Impact Stories
Volume III

A collection of case studies from Arizona educators that are making a proven impact on their students and communities.

ASU • Helios
Decision Center for
Educational Excellence

2025 - THIRD COHORT OF THE ASU IMPACT CORPS

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EXPLORE

Impact Stories

Volume III

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Impact Stories is a publication of the ASU Helios Decision Center for Educational Excellence. This volume is a collection of case studies from educators across Arizona that are making a proven impact on the postsecondary trajectories of their students.

ABOUT THE DECISION CENTER

The ASU Helios Decision Center for Educational Excellence is a partnership between Arizona State University and Helios Education Foundation.

Our mission is to bring together all relevant data sources to Arizona's education system, and then use these data to create tools and guides for teachers, educators, administrators, leaders and other stakeholders to improve outcomes for Arizona's students.

Our work is divided into two strands: Tools & Visualizations and Impact Projects. Our suite of data analysis tools, such as the High School Outcomes Tool (HSOT), the Postsecondary Feedback Reports (PSFR) Portal, the Visualization of Student Trajectory and Achievement (ViSTA) and the K-8 Outliers combine various datasets in new, or previously unavailable, ways for schools and systems to use in their decision making. In conjunction with our Helios Decision Theater space located on the Helios Education Campus, we are able to facilitate in-depth analysis sessions with a community's relevant decision makers in an immersive way. Our set of Impact Projects use the data tools we have created to implement meaningful and tangible interventions for Arizona. Examples include our Personalized Admissions Project, which proactively admits students in partner districts to a state university, as well as the ASU Impact Corps, a program that identifies teachers making measurable impacts on students' postsecondary outcomes and trains them as mentors for teachers across Arizona.

Tools

Our Center works on high-quality, meaningful data visualizations that are designed to allow education decision makers to use data to serve their system, staff and students.

Here are a few of the tools we currently offer:

- High School Outcomes Tool
- Postsecondary Feedback Reports
- Arizona Education and Workforce Visualization
- Impact of the COVID-19 Pandemic
- Effects of Rigorous Coursetaking
- Visualization of Student Trajectory and Achievement
- K–8 Outliers
- Major Decisions

To learn about or access our Visualizations at home or in our Helios Decision Theater, visit:
decisioncenter.asu.edu/tools

Impact Projects

Our work aims to improve outcomes for Arizona's students. We model this through our Impact Projects that use data to deliver meaningful and sustainable interventions.

To learn more about our Impact Projects, including information on how to join an ongoing project, visit:
decisioncenter.asu.edu/projects

"The exciting thing about being involved in this work is that ***we want to be involved with everything that we have*** so that we can help all the educational enterprises in Arizona achieve the goal that ***we*** are working to achieve."

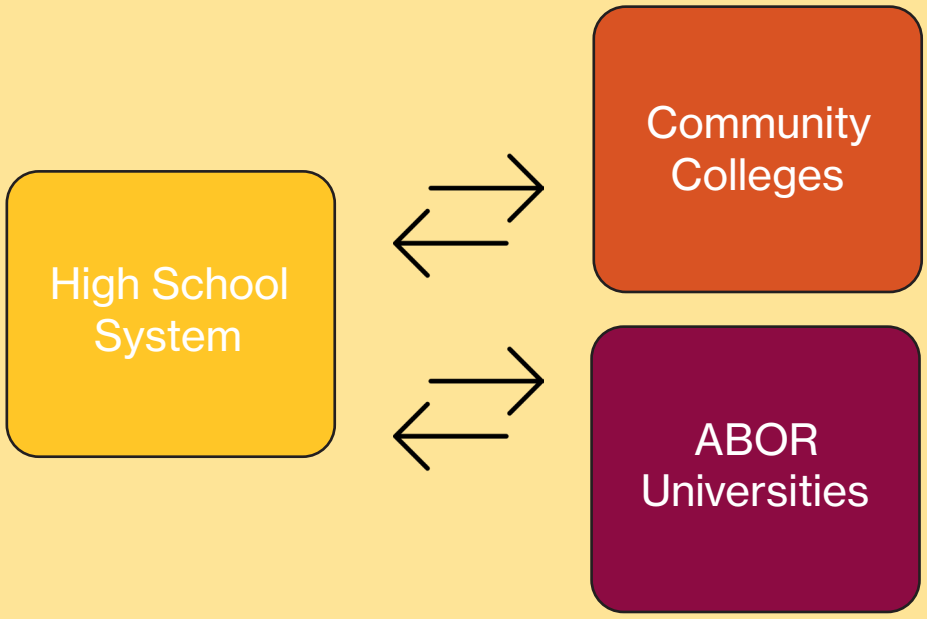
- Dr. Michael Crow, President of ASU

THE POSTSECONDARY FEEDBACK REPORTS PORTAL

A signature project of the Decision Center is our Postsecondary Feedback Reports Portal.

The Postsecondary Feedback Reports (PSFR) Portal provides public Arizona high schools (those run by a local district or a charter management organization) with feedback on how their graduates perform in the state's public community colleges and universities. The PSFR Portal can show high schools what their past graduates study in higher education, how quickly they graduate or persist, and how well they do in their coursework in specific subjects in higher education. School leaders can use these reports to meet the needs of their district, for instance, to guide management and performance and to identify areas of excellence in teaching and areas for improvement. PSFR shows high schools how their students from the past are doing now, so schools can make decisions that affect their current students in the future.

The Postsecondary Feedback Reports (PSFR) Portal connects AZ Community College and ABOR University data back to the public high school system.



To learn more about the PSFR Portal, including to request an account if you are an eligible stakeholder of a public Arizona high school, visit:
decisioncenter.asu.edu/tools/PSFR

"I'm grateful to all the people who make the Helios Decision Theater possible. **It's unique to Arizona.** And I hope that everyone who has an interest gets themselves in there. I think it will **reinvigorate your work.**"

-James Arndt, Principal of Camelback High School, discussing his visits to the Helios Decision Theater

EXECUTIVE SUMMARY

The mission of public education is to prepare students for success beyond high school. In today's economy, that increasingly means equipping students with the knowledge and skills to access high-wage, high-skill, and high-demand (H3) careers. By 2033, Arizona will need 600,000 more trained workers to meet the demands of automation and economic growth. Postsecondary education is the most direct path to these careers – improving upward mobility for individuals and supporting long-term economic vitality for communities.

Success in college and beyond begins well before students enter into high school. To better understand what works, we turned to the Postsecondary Feedback Reports (PSFR) for real-time data that show how well Arizona high schools are preparing students for postsecondary success. These reports track persistence, graduation, academic performance, and program selection across the state's public universities and colleges.

We use this data to identify "bright spots": high school graduates performing exceptionally well in college, and the educators behind their success. The ASU Impact Corps is a network of these educators who come from large urban districts, rural communities, and Title I schools – all sharing one thing in common: their students excel in higher education. From their classrooms, we've identified instructional practices and curriculum strategies that are proven to improve postsecondary outcomes.

KEY **FINDINGS**

1. Hands-On Practice and Application

In each classroom, students are actively engaged in the learning process. Through labs, coding projects, engineering challenges, and collaborative problem-solving, students build real-world skills in real time. These activities prepare students for college by modeling college-level coursework and aptitudes and mirroring the expectations of modern careers. In many classrooms, teachers blend disciplines (e.g., math in chemistry, or engineering in computer science) and replicate professional scenarios to build authentic, skill-based learning. Research shows that these active learning environments lead to stronger technical knowledge and increased student motivation.

2. Cumulative and Self-Guided Learning

Impact Corps teachers gradually shift responsibility for learning to students. Early lessons build strong foundations in content knowledge, while later lessons require students to synthesize, explore, and create independently. This structure – moving from guided instruction to self-directed learning – promotes both conceptual mastery and long-term problem-solving skills. In multi-year course sequences, such as engineering or computer science, this cumulative approach helps students grow into confident, independent learners prepared for the rigors of postsecondary coursework.

3. Collaborative and Inquiry-Based Instruction

Across classrooms, collaborative learning and inquiry-based exploration are central features of instruction. Teachers structure lessons so that students work together to ask questions, test ideas, and deepen their understanding. Peer-to-peer learning is not only encouraged but essential – building confidence and reinforcing content through shared discovery. Whether in science labs, math workshops, or computer programming challenges, students are supported by thoughtful classroom communities where teachers facilitate reflection, guide discussion, and help clarify misconceptions in real time.

4. Teacher Preparation and Continuous Learning

Impact Corps educators are deeply committed to their own growth. Many bring direct experience from industry, hold advanced degrees, or are dual-certified in complementary disciplines like math, science, and computer science. They seek out high-impact professional learning, such as the ASU Modeling Instruction Program, and stay current on new pedagogical approaches – from flipped classrooms to standards-based grading. Their preparation translates into effective instruction, and their ongoing learning ensures that their classrooms evolve with the demands of higher education and modern careers.

OVERVIEW OF SELECTED SCHOOLS

Since 2023, the Impact Corps has grown to 34 teachers from 25 different Arizona schools. This volume represents eight teachers from seven high schools.

The schools featured in this collection reflect the breadth and strength of Arizona's public education system. They range in size from small campuses serving around 250 students to large suburban high schools with enrollments over 2,500. Located in communities across the state – urban, suburban, and rural – they serve a wide range of student populations and educational contexts.

The teachers highlighted here bring diverse experiences to their classrooms. Some are in the early stages of their careers, while others have spent decades honing their craft. Many began their professional journeys in other fields before discovering a passion for teaching. What unites them is a shared commitment to student success and a belief in the power of public education to transform lives.

Together, these educators and their schools represent some of the most promising examples in Arizona's education landscape. We share their stories to celebrate their accomplishments and to offer inspiration for other schools, educators, and communities working to improve educational outcomes for all students.

