Custom queries and analyses also became possible for the first time, since the reporting interface now provided immediate access to College data. Departments and teams could gain insight on how their local changes were affecting college-level outcomes. Coincidentally, the data systems overhaul dramatically improved even standard reporting. For example, Voluntary Framework for Accountability⁴¹ data used to take 300 hours to process. That same data extraction and analysis now takes under two seconds.

Recognizing the critical role of data and analytics in understanding the performance of the College and identifying meaningful routes forward that will support Pima's students, the Chancellor elevated the leader overseeing the college's internal research function to become Chief Strategist and Assistant Vice Chancellor of Strategy, Analytics, and Research (STAR). This individual is charged with monitoring Pima's progress on its plans, developing a long-term strategic vision for the College and initiating a comprehensive migration to predictive analytics.

Figure 3. Contrast between "old style" detailed objectives and the more explicit detailed objectives Pima currently uses.¹² The new detailed objective 1.8 falls under the high level objective, "Improve student success." It includes a key performance indicator (fall-to-next term retention) and numerical targets for that indicator.

From old college plans:

- ▶ 2.3. Increase college enrollment, especially first-generation college students, students over 25, Hispanic students, and other underrepresented populations
- ▶ 2.4. Increase the rate at which students with a transfer goal successfully transfer to a four-year college/university

From the new strategic plan:

Example data-informed goal from new strategic plan

- ▶ 1.8 Identify the barriers that prevent students from continuing semester-to-semester and implement strategies to support student progress. Goal is to increase fall to next term retention from 62.7% for the fall 2013 VFA main cohort to 69% target threshold/82.2% premier goal for fall 2020.

SHIFT: Student Costs

Within the strategic plan, one of Pima's primary goals was to "Improve student success." Knowing that working learners were the vast majority of its students, this meant Pima had to somehow ease the earning burden for working learners, so that they could more easily maintain their academic lives over the course of one or two years, despite their financial struggles. Five related initiatives are described below: Earn to Learn, credit for prior learning, dual enrollment, open educational resources, and 29-day billing.

Earn to Learn

The first program focuses on a more innovative approach to financial aid, which is critical in increasing post-secondary education access and completion, especially for students from lower socioeconomic backgrounds.

Established in 2013, Earn to Learn operates the largest and most successful matched-savings scholarship program in the country. It combines student savings with scholarships, financial education, and college success coaching to help low- to moderate-income and diverse students obtain a college education and graduate ready to enter the workforce with little or no student loan debt. Students and their families who income-qualify deposit \$500 into a savings account each year, which is matched 8:1 through combined institutional support and other public and philanthropic funding, bringing their total available funds to \$4,500 per academic year, to be used for tuition, fees, and related expenses. The holistic approach, which involves personal savings and public and private contributions, is already showing promising results. Initial data demonstrates a freshman retention rate—the share of students who return to the same college in their second year—at 90%, compared to the national average of 69.3%. The difference in the "persistence rate"—the share of students who return to any college in their second year—is also sizeable (97% versus 79% nationally).

Over half of Earn to Learn students are first-generation college students, who often have difficulty financing college while also balancing the challenges of daily life. For them, Earn to Learn can be the difference between dropping out and earning a degree that may alter the course of their lives. Earn to Learn supports its participants in graduating from college at rates well above the national average, with more than half of these graduates avoiding any student loan debt. Those who do borrow are expected to carry much less debt than other borrowers.

The background to the program:

- Arizona is the first state in the country to implement a program like Earn to Learn to support students with matched college savings.
- Earn to Learn received \$21M in seed money to get the program off the ground beginning in 2013.
- Earn to Learn is currently partnered with Arizona State University, Northern Arizona University and the University of Arizona and planning to expand to Maricopa Community College District and Pima Community College.
- The next phase of growth for Earn to Learn is based on a public private funding model with a 60/40 split which launches in the 2019/2020 academic year.
- The program has garnered attention from the Governor's office under the umbrella of workforce development and has been invited to submit a proposal for programmatic support.
- Earn to Learn may be considered a supplement to the Federal Pell Grant Program – helping students to further offset educational related expenses, effectively picking up where Pell is falling short. The purchasing power of Federal Pell Grants has fallen precipitously over the years.

Early success indicators include:

- The breakdown of the program's annual overall first-year retention rate is provided in the Earn to Learn Report Card and appears to be approaching 90% statewide since the program's launch in January of 2013.

- Earn to Learn students have invested over \$2.3M in their education and have earned an additional \$18.4M in additional grant aid through the program's 8:1 match.
- Earn to Learn has provided over 27,000 hours of personal finance training to approximately 4600 students in Arizona. Personal finance training is a prerequisite to apply to the program.
- Earn to Learn's projected 6-year graduation rate appears to be approaching 80%. The program serves families up to 200% of the Federal Poverty Level which means most of the students served are Pell eligible. As a point of comparison, the national 6-year graduation rate for the Pell eligible target population is 39% according to reports from the Department of Education.
- Earn to Learn students are borrowing significantly less than their peers. The average student loan debt of student borrowers from ASU, NAU and UA is approximately \$23,000 by the time of graduation. Earn to Learn students on average are graduating with little to no student loan debt – ranging from zero student loan debt to less than \$10,000.

The enthusiasm generated by Earn to Learn is grounded in simple, fundamental economics and gets back to the principles upon which our nation was founded: Teaching citizens financial fundamentals and expanding access to education to enhance their economic mobility, avoid the burden of debt, and improve societal outcomes.

Credit for Prior Learning/Prior Learning Assessment

The premise of credit for prior learning is that students should not have to take, or pay for, courses whose material they already know. Instead, they should just have to prove they are already proficient in what the course teaches. Credit for prior learning assists working learners because many can avoid paying for courses they've taken elsewhere, or whose content they've learned on the job.

As the result of an initiative begun in August 2018 Pima currently accepts prior learning in about 30% of its classes, and a major expansion of the practice is planned. Virtually every mechanism for assigning credit for prior learning is used: national exams that cover course topics, PCC faculty-developed exams that cover their own courses' content, PCC faculty evaluation of a submitted portfolio (designed by the student to satisfy course learning objectives), ACE college credits applied to overall credit requirements for graduation, and converting non-credit courses students have taken in the past, to their for-credit equivalents on a transcript. **Figure 4** shows the array of Credit for Prior Learning options Pima offers, and **Figure 5** shows one of the detailed certification-to-course mappings used internally, to allow faculty to determine how many credits to offer under the "Industry Certifications and Licenses" option.

On top of providing students credit for prior learning, Pima operates a large (2,400 headcount) dual college credit program in conjunction with local high schools, so that high school students can, at no cost to the student, earn college credits from Pima classes before they ever graduate from high school. This, too, cuts down on costs when the students finally arrive on campus. Pima benefits from being able to educate more students at little or no net cost (high schools pay for the instructors). The high school benefits from being able to award college credit to its students. Working learners benefit from receiving college credits tuition-free.

Figure 4. Credit for prior learning options available at Pima Community College, from Pima's website¹³

How to Turn your Life Experience into College Credit

Pima offers a variety of methods to earn credit for prior learning. You must apply for admission to PCC before any evaluation can occur.

- + National Standardized Exams
- + Course Challenge Exams
- + Portfolio Assessment
- + Industry Certifications and Licenses
- + Military or Corporate Workforce Training
- + Noncredit Coursework

CORE			Module Equivalent
Book	Course	Number	
CORE	BCT 100		00107-15. M7: Basic Communication Skills (00107-15)
			00108-15. M8: Basic Employability Skills (00108-15)
CORE	BCT 111		00101-15. M1: Basic Safety (Construction Site Safety Orientation) (00101-15)
CORE	BCT 112		00102-15. M2: Introduction to Construction Math (00102-15)
CORE	BCT 113		00103-15. M3: Introduction to Hand Tools (00103-15)
			00104-15. M4: Introduction to Power Tools (00104-15)
CORE	BCT 114		00105-15. M5: Introduction to Construction Drawings (00105-15)
CORE	BCT 115		00106-15. M6: Introduction to Basic Rigging (00106-15)
			00109-15. M9: Introduction to Material Handling (00109-15)
CORE	BCT 105		00102-15. M2: Introduction to Construction Math (00102-15)
			00106-15. M6: Introduction to Basic Rigging (00106-15)
			00107-15. M7: Basic Communication Skills (00107-15)
			00108-15. M8: Basic Employability Skills (00108-15)
			00109-15. M9: Introduction to Material Handling (00109-15)
CORE	BCT 107		00101-15. M1: Basic Safety (Construction Site Safety Orientation) (00101-15)
			00103-15. M3: Introduction to Hand Tools (00103-15)
			00104-15. M4: Introduction to Power Tools (00104-15)
			00105-15. M5: Introduction to Construction Drawings (00105-15)

Figure 5. Sample crosswalk used to assign credit for prior learning. Students who have passed one or more of the learning modules offered by the National Center for Construction Education & Research (NCCER), can obtain academic credit towards an Associate of Applied Science Degree in Building and Construction Technologies at Pima. The Pima courses to which credit will be applied are on the left; the equivalent NCCER certifications/training modules are on the right.



