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Building Alaska's Science and Engineering Pipeline

Evaluation of the
Alaska Native Science
& Engineering Program

What Is ANSEP?

Based at the University of Alaska, the Alaska Native Science & Engineering Program (ANSEP) is designed to prepare and support Alaska Native students from middle school through graduate school to succeed in engineering and science careers. ANSEP offers intensive academic support, exposure to industry, and the opportunity to participate in a learning community incorporating Alaska Native cultural identity.

ANSEP provides comprehensive programming for its precollege, undergraduate, and graduate components aimed at empowering and exciting youth around engineering and science, promoting success in educational and career paths, and connecting local communities to science, technology, engineering, and math (STEM) resources.

In addition to supporting individual students, the ANSEP model is also designed to effect systemic change to improve the climate for Alaska Natives in the Alaska kindergarten through 12th grade (K–12) educational system, the University of Alaska, and Alaska’s STEM industries.

Why Is ANSEP Needed?

STEM industries are a critical share of Alaska’s economic vitality, and the majority of STEM occupations—75 percent—require at least an undergraduate degree.¹ Though Alaska Natives make up 15 percent of Alaska’s population² and 10 percent of the workforce, they are only 6 percent of the state’s workers in computer, engineering, and science occupations.³ ANSEP is designed to address this gap and produce trained Alaska Native scientists and engineers who can provide valuable leadership, perspective, and connection to local communities, from which many STEM employers in Alaska can directly benefit.

Alaska Natives face substantial barriers to success, with significantly lower labor force participation rates and the highest unemployment rates among all racial groups in Alaska. Alaska Natives also have the lowest median income among all racial groups in Alaska (\$40,705) and the highest poverty rate (25 percent compared with the overall 9 percent). Household income and employment compound structural and historical conditions that contribute to a history of social and economic challenges for Alaska Natives. The public school system in Alaska has high teacher turnover and insufficient resources in a geographically dispersed context, where providing high-quality, in-person instruction to small communities poses a logistical challenge. Alaska Native students test at significantly lower levels than other racial groups on the National Assessment of Educational Progress examinations, with a majority of students in grades four and eight performing below basic levels in reading and at or below basic levels in math.⁴ The proportion of students in grades seven and eight enrolled in Algebra 1 in the 2009–10 academic year who were Alaska Native students (12 percent) was well below their share of the overall student population (23 percent). The disparities were even more prevalent in advanced courses that are often prerequisites for entry into STEM college degree programs (e.g., Alaska Natives made up only 5 percent of calculus students in secondary schools in the state).⁵ ANSEP addresses these challenges by providing targeted programming and supports and requiring students to commit to academic achievement during middle school and high school.

How Was ANSEP Evaluated?

The Urban Institute, a nonprofit, nonpartisan research organization, is dedicated to elevating the debate on social and economic policy. For nearly five decades, Urban scholars have conducted research and offered evidence-based solutions that improve lives and strengthen communities across a rapidly urbanizing world. Its objective research helps expand opportunities for all, reduce hardship among the most vulnerable, and strengthen the effectiveness of the public sector. The Urban Institute conducted an implementation and participant-outcomes evaluation of ANSEP between September 2013 and December 2014. The research team collected and analyzed data from interviews and focus groups conducted with participants, staff, partners, and stakeholders in the University of Alaska, the K–12 educational system, and organizations in the STEM industry. The team also fielded a survey to alumni and analyzed student records. The evaluation assesses the ANSEP model to inform its programming and planning as well as provide lessons for other STEM education programs that serve underrepresented minorities nationwide. The logic model that appears in figure 1 is a graphic representation of ANSEP’s theory of change and served as the framework for data collection in the evaluation.

FIGURE 1

Alaska Native Science & Engineering Program (ANSEP) Logic Model

ASSESSING THE NEED

INSTITUTIONAL

ALASKA K-12 SYSTEM Teachers • Curriculum • Other resources	UNIVERSITY OF ALASKA Faculty and staff • Student social and academic supports • Research resources • State STEM career preparation • Student diversity and climate for Alaska Natives	STEM INDUSTRY STEM workforce • Interaction with Alaska Native communities • Staff diversity and climate for Alaska Natives
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STUDENTS

Preparation for and awareness of STEM educational and career pathways
Motivation and commitment to STEM
Family and community resources