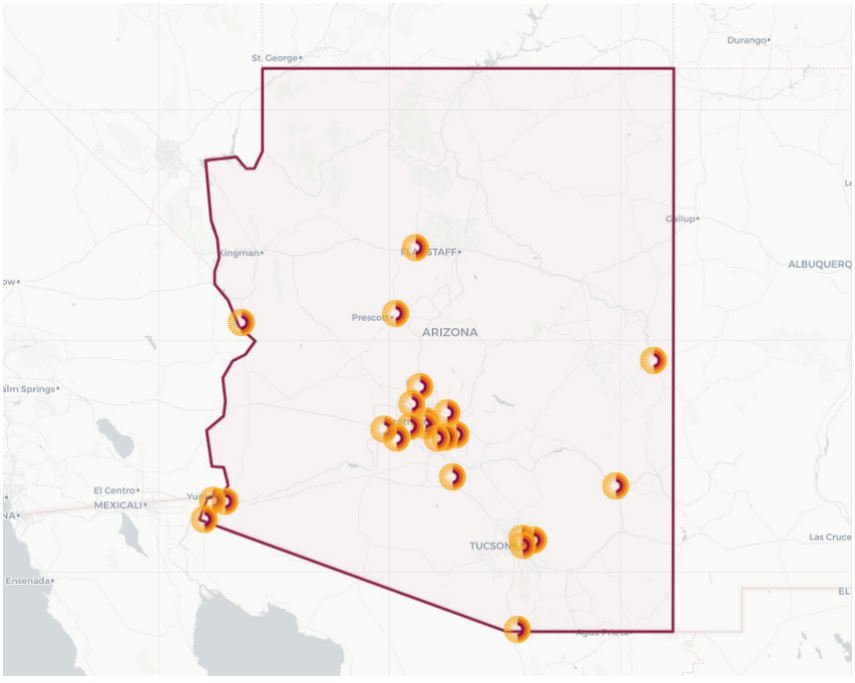
The selected schools in this volume of Impact Stories, in alphabetical order, are:

Boulder Creek High School, Catalina Foothills High School, Corona del Sol High School, Desert Mountain High School, Sunrise Mountain High School, University High School and Williams High School.

This map shows the Impact Corp's reach in Arizona.

Arizona's vast diversity of people, cultures, geography, climate and density are its strength, and our state's public schools reflect this.

It is an important mission of the Decision Center to represent this diversity in the schools we collaborate with in the Impact Corps.



ASU IMPACT CORPS
THIRD COHORT TEACHERS

Arizona has many talented educators. These are some of the best.

After identifying a group of schools whose graduates demonstrated unusually strong success in specific university subjects, we set out to learn more about what might be driving those outcomes. That search led us to this group of eight teachers – each closely connected to those subjects at their respective schools.

Following classroom visits, interviews, and observations, we invited these educators to become the Third Cohort of the ASU Impact Corps. Their stories are featured in this catalog, and they are now serving as mentors to other educators and schools across Arizona. Throughout 2025, they will participate in mentor events statewide. We encourage you to follow their work and connect with the ideas and practices they are sharing.

Thomas Clarke
Boulder Creek High School

Bernadette Moreno
Catalina Foothills High School

Dr. Melissa Wendell
Corona del Sol High School

Stacey Rosenfeld
Desert Mountain High School

Joseph Temple
Sunrise Mountain High School

Michelle Burns
University High School

Tyler Hill
University High School

Robert Grossman
Williams High School

Keep up-to-date by visitingdecisioncenter.asu.edu/impactcorps

IDENTIFYING BRIGHT SPOTS

Arizona's educational strengths are found in our students, teachers and educators.

Using our linked data system connecting Arizona's high school students directly to the state's public higher education institutions, we are able to look for statewide trends and patterns. With this in mind, we wanted to identify bright spots in Arizona's public school system: specific schools and teachers who are making meaningful impacts on their students' postsecondary trajectories.

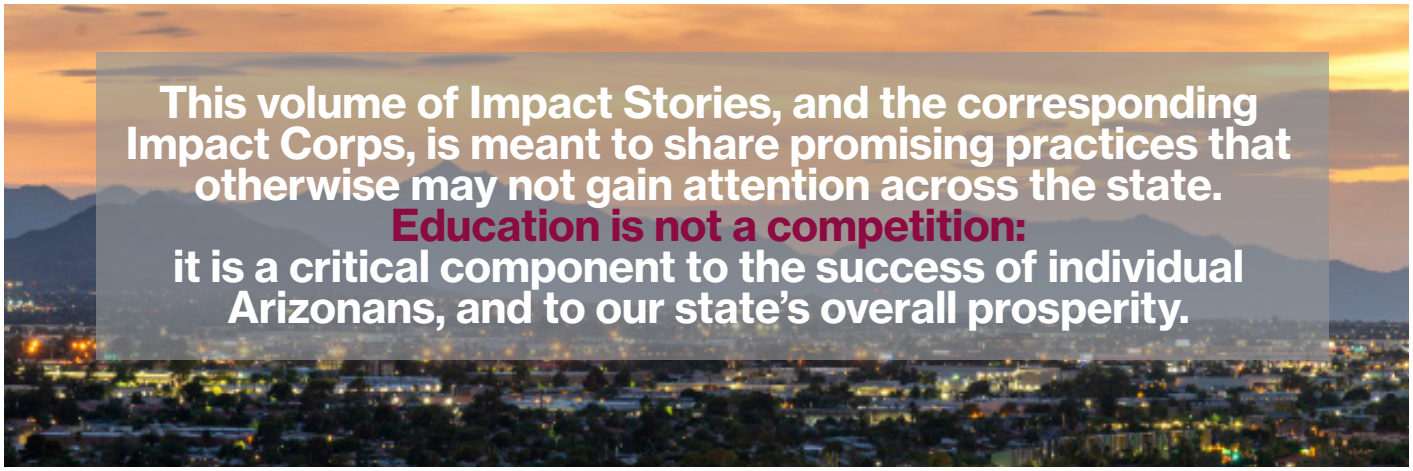
We can identify specific high schools who have high rates of academic success in a specific discipline at the higher education institutions. We narrowed our search to key STEM disciplines, given the importance of these subjects in higher education success, and the relatively standard availability of these subjects to high school students across the state.

From there, we searched for schools that met the following criteria:

- High rates of As and Bs earned in the subject discipline at the 100- and 200-level at the university.
- Graduating students spread across all three ABOR universities; ASU, NAU and U of A.
- Diversity in school types to best represent Arizona: we sought to create a cohort that is a mixture of district and charter schools, urban and rural areas, and different regions of the state so that any educator in Arizona might see a relevant school within the group.

It is important to note that the schools we selected are not necessarily from a ranked list. Rather, given the variance in size of high school student bodies, rates of postsecondary enrollment and local contexts, we ensured that schools are representative of, and relevant to students and educators across the state. The goal of Arizona's public education system is to provide strong educational opportunities and outcomes for all students.

The stories presented here capture promising and inspiring stories from across Arizona. They also represent the potential for what else we can learn from the teachers and educators that are showing up every day in our state's classrooms. We are proud to present this selection of stories to you now, and we look forward to identifying even more bright spots in Arizona's classrooms in future cohorts.



Arizona's Public School System

Arizona's K-12 public school system currently enrolls 1.10 million students.

Arizona's overall high school graduation rate is 78%, below the national average of 87%.

68% of college-goers who graduate from an Arizona high school attend an in-state public university.

There are nearly 500 public high schools in Arizona, ranging in size from less than 25 students to almost 4,000 students.

Sources: 1. Arizona Department of Education, Fiscal Year October 1 Enrollment, 2. National Center for Education Statistics, High School Graduation Rates (School Year 2021-22), May 2024 3. Arizona Board of Regents, Postsecondary Attainment Report, 2023. 4. Arizona Department of Education, Enrollment Report, traditional/comprehensive brick-and-mortar high schools included only.

Guide to Impact Stories

In each Impact Story, there are references across the top of the page. These references contain at-a-glance information about the school being highlighted. Refer to the key below for the meaning of each symbol.

School type and urbanicity (National Center for Education Statistics).

Free and Reduced Lunch rate in 2025 (AZ Department of Education).

High school graduation rate in 2024 (AZ Department of Education).

Approximate enrollment in 2025 (AZ Department of Education).

BOULDER CREEK HIGH SCHOOL
ANTHEM, AZ

"Tools and problem solving are two of the most important things students should learn in the classroom."

TEACHER BIOGRAPHY

Thomas Clarke teaches computer science at Boulder Creek High School in Anthem, Arizona. A second-career educator with a background in design and software architecture, Clarke draws from real-world experience to prepare students for the demands of college-level computer science. Over the past 13 years, he has built Boulder Creek's computer science program from the ground up, creating a four-year pathway for students to develop functional coding skills and tools for collaborative software development.

Clarke's teaching empowers students to take direction in their learning. Through project-based instruction, live coding sessions and debugging methods, his students must think critically and solve problems independently. His style matches that of an industry expert, focused on teamwork, revision control, and the design process. Video game design inspires a high degree of creativity in Clarke's classroom, while also ensuring students sift through the algorithmic challenges of coding. Before entering education, Clarke worked in the tech industry for over a decade, rising to the role of Senior Architect in an engineering and technology company. Today, he applies the same systems of thinking to his classroom.

As a cross country and track coach, Clarke supports his students in and out of the classroom. He stays active as an educator, drawing inspiration from initiatives like The Modern Classrooms Project and Building Thinking Classrooms to keep instruction student-centered in the rapidly evolving landscape of education technology. Clarke's teaching stands out for his impact on students and their postsecondary success – and for the sense of purpose he instills in young programmers.

PEDAGOGICAL INSIGHTS

At Boulder Creek, Mr. Clarke built a four-year computer science pathway that mirrors what students will encounter in college and beyond. He teaches multiple levels of programming – from introductory courses to advanced Java and Android development – and structures each class around real-world tools and team-based practices. Students use GitHub, practice revision control, and learn to debug collaboratively. Clarke often compares software to a product: something that must be designed, tested, and refined by a team. He encourages students to take ownership of their work and regularly incorporates projects that stretch their thinking – like designing AI opponents in Settlers of Catan or building Oculus VR simulators that mimic the work of a professional programmer.