Online Courses with No or Low Textbook Costs

Spring 2019

Course	CRN	Instructor	Date	Weeks	Textbook Cost
ANT Anthropology					
ANT 112	20782	Luchetta, SK	1/17 - 5/20	16 weeks	\$0
	20878	Luchetta, SK	1/17 - 5/20	16 weeks	\$0
	21372	Sudhaus, P	1/31 - 5/20	14 weeks	\$0
	21098	James Hernandez, FL	1/17 - 3/17	1st 8 weeks	\$0
	20748	James Hernandez, FL	1/17 - 3/17	1st 8 weeks	\$0
	21373	Sudhaus, P	3/26 - 5/20	2nd 8 weeks	\$0
	20540	James Hernandez, FL	3/26 - 5/20	2nd 8 weeks	\$0
	20752	James Hernandez, FL	3/26 - 5/20	2nd 8 weeks	\$0
BIO Biology					
BIO 100IN	21360	Carpe, AC	1/17 - 5/20	16 weeks	\$0
	21528	Carpe, AC	1/17 - 5/20	16 weeks	\$0
	20904	Tveten, MS	1/17 - 5/20	16 weeks	\$0
	20839	Workman, MA	1/17 - 5/20	16 weeks	\$0
	22683	Friedman, VA	1/31 - 5/20	14 weeks	\$0
	23309	Friedman, VA	1/31 - 5/20	14 weeks	\$0
	22364	Tarre, MR	1/17 - 3/17	1st 8 weeks	\$0
	20751	Wakefield, RL	1/17 - 3/17	1st 8 weeks	\$0
	20837	Bonati, R	3/26 - 5/20	2nd 8 weeks	\$0
	21661	Bonati, R	3/26 - 5/20	2nd 8 weeks	\$0
BIO 105IN	21714	Schmidt, N	1/17 - 3/17	1st 8 weeks	\$0
	21715	Schoonmaker, DG	1/17 - 3/17	1st 8 weeks	\$0
	21716	Wakefield, RL	3/26 - 5/20	2nd 8 weeks	\$0

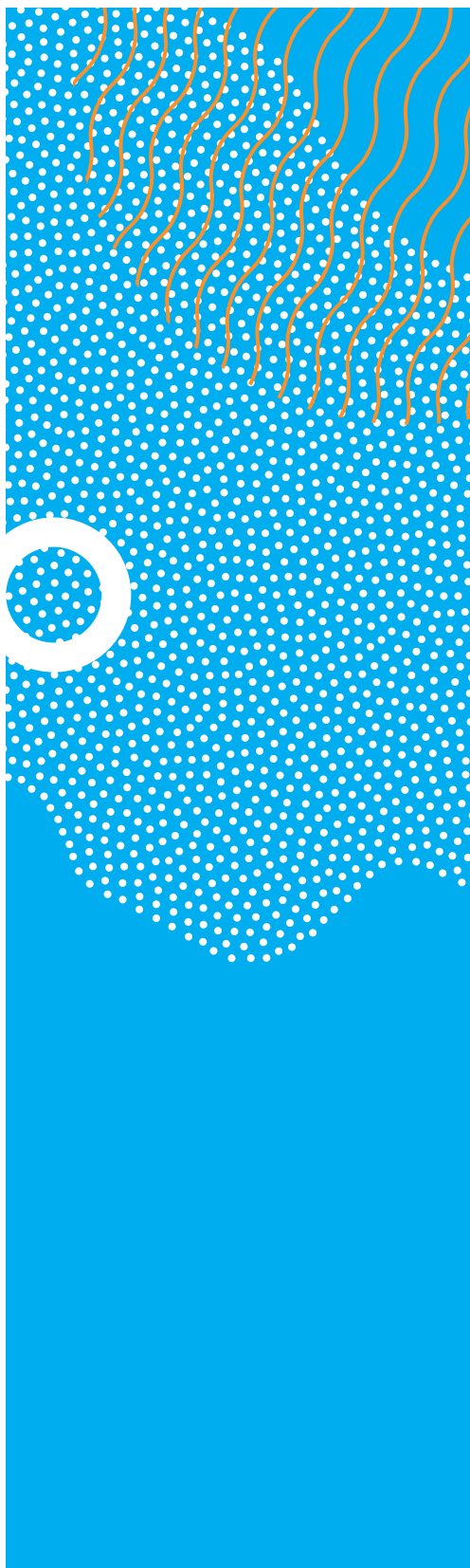
Figure 6. Portion of a long list of courses for which Pima offers zero textbook costs, due to its emphasis on utilizing Open Educational Resource instead.¹³

Free Open Educational Resources

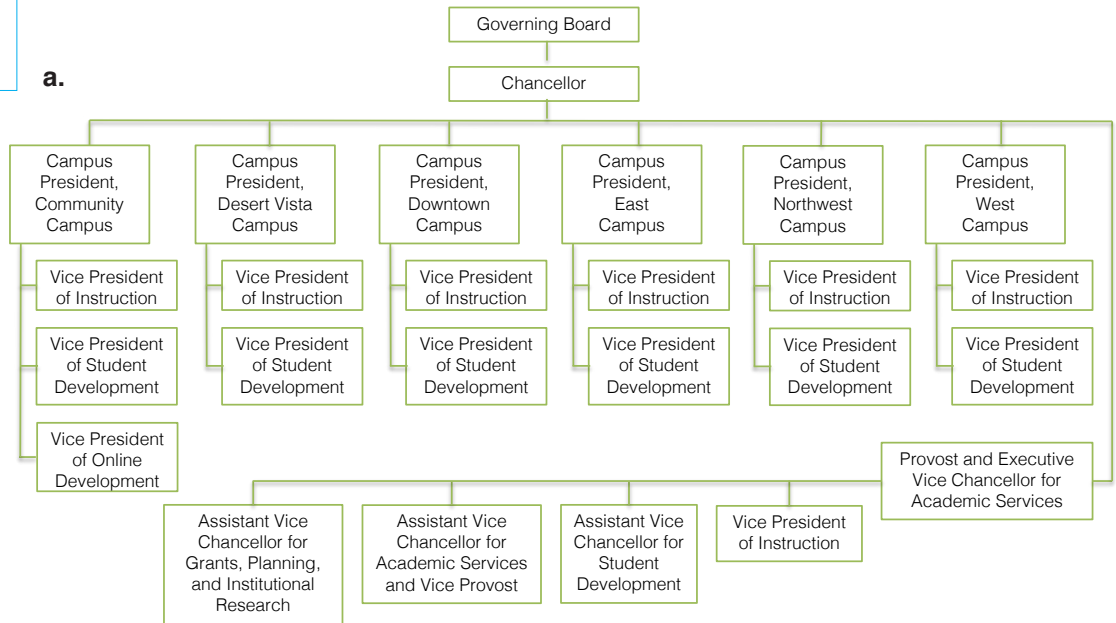
Not all expenses derive from tuition, however. For some courses, the textbooks are more expensive than the cost of credit hours. Since 2016-2017, Pima has worked steadily to reduce textbook costs, by developing no-cost, free-to-all, open educational resources (OER) that can be accessed at no cost to the student (**Figure 6**). Through OER, students have cumulatively saved more than \$1.93 million on textbooks, and the Chancellor and the Provost have challenged the College to expand OER to more face-to-face courses. Thanks to a Lumina Foundation grant, Pima's largest enrolling online program, Associate Degree in Liberal Arts, has all its textbook material available for free. Students will save about \$2,000 on textbooks over the course of the program. That's nearly seven weeks of full-time work at minimum wage, now avoided.

29 Day Billing and Grade Reporting

The more fortunate working learners (and learning workers) have employers willing to contribute tuition assistance towards their education. However, most employers will reimburse tuition only if the student's grades are good. So, for example, the employer might pay 100% of the tuition for an A, 75% for a B, 50% for a C, and nothing for any grade lower than a C. If grades and bills from the last semester don't make it to the student and employer before enrollment starts the next semester, neither party has any idea how much they will owe. The resulting financial uncertainty, particularly for the student, imperils the student's willingness to re-enroll. To relieve that uncertainty, Pima embarked on its Project 29: ensuring that grades, student bills, and employer bills were all issued within 29 days of final exams. This financial process improvement was completed in less than a year. When piloted with a national employer, the tuition-assisted enrollments from that employer doubled. The increase was attributed to a combination of the 29-day process change and Pima's decision to create a dedicated placement and advising services outpost at the employer's jobsite.



Pre-Shift



Post-Shift

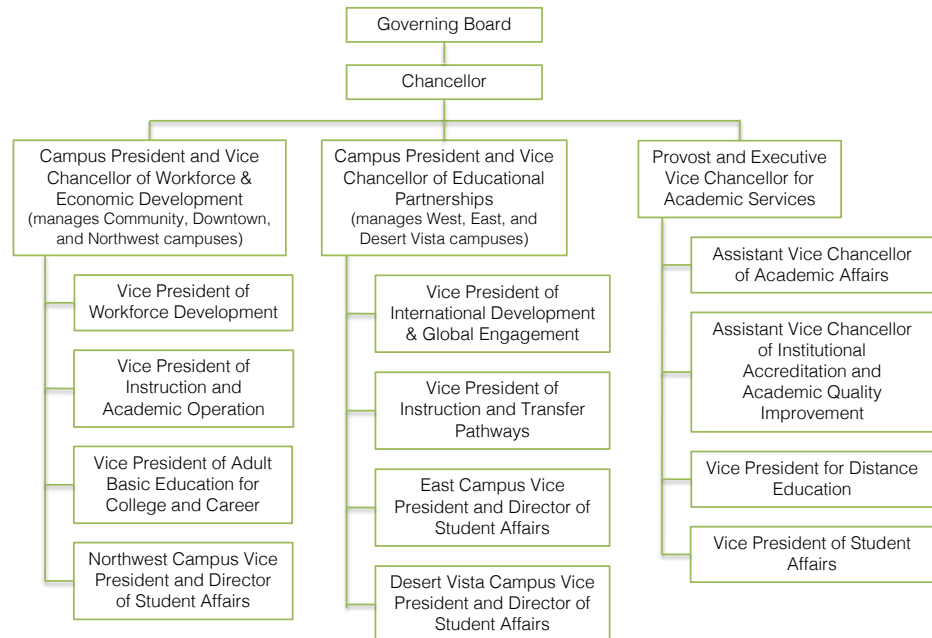


Figure 7. Organization-
al charts for
Pima's upper
level admin-
istration in (a)
2012 and (b)
2019, for po-
sitions related
to student
instruction.

SHIFT: Leadership Structure

Consolidated and Objective-Focused Reporting Lines

Both to save costs and to weave more industry-relevant skills and industry collaborations into Pima's educational fabric, Pima enacted substantial changes to its organizational structure (**Figure 7**). Six semi-independent traditional campus fiefdoms, each having its own president, transitioned to a structure in which two individuals oversaw three campuses apiece. In addition, each was primarily focused on achieving one of Pima's two overarching institutional goals: either preparing students for further higher education (typically, for transfer to a 4-year institution) or preparing students for advancement in the workforce. The Campus President and Vice Chancellor of Educational Partnerships was tasked with ensuring Pima students were prepared and able to transfer successfully to 4-year institutions. The Campus President and Vice Chancellor of Economic and Workforce Development was tasked with ensuring students who were not intending to transfer, graduated with meaningful jobs that contributed to their own success and that of the local economy. These two objectives were implemented in a matrix style of management that pervaded all six campuses with a strong sense of dual mission as well as driving consistency in Pima's deliverables to its own students.

