Impact Stories

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

Impact Stories Volume 1

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CREDITS & SOURCES

EXPLORE





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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 the 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) and the Postsecondary Feedback Reports (PSFR) Portal combine various datasets in new, or previously unavailable, ways for schools and systems to use in their decision making. In conjunction with our Decision Theater spaces, 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've 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.



The Decision Center's Executive Director, Dr. Joe O'F presents the High School Outcomes Tool in the Decision Theater at the Helios Education Campus in Phoenix

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
- Education and the Workforce
- Impact of the COVID-19 Pandemic
- Effects of Rigorous Coursetaking

To learn more about our Tools & Visualizations, including how to access them at home or in our 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.

Our current list of Impact Projects includes:

- Personalized Admissions Project
- ASU Impact Corps
- West-MEC CTE Explorer Pilot

To learn more about our Impact Projects, including for more information on how to join an ongoing project, visit our website: 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**

Right page, top - Screenshots of the types of reports shown in the PSFR Portal, as seen in the Decision Theater. Right page, bottom left - Exterior view of the Helios Education Campus in Phoenix. Right page, bottom right - Interview view of the Decision Theater

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 fare 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 subject disciplines in higher education. This level of detailed feedback gives high schools information they have not previously had access to. 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 PSFR Portal is uniquely Arizonan. Our Center's unique partnership with the Arizona Department of Education, the Arizona community colleges, the Arizona Board of Regents (ABOR) and AZ Transfer has allowed us to connect previously siloed data sources and provide these regularly updated reports to schools in both a web-based portal and in interactive visualizations that can be used in our Decision Theater partner locations (see image on right).

The Postsecondary Feedback Reports (PSFR) Portal connects AZ Community College and



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





decisioncenter.asu.edu

Impact Stories, Volume 1

"I'm grateful to all the people who make the 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 Decision Theater

OVERVIEW OF **SELECTED SCHOOLS**

Nine different high schools are represented in this volume of Impact Stories.

Nine different high schools are represented in this volume of Impact Stories. These schools range in size from 400 students to nearly 3,000 students. They are in the densest parts of Phoenix, rural towns, in the northern mountains and on the Mexican border. The teachers whose stories you read in this collection range from being in the relatively early stage of their career, to having served decades in the classrooms. Many started their professional careers in another space and found their way to teaching later on.

Collectively, these schools and these teachers represent some of the bright spots in Arizona's public education system. We are proud to present their stories both to celebrate their successes and to offer starting points to other schools, educators and communities in our state who are seeking to better their own schools on behalf of Arizona's students.

The selected schools in this volume of Impact Stories, in alphabetical order, are: Bioscience High School, Boulder Creek High School, Lee Williams High School, Mesquite High School, Nogales High School, River Valley High School, San Luis High School, Tangue Verde High School and Thatcher High School.

ASU IMPACT CORPS **INAUGURAL COHORT**

Arizona has many talented educators. Here are some of them.

After identifying a group of schools whose graduates showed particularly high rates of university success in individual subjects, we reached out to learn more about what was happening at those schools that may be contributing to these high rates of success. From there, we connected with this group of 12 teachers who were most directly connected to these subjects at their schools.

Since interviewing and in most cases observing and visiting their classrooms, we invited them to become the Inaugural Cohort of the ASU Impact Corps. Their stories are highlighted in this catalog, and they are serving as mentors to other educators and schools in Arizona. They will be participating in mentor events throughout 2023. We encourage you to follow along with their work.



decisioncenter.asu.edu

Keep up-to-date by visiting decisioncenter.asu.edu/impactcorps

ASU Impact Corps: Inaugural Cohort Members



Chris Cook Thatcher High Thatcher, AZ



Britny Delp Bioscience High School Phoenix, AZ



Milton Johnson Bioscience High School Phoenix. AZ



Andrew Jordan Boulder Creek ligh School Anthem. AZ



Valenzuela Nogales High



Grazyna Zreda Tanque Verde High School Tucson, AZ

Note: Lee Williams High School and River Valley High School were identified as case studies, and their stories are shared in this volume of Impact Stories, but Mr. Reiman and Ms Wait were unable to join this cohort of the ASU Impact Corps.

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.

Because we have access to students' coursetaking information at the state community colleges and universities, 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 as well as English, 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 UArizona.
- 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. Given the variance in size of high school student bodies, rates of postsecondary enrollment and local contexts, we want to ensure 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.

This volume of Impact Stories, and the corresponding Impact Corps, is meant to share promising practices that otherwise may not gain attention across the state. **Education is not a competition:**

it is a critical component to the success of individual Arizonans, and to our state's overall prosperity.

Arizona's Public School System At-A-Glance



Arizona's K-12 public school system currently enrolls 1.125 million students.



68% of college-goers who graduated from an Arizona high school attend an in-state public university: ASU, NAU or IArizona.

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

Guide to Impact Story Symbols

In each Impact Story, there is a maroon bar across the top of the page. This bar contains at-aglance information about the school being highlighted. Refer to the key below for the meaning of each symbol.



This symbol denotes the school's type and urbanicity. The first letter has two possibilities for school type: "D" refers to district, "C" to charters. The second letter refers to urbanicity: "C" refers to city, "S" refers to suburb, "T" to town, and "R" to rural. For example, "D/T" refers to a district-run school in an Arizona town. Urbanicity classifications come from NCES definitions and are based on proximity to major metropolitan centers, as well as population.



Approximate enrollment in 2021, according to the AZ Department of Education.



Free and Reduced Lunch rate in 2020, according to the Civil Rights Data Collection



Arizona's overall high school graduation rate is 78%, below the national average of 86%.



There are nearly 500 public high schools in Arizona, ranging in size from less than 25 students to almost 4.000 students.



High School Graduation rate in 2021, according to the AZ Department of Education.



College-enrollment rate in the semester following high school National Student Clearinghouse.



STUDENT PATHWAYS

Bioscience High School (BioSci) is a STEM-focused high school with programs in biomedical science and engineering. BioSci is located in downtown Phoenix as part of the Phoenix Union High School District (PXU). BioSci offers a unique program to its 400 students. After 9th and 10th graders participate in a common set of courses with a STEM-emphasis, they can select between a biomedical or engineering pathway for their 11th and 12th grade years. For those who select engineering, they participate in two levels of engineering-specific coursework, along with a set of core classes in science and math. Engineering 1 and Engineering 2 are offered as CTE courses. PXU offers CTE courses, including in Engineering, across many of its high school sites.