His teaching philosophy is grounded in two values: tool fluency and independent problem solving. Students in his class don't just follow along – they code, make mistakes, troubleshoot, and try again. His favorite lessons are rarely the easiest to manage. Whether it's game engines in Unity or binary conversions using bitwise operators, Clarke treats complexity as an opportunity for creativity and engagement. A typical lesson may include a live coding session led by a student "driver," collaborative problem-solving, and GitHub uploads for group reflection and feedback. His classroom is dynamic and hands-on, with students applying skills immediately after they are introduced.

To make learning feel meaningful, Clarke often invents spontaneous projects tied to his students' interests – or even his own life. After earning his commercial driver's license to drive a school bus for the track team, he tasked students to write a simulation program to teach bus safety and pre-checks that students could explore using virtual reality. He's created a fictional software company – BCH Software Inc. – to give his upper-level students experience working on projects that build over time. This kind of long-term product thinking, Clarke says, helps students understand that good software is both creative and collaborative. It also leaves students with something they can point to during college and job interviews: tangible, team-based experience in designing and working code.

While his content is demanding, Clarke believes learning should never be formulaic. He builds lessons around student motivation and autonomy, borrowing ideas from The Modern Classrooms Project and Building Thinking Classrooms to keep students engaged and thinking deeply. These approaches emphasize blended learning, flipped instruction, and visible thinking – all of which have influenced Clarke's classroom structure and improved access for struggling students. He also reads widely, diving into research on motivation, psychology, and learning to refine his own practice.

"I like math, and I like the elegance of math—and that translates to computer science. You know elegant code when you see it."

EXTRACURRICULAR

Beyond the classroom, Clarke invests deeply in student development. As a cross-country and track coach, he models the same values he promotes in his teaching: discipline, goal-setting, and resilience. His students know him as someone who will challenge them – and support them – as they push toward their potential.

Through rigorous coursework, creative applications, and mentorship that extends beyond the school day, Thomas Clarke is shaping a new generation of programmers, engineers, and thinkers. His students leave Boulder Creek prepared not just for the next class or the next test – but for the complex and dynamic world of modern computing.

"I want my students to learn that software is not written alone but as a team."

CATALINA FOOTHILLS HIGH SCHOOL
TUCSON, AZ

"I want to make sure my kids are over-prepared, so they never underperform."

TEACHER BIOGRAPHY

Bernadette Moreno teaches chemistry at Catalina Foothills High School in Tucson, Arizona. A veteran teacher of 18 years, Moreno has dedicated her entire career to public education. She teaches standard, honors, and AP Chemistry – and her students consistently outperform in postsecondary chemistry courses, some of the most difficult courses in college STEM pathways.

Ms. Moreno's chemistry instruction began at the University of Arizona's New Start program, where she worked closely with first-generation students from diverse socioeconomic backgrounds. Since then, she has committed herself to opening doors for all learners, especially those underrepresented in STEM.

Her classroom is known for its consistency, structure, and high standards. She proudly calls herself "the hard teacher" – but her students rise to the challenge. Her emphasis is on the intersection of math and science that equips her students to succeed in the rigorous, interdisciplinary environment of college-level coursework.

With nearly two decades of experience, Ms. Moreno has served her school not only as a teacher but as a former cheer coach and sponsor of HOSA (a future health professional program, formerly Health Occupations Students of America) and mentor to new teachers. One of her favorite afterschool activities is her club, "Board Game Budsters," where students get to unplug and connect with board games.

CONTENT & INSTRUTION

At Catalina Foothills High School in Tucson, Arizona, Ms. Bernadette Moreno teaches chemistry with a focus as sharp as her standards. Moreno is known among students as "the gauntlet" – a title she embraces not for its intimidation factor, but because it signals to students that the work they do matters. Her classroom is structured, deliberate, and demanding, and under her guidance, students thrive in one of the most analytically challenging subjects in secondary and postsecondary education.

Moreno teaches across three levels – standard, honors, and AP Chemistry – and her students consistently perform well in college-level science coursework. This success is not incidental. It reflects an instructional approach grounded in two interlocking priorities: first, that chemistry must be taught as an analytical science inseparable

from mathematics; and second, that students learn best in environments that are both predictable and intellectually rigorous. These priorities are not in tension. Together, they form a classroom culture that promotes both confidence and achievement, particularly for students who might not otherwise see themselves as scientists. Moreno's emphasis on the intersection of math and science is central to her instructional design. A self-described "science teacher who enjoys math," she introduces chemistry concepts through real-world phenomena – questions like "Why does an apple turn brown?" – and then leads students through increasingly abstract layers of explanation. She treats math not as a parallel subject, but as a modeling tool that allows students to measure, predict, and explain the natural world. This approach is especially relevant in an era of science instruction that often de-emphasizes quantitative skills. While Moreno aligns her teaching to the Next Generation Science Standards (NGSS), she also recognizes that many emerging science curricula reduce exposure to the types of computation and precision that STEM fields demand. Her response is to preserve both the accessibility of NGSS-style inquiry and the analytical rigor that postsecondary science requires. In doing so, she equips her students with skills directly transferable to university lab settings, particularly in STEM pathways where the ability to move between conceptual and mathematical reasoning is essential.

TEACHING STYLE

Equally distinctive is Moreno's instructional structure. Her classroom runs on a clear, repeatable rhythm: each lesson builds upon prior knowledge, reinforces core concepts through guided practice, and culminates in weekly application tasks. Students are paired with "budsters," collaborative partners who help navigate labs and problem-solving activities. This predictability allows students to focus on higher-order thinking without confusion about expectations. Her assessments follow a standards-based rubric system adopted by the district ten years ago. Students begin with Level 1 tasks – basic conceptual benchmarks – and work toward Level 3 challenges that require synthesis and application. A recent Level 3 assessment asked students to draw Lewis dot structures, determine bond polarity, and predict molecular geometry using repulsion theory. By the time students reach this level, they've built the intellectual scaffolding to succeed – step by step, with purpose.

One of Moreno's favorite lessons involves significant figures. On the surface, it's a lesson about precision in measurement. But for her students, it becomes a deeper conversation about the limitations of scientific knowledge – what we can and cannot know through data. In labs that follow, students mix chemical solutions, isolate precipitates, and calculate percent yield. Most discover their actual yield exceeds the theoretical maximum. Instead of treating this as failure, Moreno turns it into an opportunity for reflection. She invites students to consider the presence of "superfluous materials," using a memorable scene from the 1991 film Father of the Bride as a metaphor. The lesson sticks. Students return to their calculations with new insight, this time adjusting for limiting and excess reactants with greater care. For Moreno, this moment – where theory meets reflection, and content becomes clear – is what chemistry instruction is all about.

TEACHER MENTOR

Moreno's teaching extends beyond the boundaries of chemistry. A daughter of first-generation professionals and a graduate of Douglas High School, she understands the long-term significance of educational access. She began her career as a mentor in the University of Arizona's New Start program, working with students from low-income and first-generation backgrounds. That experience shaped her classroom philosophy: all students can rise to high expectations when given the tools, structure, and support to meet them. She still carries that commitment into her classroom and into her extracurricular roles as a mentor, coach, and sponsor. One of her most beloved activities is an after-school club, the Board Game Budsters, where students disconnect from screens and connect with each other over strategy, logic, and fun.

In a subject students often meet with intimidation, Moreno creates an environment where persistence is rewarded, structure is stabilizing, and analytical rigor becomes a source of empowerment. Her students don't just pass chemistry – they master the habits of thinking that allow them to succeed long after high school. In a state investing heavily in STEM pathways, Moreno's classroom offers a clear example of what rigorous, inclusive science instruction can look like. It's not about shortcuts. It's about building the skills – and confidence – that students will carry with them into every lab, lecture hall, and career ahead.

CORONA DEL SOL HIGH SCHOOL
TEMPE, AZ

"Science is fun,hands on, and project-based."

TEACHER BIOGRAPHY

Dr. Melissa Wendell teaches an engineering and Career and Technical Education (CTE) program at Corona del Sol High School in Tempe, Arizona, drawing on 21 years of teaching experience that spans middle school in New Jersey and Arizona, 14 years at Mountain Pointe High School, a year in district leadership, and now three years at Corona del Sol. Graduates from Corona del Sol High School achieve remarkable scores at the state's public universities and community colleges – particularly in engineering courses. As the sole engineering teacher at Corona del Sol, identifying Dr. Wendell's influence on student outcomes was easy. She designed a three-year engineering sequence which is broad enough to expose students to various engineering fields but comprehensive enough to ensure pre-engineering mastery.

Dr. Wendell's hands-on approach to education places students in the role of engineers, who are in charge of research and prototyping. As a CTE teacher, Wendell is industry minded. Almost all her students receive an industry credential before graduating high school – a test which typical students take after two years of college. By the time they enter higher education, Dr. Wendell's students are prepared to meet the rigors of an engineering degree and to tackle the challenges of modern industry.

ENGINEERING SEQUENCING

Dr. Melissa Wendell has dedicated over two decades to teaching science, engineering, and CTE at Corona del Sol High School in Tempe, Arizona. Her instructional leadership is widely recognized for fostering exceptional student outcomes in engineering coursework at the state's public universities and community colleges. As the sole engineering teacher at Corona del Sol, Dr. Wendell designed and implemented a rigorous three-year engineering sequence that balances broad exposure to diverse engineering fields with sufficient depth to cultivate genuine mastery. This carefully scaffolded curriculum is the foundation of her program's success and central to her influence on student achievement.

The engineering sequence begins with a strong emphasis on mathematics and foundational principles, recognizing math as a critical gateway subject. In the first year, Dr. Wendell integrates core mathematical concepts with introductory engineering projects such as Vex robotics, air rockets, and structural challenges like bridge building and egg drop tests. These hands-on projects provide students with concrete experiences that solidify the connections between abstract math and its application in engineering. Recognizing math as a potential barrier, Dr. Wendell frontloads this content to equip students with the skills necessary for subsequent engineering challenges.