Similar realignments occurred in other functions. Campus-specific budget and finance officers were removed and replaced with one centralized finance office having functional subspecialties (e.g., travel reimbursement, accounts receivable, auxiliary and ancillary services). Human resources (HR) and information technology (IT) functions were also moved to sit under the Executive Vice Chancellor for Finance and Administration. The consolidation under Finance both cut costs and increased the quality of certain interrelated processes: better capital budgeting in IT, better benefits processing in HR, consolidated enterprise systems support.

Single point of contact for Industry Partners

Another structural change in personnel was the creation of a Vice President of Workforce Development. This individual sits underneath the Campus President and Vice Chancellor of Economic and Workforce Development. The position was created in response to industry complaints that Pima was difficult for an outsider to navigate.

The VP of Workforce Development position was designed to ensure that no prospective industry partner would ever get lost in academic bureaucracy again, or spend time having to "learn the ropes" of an institution not their own. Instead, the VP would take an industry request, determine its priority, and from there handle all the internal navigation, coordination and obstacle-jumping required to get the initiative in place. This single point of contact arrangement worked because the VP was backed up at every turn by the Chancellor, whose gentle but persistent message to naysayers in individual departments or programs was "yes, this is happening," and "yes, we need you to do your part in it."

The Chancellor's own views were independently synchronized with the business community, both locally and nationally. Chancellor Lambert sits on the Sun Corridor's Chairman's Circle, a high-level committee comprising local community and business leaders. Nationally, he is a founding member of the National Coalition of Certification Centers (NC3), which emphasizes increasing the competencies of the workforce in transportation, energy and aviation. NC3 has trained more than 10,000 students and instructors through a turn-key certification process, driven by industry-recognized certifications that are stackable, portable and third-party validated. Thus, he could back up the VP of Workforce Development not just on faith, but by independent corroboration.

The single point of contact approach has proven immensely popular with industry, which need-

ed a well-identified latching-on point before it could begin to integrate more fully into Pima's mission and programs. However, as the VP himself noted, being the point man for every industry request is time consuming. He was now responsible for attending some 35 meetings a week. These included meetings with individual employers who had traditionally worked with Pima, meetings with additional employers who, upon research, were likely aligned to Pima's educational offerings, meetings with employers moving to Arizona (who might need new trained workers or new worker training), meetings with the Tucson Metro Chamber of Commerce (of which the VP was now a member of the Board of Directors), meetings with the local economic development authority (Sun Corridor, Inc.) and, essentially, meetings with any industry group with a likely foothold in the Tucson area.

The VP of Workforce Development also became Pima's voice in regional economic planning exercises. This enabled Pima to position its programming at the cutting edge of future shifts within the community's economy, giving it "first trainer" advantage. On a practical note, having the VP of Workforce Development at the table meant that Pima was often asked to write the workforce development and training section of economic development plans, thereby assuring that some portion of economic development funding would eventually flow towards Pima.

Business Engagement Team

About 5 years ago – before the reorganization that ultimately resulted in two Campus President/Vice Chancellors – Pima had a somewhat independent workforce development unit that specialized in career and technical education. Although this unit operated virtually independently of everything else in the college, it developed a deep expertise in addressing industry's training needs – in particu-

lar, developing course syllabi in collaboration with industry, locating adjunct faculty with industry experience to teach the courses, and doing so in a 2-3 week turnaround. Moreover, the workforce unit's programs were successful by any measure: historically, they had a 90% completion rate and an 85% job placement rate.ⁱⁱ² This was the unit for which the VP of Workforce Development had responsibility, but with the expansion of his own job description, he realized the purview of this unit needed to broaden as well, if they were to support industry holistically.

With the support of the Chancellor and the Campus President/Vice Chancellor of Economic and Workforce Development, The VP of Workforce Development reconceptualized this traditional contract training unit as a comprehensive Business Engagement Team. The Business Engagement Team would work with the Vice President to develop and implement programs and services for all sizes of business and across all sectors, including talent development via tuition assistance, work-based learning and apprenticeships, new credit program development, customized training, and more. Top priority would be given to credit-bearing programs, secondary priority to non-credit contracted training. The third priority would be cultivating general goodwill and positive PR.

However, before the integration could work, several internal processes had to change. A key process change was the decision that what was formerly the workforce development unit no longer had to be "self-sustaining." Under prior policy, workforce development had to operate in such a way that it could pay all the expenses of its staff, plus the expenses of program delivery, plus generate a 27% profit to support overhead. This led to a situation in which the unit had to control its costs by also controlling every aspect of both revenue generation and delivery. The unit thus historically focused on delivering contract training to industry whose payment dates

ii. Of course, these impressive statistics ere helped by the fact that, in many courses, the students were already incumbent workers, and their employers often mandated and paid for the training.

and amounts were known, and whose content consisted of noncredit courses whose instructors and parameters the unit could control.

Once workforce development personnel were informed they no longer had to raise their own salaries, or make a profit, to survive, they felt free to point industry to existing for-credit courses and programs where such were suitable, without fear of jeopardizing their own salaries. Workforce personnel became more supportive of credit-based education, not less. The variety and flavors of industry interactions also blossomed: job shadowing, co-teaching of courses, industry advocacy of Pima's for-credit programs in the state legislature, and more. The Business Engagement team was set loose to do its most creative work.

Personnel Policies

For the past several years Pima Community College has worked diligently to improve the Human Resources function, in particular policies and procedures to ensure that they reflect the new goals and priorities of the College. Particular priorities included broadening input from employees and updating the College's four Personnel Policy statements.

In the past College Administration participated in a cumbersome "meet and confer" process once a year, working with the college's three quasi-union organizations—PCC Education Association (PCCEA) representing faculty; the Association of Classified Exempt Staff (ACES); and the American Federation of State, County, and Municipal Employees (AFSCME) representing non-exempt employees. This process was missing the input of employees who did not belong to these representative groups.

In January 2018 the PCC Governing Board voted to adopt the unanimous recommendation of an inclusive task force that included PCCEA and AFSCME to form an All-Employee Represen-

tative Council (AERC) as a new framework for gathering employee input related to conditions of employment and personnel policies. This new group is designed to meet year-round and provides a more inclusive and flexible system for employees to provide input on personnel policies, procedures, and concerns.

The AERC is made up of exempt staff (two ACES and two non-ACES members), non-exempt staff (both two AFSCME members and two non-AFSCME non-exempt staff), two administrators, and faculty (including two adjunct faculty, two non-PCCEA faculty, and two PCCEA faculty).

The Council's first substantive task was to revise and consolidate the College's various personnel policy statements (employee handbooks). For many years PCC has had separate personnel policy statements for administrators, exempt employees, faculty, and non-exempt employees, which collectively grew to hundreds of pages. There was much duplication and also instances where the statements were not consistent. This past year the All-Employee Representative Council worked to consolidate our personnel policy statements into a single personnel policy handbook that applies to all employees. As part of that consolidation, some policies were reviewed and rewritten, but the vast majority remained in place, minus the duplication and with clarified language.

This SHIFT to a more effective method for reviewing personnel policies will ensure that feedback from employees can continue year-round, and that the policies will be applied fairly, reasonably, and consistently, and that the diverse ideas and opinions of all employees will be considered.

Lee Lambert, J.D.

Born in Korea, with a childhood spanning three continents, Lee Lambert currently serves as the Chancellor and CEO of Pima Community College.

His prior experience (in the US) includes:

- Agricultural worker (picking strawberries, raspberries, cucumbers in the summer; hauling Christmas trees in the winter).
- Work study monitor and gym custodian, University of Puget Sound
- Roof, sheet rock, fence, and air conditioner installer, Super 8 Motels and True Line Services
- Legal Clerk, US Army
- Office Assistant and Housing Resident Advisor, The Evergreen State College
- Special Assistant to the President for Civil Rights and Legal Affairs, The Evergreen State College
- Vice President for Human Resources and Legal Affairs, Centralia College
- President and CEO, Shoreline Community College

Melissa L. “Missy” Blair

In her present role as Program Manager at the Center for Transportation Training, Ms. Blair runs the program that will train autonomous vehicle drivers at Pima Community College.

Her prior experience includes:

- Military Communications Computer Systems Operator, US Air Force (top secret clearance)
- Executive Assistant, International Academy of Orthopedic Medicine
- Office Manager, Association of University Research Parks
- Traffic Survival School Certified Instructor, Pima Community College
- Motorcycle Safety Instructor, Pima Community College
- Currently also the Business Manager for Blair Plumbing, LLC

Juan Cuadra

Mr. Cuadra is the adjunct faculty member responsible for teaching mechatronics to Pima students and DMG-Mori technicians.

His prior experience includes:

- Software Designer, IBM
- Instructor, University of Puerto Rico
- Project Engineer Manager, Sensomatic Electronics
- Member of Technical Staff, Lucent Technologies
- Various management positions, Motorola
- Staff Quality Engineer, Spectra-Physics
- Certified Ethical Hacker
- Six Sigma Master Black Belt
- Mentor, Xerocraft makerspace
- Photovoltaic Energy program Instructor, Pima
- Currently also teaching aerospace and mechanical engineering classes at U of A, while pursuing his Ph.D. there.

Hiring Criteria

Under the College’s new paradigm, collaborating with internal and external constituencies is an important competency, as is an entrepreneurial spirit, which places a premium on openness to new approaches and substantive change. Thus, a key strategy in Pima’s SHIFT has been an evolving hiring process that favors applicants who, in addition to demonstrating subject matter expertise and a strong ethical sense, show they have successfully worked as change agents and have backgrounds with a cross-sectional breadth of experience.

Figure 8 shows some of the backgrounds of Pima’s leaders, faculty, and staff. All reflect individuals with a broad range of backgrounds and little fear of trying something new.

Pima’s new hires are encouraged to expand their engagement with the community, because these professional connections often are the wellspring of entrepreneurial ideas. The college recognizes that external engagement is likely to drive new forms of internal coordination, for business partners are not aware of the silos common to higher education administration. And as they’re interested in results, they don’t care. Propelled by external engagement, faculty, staff and administrators gain more practice working on cross-unit projects, with boundary-agnostic collaboration becoming the new norm.

Figure 8. Pima’s leadership, staff, and faculty typically have a very broad range of experiences prior to working for Pima. This flexibility and awareness has helped Pima continuously adapt to its changing environment.

SHIFT: Revenue Streams

As Pima re-oriented itself to more fully serve the needs of working learners, and to engage more extensively with local industry, new revenue sources began to open up. Three are discussed below: 1) economic development funding from the state, 2) customized education for incumbent workers and 3) employer-provided tuition assistance.