These courses follow CTE standards for engineering, which emphasize frequent hands-on application of engineering principles. In both levels, teachers Ms. Britny Delp and Mr. Milton Johnson make space for practicing communicaiton and collaboration between students, in order to shift the focus from rote memorization of formulas and facts, to problem-solving and application of skills. Students frequently engage in designing and building prototypes based on the topic at hand.

"We know our students, we can find those connections and bring them into the classroom.

'Where do you see this stuff happening right now in your life?' We encourage making connections between what's really going on and the theoretical principles.

COLLABORATION & COMMUNITY PRACTICE

Ms. Delp & Mr. Johnson also emphasize collaboration outside of the engineering cohort. 11th graders may work with 9th graders, offering their engineering expertise to collaborate on a project that first year students are working on. Outside guests and mentors often visit the engineering courses, offering industry perspectives to students. Even the location is a learning opportunity: with downtown Phoenix undergoing a building boom, it is easy for students to observe engineering principles at work as new skyscrapers expand the Phoenix skyline.

12th grade students also engage in an internship in the community, and it is very common for those in the engineering track to work with a company or mentor in the field, whether that is in the construction industry, industrial engineering or even architecture. This community-based practice is at the heart of BioSci's mission, and a large reason it was purposefully placed in downtown Phoenix, but open to students across the city: access to one of the city's business centers including firm headquarters, medical campuses and ASU Downtown means there is a wide variety of options available.

PEDAGOGICAL TAKEAWAYS

BioSci's programming is built around connections to the broader community, both inside and outside the classroom. The school operates largely on a grade-level team model, meaning that a group of teachers can build very strong connections with a cohort of students each year. Given the school's smaller size, there are also plenty of opportunities to connect with the entire student body in a given year. This also presents opportunities for cross grade-level collaboration, such as 11th grade engineering students assisting 9th graders with producing items in the school's Maker Space.

Both Ms. Delp and Mr. Johnson also emphasized the importance of laboratory skills in their coursework. BioSci students are able to access excellent equipment in their engineering lab, largely funded through PXU's CTE programming, which is how the Engineering courses are listed. Investing time early in the year so students know how to safely and properly use equipment allows them to take advantage of the space as the year progresses, and allows Ms. Delp and Mr. Johnson to focus on instruction and support of students over managing the equipment.

Top left - Britny Delp writes on the board in her classroom. Top - Milton Johnson & Britny Delp talk in their shared classroom space at BioSci Bottom right - View of Bioscience High School entrance on N 6th Street in downtown Phoenix





LOGISTICAL TAKEAWAYS

BioSci's academic pathway system allows for deeper integration across topics as well. For example, since 11th graders select into the Engineering pathway, Ms. Delp knows what their other core courses will mostly be that year, and can embed necessary math and science concepts into the Engineering 1 class, which is listed as an elective credit each semester. In the Engineering 2 class, students are also concurrently enrolled with Mr. Johnson for their physics science credit, allowing for more flexibility in a "block" type scheduling. Both courses also offer opportunities for industry certifications, a common feature of CTE coursework, and students can leave Biosci with intro certifications in CAD and other areas, useful for whether they pursue engineering fields in higher education, or if they enter the workforce.





Boulder Creek High School is a comprehensive high school, part of the Deer Valley Unified School District.

BOULDER CREEK **HIGH SCHOOL ANTHEM, AZ**

Mr. Andrew Jordan. left Ms. Juliette Baldwin, center Mr. Donald Baxley, right

BRIGHT SPOTS

Boulder Creek High School (BCHS) shows a very high rate of success in 100 & 200-level engineering courses at the state's public universities. Bachelor's degrees in engineering are also one of the most popular choices for BCHS graduates from the past 5 years, both in degrees completed and in declared majors. This case study focus on an instructional team approach between two engineering teachers, Mr. Andrew Jordan & Mr. Donald Baxley, and one of the school's math teachers. Ms. Juliette Baldwin.

BCHS has a well-developed engineering program that offers

students four years of courses with two tracks to choose between.

Interested students start with an Introduction to Engineering, then

an optional fourth year elective course for seniors who wish to stay

program is a CTE program, with 3 years of courses required for

certification in CAD (computer-aided design), a common software

program follows the curriculum and structure provided via Project

resources and training, and also requires compliance with certain program requirements to maintain certification as a PLTW program.

CROSS-DISCIPLINE COLLABORATION

BCHS' engineering program also works closely with the math department, Engineering requries a high level of applied mathematics, and when Mr. Baxley joined the engineering team from the math department, there was a shift towards a more purposeful overlap of the two disciplines. Currently, the engineering team works particularly closely with Ms. Baldwin's students, providing a natural opportunity to coordinate across the two disciplines, which is something the three teachers are starting to pursue more directly.



PROJECT LEAD THE WAY

Right - Logo for Project Lead the Way, the STEM curriculum organization that BCHS uses for their Engineering program. Below - Exteror view of Boulder Creek High School



PEDAGOGICAL TAKEAWAYS

The Engineering program at BCHS is structured as a cohesive instructional team, serving approximately 250 students each year. The two main engineering teachers, Mr. Baxley and Mr. Jordan, coordinate closely with each other across the engineering curriculum, and Ms. Baldwin has also been coordinating her calculus courses more closely with the engineering team recently. This combination of teamowrk and cross-discipline collaboration, and the resources to support it such as planning, is an important part of any teaching model, but especially in this scenario where the program is designed to build upon itself and students can participate for all four years of their high school experience.

Additionally, the curriculum itself is very important here. The strong emphasis on project-based learning provides students with opportunities to apply engineering principles in a hands-on way, and there are many opportunities for collaboration, reiteration and communication around the topics. This appears to be due to both the curriculum that BCHS uses, as well as in the industry experience that Mr. Baxley and Mr. Jordan have, as both teachers worked in fields related to engineering before making the transition into teaching. This practical, industry experience is useful for both the application of the PLTW curriculum, and also for how they strucutre their classrooms as they know firsthand the way engineering projects may play out in the real world.

LOGISTICAL TAKEAWAYS

BCHS' engineering program appears to utilize several logistical strategies to support student and teacher success. As previously described, this program is a CTE program, meaning that some of the funding for both personnel and equipment/supplies comes via the West-MEC CTED. All of the BCHS engineering instruction takes place on the high school campus, but this funding application to support CTE instruction gives more flexibility and resources to the school, and therefore Mr. Baxley and Mr. Jordan, and their students. All district and charter schools can connect with their local CTED, meaning this resource is available in most areas of the state. This is especially useful for a capital-intensive discipline like engineering: both engineering teachers described utilizing CTED funding to help pay for the equipment in their school's engineering lab. This exposure to the actual equipment used in the industry helps prepare students for what they will see in the workforce or in postsecondary education.