Building on this foundation, the second-year curriculum shifts toward more complex problem solving and independent inquiry. Students design and prototype their own projects, applying physics and mathematics

concepts to real-world scenarios. One example is a barge-building project where students use limited materials to engineer a vessel capable of supporting cargo, requiring them to predict load capacity and test hypotheses. This phase of the program introduces critical research skills and encourages students to independently navigate scientific variables, preparing them for the self-directed nature of college labs. Other activities such as gear ratio experiments, robot speed and torque optimization, and ramp challenges further reinforce applied physics principles. The year culminates in a district-wide boat regatta, a collaborative event that showcases students' ability to synthesize knowledge and compete in a practical engineering context.

The third year intensifies applied engineering practice, exposing students to specialized disciplines and emerging technologies. Projects range from designing supercapacitor dragsters that teach electrical engineering fundamentals to bioengineering a remote-controlled prosthetic hand using 3D printing and programming – funded in part by industry partners like Salt River Project. Students are encouraged to pursue independent innovation projects aligned with their passions, fostering creativity and ownership of learning. Dr. Wendell connects students to resources such as ASU's Luminosity Lab, expanding their exposure to interdisciplinary innovation across mobile development, robotics, and data science. Through this comprehensive progression, students develop critical engineering and communication skills, including technical report writing and formal presentations, essential for postsecondary success.

INSTRUCTIONAL INSIGHTS

Central to Dr. Wendell's pedagogy is the principle that engineering education must be experiential, iterative, and collaborative. Each project unfolds over several weeks, beginning with a realistic scenario and clear constraints. Students engage in independent brainstorming followed by peer collaboration, prototype development, and continuous reflection. When experiments fail, students analyze their decisions and revise designs, embracing failure as a crucial learning step. Dr. Wendell fosters a supportive classroom culture grounded in Ralph Waldo Emerson's maxim: "Our greatest glory is not in never failing, but in rising every time we fail." This ethos cultivates resilience, peer mentorship, and a positive relationship with challenging content.

Beyond project work, Dr. Wendell's assessment practices emphasize reflection and dialogue over traditional testing. Students demonstrate mastery not only by solving problems but by articulating their learning process through written reflections and presentations. This method enables deeper comprehension and allows Dr. Wendell to identify and address misconceptions through ongoing conversation. Her approach to industry credentialing is similarly student-centered; nearly all students earn a Pre-Engineering Certificate before graduation, a credential typically achieved only after two years of college. When students fall short, Dr. Wendell provides targeted reteaching informed by detailed performance reports, ensuring mastery through individualized support.

STUDENT SUCCESS

Dr. Wendell's impact extends beyond the classroom through her sponsorship of AZTECHS, a FIRST Robotics team and a student-led program that integrates extracurricular learning with engineering content. By partnering with industry professionals and program alumni, she offers mentorship and specialized support, enriching students' educational experiences and fostering community engagement. Participation in robotics further motivates students to pursue STEM pathways and strengthens their practical skills.

Dr. Wendell's comprehensive curriculum and industry-aligned, hands-on pedagogy prepare students to meet the rigorous demands of college engineering programs and competitive careers. Her program's success is evident in graduates who not only earn industry credentials but also persist and excel in higher education and STEM professions. One alumna, for example, overcame her early struggles to graduate in electrical engineering – then interned at NASA and SpaceX, and now contributes to rocket launches with Blue Origin. Dr. Wendell's instruction exemplifies how sustained, thoughtful educational design and mentorship can transform student trajectories to succeed in a complex and evolving technological landscape.

"Doing science at a deeper level."

DESERT MOUNTAIN HIGH SCHOOL
SCOTTSDALE, AZ

"I wanted to become a role model to inspire people who didn't know they were into science."

TEACHER BIOGRAPHY

Stacey Rosenfeld teaches chemistry at Desert Mountain High School in Scottsdale, Arizona. Her classroom produces an impressive caliber of chemistry students. Graduates from Stacey Rosenfeld's class enjoy high levels of academic success in 100 and 200-level chemistry courses.

She is a 16-year department chair and instructional leader alongside her duties as a full-time teacher. Rosenfeld takes advantage of modern teaching tools and techniques, such as the "flipped" classroom, so students spend more time practicing fundamental chemistry concepts in class, while providing more time at home for exploring advanced topics such as quantum theory. What we saw in the data – the exceptional performance of Desert Mountain graduates in post-secondary chemistry courses – we could only confirm when we observed Rosenfeld's classroom in action. More students doing, more students learning.

Her classroom is a model of structure, engagement, and active learning. From the moment students enter, they are immersed in hands-on experiments – identifying unknown compounds, taking ownership of their learning, and working in a space that reflects both scientific rigor and student creativity. Whether through lab work, thoughtful questioning, or classroom culture, Ms. Rosenfeld fosters a learning environment where every student is challenged, supported, and deeply engaged.

INSTRUCTIONAL DESIGN

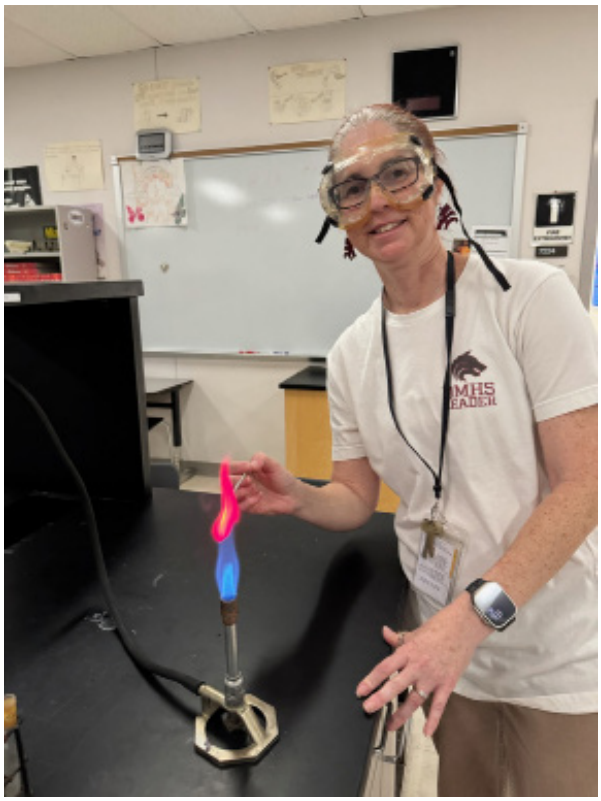
Over a 25-year career, Rosenfeld now teaches one of the state's highest-achieving high school chemistry classrooms. Her students consistently excel in postsecondary chemistry coursework – courses known for their rigor and high attrition. Rosenfeld's classroom is a model of thoughtful structure and student-centered practice, with a clear emphasis on cumulative learning, applied science, and long-term academic success.

Rosenfeld's classroom reflects the intentionality of a teacher who has studied her craft and refined it over time. She holds a master's degree in curriculum and instruction and has designed her courses to ensure that all students – regardless of background – can access and succeed in rigorous science content. Years ago, she adopted a flipped instructional model, recording her lectures and organizing note guides and presentations that students complete at home. Class time, then, is used for structured application: problem-solving, collaborative analysis, and lab-based inquiry. This model frees up time for Rosenfeld to support students as they apply prior knowledge to new contexts, deepening their understanding through repetition, feedback, and discussion. It also ensures that no student misses out on essential content. "Chemistry is like peeling an onion," she explains – each unit builds on the last, and gaps in foundational understanding can quickly snowball. The flipped classroom gives students continuous access to the tools they need, regardless of absences or disruptions.

These tools – guided notes, scaffolded practice, collaborative learning routines – are designed to serve all students, especially those who might struggle in fast-paced STEM environments. Rosenfeld designs her course with layered complexity. She begins with real-world phenomena, such as why an apple turns brown, then adds a scientific framework, models, and equations to explain it. Her classroom structure is consistent: new concepts build on existing knowledge; labs and practice reinforce core skills; assessments are cumulative. In a typical week, students complete at least one application activity, often working with a partner to solve problems or test hypotheses in a lab setting.

FOUNDATIONAL REASONING

Mathematical reasoning is central to Rosenfeld's approach. She sees math as the connective tissue of science and works deliberately to make it both accessible and meaningful. One of her favorite lessons, quantum theory, challenges students to visualize abstract, three-dimensional electron sublevels. To support understanding, she incorporates 3D models, interactive simulations, and scaffolded group work. At the end of the unit, she draws a connection to the colorful display of fireworks, explaining how their vivid colors stem from electrons transitioning from excited to ground states. Each color corresponds to a specific element or compound emitting light in a distinct part of the visible spectrum. Rosenfeld performs a demo that draws literal "oohs" and "aahs" from students – then encourages them to explain the science behind it to their family and friends. "Fireworks," she tells them, "are just excited electrons."



Another unit – stoichiometry – is widely regarded as the "roadblock" in chemistry due to its cumulative demands: students must draw on multiple prior units to balance equations, calculate yields, and model limiting reactants. To address this, Rosenfeld devotes significant time early in the year to ensuring students master the basics of formula writing and equation balancing, setting them up for later success. Her instruction supports both retention and transfer – key skills for students navigating difficult college chemistry sequences.

STRONG BONDS

What makes Rosenfeld's classroom truly distinctive, however, is the way she brings chemistry into the real world. Students read ChemMatters articles from the American Chemical Society, apply gas laws to the mechanics of pistons, and learn how polymers affect the design of Nike sneakers. In one unit, students study the Hindenburg explosion and recreate the conditions in a lab, producing hydrogen gas to fill a test tube before safely igniting it. These lessons do not just illustrate chemical principles – they spark curiosity. Each unit asks students to explore how chemistry explains the world around them and how it might shape their future.

Rosenfeld is equally committed to preparing students for careers in STEM. She ends the year with a project in which students research chemistry-related careers and present their top three choices, often discovering new and less conventional pathways – from materials engineering to environmental forensics. The point, she says, is to expand students' vision of what is possible.