CONTEXT

Economic conditions and labor market • Policy and budget climate (K-12 system, University system, and federal, state, and local/village) • Historical and social conditions for Alaska Natives

INPUTS

FUNCTIONAL ACTIVITIES

RECRUITMENT AND SELECTION

PARTNERSHIP AND RELATIONSHIP MANAGEMENT

FINANCIAL MANAGEMENT

FUNDRAISING

MARKETING AND COMMUNICATIONS

ALUMNI OUTREACH AND ACTIVITIES

POLICY WORK AND ADVOCACY

PROGRAMMATIC ACTIVITIES (COMPONENTS)

MIDDLE SCHOOL ACADEMY

- Computer assembly
- Residential experience on campus
- Hands-on STEM modules
- Team-building work
- Social activities
- Field trips
- Exposure to Alaska Native and other mentors

CAREER EXPLORATIONS

- Recurrent program**
- Residential experience on campus
- Hands-on STEM modules
- Team-building work
- Social activities
- Field trips
- Exposure to Alaska Native and other mentors

ACCELERATION ACADEMY

- Recurrent program**
- Computer assembly
- Residential experience on campus
- Hands-on STEM modules
- Team-building work
- Academic preparation
- Supports and advising
- Social activities
- Exposure to Alaska Native and other mentors
- Scholarships for college
- Jump Start for former participants*

SUMMER BRIDGE

- Freshman-year academic preparation
- Residential experience on campus
- Team-building work
- Paid internship
- Supports and advising
- Social activities
- Professionalization and skill-building
- Exposure to Alaska Native and other mentors
- Scholarships for college

UNIVERSITY SUCCESS

- Performance requirements
- Merit-based scholarships
- Residential experience on campus
- Team-building work
- Paid internship
- Peer study groups
- Weekly meetings and employer networking
- Study/social space and resources
- Supports and advising
- Job-placement assistance
- Informal mentoring/networking
- Teaching and research opportunities
- Research exposure
- Exposure to Alaska Native and other mentors

GRADUATE SUCCESS

- Scholarships and financial support
- Supports and advising
- Academic research skill-building
- Career awareness and exposure to other universities
- Team-building work
- Exposure to Alaska Native and other mentors

OUTPUTS / SHORT-TERM OUTCOMES

ALASKA K-12 SYSTEM Higher performing students returning to classroom • College application rates • Contact with university	UNIVERSITY OF ALASKA Diversity rates • Retention rates • Resources	STEM INDUSTRY Diverse workforce • Interns' work product • Alaska Native community relations
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Knowledge of college life • Soft skills • Leadership development • Application to further ANSEP activities • Social integration • STEM professional identity and socialization					
Commitment to complete algebra by the end of 8th grade		Commitment to complete trigonometry, chemistry, and physics by end of high school		Retention at university • Entry-level STEM employment	
Completion of Academy	Completion of Career Explorations • Reinforcement of Middle School Academy experience	Completion of Academy, with credits • Application to university	Completion of Summer Bridge, with college credits	Completion of STEM major coursework	Retention in advanced degree

LONG-TERM OUTCOMES

ALASKA K-12 SYSTEM Pool of qualified Alaska Native and non-Alaska Native STEM teachers • STEM education practices that emphasize hands-on learning and career-focused curriculum • Resources committed to STEM	UNIVERSITY OF ALASKA Recruitment and retention of Alaska Native students and other minorities • Use of existing university resources, visibility and attraction of STEM funding to campus • Filling Alaska's STEM occupational needs	STEM INDUSTRY Access to skilled, stable workforce of scientists and engineers • Access to Alaska Native perspective and leadership on STEM and natural resource issues
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Excitement about STEM • Connection to academically focused peer group • Reinforcement of Alaska Native identity					
Knowledge about STEM education and occupations for parents, social networks, and sending communities					
Personal computer		Personal computer			
College-readiness for STEM field • College enrollment • College degree attainment • Advanced degree attainment • Career advancement and wages • Commitment to STEM field					
Empowerment and leadership • Commitment to Alaska Native community and Alaska					
Social and professional network of colleagues and employers					

Alaska Natives in leadership roles • Changing attitudes toward Alaska Natives and minorities • Greater sensitivity to diversity

How Does ANSEP Work?