"A lot of our success is related to engagement. These students are not going to go on to be successful in engineering programs without that component... that's the wind in their sails.

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HIGHLIGHTS







D/S ;;;;;;; 1,400 ∏♂ 32% ↔ 88% mm 54%

MESQUITE HIGH SCHOOL

GILBERT, AZ

Ms. Anne Hoodin



THE PHYSICS DEPARTMENT

Mesquite High School's Physics program is currently taught by one teacher: Ms. Anne Hoodin. In her position, she offers 6 sections of Physics total: 4 regular and 2 AP sections. While she is part of a broader Professional Learning Community (PLC) with the school's two Chemistry teachers, throughout her time at Mesquite High School, she has largely been the sole Physics instructor.

At MHS, students typically take Physics as early as their junior year, usually after a sequence of biology and chemistry. Recently, MHS has been encouraging more and more students to enroll in Physics, adjusting the math prerequisite to allow more students to enroll. This intentional increase in access is opening up

INTERDISCIPLINARY FOCUS

In this adjustment, Ms. Hoodin has focused on how to supplement math instruction into the curriculum. as that is the area where students need the most assistance to access the broader Physics curriculum. She accesses a variety of resources to accomplish this: her own content knowledge, previous experience with adjusting and readjusting curriculum, reaching out to other experts in the field (such as ASU model labs), and regularly including formative and summative assessments into her practices so she knows where students are at any given moment.



"I have a lot more students who are taking physics who probably would never have done it before. I've had to adjust, but I don't adjust what I'm teaching them: I've adjusted how I'm supplementing mathematics to get them where they can do what I need them to do."

> - Ms. Anne Hoodin. Physics teacher at Mesquite High Schoo Above - Ms. Hoodin works with students in her classroom

USING ASSESSMENT TO GUIDE INSTRUCTION

Ms. Hoodin's assessments are a central part of how she moves through the curriculum, not only within a given topic or unit, but also between years. Students are assessed regularly, which builds a culture that prioritizes feedback as a tool for learning, not as a competition or solely a means to a final grade. The content of the course is driven by the standards, the College Board (for AP sections) as well as by the skills needed in a typical first-year college physics sequence. With these end goals in mind, Ms. Hoodin can backwards plan how to achieve them, and then directly design assessments that seek to measure mastery of the goals via the labs, activities and coursework that students are completing in class. This provides consistent feedback to both student and teacher throughout the academic year. Equally important, after each unit, Ms. Hoodin goes back and gives herself feedback and edits on her own assessments, as a way to prime her for what worked and what she wants to change the following year: in this way she gives herself her own immediate feedback that she can then act on the next time around.



PEDAGOGICAL TAKEAWAYS

Ms. Hoodin references a steady creation of resources over the course of her teaching career: things she has built from professional developments that really stuck with her, or new items she discovered, or things she created herself to augment what was available in the school textbooks. This is a very common practice across K-12 education. Yet, because she ties everything she does so closely to assessments that are driven by the pre-established instructional goals, this has allowed her to both create a repertoire of physics instructional resources, but also to appropriately and intentionally select from them to meet her instructional goals. This is useful as student groups and personalities may change from year to year, or when larger trends are at play, such as bigger changes from the College Board or, in the current reality, a broader group of physics students who may need more math supplements than previous years.

OPENNESS TO CHANGE

Ms. Hoodin has been teaching for 29 years. Prior to starting her career in the classroom, she had extensive experience in private industry working on the chemical engineering team for Procter & Gamble, and raising her own children before she made the switch into teaching. Throughout her time in the classroom, she has pursued opportunities to improve and iterate on her own practices, allowing her core pedagogical skills to become stronger over time. She has seen curriculum changes come and go, and holds on to what she knows is an asset whether in terms of pedagogy or discipline-specific knowledge. During the interview, she described how prior to the pandemic, she had not yet made a significant shift into an online LMS (such as Google Classroom or Canvas), but when that became required during remote learning, it ended up



Teach

being a practice she embraced and has continued through to the current school year, moving more and more of her resources into a digital format. There were repeated mentions of things like this throughout the interview: when she sees something better than what she is doing, she embraces it. She knows that change is an important part of the teaching process, and if something is going to be used during the limited time she has with her students, she needs to be able to support with evidence why it is worth doing. This type of growth philosophy appears to be a key part of Ms. Hoodin's success and practice, and a takeaway lesson for other schools. By encouraging and cultivating an openness to change in teachers, and all the accompanying skills this requires - such as trust in professional judgment, time and support to explore new approaches and ideas, a workplace culture that provides support for development - schools can provide examples of these skills in practice to their own students, in addition to high quality academic instruction and preparation for postsecondary success.

Left - The marquee outside Mesquite High School as seen from McQueen Road in Gilbert.

D/T ເຖິງງິງ 1,800 🔟 70% 分 97% 🚔 65%

NOGALES HIGH SCHOOL

NOGALES, AZ





Ms. Jennife

Valenzuela

HIGHLIGHTS

Nogales High School (NHS) graduates who take 100- and 200-level engineering courses at the state's universities pass their courses at rates much higher than the state average. Nogales does not have an engineering program, but their math and science departments collaborate may start further along the pathway depending on their middle school closely to provide students with a cohesive experience throughout high school.

NHS was identified in the PSFR Portal for their high rates of success in postsecondary engineering courses. Yet, there is no explicit engineering program at the school so three teachers from the math and science departments spoke about their experiences in collaboration and pedgogical approaches. Mr. Vince Dober teaches math and physics, Ms. Jennifer Valenzuela teaches AP Calculus and IB Chemistry, as well as serving as the IB/Honors Coordinator, and Mr. Jigar Mehta has taught math for 10 years.

These three teachers described a rigorous set of course offerings for students at NHS that can offer a variety of options as well as structured, extra programs such as International Baccalaueate (IB). Typically, students take the following science pathway: 9th grade is Physical Sciences, 10th grade is Biology, then starting in 11th grade, students can elect into IB Biology or IB Chemistry, with AP Physics most often being a One of the challenges for NHS has been how to offer this pathway to choice for seniors.

"My classroom is arranged for a collaborative work experience. Sometimes there are different approaches to the same problem, and they get the same answer. Sometimes they have wrong answers out there, and so we find out what mistakes they did together."

NOGALES HIGH SCHOOL

"I tell my students, 'This is a college level class' and I approach it that way. I do it based on when I was in charge of the physics labs at NAU. I'm trying to develop the structure and habits they're going to see."