That vision is especially important to Rosenfeld, who entered science at a time when few women did. As a biology major and a chemistry minor in college, she was one of just three women in certain courses. Her experience inspired her to become the kind of teacher she once needed: a confident, enthusiastic mentor. Now, she offers that same mentorship to both students and colleagues. She hosts student teachers and new instructors and provides weekly coaching sessions for Desert Mountain faculty. Her mentorship model focuses on encouragement, observation, and direct support – strategies that mirror her work with students.

In every aspect of her role, she brings expertise, structure, and joy to chemistry education. Her classroom is rigorous, inclusive, and full of discovery. Through innovative instruction and sustained leadership, she continues to shape not only future scientists but also future teachers – and the impact of that work is evident in the continued success of her students, who routinely thrive in the most demanding college chemistry courses and beyond.

SUNRISE MOUNTAIN HIGH SCHOOL
PEORIA, AZ

"Kids get to explore and chase their dreams with their creation."

TEACHER BIOGRAPHY

Joseph Temple teaches computer programming, game design, and AP Computer Science Principles at Sunrise Mountain High School in Peoria, Arizona. He is a CTE teacher ready to prepare students for the unique demands of college-level computer science.

Temple's path to the classroom was neither conventional nor accidental. After graduating from Arizona State University with a degree in Graphic Information Technology, he began his career as a photographer and later worked in restaurant management. He even attended an umpiring school in Florida before a friend encouraged him to try substitute teaching. Within two months, Temple's principal recognized his natural skill with students and offered him a full-time teaching role. He began teaching career exploration courses in junior high before moving to Sunrise Mountain High School in 2021, where he now leads computer programming, game design, and AP Computer Science Principles.

Temple's classroom emphasizes persistence and problem solving. Students spend much of their time debugging code—an approach that builds independence and reinforces core programming concepts. His structured teaching style offers strong support for beginners and self-led projects for experienced coders, helping students grow into capable, self-reliant coders.

As a dedicated member of the school community, Temple coaches, sponsors student council organizations, and continually updates his curriculum to reflect current industry tools and practices. As a rising leader in his department, Temple is expanding opportunities in computer science education and mentoring the next generation of programmers and innovators.

TEACHING PEDAGOGY

Temple's entry into teaching mirrors the philosophy that now guides his instruction: success isn't about getting things right the first time—it's about learning through practice. Across all his courses, Temple emphasizes one skill above all: how to handle mistakes. Debugging is central to his pedagogy. Students spend a significant portion of their class time identifying and correcting errors in their code, a process that sharpens not only their technical ability but their independence and resilience. "Ninety percent of what I teach is debugging," Temple explains. "It's not just about writing code—it's about figuring out what went wrong and how to fix it."

This focus on troubleshooting is more than a technical routine; it's a cognitive framework. When students engage with error messages and logic failures, they practice high-level reasoning across multiple domains such as syntax recognition, logical sequencing, and conceptual abstraction. Debugging becomes a meta-skill that prepares students for the rigors of college-level computer science, where success hinges on a student's ability to self-correct and persist.

His classroom scaffolds this development through a carefully structured curriculum. In introductory courses, he begins with line-by-line instruction, modeling code on-screen, so students understand every function before building their own. This approach supports all learners—from those just discovering programming to more advanced coders who benefit from strong fundamentals. With the benefit of Sunrise Mountain's 90-minute block periods, he balances direct instruction with independent application, giving students time to tinker, test, and iterate.

As the year progresses, so does student autonomy. In the second semester, Temple shifts from direct modeling to project-based learning, where students take the lead on coding challenges. Game design becomes a vehicle for creativity, technical growth, and collaboration. Students code character movement, object behavior, and environmental interaction – problems with multiple solutions that require both experimentation and peer input. One such project – the development of a custom-built arcade-style game – was a collaboration between Temple's programming students and an engineering class, connecting two programs into a single, interdisciplinary project. During our classroom visit, a student proudly demonstrated the completed game, programmed at home and housed in a self-designed gaming cabinet. He spoke with confidence and fluency about the inner workings of the game – an unmistakable reflection of the independence and mastery cultivated in Temple's classroom.

His teaching reflects a culture of trust, autonomy, and mutual respect. Students are expected to try, fail, ask for help, and try again. They learn not just to write code, but to think like programmers: methodically, analytically, and creatively. When students inevitably get stuck, Temple encourages them to search forums, consult tutorials, and collaborate with peers. The classroom is a studio for creative problem solving, and students take pride in their ability to learn independently.

"Anyone can be a good programmer. But can you be a good debugger?"

COMMUNITY IMPACT

Outside the classroom, Temple is deeply embedded in the life of Sunrise Mountain High School. He coaches boys' golf and JV softball, runs the football scoreboard, DJs basketball games, advises Future Business Leaders of America (FBLA), assists student council, and even drives students for behind-the-wheel practice to help them earn their driver's licenses. His community involvement mirrors his instructional approach: he shows up, builds relationships, and models what it means to care about growth – whether in sports, leadership, or learning to debug a program.

As older teachers retire, Temple has emerged as a rising leader in his department, mentoring colleagues and expanding the school's computer science offerings. His role at Sunrise Mountain is to shape a new generation of confident, curious, and capable problem solvers. In a field where tools evolve by the year and standards are constantly redefined, Temple's steady focus on student growth, persistence, and relevance ensures his impact will last well beyond the bell schedule.

EDUCATING THE FUTURE

A forward-thinking educator, Temple continually updates his curriculum to keep pace with industry shifts. He is currently integrating AR/VR headsets and robotic arms into his Python unit and supporting students on projects that blend engineering and computer science. One student is developing a mini arcade cabinet using a Raspberry Pi – part of a collaborative project between Temple's class and an engineering course – combining software development with hands-on construction. Temple encourages these intersections – between disciplines, between failure and growth, between creativity and computation – because they reflect the real-world complexity students will face in college and career.

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UNIVERSITY HIGH SCHOOL
TOLLESON, AZ

"The goal of our high school is to support students in getting to college. That mission inspires me to teach."

TEACHER BIOGRAPHY

Michelle Burns teaches AP Calculus AB and BC as well as AP Computer Science at University High School in Tolleson, Arizona. A teacher of 28 years, she blends deep content knowledge with a clear instructional structure that supports students' success in advanced mathematics and computing.

Burns plays a central role in ensuring students are ready for the demands of university-level STEM curriculum and lab practice. Her students routinely excel in advanced coursework, and many go on to pursue STEM degrees. Her classroom emphasizes collaborative learning and critical thinking. Rather than lecture-heavy lessons, she structures class time around guided instruction, group problem solving, and reflective review. Her strategic use of whiteboard collaboration and error analysis encourages students to approach math as a shared challenge – where learning comes through practice, discussion, and revision.

As one of two University High School educators selected for this ASU Impact Corps cohort, Ms. Burns exemplifies a commitment to academic excellence and college readiness. Her work ensures students leave high school prepared to succeed in the most demanding postsecondary environments.

"I don't let my students give up. And I don't give up on them."

TEACHING MATHEMATICS

For 17 years, Michelle Burns has taught advanced mathematics and computer science at University High School in Tolleson, Arizona – a campus built on the mission of preparing students for college success. After discovering a passion for tutoring in college, she entered the teaching profession and now plays a central role in helping students develop the skills and confidence needed to succeed in this central STEM discipline. A former junior high teacher in Ohio, she moved to Arizona to raise her family and found a professional home at University High School, drawn by its focus on academic rigor and postsecondary readiness.

Ms. Burns teaches AP Calculus AB, AP Calculus BC, and AP Computer Science Principles, guiding students through a challenging progression of analytical thinking, programming, and advanced mathematics. Her classroom was identified in this study for producing exceptional outcomes in college-level math. Burns believes early exposure to calculus is one of the most powerful predictors of success in STEM. Many of her students go on to pursue degrees in science, engineering, or computer science, and she attributes this trajectory in part to the structured preparation they receive in high school. For students who may not see themselves as "math people," her classroom becomes a place where they build confidence and fluency through guided practice and collaborative learning.

Burns structures her class around a clear three-part sequence: instruction, practice, and summary. Lessons begin with a focused 10–15 minutes of direct instruction, then quickly shift into group-based problem solving. Students work in triads at whiteboards, taking turns writing, discussing strategies, and catching mistakes together. While the students are working, Burns circulates throughout the room identifying errors, asking probing questions, and encouraging revision. One of her signature strategies is requiring students to leave their mistakes visible – no erasing allowed – so the class can learn from different approaches during a gallery walk at the end of the session. This emphasis on peer critique and error analysis strengthens students' conceptual understanding while fostering a growth mindset.

When we visited Ms. Burns's classroom in April, we saw this approach in action. Students were using everyday objects and water displacement – sliced limes and a graduated cylinder – to explore volume and validate their calculations. The activity blended tactile engagement with abstract reasoning, and the room buzzed with quiet intensity. Students discussed their work with clarity and confidence, and even our graduate-level colleagues found themselves drawn into the exploration. It was a clear reflection of Ms. Burns's talent for making advanced mathematical concepts meaningful and accessible.

Her instruction extends beyond content delivery – it is about creating the habits and mindsets students will carry into college. She closes each class with "notes to your future forgetful self," a succinct synthesis of key takeaways to reinforce long-term learning. Her classroom routines reinforce self-reflection, critical thinking, and collaborative problem solving – skills essential for success in AP exams, university coursework, and future careers in STEM.

EXTRACURRICULAR

Burns's commitment to student opportunity and STEM leadership extends beyond the school day. She founded her school's chapter of the National STEM Honor Society and organizes two annual community events: STEM Night, where students showcase original projects for families and community members, and STEM Challenge Night, a team-based competition that invites students to solve hands-on design problems. She coaches a drone competition team and leads after-school activities in robotics construction and programming. Her students also compete in university-level STEM design challenges; in one recent event – the Military Infrastructure Resiliency Design Competition at Arizona State University – her team took first place and earned $2000 per student.

As one of two University High School educators recognized through this ASU Impact Corps cohort, Ms. Burns exemplifies what it means to prepare students for the future. Her instruction is not only academically rigorous but also deeply intentional, designed to support every student in becoming an analytical thinker, capable problem solver, and confident college learner.