Economic Development Funding

For years Pima emphasized transfer programs to the detriment of its workforce programs. However, the U.S. economy is increasingly dependent on “middle skill” jobs: work which require education beyond high school but not a four-year degree. These make up the largest part of the labor market in the United States and in each of the 50 states. All too often, key industries in our country are unable to find enough sufficiently trained workers to fill these jobs; this skill gap keeps states’ economies from growing and employers from hiring.

Pima began the rebuild of its career and technical training programs by implementing a new position, the Vice President of Workforce Development. Under his guidance, Pima became a common sight at virtually all gatherings of local industry. Relationships were further cemented through the continuing participation of individual deans and faculty in sector-specific industry collaborations aligned to their departments. For example, the Dean of Applied Technology had made it a point to personally attend monthly meetings of the Southern Arizona Manufacturing Partners, ever since his arrival at Pima – and, following that example, many of his faculty engaged also. As a result, industry interaction at Pima skyrocketed.

Faculty and College administration sought out the input of local industry and employers on how to better prepare Pima’s students for jobs. Curricula were tweaked, laboratory experiences were added, learning objectives were gap-checked against industry standards for knowledge and skill (e.g.,

applying the NIMS certification standards for industrial repair, to Pima’s mechatronics curriculum). The more Pima listened, the more companies began to champion Pima’s academic programs in the halls of the state legislature, arguing for more funding for programs that supported their own workforce needs. Eventually, opportunities began to materialize and Pima had to mobilize quickly to intercept: Media, Government and Community Relations, Workforce Development, and the Pima Community College Foundation all worked together to provide information on request and provide backup support for industry’s push.

For example, collaboration with the aviation sector resulted in \$15M of state funding being appropriated to Pima’s Aviation Technology Program. Arizona Governor Doug Ducey took a personal interest, in part due to his previous visits to Pima’s Aviation Technology Center to see the facility that is a national leader in aviation mechanics, repair, and maintenance training. Pima employees, students, and aviation partners traveled to the State Capitol Building to answer questions from legislators, as the budget proposal was being considered. At the event, one legislator asked the not-yet-graduated aviation technology students, “Who here has a job already?” All hands went up except one. The appropriator followed up with, “And you, sir, why don’t you have a job yet?” The student replied, “I have three job offers and can’t decide between them.” The unscripted response stole the day and illustrated the industry-college-student relationship perfectly.

It should be noted that this industry-college push for more state funding for Pima Community College is complemented by Pima’s own efforts to integrate itself into the economic development plans of its region. Pima leadership not only actively works with the regional economic development organization, Sun Corridor Inc., but assists them in the development of the workforce portion of economic development plans. Pima thus ensures it is an integral part of the region’s economic future.

Incumbent Worker Training

Because of the vastly increased frequency of meetings between industry and Pima leadership/faculty/staff, chance opportunities to serve industry with educational offerings kept coming up more and more frequently. The Vice President of Workforce Development recounts a story in which he started out as an invited speaker at a Caterpillar videoconference about what it was like to move to Arizona. The videoconference was telecast to some 600 Caterpillar workers scheduled to make the move from Wisconsin, Illinois, and elsewhere to the expanded Caterpillar Surface Mining Technology division near Tucson. The VP's speaking role was to describe his own experience as "a guy who just moved to Arizona," to ease any anxieties felt by the 600 Caterpillar workers. His presence on the panel, plus one other chance encounter, brought him to the attention of Caterpillar's chief engineer. The engineer described his desire to see Caterpillar's new engineers – all of whom had 4-year degrees – get some kind of practical training that would keep them from making rookie mistakes in designs. Ideally, the engineers would get to do some welding and machining themselves, to allow them to understand how to better design parts that the welders and machinists would have to make. By virtue of doing contract training in the past, Pima was able to respond in three weeks with proposed courses, equipment, and instructors. The result was "Welding for Non-Welders" and "Machining for Non-Machinists."

The experiment in turning "book engineers" into "real engineers," has become so successful, it led not only to a continuing stream of Caterpillar employees taking courses at Pima, but plans to expand to other companies. Pima hopes to someday make these practical experiences, once the poor stepchildren of an isolated workforce training program, available systematically to students in 4-year institutions as well. Not every university has the industry connections or physical plant to maintain an industry-grade labora-

tory experience. Internships can fill the need for practical experience prior to graduation, but not every student is lucky enough to land an internship. Consequently, there will always be students who struggle to gain the field experience their theoretical training has lacked. Pima has already begun experimenting with offering its facilities and instructional support to capstone engineering design projects from University of Arizona, integrating Pima students into the U of A teams.

Another example of chance industry contacts leading to additional enrollment came via the Dean of Applied Technology. He and his faculty had approached their industry colleagues regarding the best new mechatronics equipment to buy for student labs. They toured industry plants and quizzed their industry colleagues on which tools would allow students to practice the kinds of production concepts they would encounter in industry. They were surprised to learn that equipment from the usual academic supplier was considered too simplistic and were recommended instead some equipment from DMG MORI, similar to what industry itself was using. Taking their industry colleagues' advice, Pima faculty put in an order for the DMG MORI equipment. Much to Pima's surprise, this led to DMG MORI inquiring about Pima's new mechatronics program, since it was one of the few in the country using their equipment, and asking if it could send its own new hires to the Pima program, to be trained by Pima faculty on DMG MORI equipment. A steady stream of Illinois-based DMG MORI employees ensued. The mechatronics program became one of several that were now attracting students from multiple states – an unusual position for a community college to be in. Best of all, local Pima students shared their machine shop with the DMG MORI employees, providing an opportunity for the kinds of cross-fertilized social networks that could prove useful in students' later professional careers.

Employer-Provided Tuition Assistance

Not every company seeking Pima's educational expertise needs specialized training. Many do not have enough employees of one particular type to warrant a customized program. Yet, many still want an overall upgrading of their employees' skill base. Stronger employee satisfaction has also been a concern. With the economy gaining steam and the labor market tightening, employers began to see tuition reimbursement a way to upgrade their workforce while simultaneously increasing employee loyalty and lowering employee churn.

Pima responded to this opportunity in several ways. As mentioned earlier, the intentional shortening of its grade notification and billing timelines made tuition reimbursement programs much easier for working learners to continuously enroll. In addition, however, it broadly encouraged tuition assistance as a best practice in its industry meetings. Pima leveraged an industry champion, the CEO of AGM Container Controls, to speak alongside Pima at conferences and events on behalf of the wonders of tuition reimbursement. AGM Container Controls gives the maximum deductible amount of tuition reimbursement (\$5,250/yr. per employee), and 25% of its employees take advantage of the perk, taking an average of 3.4 classes per year. Two thirds enroll in Pima Community College. Part of the reason for AGM's tuition reimbursement program's success is the company's willingness to base raises in part on coursework completed in topic areas relevant to the company's business interests (though tuition reimbursement is available for any course). The CEO also changed its reimbursement scheme, to allow 100% reimbursement for both A's and B's, recognizing that there really wasn't much of a job performance difference between these two grade levels. The CEO's word carries weight with his peers, as he is a minor celebrity, having won Southern Arizona's CEO of the year in 2018.

SHIFT: Adult Basic Education

iBEST

Many working learners arrive at Pima without the fundamental skills to conduct college-level work. This is expected, given Pima's open admissions policy, where no student is denied a chance at higher education. It is perhaps also expected due to regions of high poverty in and around the college. In 2018, the US Census estimated Tucson's poverty rate at 24%, placing it well above the national poverty rate of 12% and Arizona's poverty rate of 15%.¹⁴ Against this backdrop, Pima's Adult Basic Education (ABE) program teaches basic literacy and numeracy skills to students who lack them, so those students can go on to earn a college degree or other meaningful credential. Most of Pima's ABE students lack a high school diploma or GED, or lack English language fluency. They are thus even more challenged than traditional developmental education students who arrive at college with a high school diploma but missing specific literacy or numeracy skills.

Prior to Chancellor Lambert's arrival at Pima, the vast need for basic skills instruction was often overlooked, and Pima's award-winning Adult Basic Education program was invisible. The Chancellor empowered the College to elevate and restructure ABE. The unit disrupted traditional college structure by establishing a Vice President of Adult Basic Education for College and Career and bringing Developmental Education and college-wide Placement and Testing under this one leader. The Chancellor championed ABE in his communications and helped the college community see the essential role that ABE should play in a community college. ABE was now poised to achieve the mission of helping students to access and succeed in career pathways at the College and beyond.

Pima was also quick to see the value of the Integrated Basic Education and Skills Training (iBEST) model that ABE was piloting. The iBEST program was well-known to Chancellor Lambert

before his arrival at Pima, since the program had originated within his prior home state of Washington and received a lot of press there. In fact his prior institution, Shoreline Community College, was home to one of the largest populations of iBEST students in the state.

iBEST is an instructional model that blends career and technical coursework with basic skills development. iBEST brings both the technical content faculty member and the adult basic education instructor together into one classroom, team-teaching at least 50% of the time. The ABE instructor co-plans and co-teaches with the technical content faculty member, buttressing students' critical skills, knowledge and support systems as they progress through the program. Any additional basic skills instruction is 100% contextualized to the field of study. By integrating college-level coursework with basic skills instruction in reading, writing and math, as well as academic and employment readiness, students are able to transition to college faster and progress through college and into a career with more confidence and stronger skills. With the

implementation of iBEST, ABE students now had access to earning college credits, could graduate with real college certificates, and would obtain family-sustaining careers, none of which they had done before.