-Mr. Dober, Physics teacher, Nogales High School

On the math side, students start with Algebra in 9th grade, then Geometry in 10th grade, followed by Trigonometry & Precalculus in 11th grade, and AP Calculus in 12th grade as an option. Some students placement test, or if they take a course to excel over summer. Due to these concurrent pathways in science and math, there is a subset of students, typically seniors who are candidates to complete the IB program, who are taking AP Physics and AP Calculus at the same time. Furthermore, given the collaboration between NHS teachers, this means that while the courses are separate, both Mr. Dober and Ms. Valenzuela are communicating with each other to emphasize the relationship between math and physics for these students, certainly priming those who may go on to pursue engineering fields at the university level.

The teachers also credit the IB program for providing a more consistent and cohesive structure to the students who participate in and complete it. Both for the academic coursework it contains, but also for the support skills it fosters, such as time management, study habits and cross-discipline thinking.

more students. Given the size of the school, the most rigorous course offerings are very limited in the number of students they serve, and this is an area where NHS is focusing on moving forward: whether that is via an expansion of IB or by offering more courses via dual enrollment or through a CTE program, NHS hopes to build on its solid foundation to offer even more opportunities for its students, which is especially salient given the high graduation and college-going rates.

In the past, NHS has offered a course called Metro Matematicas. which was a course based on mathematical applications in industry, where students mainly worked via project-based learning and handson projects using tools and decives that would typically be seen in industry settings. This course was offered as an elective, and also had a companion course at the middle school level. Historically, there was a throughline of interest from freshman students in Metro Matematicas who would eventually become IB students, however, the program has since been discontinued, although Mr. Mehta continues to use many of the principles in the math courses he teaches now.

Nogales High School is the comprehensive high school in the Nogales Unified **School District.**

LESSONS LEARNED

Before describing what other schools may be able to learn from Nogales, it is important to emphasize their unique location along the US-Mexico border. While Nogales, AZ has a population of 20,000 residents, Heroica Nogales in the Mexican state of Sonora has a population of 220,000 creating a unique metropolis that spans both sides of the border and creates influences on the culture and economy that do not exist in other parts of Arizona.

Scaffolding through grade levels: One key theme that arose throughout the group interview is the clear planning and scaffolding that exists for a Nogales student from 9th through 12th grade. Students are given options early and teachers and counselors ensure that they remain on the right path that will help them meet their postsecondary goals. This is seen in very clear ways, such as the highly structured nature of the IB program, but also in the coursework that students are taking as soon as 9th grade, and even in the coordination seen with the middle school. Fostering a collaborative atmosphere between staff members is imperative in creating and maintaining a school that can support students across their entire high school career.

High expectations for all students participating: All three teachers emphasize the importance of high standards and expectations for their students. While a small percentage of NHS graduates are IB completers, these expectations persist across all classes and domains, and it is clear that teachers share the responsibility and attitude across the campus. This is a difficult balance to maintain in a school with nearly 2,000 students, but Nogales graduates success in both the PSFR Portal as well as in their extremely high graduation rate, and higher than average college-going rate indicate their commitment to students and the community.



Top right - Students conduct an lab activity in understanding horsepower. Above - Jigar Mehta works through an exercise with his math students Right - Jennifer Valenzuela works through a problem with her Calculus I class. Left - Exterior view of Nogales High School.

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"It's very important that they learn how to study, they lea how to manage their time and [IB and the Honors program] help a lot. Once they go to college and they start their first year, it's not as hard as they think it would be or as other s not from Nogales High School say."

enzuela, Math teacher, Nogales High Schoo

ເ**ຕິ້າ: 2,500** ປປ **91% 59%** 65%

SAN LUIS HIGH SCHOOL

SAN LUIS, AZ

Mr. Fernando Ramirez



ENGINEERING PROGRAM STRUCTURE

San Luis High School (SLHS) hosts a comprehensive engineering program spanning two CTE courses. Both courses emphasize fundamental principles of engineering (as seen in Figure 1) in applied, project-based settings. These projects involve building, testing & redesigning physical prototypes & products, learning & applying skills in an engineering lab (such as how to use tools with proper safety protocols), and accessing necessary engineering and other science principles (such as computer simulations of physics concepts).

Interested students start with an Engineering 1 course, which is open to all interested students who meet a math prerequisite. Generally, SLHS hosts 2-3 sections of Engineering 1, which is made up of students in various grade levels (provided they meet the math prereg). Following Engineering 1, students can continue into Engineering 2 with approval. Each year, there are approximately 20-25 students in one section of the Engineering 2 course. Both courses fulfill a CTE credit, and across the 2 years, students are able to earn a variety of industry-certifications, such as in CAD (Computer-aided design) software or equipment operation. Both of these courses are "block" scheduled, meaning they occur across two normal-length class periods, allowing more time for the project-based learning approach each day.

In addition to the coursework, students are able to connect with engineering outside the classroom. Mr. Ramirez is involved with Skills USA, a CTE focused organization that provides students across the country with opportunities to apply skills in a challenge-based competition. For the past few years, some of his students participate in a search-and-rescue challenge, and one student competed in the national competition with a robot he built that was able to navigate an obstacle course, retrieve target objects and return them to a "base." These competitions require application of many different engineering skills: design, implementation, reiteration, communication and sportsmanship.

Top - Students in Mr. Ramirez's class work on a motor assembly project. Above, right - A student-designed robot retrieves an object as part of an obstacle course task Right page, bottom - An exterior view of San Luis High School



COMMUNITY CONNECTIONS

The engineering program has also gained attention in the local community: 2 years ago, the Yuma County Humane Society reached out and asked for help in creating a mobility device for a chihuahua mix who had trouble walking. Mr. Ramirez brought the challenge to his engineering class, and students worked in teams to design, prototype and build possible devices to assist the dog. Roo, the dog, received the device and is more mobile than before, a direct result of students applying these concepts to a problem in their community.





Situated extremely close to the US-Mexico border, members of the SLHS comr repeatedly described this as an asset to the school's culture of excellence and succes

San Luis High School is a comprehensive high school, part of the Yuma Union **High School District.**

PEDAGOGICAL TAKEAWAYS

Mr. Ramirez's course are consistently aligned with CTE standards in his discipline. This helps provide a guiding framework for the academic year when planning instruction. Additionally, Mr. Ramirez designs his courses around project-based learning so students have the opportunity to discover and apply concepts in this area. Furthermore, Mr. Ramirez makes space for not only the "core" engineering principles (such as applied physics and mathematics), but also for the complementary skills needed to be successful in this discipline, such as teamwork and communication. These are outlined in an "Engineering Design Process" model (see image at right). Students work with others constantly and must engage in informal teamwork and communication (like when working on their own prototypes) and formal examples of these skills (such as when presenting to the entire class a reflection on their project design).