ANSEP seeks to motivate young, talented students to commit to rigorous educational pathways and provides them the academic and experiential training and supports to achieve a STEM college degree and career. ANSEP uses a multi-stage model that provides opportunities for students beginning as early as sixth grade, through high school, into their STEM education at the University of Alaska, and into the workforce. The components of the ANSEP model include: Middle School Academy, STEM Career Explorations, Acceleration Academy, Summer Bridge, University Success, and Graduate Success.

Middle School Academy

Middle School Academy is the first possible entry point to the ANSEP multi-stage model. It provides youth who are middle school age with an 11-day residential experience at the University of Alaska Anchorage. The experience provides active learning opportunities designed to foster enthusiasm for pursuing STEM education and careers and a commitment to completing Algebra 1 by the end of eighth grade. The component has grown since its creation in 2010, evolving from a centralized component run entirely by ANSEP staff to a hybrid model that relies on collaboration with specific school districts around the state of Alaska. The average cost per participant is \$2,593.

STEM Career Explorations

STEM Career Explorations provides an opportunity for participants who previously attended a Middle School Academy to return to the University of Alaska Anchorage for a five-day residential camp in which they focus on a particular STEM field. This allows participants to renew their dedication to and enthusiasm for the ANSEP community and STEM study. The average cost per participant is \$1,000.

Acceleration Academy

Acceleration Academy gives high school-age participants college preparatory coursework and supports to ensure they continue on the STEM education path. Acceleration Academy is a five-week summer session at the University of Alaska Anchorage, where participants can earn college credit through intensive summer college courses and gain hands-on STEM experiences. Participants benefit from a college residential experience, peer socialization, and college scholarships to reward completion. The average cost per participant is \$6,157.

Summer Bridge

Summer Bridge provides a transition summer for participants who are beginning a STEM undergraduate degree at the University of Alaska in the fall. The eight-week program combines academic coursework with a paid internship in a STEM workplace, either in Anchorage or in the field elsewhere in the state. This prepares participants to successfully transition both academically and socially into the university, and it provides them work experience and exposure to STEM career fields. The average cost per participant is \$7,784.

University Success

University Success provides a comprehensive set of supports to undergraduate students enrolled in science and engineering majors at the University of Alaska Anchorage, Fairbanks, and Southeast. University Success supports the academic, professional, and social success of participants by providing a range of supports and requirements. The program requires participants to meet high academic standards, complete summer STEM internships, and actively participate in the learning community. The average cost per participant is \$225; participants are provided an average scholarship of \$2,910 each semester.

Graduate Success

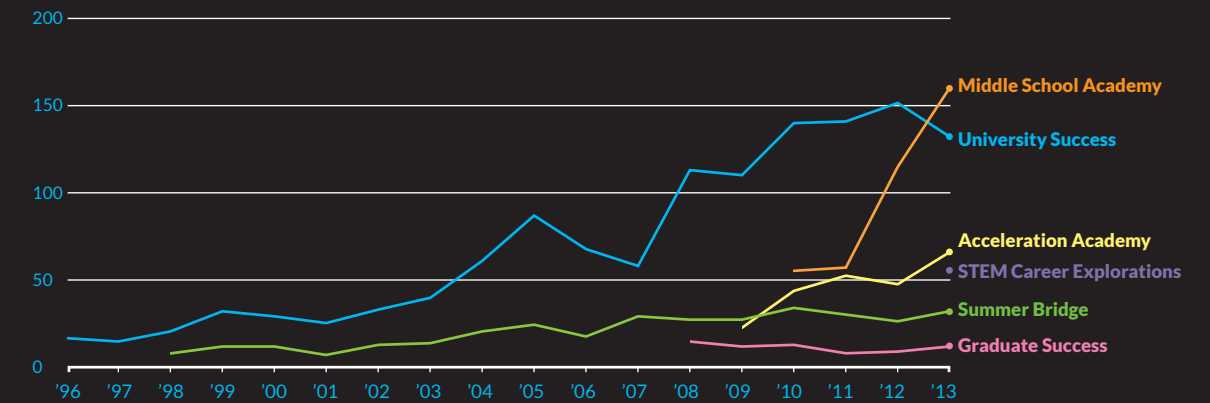
Graduate Success supports participants who choose to continue their post-secondary education by pursuing master's, doctoral, or other professional degrees in STEM fields at the University of Alaska or partner institutions elsewhere in the United States. The program provides financial and other supports to develop leaders for STEM industry organizations and the faculty of the University of Alaska. The average cost per participant is \$2,500; participants are provided an average scholarship of \$2,910 each semester.