To give an idea of what a dramatic improvement Pima's iBEST implementation represents, consider the average success rate of non-iBEST developmental education in Arizona, which caters primarily to students who have at least a high school diploma but are deficient in some English or math skills. Back in 2011-2012, before the current wave of innovation, the primary methodology was re-teaching what students should have learned in high school, using the same content and pedagogy that failed students the first time around. Arizona's community colleges saw about 27% of their students completing their developmental coursework, and 13% going on to complete their certificate or associate's degree. In contrast, 75% of all of Pima's students who start one of Pima's iBEST programs, successfully complete their college certificate. All of these are students who arrived at Pima with basic skills deficien-

Supply and Demand for PCC Certificate Level Programs

CIP CODE	CIP TITLE	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	AVERAGE ANNUAL PCC COMPLETERS	TOTAL GAP OR SURPLUS	MEDIAN HOURLY WAGE
52.1803	Retailing and Retail Operations	1,242	1	1	1,241	\$12.66
12.0505	Food Preparation/Professional Cooking/Kitchen Assistant	801	9	9	792	\$9.40
51.2602	Home Health Aide/Home Attendant	366	6	6	360	\$10.19
12.0503	Culinary Arts/Chef Training	215	3	1	212	\$12.68
19.0706	Child Development	157	3	2	155	\$8.99
52.0302	Accounting Technology/Technician and Bookkeeping	144	17	17	126	\$16.20
52.0401	Administrative Assistant and Secretarial Science, General	144	24	16	120	\$16.61
52.0201	Business Administration and Management, General	157	50	35	107	\$31.16
46.0401	Building/Property Maintenance	120	26	26	94	\$17.73
12.0504	Restaurant, Culinary, and Catering Management/Manager	99	14	14	86	\$14.49
47.0201	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician	64	10	10	53	\$22.20
47.0604	Automobile/Automotive Mechanics Technology/Technician	78	41	41	37	\$17.34
48.0501	Machine Tool Technology/Machinist	32	6	6	27	\$17.90
12.0501	Baking and Pastry Arts/Baker/Pastry Chef	30	5	4	25	\$13.59

cies, about half of whom also lacked a high school diploma on college entry. More startling is their high employment rate: 81% of iBEST completers find employment within a year after completing the program. This success would not have been possible without both a successful model to follow, the support of the Chancellor and the Governing Board, and the competency, and passion of the ABE team responsible for implementation.

Past iBEST programming at Pima includes Hotel and Restaurant Management, Machine Tool Technology and Behavioral Health Services. Currently Pima offers Medical Assistant, Automated Industrial Technology (Mechatronics) and Logistics and Supply Chain Management iBEST programs. Pima plans to increase capacity to include additional programs in future years.

Figure 9. Partial listings from a supply-demand analysis of (a) Pima's certificate programs and (b) Pima's Associate degree programs. These analyses are part of Pima's ongoing planning exercises and can be found in Pima's Educational Master Plan.

SHIFT: Courses and Curriculum

Externally-Driven Course Creation

In the past, Pima's faculty and administrators have had to base curricular decisions on internal academic factors. For example, a new course might be launched because a particular professor needed to clock more hours, or because a peer school had just launched a similar program. Enrollment numbers, of course, have always driven course creation – then and now. However, the new, more outward-facing Pima was starting to methodically include the entire community's skill needs in its curricular planning.

As Pima representatives participated in regional economic development discussions alongside industry and government representatives, and began issuing calls for comment from the community, they began to experience a much clearer vision of impending regional changes and associated workforce skill needs. This information on the likely future state, combined with present-day workforce supply-demand data (see **Figure 9**), has been increasingly used to decide which academic degree programs Pima should launch. The same process has also been used to design short-term training opportunities for existing workers – or for community demographics who have identifiable skill needs, and no obvious source of short-term training. Several recent examples illustrate this point.

Supply and Demand for PCC Associate Level Programs

CIP CODE	CIP TITLE	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	AVERAGE ANNUAL PCC COMPLETERS	TOTAL GAP OR SURPLUS	MEDIAN HOURLY WAGE
52.0401	Administrative Assistant and Secretarial Science, General	150	5	5	144	\$16.61
46.0401	Building/Property Maintenance	108	22	22	86	\$17.73
12.0504	Restaurant, Culinary, and Catering Management/Manager	97	30	30	67	\$14.49
43.0107	Criminal Justice/Police Science	72	37	12	36	\$32.24
47.0604	Automobile/Automotive Mechanics Technology/Technician	47	13	13	35	\$17.34
48.0508	Welding Technology/Welder	38	8	8	30	\$18.70
48.0501	Machine Tool Technology/Machinist	30	8	8	22	\$17.90
52.1902	Fashion Merchandising	21	3	3	18	\$20.34
50.0701	Art/Art Studies, General	4	1	1	3	\$8.53

Small Business Leadership

Data show that 92% of the firms in Tucson are small (<500 employee) businesses.¹⁶ 47 % of Tucson-area employees also work for one of these small businesses, but there is no low-cost leadership training for small business¹⁷ owners. Through Pima small business owners will soon be able to take advantage of a 32 hour/8 week Supervisor Skills Development Program originally developed in response to larger businesses' request for a program that would address preparation gaps for front-line, entry-level employees entering a supervisory role. The course provides an overview of the principles of effective personnel supervision. While the original version was always held at the contracting employer's worksite, the small business version will be held at Pima as an open enrollment course for all small businesses in the area.

To prepare Pima's own students for the likelihood that many will end up in small business, the College will also soon be offering entrepreneurship classes embedded into technical programs of study such as Building and Construction, Culinary Arts, and Fashion Design, among others. These will prepare students to launch their own business. Students also have the option to continue down this path with more intensive entrepreneurship classes offered through the Business Division and support through the Small Business Development Center.

Energy Technology Certificate

A second example of Pima responding to data-identified needs and trends, involves an upcoming wave of retirements in the local utility industry. This trend led Pima to create its Energy Technology Certificate.¹⁸ The new certificate replaces two low-enrollment certificates - the Electrical Utility Technology certificate and the Basic Natural Gas Utility Technology Certificate - with one much more attractive, streamlined certificate. Within one semester, students enrolled in the

Energy Technology Certificate program not only receive their Level 1 certificate but three industry credentials, as well. If they have career ambitions beyond an entry level job, they can take the Level 2 certificate, which provides deeper industry skills, such as joining natural pipes, rigging, measuring electricity, and reading blueprints.

Cybersecurity Associate of Applied Science

Cybersecurity job openings are another area in which Pima used data, particularly data on industry trends, to inform course creation. Anecdotally, industry colleagues were reporting great difficulty finding cybersecurity specialists to hire, but this fact was also supported by data showing 350 information security analyst job openings annually in Arizona each year¹⁹, with 30 per year in Pima county alone²⁰ That's one graduating classroom a year, fully employed, just in the surrounding community. Thus encouraged, Pima developed its new Cybersecurity Associate of Applied Science Degree, due to begin accepting students within a year.

Simultaneous industry concerns that the one remaining Cyber Warfare Range in the region was shutting down, led Pima to work with a nonprofit, Arizona Cyber Warfare Range, to create a new range, to be used for practical training exercises. The Pima Cyber Warfare Range was designed to be open - open to industry personnel, government personnel, Pima students, and the general public. It is thought to be the only "live fire" facility in the US located at a community college. "Live fire" facilities can be used to test existing systems' response to malicious hacks perpetrated by users, as well as test users' ability to deploy potential countermeasures quickly and accurately. Users can be "black hats"/Red Team, attempting to take down a system in real time, or "white hats"/Blue Team, attempting to save a system in real time.

Autonomous Vehicle and Operation Specialist Certificate

As a final example, Pima responded to local autonomous vehicle companies' concerns about what would happen to Arizona's long-haul truckers displaced by their technology. There are about 26,800 long haul truckers currently working in Arizona²¹, with over 2,500 long haul truckers in Pima County alone.²² The current skill sets required for a commercial driver's license are not the same skill sets needed for drivers of autonomous trucks. In the near term, these trucks would require both drivers and onboard computer to work together. Pima accordingly developed a new certificate program, "Autonomous Vehicle and Operation Specialist." (see **Figure 10** for course requirements, **Figure 11** for announcement ceremony). This program trains individuals having an existing commercial driver's license to now operate autonomous vehicles.

More importantly (since much of the actual driving is left to the computer), the program trains the former truckers to manage computerized route planning and repair computer electronics, two skills that will be sorely needed in the coming autonomous vehicle revolution. The creation of this program was championed by the Tucson branch of the San Diego-based company TuSimple, which had grown from 3 employees in 2017 to over 500 in 2019. TuSimple sees Pima's graduates from this program as its own future employees and vehicle operators, and Pima sees TuSimple's growth as a bellwether for the success of the academic program.

Figure 10. Course sequence and requirements for Pima's Autonomous Vehicle Driver and Operations Specialist Certificate.

Autonomous Vehicle Driver and Operations Specialist — Certificate for Direct Employment

Gain skills and knowledge in the emerging autonomous vehicle technology. Learn the basics of computer hardware components, fundamental electronics, safety, health and environmental regulations, domestic freight transportation, and illustrate an understanding of autonomous vehicles.

Before you enroll you must: possess your Class A Commercial Driver License.

What can I do with this certificate?

Career Options: Autonomous Commercial Vehicle Driver trainee, co-driver, or operations specialist

Location: Community Campus

Department/Contact Information:

Dean: 520-206-6321

Lead Faculty: 520-206-2744

Prerequisite(s): Class A Commercial Driver License.

Special Admissions Program: You are not fully admitted to this program until you have fulfilled the requirements listed above and have been officially admitted to the program. See the website or an advisor for details.

Course Number	Course Title	Credit Hours
Required Core Courses - A grade of C or better is required for graduation.		
AIT 100	Industrial Safety.....	1
AIT 125*	Electrical Systems 1.....	3
AUV 101	Introduction to Autonomous Vehicles.....	2
CIS 136	Computer Hardware Components.....	3
LGM 106	Transportation and Traffic Management.....	3
Total credits as displayed.....		12

* This course has a prerequisite, co-requisite, or recommendation. See course description section.

Pima is fast becoming an expert at delivering hands-on experiences of a kind very few 4-year institutions can execute. The large adjunct faculty workforce deserves particular mention, as many of them teach classes right after their industry day jobs and know exactly what is considered acceptable practice at that very moment in time. Full and part-time faculty also review curricula against industry-issued national

certification standards to ensure their students can pass relevant national certification exams. Due to a blossoming of professional and trade society activism, national industry-recognized certification exams now exist for virtually every profession.²³ And, of course, the many meetings between Pima faculty and industry, and between Pima leadership and the community, continue to provide insight that is refined using data analysis.

Figure 11. Pima Community College and industry partner TuSimple celebrate the announcement of Pima's Autonomous Vehicle Driver and Operations Specialist Certificate. On the right is one of TuSimple's self-driving trucks.



SHIFT: Online Course Delivery

Engaging Online Students

At the same time that Pima's course content shifted to become more forward looking, more industry-aligned, and more community-responsive, its online delivery system underwent changes as well. Online course delivery is a core element in any collegiate system designed to accommodate the needs of working learners. With jobs having fixed hours, working learners need education that has flexible hours. Online delivery gives that option.