This pedagogical structure supports an atmosphere of trust and camaraderie between groups of students as well as between teachers and students. Students have access to the equipment needed to do their work, and after demonstrating they can be trusted in using the equipment, including industry-grade tools and components, Mr. Ramirez trusts them to use the materials appropriately. In this way, the classroom environment supports whatever needs the group has, and frees up Mr. Ramirez to focus on supporting students over micromanaging materials.

LOGISTICAL SUPPORT

Since SLHS' Engineering program is part of the broader CTE department, there are opportunities to leverage different sources of funding outside the school's general budget. In a discipline like engineering, where the capital investment in setting up a lab can be quite expensive, this is a necessary avenue to give Mr. Ramirez and his students what they need.

This requires a strong culture of communication between Mr. Ramirez, Ms. Lansman (the CTE Instructional Leader) and school administrators like Mr. Jankowski (SLHS Principal). This level of professional trust in CTE teachers/programs and the follow through and support by administrators, the Yuma Union High School District and STEDY (Southwest Technical Education District of Yuma: the county CTED) has resulted in a scenario where Mr. Ramirez is able to ensure his students have access to the materials they need to support his instruction, as well as to gain valuable industry experience should they choose to continue pursuing engineering in higher education, or enter the workforce 🖓



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TANQUE VERDE HIGH SCHOOL **TUCSON, AZ**

Dr. Grazyna Zreda



STUDENT PATHWAYS

Dr. Grazyna Zreda has been teaching at Tanque Verde High School (TVHS) since the school opened in 2005 (and she was teaching at the middle school level before that). As such, she has been in a unique position to have helped shape the science department and the subsequent offerings in Chemistry. Currently, they offer a general chemistry course, honors chemistry and a dual enrollment General Chemistry for Science Majors (through Pima Community College) course. This type of structure echoes across many of TVHS' departments, and they are able to offer dual enrollment credit given their staff's credentials (for example, Dr. Zreda completed her PhD in geochemistry). Additionally, there are clear pathways that staff can offer to students so that they can take advantage of the opportunities that TVHS offers starting in 9th grade that thread through 12th.

Dr. Zreda's classes consist of a variety of activities that are structured to provide students with opportunities to discover concepts, apply inquiry skills and make sense of the concepts they are working with. Given the school's block schedule structure, she has several opportunities in a given week to do more involved activities that require longer periods of time. Lab activities take place in the same classroom as discussions, partner work and lectures, meaning students are quite used to navigating the space. Given the full lab setup, students are also trained in how to operate in a lab setting, something that many of them will need to navigate if they pursue a STEM undergraduate major.

"I feel like it's very important to have a professional network. I got some of my best ideas from my colleagues.



Above - A view of the Tangue Verde High School campus. Right - Students work on a collaborative molecular model building activity. Right page, bottom - Students work on a lab project in Dr. Zreda's classroom



Tanque Verde High School is the comprehensive high school in the Tanque Verde Unified School District, serving an unincorporated community east of Tucson.

TEACHER SPOTLIGHT

Dr. Zreda demonstrates a high level of collegiality and professional service in her role at TVHS. She partners with the feeder schools in the district, organizing visits to the lower schools to highlight science concepts to younger students, as well as coordinating a poster contest for southern Arizona as part of National Chemistry Week. Her service also extends to professional and pedagogical development, such as by connecting with other teachers through the American Chemical Society Conference, professional learning communities (PLC) within TVHS and her own self-reflective practices (such as using the pandemic-driven shift to Google Classroom to rework the way she uses technology in her classroom, even after the return to in-person instruction).



REFLECTION ON TEACHING PRACTICES

Through TVHS' structure and Dr. Zreda's pedagogical and professional practices, there are several key takeaways that other schools could apply to their own contexts.

Dr. Zreda and TVHS more broadly have structures in place to allow for the professional development of teachers in their given subject area. Dr. Zreda is part of a PLC with other science teachers at TVHS, which allows them to discuss practices and techniques that are relevant to their disciplines. Additionally, she participates in several venues that are specific to chemistry, such as the American Chemical Society which gives her a place to connect with other professionals in the field. Additionally, the connection to outside experiences such as the regional poster contest and science olympiad program allow students to engage with these topics beyond the time in their classroom

Related to this, Dr. Zreda demonstrates the willingness to adapt and adjust her own practices. She is an expert in this field, and still she regularly seeks out new ideas, resources and pedagogies. By being willing to let go of things that no longer serve the best interests of her students, she is able to appropriately and intentionally select strategies to meet her instructional goals. This is useful as student groups and personalities may change from year to year, or when larger trends are at play, such as bigger changes from the College Board or, in the current reality, a broader group of physics students who may need more math supplements than previous years after multiple years of COVID-related proficiency deficits.

This type of approach to teaching, as a continuous cycle of learning yourself, requires practice and trust: between Dr. Zreda and her students, as well as between teachers and the administration in knowing that there is support and willingness to change. TVHS is in a small district, and Dr. Zreda is the only chemistry teacher, which means that the collaboration and camaraderie she experiences in her role at TVHS must be explicitly attended to and fostered. This is a helpful lesson for both other small districts, as well as for larger school systems where it can still feel like a teacher is siloed within their own campus or classroom.

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Thatcher High School is the comprehensive high school of the Thatcher Unified **School District.**

THATCHER HIGH SCHOOL

THATCHER, AZ

Mr. Chris Cook





"Our students are actually able to scratch their teeth, put the sample into a PCR machine, replicate their own DNA, take it out, put it on a gel electrophoresis, run it, take a picture and tell the difference at a certain section of your DNA why you're different than your neighbor. We're able to do things that if we didn't have Biotechnology, we would never be able to do… I think it's helping their academics by feeling so good about being able to run a high-tech piece of equipment.

BIOTECHNOLOGY OFFERINGS

Thatcher High School offers a robust science program to its students, especially in its biology area. A pair of biotechnology courses is a very unique offering, not just in the Thatcher area, but across Arizona. THS' biology & chemistry teacher, Mr. Chris Cook, received grant funding approximately 5 years ago to start a Biotechology program, and largely used this to invest in equipment, devices and machines needed for these courses. Additionally, THS leveraged its existing relationships with local community colleges to offer courses for dual enrollment (DE). By blending and combining course offerings to take advantage of grant funds, CTE funds and general operating funds, THS now has a robust selection of science course offerings for students. Most of these courses are either classified as CTE or DE courses, in partnerships with the local Eastern Arizona College (EAC) and Estrella Mountain Community College (EMCC). Instructors from EAC even teach some of the biology and chemistry courses on the THS campus.