UNIVERSITY HIGH SCHOOL
TOLLESON, AZ

"My classroom can be a loud environment, but it is a curious space where students feel open to making mistakes and being vulnerable, where they feel safe to learn."

TEACHER BIOGRAPHY

Tyler Hill teaches chemistry and biology at University High School in Tolleson. Almost a decade in the classroom, Hill brings youth and energy to science instruction. His classroom blends content with hands-on, inquiry-based learning and emphasizes experimentation, data analysis, and problem solving – skills essential to success in college-level science.

Hill's courses include advanced chemistry, AP Chemistry, and pre-AP Biology. Labs and scientific challenges range from airbag designs to chemical concentration experiments, where Hill structures his instruction around collaborative, high-cognition tasks that push students to think critically and apply their learning.

Beyond the classroom, Hill is a Senior Fellow at the Knowles Teacher Initiative and an alum of the ASU Modeling Instruction Program. On campus, he leads the Garden Club and co-leads a faculty book club on teacher resilience. These affiliations reflect his commitment to advancing STEM education in Arizona.

PRACTITIONER INQUIRY

Teaching, like any profession, is a skill developed through consistent practice – and there is no better training than time spent in the classroom. Tyler Hill has integrated an impressive range of teaching strategies into a classroom environment that fosters inquiry, collaboration, and real-world application of student learning. Hill's extensive professional development – along with a knack for teaching – led him to adopt a "practitioner inquiry" approach in the classroom. In this model, the teacher functions as both educator and researcher – observing how students engage with lessons before analyzing outcomes and refining instruction. Hill's own practitioner inquiry means treating each class as an opportunity to learn what works, what does not, and how students respond to different strategies. He collects data through student discussions, lab performance, and assessments, in order to adjust his approach as students respond to the lesson. This cycle of teaching, observing and improving allows Hill to test new teaching strategies, so students gain high quality experience with core ideas, cross cutting concepts, and science practices.

Newton teaches us that an outside force can change the direction and acceleration of something – or someone – on a path. When we examine statewide data on student achievement, Hill's students stand out for their exceptional performance in college-level chemistry courses. To understand this effect, we interviewed and observed Hill in his classroom, examining how his inquiry-driven instruction shapes and accelerates students' learning trajectories. His deliberate cycle of teaching, observing, and refining empowers students to develop the skills and confidence necessary to succeed in advanced science, demonstrating how intentional teaching can profoundly influence student outcomes.

Tyler Hill's approach to science education at University High School exemplifies a deliberate and sophisticated effort to prepare students for the intellectual rigor and practical demands of higher education in STEM fields. His instruction encompasses advanced chemistry, AP Chemistry, and pre-AP Biology courses – each designed to integrate foundational scientific content with experiential, inquiry-based learning. This integration is not incidental but central to Hill's educational philosophy, which prioritizes the development of transferable scientific skills over mere content delivery.

PEDAGOGICAL INSIGHT

A primary strength of Hill's pedagogy lies in its focus on equipping students with the competencies essential to scientific inquiry and problem-solving across disciplines. Hill's curriculum incorporates complex, hands-on activities that compel students to engage in authentic scientific practices. For example, students design an airbag system to protect an egg during a simulated crash experiment, contending with real-world constraints such as limited materials and budgetary considerations. This task challenges students to balance theoretical knowledge with practical constraints, thereby fostering skills in experimental design, cost-benefit analysis, and materials research – while also deepening their understanding of stoichiometry through the calculation and manipulation of chemical reactions to inflate the airbags. Similarly, exploratory experiments involving the interaction of metals with flame to produce spectral light serve to stimulate curiosity and promote collaborative problem-solving.

These learning experiences are carefully aligned with the Next Generation Science Standards (NGSS), which serve as a foundational framework guiding Hill's instructional decisions. The NGSS emphasize three interrelated dimensions critical to comprehensive science education: disciplinary core ideas (the essential concepts in science), science and engineering practices (the behaviors and skills scientists and engineers engage in), and crosscutting concepts (concepts that bridge disciplinary boundaries, such as patterns, cause and effect, and systems). Hill's assessments and classroom activities are explicitly designed to develop student proficiency across all three dimensions, ensuring a holistic understanding of science. For instance, students are not only required to master chemical principles (disciplinary core ideas) but are also routinely tasked with planning and conducting investigations, analyzing data, and constructing explanations (science and engineering practices). Furthermore, by engaging with crosscutting concepts such as cause and effect during lab investigations, students learn to make connections between abstract scientific principles and tangible phenomena. This comprehensive approach better prepares students for the complex reasoning and problem-solving they will encounter in college and professional scientific settings.

PROFESSIONAL PRACTICE

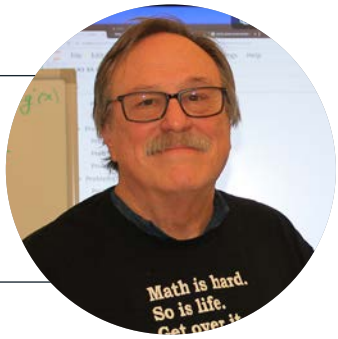
Crucially, Hill's professional development background has played a formative role in shaping both his instructional identity and his outcomes with students. As a Senior Fellow at the Knowles Teacher Initiative, Hill has joined a national network of science and math educators committed to research-based teaching and instructional leadership. The fellowship has provided him with mentorship, collaborative learning opportunities, and access to a wide body of pedagogical research, all of which have directly informed his practitioner inquiry framework. In addition, Hill is a graduate of Arizona State University's Modeling Instruction Program – an intensive workshop exercise that reorients science teaching around active student construction of scientific models rather than passive content delivery. The Modeling approach emphasizes student reasoning, experimentation, and evidence-based dialogue, which now serve as cornerstones of Hill's classroom practice.

Together, these two pillars – experiential, skills-based learning and practitioner inquiry – constitute the core of Hill's educational impact. The evidence of his success is observable not only in classroom engagement but also in tangible outcomes: Hill's students consistently demonstrate exceptional performance in college-level chemistry courses. This correlation underscores the relationship between Hill's deliberate instructional design and the accelerated development of his students' scientific proficiency. His work illustrates how high-quality science education demands both thoughtfully constructed learning experiences and a teacher's reflective commitment to continual improvement.

Hill's professional profile further reinforces his dedication to advancing STEM education beyond his classroom. His leadership on campus reflects an awareness of the broader educational ecosystem and the importance of sustaining a collaborative professional community.

Tyler Hill represents the next generation of science instruction that combines application-driven instruction with evidence-based teaching practices. His dual focus on developing students' scientific skills and continuously refining pedagogy exemplifies best practices in STEM education and serves as a compelling example for educators committed to preparing students for the demands of college and beyond.

WILLIAMS HIGH SCHOOL
WILLIAMS, AZ



"When I skip steps, I miss my students. It's true in calculus; it's more true in precalc. It's true nonetheless."

TEACHER BIOGRAPHY

Robert Grossman teaches mathematics at Williams High School in Williams, Arizona. Rural and remote schools like Williams High School are often geographically isolated from universities and community colleges. We were excited to see Williams High School students stand out in student achievement data for excellence in collegiate mathematics.

Like our other cohort members, we identified Robert Grossman by tracing his students' postsecondary success in mathematics back to his classroom. His teaching style is traditional and direct, but what strikes us is his connection with his students and their enthusiasm for learning. Grossman finds a way to make calculus relevant for students in Coconino County. In one lesson, he connects Galileo's experiments on the Leaning Tower of Pisa to the gravity on the moon. He shows unique footage of astronaut David Scott dropping a falcon feather and hammer onto the lunar surface – which landed at the same time. Once again, Galileo's theory of gravity worked on the moon – blending the principles of physics with the day's calculus lesson.

His diverse background – as a Nuclear Reactor Operator in the U.S. Navy, aerospace engineer and small business owner – brings a wealth of experience to his classroom and expands students' views of the possibility of a college degree. Grossman inspires his students to attend college and (just as important) provides them with the ability to succeed in their coursework.

"I hope I open their eyes to a bigger world."

MAKING A DIFFERENCE

When analyzing patterns in postsecondary mathematics achievement across Arizona, Williams High School – a small rural campus in Coconino County – emerged as an unexpected outlier. Despite its geographic isolation and limited enrollment, students from Williams were enrolling in and excelling at college-level mathematics at notably high rates. This trend prompted a closer examination of the instructional practices driving these outcomes. The data led to a single teacher: Robert Grossman. An educator with a diverse professional background, Grossman teaches mathematics, computer science, and physics at Williams High School. His approach to instruction – traditional in form but deeply enriched by interdisciplinary application – has proven remarkably effective in preparing students from a rural community for the demands of higher-level mathematics. This profile examines how Grossman's teaching both reflects and transcends conventional pedagogy, offering insight into the conditions under which rural schools can produce college-ready STEM students. Grossman describes his style as "old and old-fashioned," preferring chalk and textbook over newer digital tools and instructional technologies. But that modest description belies a rich, interdisciplinary approach to math instruction. Though his lessons are structured around direct instruction and computation, they are grounded in real-world scenarios that animate abstract principles. A favorite example involves Galileo's law of falling bodies –

revisited on the lunar surface. Grossman uses archival NASA footage to show Apollo 15 astronaut David Scott dropping a feather and a hammer on the moon, as a modern analog to Galileo throwing stones from the Tower of Pisa. The lesson blends the basics of physics and calculus, anchored in a story that connects the history of scientific inquiry to its modern equivalent.

It is this capacity to bridge theory with application – often drawing from his own career in engineering and science – that makes Grossman's teaching uniquely powerful. In one calculus project, students design the descent path of an airplane, calculating how to minimize g-force during landing from 40,000 feet. The assignment draws on aerospace principles and requires a high level of mathematical precision, all while immersing students in a practical, problem-solving scenario. Another day, Grossman guides students through a spring experiment in class, then uses a question that arises – "Why does the spring stop moving?" – as a gateway to introduce a new physics unit on energy conservation. It's a clear example of how he uses physics to deepen students' mathematical thinking, showing that concepts like force, motion, and energy are not separate from calculus, but embedded within it.