Online courses were not new to Pima. Back when each campus had its own president, faculty members at individual campuses created and delivered their own online courses. This led to inefficient duplication: if multiple campuses decided to deliver an introductory English course online, multiple half-filled online English courses would be the almost-inevitable result. At the institutional level, this was a waste of resources. Thus, along with the overall re-organization of campuses under two Campus Presidents/Vice Chancellors, online education became centralized with its own Vice President of Distance Education now in charge. This recommended change originated from a task force launched by the Chancellor in 2013. The taskforce was co-chaired by an administrator and faculty, and had significant involvement from both instructional faculty and the Student Affairs side of the house. The new effort was called PimaOnline.

Structurally, the new system vetted all requests for online courses through the Vice President of Distance Education and his instructional design team. This prevented prior issues with the team operating as an on-demand support unit having little control over competing demands from six different campuses. Average fill rates for courses started to edge upwards, as multiple course offerings were condensed through centralized planning. Quality standards, modeled after the

national organization Quality Matters²⁴ and the Open SUNY Course Quality Review Rubric (OSCQR)²⁵, were applied consistently to online courses. Centralized data collection began to reveal trends worth capturing. For example, eight-week courses turned out to be immensely more popular than 16-week courses covering the same material – even though they required twice the work per week (12-18 hours). Consequently, the designers started revamping 16-week courses to take place in eight weeks.

Other improvements were made, as well. The learning management system (LMS) had more capability than anyone had ever really looked at, or taken advantage of. Resources like the library were integrated into the LMS, so online students had easier access to the supplemental information they would need. PimaOnline also powered the vast majority of the free Open Educational Resources mentioned earlier, thereby improving online students' ability to afford online courses and degrees.

Overall, the transition to a centralized structure and more conscious management of the online offerings caused an increase in the fraction of Pima students taking advantage of the online option. Prior to the centralization under PimaOnline, online headcount had held steady at 30% of Pima's total headcount for 3 years running (using numbers from Fall 2014, Fall 2015, Fall 2016). For those same 3 years, FTSE's also held steady at 18% of Pima's total Fall FTSE's. After the re-organization, the share of Pima FTSE's that were online grew by 3 percentage points each year (in 2017 and 2018), and the share of Pima headcount that was online, grew even faster. As of Fall 2018, 39% of Pima's headcount was taking at least one online course. PimaOnline was larger than any of the individual physical campuses.

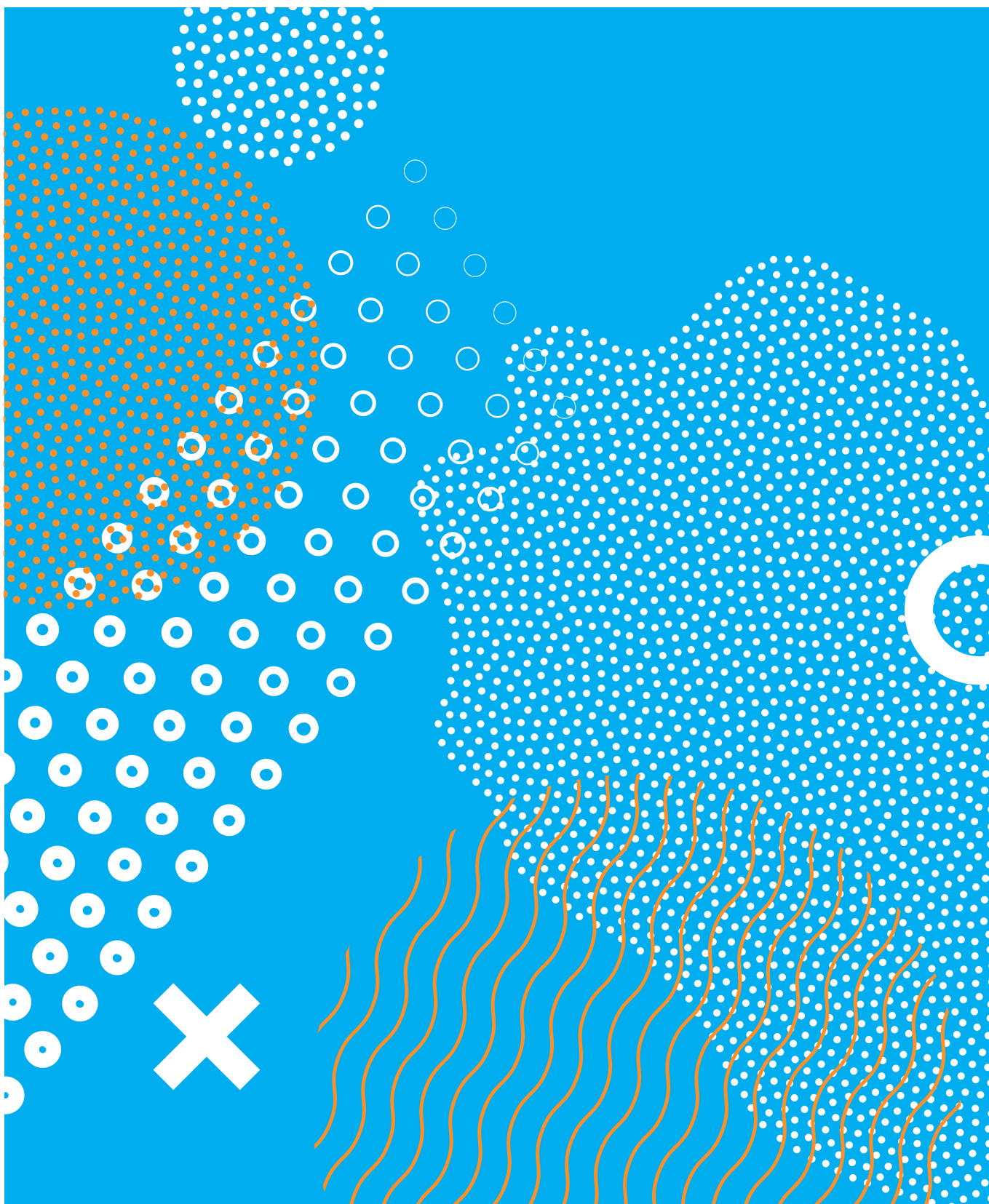
The success of PimaOnline eventually surfaced a challenge for Pima. While it was wonderful that online participation was growing, that growth was taking place almost entirely at the

expense of in-person enrollment. This was not bad in itself, because online generally meant “more accessible,” but the success rate for online enrollment had always been markedly lower than for in-person classes. The shift to online course-taking thus threatened Pima’s ability to “Improve student success,” as per its strategic goals. It improved student access, but at the expense of student success.

This realization, in the new era of constant self-monitoring, caused the VP of Distance Education and his staff to quickly begin formulating plans to address student success rates in online courses. One suggestion was to ensure every online student receive a lecture/presentation on how the learning management system worked. Perhaps a more intensive “how to succeed in an online course” class could be offered, or could be made mandatory. Instructors could be asked to create welcome videos of themselves, so students would be able to put a face with the name and be more engaged in email dialogue with the instructors. Courses could be vetted more thoroughly for accessible language and accessible supplementary resources. Students most at risk for failing their online course could be targeted with student success coaches. Analytics, combined with automated reminders, could catch students who did not turn an assignment in on time or otherwise evidenced behavior of falling behind. Quite possibly, the overall structure of most online courses – 6 to 12 hours of reading by oneself each week, followed by a written assignment submitted to a remote instructor – needed to be rethought. Certainly some of the more successful commercial offerings used snippets of video interwoven with breaks for mini-quizzes or simple “now try this” exercises. There were a lot of possibilities, if one looked at the broader world of online education, for what might improve student success. The upshot of having so many possible paths forward, all of which would need to be evaluated, implemented and coordinated, led Pima to the inescapable conclusion that it needed a Director for Online Student Success. That position is being formulated as this article is being written.

Before leaving the topic of online course delivery, it is worth mentioning that PimaOnline often ended up as the preferred delivery vehicle for specialized courses requested by local employers. As the Workforce Development effort within Pima became more prominent, PimaOnline became ever more involved in delivering employer-commissioned and/or employer-inspired content. PimaOnline currently sees employer-focused offerings as one of its two advantages in the endgame of online learning. While much larger course aggregators, such as EdX or Coursera, might be able to offer general-purpose classes to the masses at higher scale and lower cost, Pima would have the advantage of being the developer of choice for the more specialized training that local employers were looking for. This dovetailed nicely with what Pima saw as its other tactical advantage: being the hometown institution everyone recognized and felt comfortable with. Anyone interested in a Pima degree would likely be taking the online courses that were scaffolded into those degrees.

The employer track proved nationally competitive. Because of PimaOnline’s experience, reputation, tenure and expertise in working with adult learners, Pearson Accelerated Pathways chose to partner with Pima Community College as an Associate Degree Pathway Partner. Pearson Accelerated Pathways guides corporate partners towards “best match” educational opportunities for their eligible employees. The instruction is then provided through Pearson’s strategic partnerships with institutions such as Pima Community College. The corporate employees are able to utilize the tuition assistance provided by their employer, within the identified pathway, to graduate with their (in this case) Associate Degree with little to no educational debt. Students participating in the Associate Degree Pathway receive advising support from Pearson Advisors from application through graduation, supplementing the guidance and support provided by Pima Community College. And Pima – along with Pearson’s other partners – fuse into the national backbone for “learning worker” education in the US.



SHIFT: Campus Buildings

Centers of Excellence (CoEs)

While some futurists have predicted online delivery will consume traditional education wholesale,²⁶ it may end up consuming only the lecture component of education. Whether it's fighting cybersecurity attacks on the fly or repairing autonomous vehicles, cutting edge jobs require a surprising number of skills that cannot easily be taught online. Future-oriented community colleges will need to teach hands-on skills and nuanced judgement in particular.ⁱⁱⁱ These are the two skills arguably left to human workers, once the jobs that can be done by computers disappear from jobs ads forever. However, hands-on skills and nuanced judgement require extensive practice in real-life environments. Thus, working learners might be working day jobs now to earn money for tuition, but in the future, their class time was going to look more and more like “real” work as well – just a higher grade of work than what they were currently doing to make ends meet.