This variety of course offerings provides Thatcher students with many opportunities to become familiar with hands-on application of science concepts in lab & project settings. The various branchings also allow students to be exposed to a variety of biology topics outside of the traditional integrated science core.

COLLABORATION & APPLICATION

From a pedagogical perspective, the biotechnology courses (and the entire biology program) provide students with important experiences in both technical, applied knowledge and project-based tasks. Mr. Cook emphasized the importance that his students know their way around a lab setting, be familiar with equipment and procedures as this is a key component of participating in science-based fields at the university level, and later in industry or research. This priority for his classroom experience is rooted in Mr. Cook's own industry experience.

Additionally, Mr. Cook described coursework that puts students in collaborative, problem-solving situations. For example, he described one unit of study where students participated in a forensic investigation simulation. They collected multiple samples from individual specimens, and then used their knowledge of key science concepts, as well as practical know-how of the lab equipment, to compare their collected DNA specimens against the target sample, reach a conclusion of which matched, and then share their findings in a written report. This type of teaching allows students to practice and apply conceptual knowledge, procedural knowledge, collaboration and communication skills in performing a high-interest, relevant task.

Mr. Cook describes the unique ability of his students to leave high school with the experience of using state of the art equipment as an important strategy in building academic and self-confidence that will pay off in his students' future endeavors.

SEEKING OUT PARTNERSHIPS

In Thatcher's example, there are several simultaneous partnerships occurring. Mr. Cook works closely with his instructional team at Thatcher High, and there is also communication and support between teaching faculty and school/district leadership. In order to provide DE opportunities, Thatcher sought out a partnership with local community colleges as a way to bring DE to their students. As the landscape for high school course offerings grows ever more complicated, individual schools and districts can initiate and shape partnerships with a variety of local institutions to provide the right set of options for their students. This is also crucial as statewide policymakers consider ways to streamline and strengthen these programs statewide.

Another takeaway from Thatcher's program is to leverage funding opportunities that may arise. In the case of Mr. Cook and Thatcher High School's implementation of a biotechnology course, grant money helped to provide the initial capital needed, especially for the important, but expensive, lab equipment. With this starting money, Thatcher was able to then tie in other funding sources to expand and sustain its course offerings. By pursuing CTE courses, new funding became available, which in turn eased stress on the general budget. This strategy requires teamwork and collaboration between teaching faculty, administration and community partners (such as community colleges, CTEPs or grant fundina providers).



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"When the kids go to university or community college, I want them to be able to go in the lab and feel really, really confident about doing well in lab because, to me, that builds a lot of self-confidence when you're so good at the hands-on part that it boils over to the other side."

- Mr. Chris Cook, Biotechnology teacher, Thatcher High School

Left page, top - Students in Mr. Cook's Biotechnology class visit the Coronado Dairy in Willcox, AZ. This dairy features applications of genetics in its cattle breeding and husbandrv programs

Top - A view of Thatcher High School with Mt. Graham in the background. Center - Students visit the Biosphere 2 in Oracle, AZ. This project by the University of Arizona features a climate-controlled environment to study biodiversity, the impacts of climate change and sustainable development.

ແຕຼິງ 1,000 🛛 🖉 44% 🥎 78% D/T 41%

LEE WILLIAMS HIGH SCHOOL **KINGMAN, AZ**

Transferable Lessons

reas: the power of rigorous programming (such as the Cambridge mode which LWHS uses) and how to build continuity in pedagogical success

PASSING THE TORCH

Mr. Jeremy Reiman grew up in Kingman, and took the opportunity to come back for his student teaching while studying education at NAU, partly because he was able to be mentored by his former physics teacher. Mr. Jennings, a fixture at Lee Williams for many years, had built up a physics (as well as chemistry) curriculum that Mr. Reiman was trained on and, eventually, took over entirely. Now, he is the physics and chemistry teacher at LWHS, offering enthusiasm and passion for the content to a new generation of Kingman students. This mentorship provided structure as Mr. Reiman began his solo teaching career, and the curriculum resources he inherited have now been expanded and revised as needs change.

RIGOROUS COURSE OFFERINGS

LWHS offers a variety of science courses to students, especially for students who are part of the Cambridge model. Cambridge International is a curriculum model and program that is designed and administered by the University of Cambridge: schools all around the world participate in the Cambridge model in a way that is similar to the International Baccalaureate (IB) program. LWHS offers the Cambridge model (this is the 11th year of the program), and approximately one-third of each grade level participates, often after participating in the middle school version of the program.

"Kids want to be in that class because it's fun and engaging. And I think that was the same with our previous teacher. I think that's a huge reason why we are probably seeing a success in Physics: because the students want to be there."

RIVER VALLEY HIGH SCHOOL MOHAVE VALLEY, AZ

EVERYONE CAN RELATE

Ms. Lorraine Wait did not set out to be an English teacher: she studied French and psychology. She also spent multiple years working in jobs that many would not see as connected to teaching English: she has worked at the Grand Canyon, for the United States Postal Service, in a curio shop, and even in construction. She eventually found her place in education, or perhaps education found her, and she now credits these experiences as an asset she can leverage in the classroom. Her abundant perspectives and experiences offer many ways to connect to students, and to literature. This value and appreciation for different types of paths is a key approach in the English Language Arts department at River Valley.

500

53%

Ms. Wait spoke about the approach that the RVHS English department takes in all their courses that students will interact with from 9th through 12th grade. Ms. Wait has been teaching at RVHS 16 years, and for 12 additional years before that at the middle school level. One of the key philosophies underpinning their school's approach is the idea that literacy and literature skills are useful to everyone no matter what their postsecondary path. English encompasses so many skills, especially writing and communication, and these are imperatives in career, college and workplace settings, but also in life. This is borne out in the data: as a very high percentage of RVHS graduates who take 100- and 200-level English courses at the state's universities pass them with A's and B's.

In a way that is similar to the AP program, Cambridge courses culminate in an assessment at the end of the school year, and so much of the coursework during the academic year is driven by the comprehensive exam. This provides consistent structure to the course, including in the Physics courses taught by Mr. Reiman, in terms of end-of-course learning goals, while there is freedom and flexibility for the teacher to work towards those learning goals. This framework allows for passion for the subject matter to shine through, and students can pick up on that.