While Grossman often relies on traditional methods, he is equally comfortable teaching through Jupyter Notebooks – a programming environment that allows him to write and execute code directly alongside student notes. When students struggle to grasp abstract concepts, such as how Riemann sums approximate the area under a curve, he writes animations that model the accumulation process in real time. These visualizations help students see what the math is doing, not just calculate it. Grossman's integration of coding into math instruction reflects not a break from tradition, but an extension of it – drawing on his engineering background to make advanced concepts more accessible and concrete.

THE MATH CONNECTION

Williams High School graduates about thirty students per year. In a school this small, over half the student body passes through Grossman's math classroom. Some students study under him for multiple years. Rural schools like Williams often face structural barriers to advanced coursework – limited staff, fewer electives, and distance from university programs. But Grossman defies that trend. His students enroll in college mathematics at impressive rates, and they succeed once there. That outcome is no accident. By giving students analytical fluency, technical exposure, and personal relevance, Grossman builds skill and self-confidence.

Grossman's example also underscores a broader insight about rural STEM education: teachers with industry backgrounds can offer more than content – they provide context. When Grossman teaches calculus, he draws from real-world experience applying mathematics in high-stakes environments, such as operating a submarine reactor. His instruction is grounded in practical relevance; whether discussing flight dynamics or systems programming, he connects abstract concepts to the settings in which they are used. This firsthand perspective gives students a clearer understanding of why the math matters – not just how to compute it. By fostering this deeper comprehension, Grossman better prepares his students to apply mathematical thinking effectively in college-level courses and beyond.

CONTINUOUS LEARNING

Even in the later stages of his career, Grossman continues to refine his craft. He plans to attend the ASU Modeling Instruction Program to update his physics instruction and recently enrolled in a summer calculus course at Northern Arizona University – not because he has forgotten the material, but because he wants to see how today's college professors are teaching it. "I'd like to study it again in the 21st century," he jokes. But beneath the humor lies a deeper truth: Grossman sees himself as a lifelong learner, modeling the very habits he hopes to instill in his students.

Robert Grossman is redefining what STEM education can look like in a rural school. With a steady hand, a rich professional background, and a deep commitment to his students, he makes complex math feel within reach – and shows students that even in a town of 3,000, they can succeed.

ASU MODELING INSTRUCTION

EXCELLENCE IN TEACHER PREPARATION

"Good teaching is an art, fully deserving our respect and admiration."
- Dr. David Hestenes, Co-Founder of Modeling Instruction

Some of the best high school teachers in the state attribute their success to the Modeling Instruction Program at Arizona State University. ASU Modeling Instruction is a teacher preparation program for physics, chemistry, and interdisciplinary STEM courses for high school and college educators. In a series of workshops, teachers learn robust methods for teaching and classroom technology. The program aims to correct the weaknesses of traditional lectures with interactive teaching methods for students to understand physical experiences and to articulate and evaluate scientific claims and evidence. Rooted in research-based practices, Modeling Instruction at ASU has prepared teachers for high-quality instructional practices across the state – and has left its mark on Arizona students and educators.

The program's core mission is to deepen teachers' understanding of how students learn science and to equip educators with strategies to foster academic success. Modeling Instruction emphasizes data analysis, the development and defense of scientific claims, and thoughtful experiment design. This approach produces students who consistently outperform their peers in introductory physics and chemistry courses across Arizona.

The program's influence is evident in the ASU Impact Corps, where nearly one-third of alumni have participated in Modeling Workshops. This strong representation reflects the program's broad impact on statewide student achievement. Educators trained through ASU Modeling return to their classrooms armed with high-impact instructional strategies that elevate student success in STEM.

The program was developed in the 1980s by Malcolm Wells, a physics teacher at Marcos de Niza High School in the Tempe Union High School District, in collaboration with his doctoral advisor, ASU physics professor David Hestenes. Wells implemented Hestenes's theory of modeling as the central activity of physics instruction, alongside contributions from ASU biology professor Tony Lawson, who refined the Karplus learning cycle (commonly known as the 5Es). This synergy of theory and practice would soon transform physics education in Arizona.

David Hestenes's pioneering research demonstrated that traditional physics instruction often leaves students with fragmented and incomplete understandings of physical phenomena. He identified that students come to class with their own "system of beliefs and intuitions" about the physical world, and effective teaching must build on these ideas. His extensive body of work, including more than 35 publications and numerous empirical studies, validated the efficacy of Modeling Instruction. Students taught by novice Modeling teachers showed measurable improvements, while those taught by expert modelers consistently doubled their conceptual understanding in introductory physics.

A vital contributor to the program's growth is Larry Dukerich, a longtime chemistry and physics teacher at Dobson High School in Mesa Public Schools and one of the earliest Modeling Workshop leaders. As Assistant Executive Officer of the American Modeling Teachers Association, Dukerich played a central role in expanding workshops in

chemistry, physical science, and second-semester physics. His leadership in curriculum design and teacher training continues to leave a lasting impact on science education statewide.

Leading the program is Director Jane Jackson, who has guided Modeling Instruction since 1994, when David Hestenes entrusted her with executing a $4 million National Science Foundation grant that expanded the program nationally. Under her leadership, more than 1,350 Arizona teachers have completed the intensive workshops, influencing thousands of students across the state. The program is further supported by associates Colleen Megowan, founding Executive Officer of the American Modeling Teachers Association; Bryan Henderson, Director of the Master of Natural Sciences Program at ASU; and Robert Culbertson, former director of the master's program.

Sustaining the program's impact are funders such as the Arizona Public Service Foundation and Salt River Project. SRP has provided $35,000 in annual support for 17 years, while APS recently contributed $50,000 to fund tuition scholarships, increasing access to professional development for Arizona teachers.

The continued efforts of dedicated Modeling Workshop leaders—including Andy Chapman, Melissa Grimscheid, Kirticia Jarrett, Richard McNamara, Justin Sheets, Mitch Sweet, Jae Chang, Agatha Andersen, and Kelli Warble—have been essential to the program's success.

The continued dedication of the Modeling Instruction community—including workshop leaders, program directors, educators, and funders—has established a sustainable and scalable model for transforming science education in Arizona. By equipping teachers with research-backed instructional strategies and fostering collaborative professional networks, the program not only elevates teacher effectiveness but also creates measurable improvements in student learning and postsecondary success. This comprehensive approach addresses long-standing challenges in STEM education, particularly in physics and chemistry, by shifting the focus from rote memorization to conceptual understanding and inquiry-based learning. As the program expands its reach and evolves with emerging educational research, it stands to promote its science instruction as the gold standard for national education in STEM classrooms. The Modeling Instruction Program exemplifies how targeted teacher preparation, supported by robust research and community engagement, can yield lasting benefits for students, educators, and the broader education system.

WHAT'S NEXT?

This collection of Impact Stories explores the promising practices and bright spots in seven of Arizona's public high schools. As we welcome and congratulate the Third Cohort of the ASU Impact Corps, we are also looking towards the future. Here's what's coming next:

MENTOR EVENTS

Each of the ASU Impact Corps members have agreed to serve as mentors to Arizona's schools and educators. They will provide informational events that are designed to share what they have done and learned in this process of becoming an Impact Corps member. They will serve different communities of educators, such as by having a focus on a specific subject discipline, or on a specific community of schools.

ANNUAL COHORTS

The 2025 Cohort is the third in what we hope to be a longstanding program within Arizona's K-12 education system. Due to our partnership with many education stakeholders in the state, along with the support of ASU, we are planning to continue and expand this cohort model. Each year, we will seek out a group of high schools whose graduates demonstrate high levels of academic success in the state's colleges and universities. From there, we will reach out and identify specific teachers and educators at those schools who demonstrate effective practices, promising stories and scalable strategies. We will invite these educators to join the Impact Corps, offer them opportunities to collaborate with other educators across the state and serve as mentors to strengthen Arizona's public education system.

DECISION CENTER RESOURCES

The mission of the ASU Helios Decision Center for Educational Excellence is to provide schools, teachers and education stakeholders with actionable information that guides decision making to improve outcomes for Arizona's students and, therefore, Arizona itself. We do this via our partnerships with various organizations in the state that allow us to create, publish and disseminate a variety of tools and resources. Our team is based out of the ASU Tempe campus and the Helios Education Campus in Phoenix, but we work across the state. Our tools are available online, as interactive presentations in our Helios Decision Theater, and as Impact Projects where districts and charter schools are our direct partners.

CREDITS & SOURCES

AUTHORS & PROJECT LEADS

- Dawn Foley, PhD
- John Janezic
- James Driscoll

CONTRIBUTORS

This third volume of Impact Stories was made possible from the contributions and support of our team members.

- Whitney Marsh
- Joe O'Reilly, PhD
- Cristi Guevara, PhD
- Christopher Salem Ozuna, PhD
- Rebecca McKay
- Momoko Rai
- Camila Tompkins, PhD
- Mary Zhu
- Ben Stewart Silas Sargunam
- Kelvin Munakandafa

DATA SOURCES

The Postsecondary Feedback Reports Portal is the data source for identifying schools to participate in the Impact Corps. For more information on the specifics of how this database is structured, please visit: decisioncenter.asu.edu/tools/PSFR

The facts displayed for each school come from multiple sources. The school type, high school graduation rate, student body enrollment and Free and Reduced Lunch rate come from the Arizona Department of Education, and are from 2025. School urbanicity comes from the National Center for Education Statistics. High School graduation rates come from the ADE.

IMAGE SOURCES

Photographs from school sites were provided by participants or taken the day of observations in accordance with school photography policies. Background and other photos come from the ASU Brand Library or from Pixabay and are used here according to license terms. Icons are from The Noun Project.

FUNDING

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MEET THE TEAM

The Decision Center's team of dedicated staff and data scientists are helping Arizona's leaders and educators make informed decisions about education.