PCC recognizes it must adapt quickly to meet the community's needs for high-quality, in-demand programs and employees. CoEs will utilize real-time regional economic development and local labor data in developing plans, and will collaborate with external partners, including businesses of all sizes, workforce development agencies and school districts. We will provide formal degree and certificate programs along with short-term training opportunities via stackable credentials and multiple on-ramps. COEs will include simulation spaces that mimic industry settings, such as laboratories with relevant and leading-edge equipment, supplies, and training.

– Pima Community College Press Release, June 5, 2018

The dawning reality that next generation jobs were going to require lots of sophisticated hands-on learning has placed Pima in the somewhat awkward position of having too much real estate of the “old” kind (buildings that can be used for classrooms) and not enough buildings of the “new kind” (buildings with the power, vibration, electromagnetic shielding, emissions/waste flow, air flow, plumbing, and other systems that can support, for example, heavy industrial equipment, sensitive electronics, or medical waste). Facilities planning exercises began to focus on how to conceptualize and build the kind of facilities that were needed. The planning process was designed at the outset to be community- inclusive, soliciting building requirements input from industry partners, community organizations, Pima's own faculty, and more.²⁷ **Figure 12** shows an example of a brochure soliciting industry and community input for the first proposed center, an Applied Technology Center of Excellence. **Figure 13** captures one of the summits seeking feedback from industry and community members on an Information Technology Center of Excellence.

The Applied Technology Center of Excellence is now past the planning stage. Ground is being cleared for a \$45 million state-of-the art facility with commercial-grade hardware, to be run under faculty with extensive industry experience, aided by trained technical support staff. The facility will support courses and training in

- advanced manufacturing with an emphasis on aerospace and defense
- autonomous vehicle technology
- diesel technology
- infrastructure with an emphasis on mining and energy technology

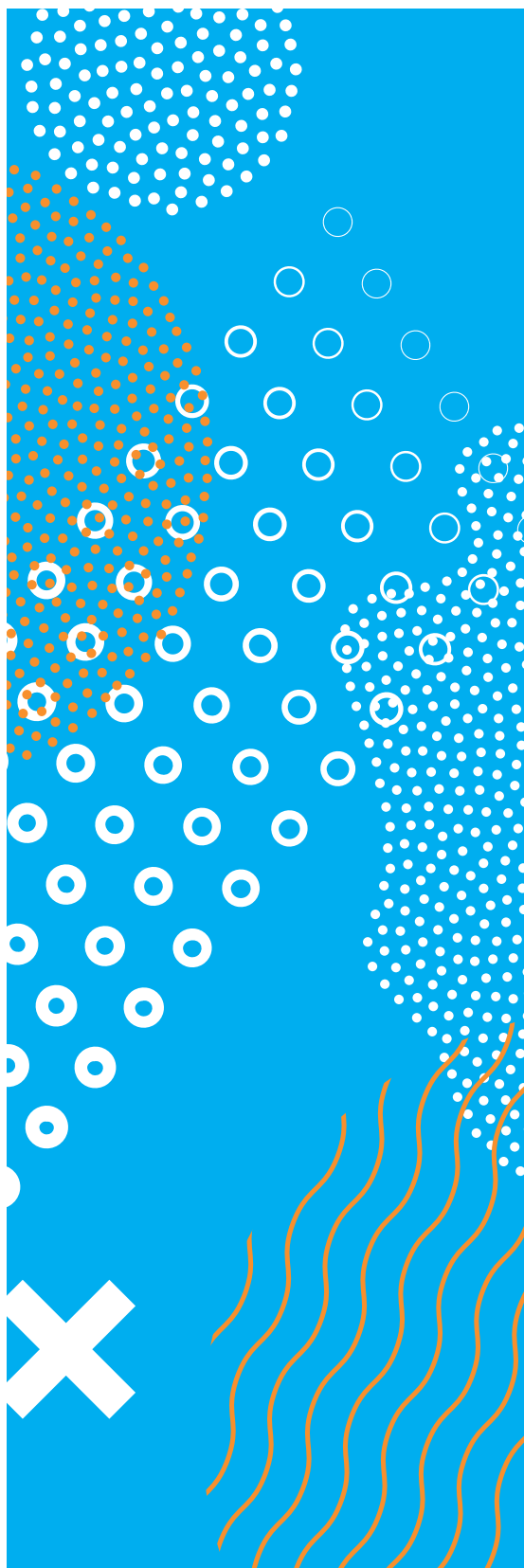
iii. It is worth noting that while machine learning can make nuanced judgements quickly, it cannot make nuanced judgements at all unless it has a pre-existing body of human judgements on which to train its algorithm. Thus, any unique situation, requiring a first-time judgement, remains the province of humans – for now.



Figure 12. Part of a brochure requesting community and industry input on Pima's Applied Technology Center for Excellence. Brochures, meetings, press releases, interviews, focus groups and more were used to solicit ideas and feedback on the Center's design, function, and services.



Figure 13. A 2018 community meeting used to inform the design, construction, and uses for the Information Technology Center of Excellence.



- optics and photonics
- robotics
- quality assurance
- transportation and logistics

The building's construction is being supported through bond issuance, meaning Pima is going into short-term debt to build out its version of the future of working and learning. That said, bond rating companies were bullish on Pima's prospects for bond repayment²⁸, citing Pima's existing financial stability (mostly the result of prudent cuts and planning), its competitive educational offerings, and the long-term future of education and training in the vibrant Tucson area.

The first Center of Excellence is intended to be followed by six more, currently in various stages of planning:

- Health-Related Professions
- Public Safety and Security
- Ethnic, Gender and Transborder Studies
- Information Technology
- Arts, Humanities and Communications
- Hospitality

Conclusion: As the SHIFT progresses, progress shifts

Pima's mission has not changed since its inception in 1969 – “to meet the needs of those traditionally underserved by higher education.” The Chancellor believes the College can achieve its mission by providing students with programs and services that will keep them relevant in the workplace, despite looming, wrenching, technological change. If Pima is successful, Pima Community College will have redesigned itself to not only meet working learners where they are today, as they strive to afford the time and cost of higher education; but where they'll be tomorrow, when they get their first solidly-paying jobs; and where they'll be a year or two after, when they return to Pima to get the next short-term training boost they or their company has identified as necessary to remain competitive.

The changes to get this far have been extensive. The obvious question is, is the plan working? The answer is, we don't know yet. Many of the changes detailed herein have taken place in the last two years, all in the last five.

As is the case with most community colleges, Pima's enrollment has declined over the last few years. However, in Pima's case, it is declining ever more slowly, as if a great wound has been staunched (see **Figure 14**). The online portion of enrollment is on the rise. Similarly, employee sentiment is improving (see **Figure 15**).

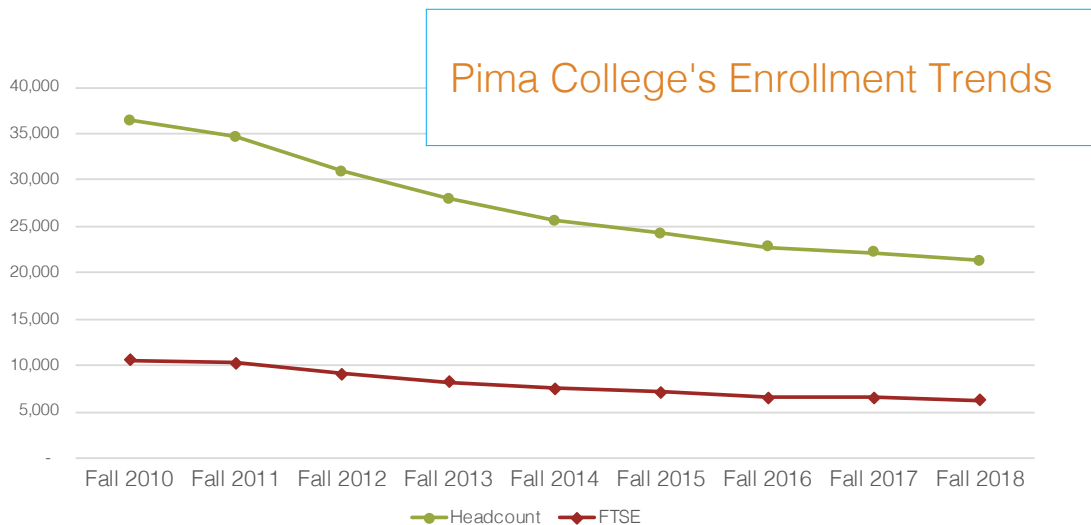


Figure 14. Pima Community College's enrollment trends. Declines are slowing down, from -10% negative growth in 2012, to -2.6% in 2017. Online courses, which make up part of these numbers, are actually growing.