COHESIVE CURRICULUM MODEL

Many schools in Arizona offer a variety of course types and programs, such as AP, dual enrollment, IB, CTE and many others. Cambridge International is a cohesive program that Lee Williams has invested time and resources into providing to interested students, and it can offer a set of opportunities that would be otherwise unavailable in a rural setting like Kingman. While Cambridge itself may not be an appropriate or feasible program for all schools to adopt, approaching a high school curriculum as a single, cohesive program appears to have incredible potential to foster a strong community that values academic excellence within a traditional, comprehensive high school setting.



Above: Students in Mr. Reiman's physics class work on a catapault activity on the Lee Williams field.

CONNECTING TO STUDENTS

The enthusiasm that Ms. Wait and her colleagues bring to their coursework is imperative in how they encourage their students to see the value in the subject matter and the way it affects their own lives. This takes skill and expertise to make, for example, writings from 200 years ago relevant to a group of teenagers in modern times. Literature is a way for humans to connect with the experiences of others in the past, and for those in the present to better understand how we got here. Offering students both the opportunities to connect with English in this way, as well as the safety to know that they do not necessarily have to be share their English teachers lifelong passion for the subject in the same way seems to be creating a space for students to participate in the coursework in ways that are leaving lasting impressions.

"We're not educating them to do only one thing: we're educating them to be successful wherever they go in the world." Ms. Lorraine Wait, English Teacher, River Valley High School

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Two Additional Cases

94%

46%

Lee Williams High School (left page), is a comprehensive high school in the Kingman Unified District. These two schools' cases are also highuccess in English courses, while Lee Williams is highlighted for succ

"I know every single student in every single class can be successful at something: they just have to find out what it is... It's so much more than the material: it's showing that you care about them, that you believe in them."

UNIQUE SCHEDULE STRUCTURE

RVHS utilizes a four day a week schedule so each class period is 65 minutes long. This provides teachers with slightly more time than a typical 50 minute period. Part of RVHS' schedule also includes after school labs that provide students with opportunities to receive extra instruction, attention or help in various subjects so that they are able to stay on top of their coursework and head off any problems before they accumulate. These type of wrap-around resources, and the scheduling to provide them, is worth exploring as a way to help meet the needs of students and their families in ways that emphasize school as a resource center.

Shifting Perspectives

CIENEGA HIGH SCHOOL

VAIL, AZ





Ms. Carla Wrigh

IDENTIFYING STRENGTHS & CHALLENGES

Alvarado

Making Change

It to serve as an exemplar for how other schools may incorporate this tool into their decision-making.

Cienega High School (CHS) is using the PSFR Portal to make data-based decisions about their instructional approaches. Utilizing largely the Community College and University Benchmark reports, CHS' staff identified areas of strength in their postsecondary success, and also highlighted subject disciplines where they wanted to investigate why students were not as successful in postsecondary and put plans into place to improve for their current and future cohorts.

"The data is just so helpful because when we sit there and look at the information and we see [where we're doing well]," said Carla Wright, head of the CHS social studies department at the time of our interview. "But to see that something wasn't translating is just good information because it prompted me and my department to figure out how we can do better. We needed to find out what are [the community colleges and universities] asking for that we're not teaching our kids here."

From these conversations, the Social Studies department reached out to Pima Community College and the University of Arizona to obtain samples of course syllabi for intro-level history courses to determine what was being asked of CHS graduates in their early postsecondary courses in this discipline. This has resulted in ongoing conversations around how to better align the teaching style and learning objectives so that students will be familiar with this format after CHS. For example, the CHS Social Studies department saw how much more reading and writing was required of students on a weekly basis in postsecondary, and is therefore focusing on increasing student stamina and quality in these two areas through their CHS offerings.

"Our district is so datadriven, and our students are so familiar with data being used to make decisions, that the PSFR **Portal helps with those** conversations."

- Kim Middleton, Principal, Cienega High School

Right page, top left - Cienega staff and students pose in front of their school. Right page, top right - Cienega's mascot, Bart the Bobcat, relaxes in front of Cienega High School

MAKING CHANGE

CHS exemplifies two key strategies in using the PSFR Portal to affect change at the individual school level. The first is the presence of systems for analyzing and utilizing data in multiple ways: in CHS' case, first building administration familiarized themselves with the reports, then brought them to instructional and departmental leaders, and then shared them with broader staff. While this seems straightforward, sharing data with colleagues in this manner, with the intent to highlight challenge areas and brainstorm strategies for improvement, requires a very high degree of trust between all members.

In CHS' example, they decided to focus on social studies & history courses as the benchmark reports showed that their graduates were struggling in that discipline in postsecondary. By cultivating a staff and school culture that allowed these conversations to happen in a non-blaming manner, CHS is able to identify possible change points and put a plan into place to address these. This is occurring both with the teaching staff responsible for the day-to-day instruction in these areas, as well as with other school-level staff. For example, the counseling team is re-evaluating how a "Senior



Exit Project," a 12th grade project that culminates in a written paper, might be adapted to provide additional writing scaffolding that better prepare students for the type of writing they may be expected to do on a regular basis at the community college or university level. Additionally, CHS' administration also is seeking how they can support the social studies department by, in one example, responding to a department request to limit the time students are pulled from those courses when other school priorities arise. This collaborative culture where all staff members operate as part of the same team with the same goal, student success, does not happen immediately or sporadically: it requires careful support and nurturing by school and district leadership.

The second key strategy CHS employs in using the PSFR Portal is recognizing that these data give you a snapshot of a moment in time, but require careful interpretation in finding the right points of action. In our conversation, the CHS staff members expressed not only places to adjust teaching strategies on the content itself, such as a shift towards mostly written analysis of social studies concepts and away from multiple-choice type assessments of these topics (as informed by their analysis of the community college and university syllabi), but they also evaluated how they were currently providing all the other skills needed to make that shift. During the interview, they discussed how to improve students' academic reading stamina which is a very specific skill that may not be occurring in their other courses in the same way. CHS staff also explored opportunities for structural change: for example the majority of students do not take a social studies or history course the last semester of their senior year, and how might that be influencing their first-year performance in these postsecondary courses? Colette Alvarado, a counselor at CHS, indicated that the reports are adjusting how she advises students to holistically think about how their coursework aligns with their postsecondary goals. By examining the entire spectrum of how their school is meeting student needs in this area, they are able to identify multiple opportunities for change or new strategies that are sustainable, targeted and intentional.