The Decision Center for Educational Excellence leverages the resources of ASU and Helios Education Foundation to research our education system and bring together education stakeholders in order to drive positive change and better student outcomes. Partnering with Helios Decision Theater and other ASU researchers and thought-leaders, we convene key stakeholders with our Tools & Visualizations to examine the education system and model and visualize the impact of potential new policies and innovative solutions on education outcomes. Our work is made possible with a dedicated staff of leaders and researchers making a difference in Arizona.

Decision Center Staff

Dawn Foley, PhD, Impact Corps Project Lead
Dawn is helping shape the Decision Center's impact projects and Helios Decision Theater sessions to better serve partners, especially K–12 schools. With a strong background in curriculum, instruction, and school leadership, she is supporting Arizona schools using these tools to drive measurable outcomes for students.

John Janezic, Impact Corps Project Team Member
John is an interdisciplinary professional focused on sustainable futures and cross-sector collaboration. With a background in program development, leadership and global management, he explores the resources, barriers and opportunities shaping K–12 education in Arizona and beyond. He continues to support accessible, high-quality education through a range of ASU K–12 initiatives.

James Driscoll, Impact Corps Project Team Member
James co-authored Volumes II and III of the ASU Impact Corps Catalog. Before joining the Decision Center, he conducted research on Arizona's political and economic landscape. He is currently pursuing a Juris Doctor at the Sandra Day O'Connor College of Law.

Cristi Guevara, PhD, Senior Data Scientist
Cristi is an interdisciplinary applied mathematics researcher with analytical skills for problem solving, collaborative research, modeling, algorithm developing and machine learning. She currently works on our education & workforce visualization, as well as our CTE research projects.

Rebecca McKay, Senior Data Scientist
Rebecca McKay serves as a Senior Data Scientist at the Decision Center, where she leads projects focused on leveraging data to drive systemic improvements in Arizona's education landscape. With over 25 years of experience in applied analytics, educational research, and strategic data use, Rebecca plays a pivotal role in transforming complex educational data into actionable insights for policymakers, school leaders, and community stakeholders.

Momoko Rai, Senior Data Scientist
Momoko has over twenty years experience conducting research and creating innovative projects. She has a background in both public policy and data analytics. Momoko has been embedded at the Arizona Department of Education and is well versed in PK-12 data. She has been involved in studies of rigorous course taking, longitudinal course taking, personalized admissions, and prototyping various visualizations and initiatives.

Camila Tompkins, PhD, Data Scientist
Camila is an interdisciplinary social scientist with over 10 years of education experience at the high school and university level. She has a background in conducting quantitative and qualitative data analysis. She supports projects that advance educational equity and student success, transforming complex data into actionable insights for Arizona's schools and communities.

Mary Zhu, Full Stack Developer
Mary joined the Decision Center in 2023 with more than 25 years of experience in web and database applications design and development. She works with data scientists to create visualization tools that support the Center's mission of improving educational outcomes for Arizona students. She also oversees the Center's communications efforts.

Kelvin Munakandafa, Student Innovation Analyst
Kelvin supports various projects at the Decision Center, where his focus is automating processes and validating data. As the founder of a drone startup, FlighTech, he is passionate about using technology to address critical community needs. Kelvin is currently an MGM Data Science Candidate at the Thunderbird School of Global Management.

Ben Stewart Silas Sargunam, Student Innovation Analyst
Ben is currently pursuing a Master's in Computer Science at ASU. At the Center, he supports data collection and validation for education-focused tools. He also contributed to ASU Impact Corps 2025 through interview write-ups and a school visit.

Leadership Team

Whitney Marsh, Associate Vice President, Educational Outreach and Student Services
For the past 15 years, Whitney Marsh has led national and state-level strategy, policy, and implementation in education – building cross-sector partnerships to strengthen systems and expand opportunity.

Joe O'Reilly, PhD, Director
Joe came to the Center after 30 years of directing research, assessment and accountability in Arizona's largest school district. He is past vice-president of the American Education Research Association and has been extensively involved in Arizona education issues for many years.

OUR PROJECTS RANGE FROM KINDERGARTEN THROUGH EMPLOYMENT

K–8 Outliers

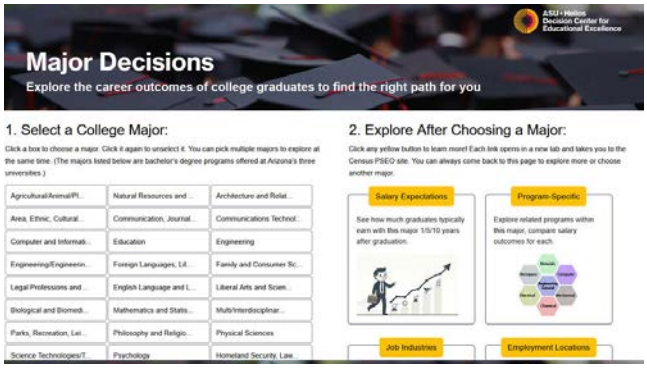
The K–8 Outliers visualization enables schools to compare themselves on criteria they choose with similar schools to identify high-performing schools and opportunities for growth.

Visualization of Student Trajectory and Achievement (ViSTA)

The Visualization of Student Trajectory and Achievement allows public Arizona middle schools track how their students are progressing and performing in district and charter high schools in Arizona.

High School Outcomes Tool (HSOT)

The High School Outcomes Tool combines community-level data from multiple public sources to better understand the context of AZ high schools.



Major Decisions

The Major Decisions Tool helps students explore the career outcomes of college graduates based on different college majors.

Personalized Admissions

The Personalized Admissions Project offers qualified students admission to state universities before they even apply.

Postsecondary Feedback Reports (PSFR)

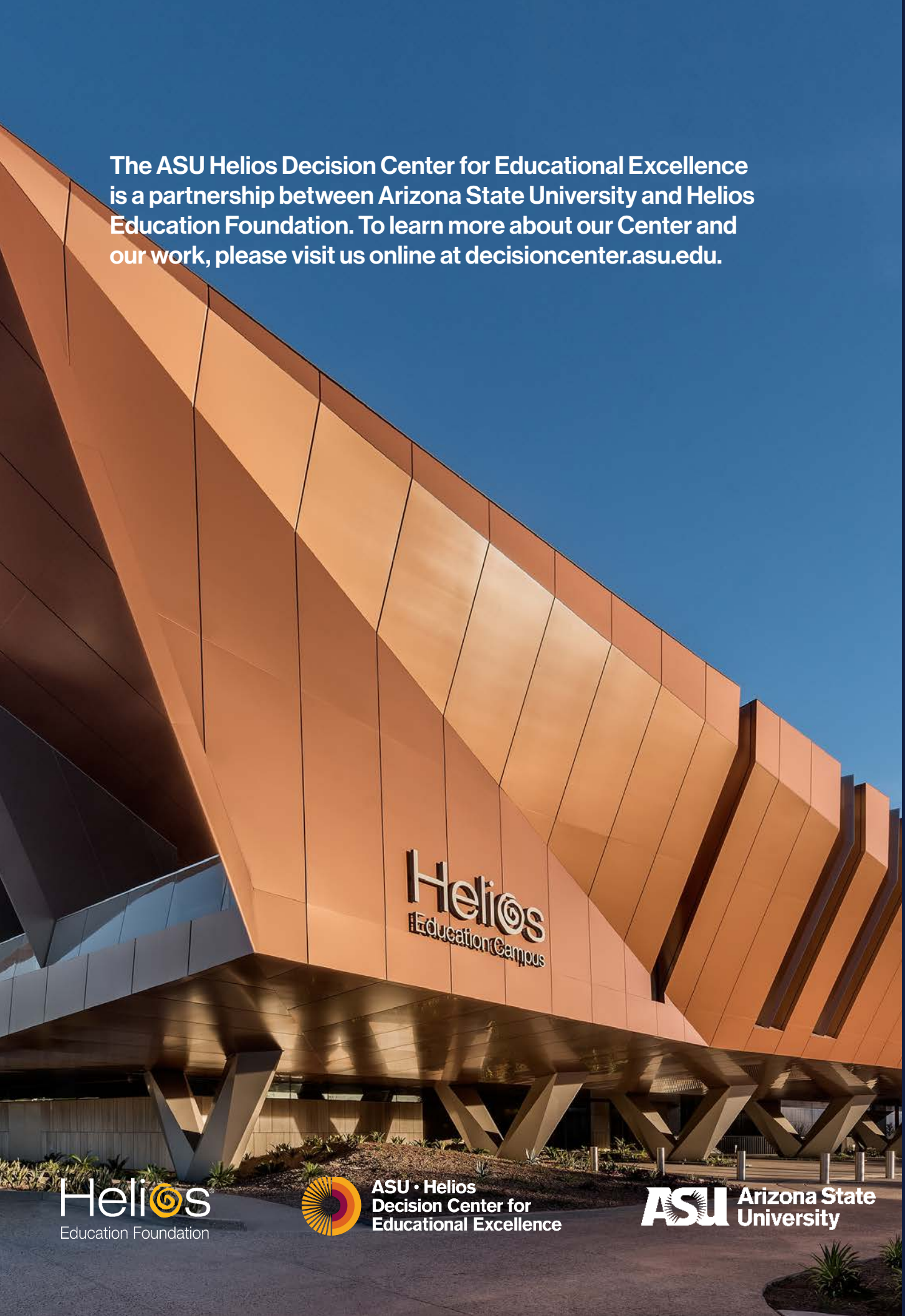
The Postsecondary Feedback Reports give feedback to high schools on how their graduates perform in community colleges and public universities.

ASU Impact Corps

The Decision Center identifies teachers whose students excel in their subjects in college. The teachers are honored and share how they prepare their students for future success with other teachers around the state.

Arizona Education and Workforce Visualization

The Arizona Education and Workforce Visualization examines the demand for workers in specific industries over the next decade, and how we can better prepare Arizonans for the opportunities in the future workforce.



The ASU Helios Decision Center for Educational Excellence is a partnership between Arizona State University and Helios Education Foundation. To learn more about our Center and our work, please visit us online at decisioncenter.asu.edu.

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