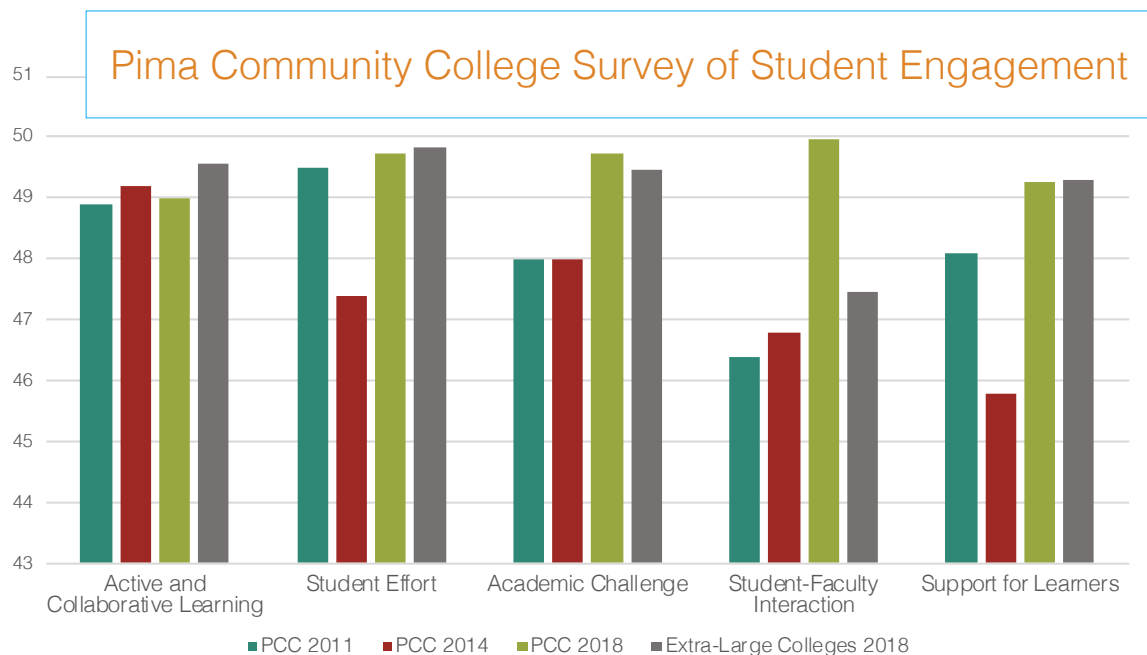
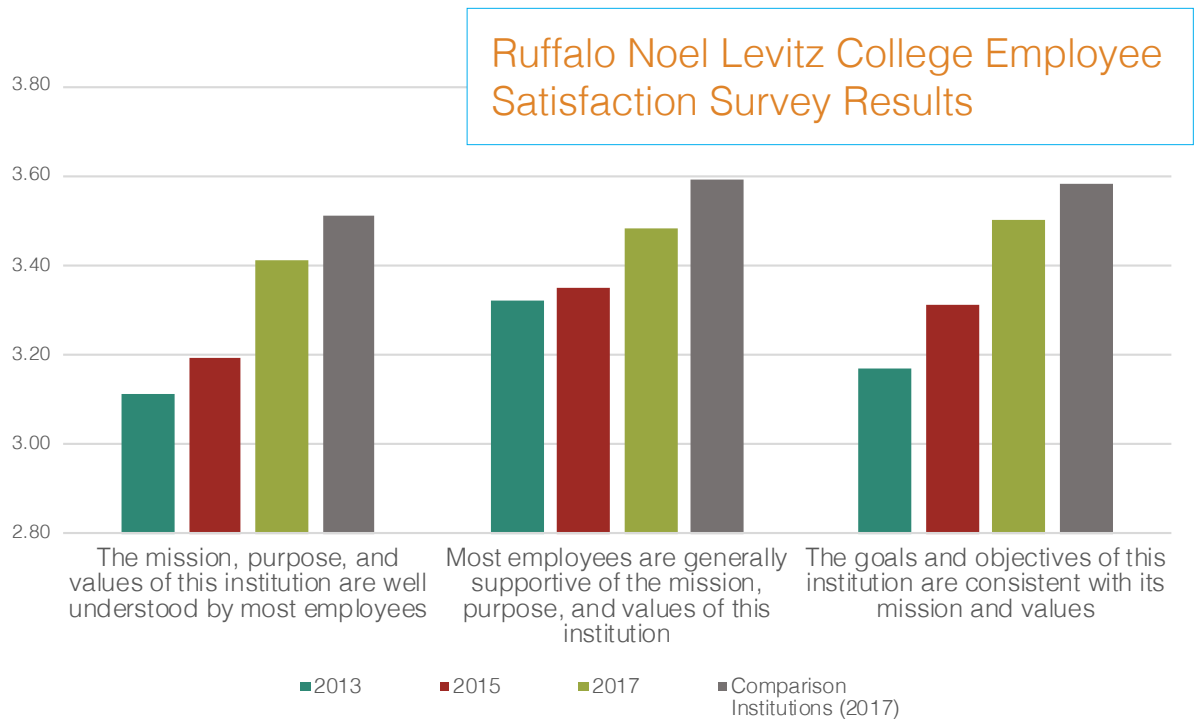


Figure 15. Pima's results from the Ruffalo Noel Levitz College Employee Satisfaction Survey. Key morale indicators are improving.

Figure 16. Pima Community College Survey of Student Engagement (CCSSE) results related to academic rigor and student learning support (2018).

From the student's point of view, things are changing for the better as well. Pima is now more rigorous *and* more supportive. Its Community College Survey of Student Engagement (CCSSE) results show a significant increase in student ratings related to "Student Effort," "Academic Challenge," "Student-Faculty Interaction" and "Support for Learners" in the last 4-5 years. Both are now approaching or exceeding their peer institution benchmarks (**Figure 16**). Moreover, short-term measures (the only measures currently available) show more students are succeeding: fall-to-next-term retention and 2-year completion rates, have picked up (see **Figure 17**).

Qualitative and anecdotal indicators have also shifted. Industry is engaging significantly, championing new programs and new facilities. Students are graduating with job offers already in hand. State funding, which had been zeroed out, has started to come back in new forms – the \$15 million appropriation for aviation technology mentioned earlier – and, extremely recently, another \$400,000 for STEM education.

Unequivocally enthusiasm is high at Pima Community College. A decade of cuts and low morale has been replaced wholesale by a clear vision and inspiring narrative that creates a believable story about Pima's place in the future of working and learning. Conversations with individual administrators and staff lower down in the hierarchy inevitably contained terms like "night and day," "for the first time," "finally," and not uncommonly, "it's been a lot of fun." Pima is an example of how SHIFT can, will, and perhaps should, happen.

Figure 17. Measures of student success, from Pima's VFA (Voluntary Framework of Accountability) data.

VFA Cohort 10 Term	Fall to next term retention	First term credit success rate	2 yr credit success rate	No success 1st term	Reached credit threshold	Completed certificate or degree	Transferred	Still enrolled
Fall 2010	65.0%	62.0%	62.0%	19.6%	18.9%	3.2%	21.8%	40.8%
Fall 2011	65.7%	60.1%	60.7%	21.7%	18.6%	3.7%	20.9%	40.2%
Fall 2012	64.8%	62.4%	63.6%	20.2%	21.4%	4.9%	21.4%	40.5%
Fall 2013	62.7%	62.5%	65.0%	20.7%	22.2%	5.2%	20.0%	40.1%
Fall 2014	63.0%	65.3%	67.3%	19.5%	24.0%	6.4%	19.1%	41.7%
Fall 2015	66.1%	68.1%	68.3%	16.9%	25.1%	7.1%	16.1%	44.6%
Fall 2016	66.1%	69.8%	69.8%	16.9%	27.0%	8.6%	16.5%	43.0%

Endnotes

1 Jamai Blivin and Merrilea Mayo, *Shift Happens 2*. Santa Fe, NM: Innovate-Educate, 2019. Also available online at <https://innovate-educate.org/wp-content/uploads/2017/04/ShiftHappens2.pdf>

2 Ibid.

3 Peace Bransberger and Demarée K. Michelau, *Knocking at the College Door: Projections of High School Graduates*. Boulder, CO: WICHE, 2016. Report available online at <https://knocking.wiche.edu/> and data tables (for state data) available online at <https://knocking.wiche.edu/data>.

4 Pima Community College, *Educational Master Plan 2015-2025*. Also available online at <https://pima.edu/about-pima/strategic-plan/docs-master-plans/2015-2025-pcc-educational-master-plan.pdf>

5 US Census. American Community Survey Public Use Microdata Sample (PUMS), 2017. Retrieved through Dataferret, <https://dataferrett.census.gov/>

6 Pima Internal Research Department data, generated from Pima's participation in the Community College Survey of Student Engagement (CCSSE).

7 Ibid.

8 Jean Johnson, Jon Rochkind, Amber N. Ott, and Samantha Dupont. *With Their Whole Lives Ahead of Them*. New York: Public Agenda, 2009. Also available online at <https://www.publicagenda.org/files/theirwholelivesaheadofthem.pdf>

9 Federal Student Aid Office, US Department of Education. *Basic Eligibility Criteria* [Online]. <https://studentaid.ed.gov/sa/eligibility/basic-criteria>

10 Pima Community College, *2017-2021 Strategic Plan*. [Online]. <https://www.pima.edu/about-pima/strategic-plan/docs/2017-21-strategic-plan-final.pdf>

11 American Association of Community Colleges, *About VFA*. [Online]. <https://vfa.aacc.nche.edu/about/Pages/default.aspx>

12 Nicola C. Richmond, *Mission, Planning, Budget and Data: Connecting the Pieces through IR*. Poster presented at the 2019 AIR Forum. Denver, CO: May 28-31, 2019. [Online]. <https://www.pima.edu/about-pima/strategic-plan/docs/2019-air-presentation-poster-planning.pdf>

13 <https://pima.edu/new-students/prior-learning/index.html>

14 *QuickFacts*, US Census. [Online]. <https://www.census.gov/quickfacts/fact/table/US,AZ,tucsoncityarizona/PST045218> Note the estimates are not strictly comparable between city, state, and national levels due to methodological differences, but the numbers should be generally accurate.

15 Pima Community College, *Educational Master Plan 2015-2025*. Ibid.

16 US Census, *2016 SUSB Annual Data Tables by Establishment Industry, Data by Enterprise Employment Size, Metropolitan Statistical Areas (MSAs)*. [Online]. <https://www.census.gov/data/tables/2016/econ/sus->

[b/2016-susb-annual.html](#)

17 Ibid.

18 Pima Community College, *Energy Technology, Level 1*. [Online]
<https://www.pima.edu/programs-courses/credit-programs-degrees/trade-professions/energy-technology/energy-tech-level-1-cert.html>

19 Office of Economic Opportunity, State of Arizona. *Employment Projections*.
<https://laborstats.az.gov/employment-forecasts> State data table is at https://laborstats.az.gov/sites/default/files/documents/files/OccupationProj_04_2019to2020.xlsx

20 Office of Economic Opportunity, State of Arizona. *Employment Projections*.
<https://laborstats.az.gov/employment-forecasts> Pima County data table is at https://laborstats.az.gov/sites/default/files/documents/files/OccupationProj_000019_2019to2020.xlsx

21 https://laborstats.az.gov/sites/default/files/documents/files/OccupationProj_04_2019to2020.xlsx

22 https://laborstats.az.gov/sites/default/files/documents/files/OccupationProj_000019_2019to2020.xlsx

23 For a comprehensive list of national certification exams by occupation, visit <https://www.careeronestop.org/Toolkit/Training/find-certifications.aspx>

24 *Quality Matters*. [Online]. <https://www.qualitymatters.org/>

25 *The Open SUNY Course Quality Review* [Online]. <https://oscqr.org/>

26 Clayton M. Christensen, Michael Horn and Curtis Johnson, *Disrupting Class : How Disruptive Innovation Will Change the Way the World Learns*. New York: McGraw-Hill, 2008.

27 <https://www.pima.edu/press-room/news-releases/2018/2017-18%20Engagement.html>

28 <https://www.pima.edu/press-room/news-releases/2019/201901-revenue-bonds.html>



PimaCommunityCollege

/// Keep striving.