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Impact Stories, Volume 1

Using PSFR

Cienega High School demonstrates how the reports available from PSFR can be used to make targeted changes at the school level. Via the insights offered by the reports, Principal Middleton was able to guide discussions that have resulted in both pedagogical and logistical changes made in the interest of students. This example of using data in the hands of skilled educator judgement can serve as a model for other schools.

> Watch the entire story by visiting: decisioncenter.asu.edu/tools/PSFR

THEMES AND TRENDS

As educators and school systems consider these case studies, these themes stand out. As the Impact Corps grows, we will continue to investigate these themes across AZ.

HANDS-ON PRACTICE AND APPLICATION

'Students should graduate from high school and be college, career and community ready,' is a common refrain in American education. The implication is that students should leave high school with skills that they can readily apply to what comes next. Each of the teachers we spoke with for this project emphasized how important this was in their own practices. For the most part, this took the form of exercises, projects, labs and other guided activities. Some teachers specifically used the phrase "project-based learning," a wellestablished pedagogy that has its roots in constructivist views of education. This type of learning is characterized by providing students with opportunities to apply the concepts they are learning in a classroom to real-world and relevant problems or situations. These can take many forms and can be derived from the teacher, the students, or even the community.

Additionally, this type of teaching and learning leans on the student as the guide of inquiry, rather than relying on the teacher to provide only direct instruction and rote memorization of facts or algorithms. Students are presented with scenarios, challenges or problems, and then with the teacher in more of a facilitator role, explore different paths. The teacher's role is often in providing support, feedback and carefully monitoring the progression of the class time, with some direct instruction, scaffolding or other supports offered as necessary.

EXPERTISE IN THE FIELD

Many of these teachers came to the classroom after extensive experience working in the fields that they now teach. Teachers with industry experience expressed their reliance on this background in shaping their instruction. This set of teachers tended to describe viewing their classrooms more as spaces for applying the skills in a setting that mimics the type of scenarios students might see in an industry setting. These teachers are also able to offer valuable perspective and insight to students as to what possible careers in their fields might look like, offering the type of mentorship to guide high school students as they plan their careers after high school. We look forward to further investigating this feature in future cohorts of the Impact Corps to better understand the relationship between non-classroom experience and pedagogical impact.

Additionally, as Arizona continues to explore ways to recruit highly skilled and qualified teachers, attracting those with industry experience and assisting them in finding pathways to teacher certification could be a valuable strategy.





Learning is a communal process. Public education as a system is built on the collaboration of many different people, and learning at the classroom level is no different. All of the teachers that are part of the Impact Corps emphasized the importance of collaboration in their work: even if they were the only teacher in their specific subject at their school. Many of the teachers emphasized the collaborative nature on their instructional teams, both within and across disciplines. Many schools offer staff members who are not in a classroom teacher role, but are integral parts of the teaching and learning process for their schools' students: instructional coaches, CTE coordinators and of course school administrators provide the professional and collegial support needed to deliver high quality instruction on a regular basis.

Many of the Impact Corps members also emphasized that they prioritize collaboration in professional capacities outside of their immediate school or district. This provides the opportunity to stay immersed in the conversation of teaching as a profession with people who are not in your immediate vicinity. Our public schools find their strength in their ability to pool together the resources of our communities, and the teachers in our Impact Corps seek out opportunities to leverage collaboration for the benefit of their students.

WELL-DEFINED PROGRAMS AND CURRICULA

Even though the schools included here range in enrollment sizes from 400 students to nearly 3,000, many of the school sites use well-defined programs or curricula in the selected subject areas. We heard teachers talk about programs like: International Baccalaureate (IB), Cambridge, Project Lead the Way, even aspects of CTE and AP. At times, the entire school is geared around a focus, such as with Bioscience High School, but even within the larger schools we included, we consistently see this almost school-within-a-school model.

With future cohorts, we are interested in learning more about which features of these programs are most related to postsecondary success for students. Teachers expressed high levels of satisfaction with these programs, so it is important to empirically understand their impact. Being part of a program within a school likely allows for collaboration and a continuous experience for students with a community of teachers who work together, in addition to the pedagogical and subject matter expertise these programs emphasize.

Impact Stories, Volume 1

OUR PUBLIC SCHOOLS FIND THEIR STRENGTH IN THEIR ABILITY TO POOL TOGETHER OUR RESOURCES IN SERVICE OF OUR COMMUNITIES.





Shifting Perspectives

WHAT'S NEXT?

This collection of Impact Stories explores the promising practices and bright spots in nine of Arizona's public high schools. As we welcome and congratulate the Inaugural 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. These events will be designed to serve different communities of educators, such as by having a focus on a specific subject discipline, or on a specific community of schools. These Mentor Events will be held throughout the state so that those who wish to attend in person will have the opportunity to do so, and we will also offer events virtually to reach as many educators as possible.

ANNUAL COHORTS

The 2023 Inaugural Cohort is the first 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 also serve as mentors to strengthen Arizona's public education system.

DECISION CENTER TOOLKIT

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 Decision Theater, and as Impact Projects where districts and charter schools are our direct partners.





IMPACT AT EVERY LEVEL

Our Tools & Visualizations and Impact Projects are intentionally aligned to provide resources to all levels of Arizona's education system: student, teacher, school & district and the community.



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Student Level

Impact Project: Personalized Admissions We connect public districts with the admissions offices of ASU, NAU and UArizona to We currently partner with 14 districts, with more in the works for 2023/24.

Teacher Level

Impact Project: ASU Impact Corps We identify teachers in high schools with high rates of academic success at the universities. Starting in 2023, we are convening teachers into cohorts, providing them resources and mentor training and connecting them to educators across AZ.

School & District Level

Tool & Visualization: PSFR Portal The Postsecondary Feedback Reports Portal is a powerful tool that enables educators in Arizona's public (district and charter) high schools to see how their graduates fare in Arizona's public higher education institutions: the AZ Community Colleges, ASU, NAU and UArizona.

Community Level

Tool & Visualization: High School Outcomes Tool, AZ Workforce & Education The High School Outcomes Tool (HSOT) is our flagship visualization and combines data from multiple sources to give an understanding of the community context of a school (or group of schools). Our newest tool, AZ Workforce & Education, shows trends and projections for AZ's economy over the next decade. These tools support conversations around education's connection to the community.



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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 and student body enrollment come from the Arizona Department of Education, and are from 2019. School urbanicity comes from the National Center for Education Statistics. College-going rates come from the National Student Clearinghouse. Free and Reduced Lunch rate are sourced from the Civil Rights Data

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.

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