Who Does ANSEP Support?

ANSEP has expanded its programming since its creation in 1995 at the University of Alaska Anchorage, implementing six components that support future scientists and engineers throughout their educational development (see figure 2).

FIGURE 2

Number of Participants in ANSEP Components, 1996–2013



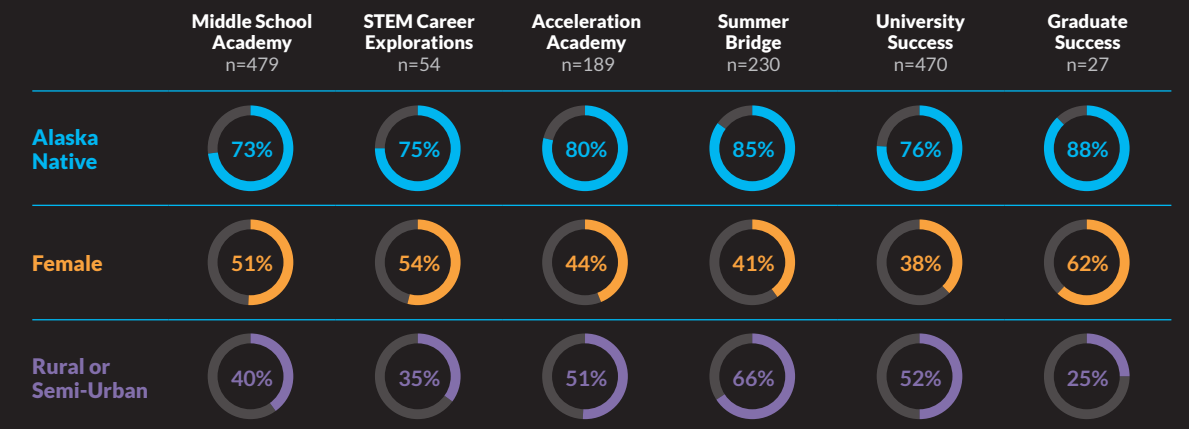
Notes: These data include the total number of participants in each year (i.e., repeating students appear in multiple years).

Most ANSEP participants across all the components come from the underrepresented minority groups whom the program targets; Alaska Natives make up the majority of participants in all the components.

There is approximately proportional representation of females in all components, except in Graduate Success, where they are overrepresented (see figure 3). There is also overrepresentation of students from rural or semi-urban communities in all components except Graduate Success and STEM Career Explorations.

FIGURE 3

Target Group Demographics by ANSEP Component



Notes: Repeat participants are counted as single observations. Percentages exclude participants for whom demographic information is unknown. Participants whose hometowns are out of state or unknown are not included in the calculation of the proportion of rural and semi-urban participants.

What Have ANSEP Participants Achieved?

For each component in the ANSEP model, the Urban Institute examined the programmatic accomplishments that constitute the “outputs” in the logic model. These are typically the more immediate results of each ANSEP component. For ANSEP’s precollege components, course completions and academic advancement are the primary outputs.

77% of Middle School Academy participants successfully completed Algebra 1

at their home schools by the end of eighth grade, among participants for whom completion information is known and who have reached eighth grade.

79% of all Acceleration Academy participants who took a precollege or college-level math course completed it with a grade of C or higher.

Eighty-five percent of participants who took college-level science coursework passed the same bar. Since participants elected to take either or both college math and science courses, the average overall completion rate of any course (college or precollege) among all participants was 95 percent.

68% of the Summer Bridge participants from 2010 to 2013 who took a math course received college credit.

Of this group of completers, 72 percent took courses at the college level, while 28 percent took courses at the precollege level.

For undergraduate and graduate components in ANSEP, on the other hand, degree completion and academic achievement (e.g., grade point average [GPA] and time to degree) are the key outputs. Table 1 provides completion and enrollment status for all University Success participants to date—showing that 67 percent of all participants who received a minimum scholarship in any one semester have either completed or are currently enrolled in STEM degree programs at the University of Alaska.

In University Success, the rates of Alaska Native participants who do not complete their degrees after eight years (22 percent) or who are currently studying in non-STEM programs (12 percent) are higher than almost all other racial groups.

The most recent average cumulative GPA of University Success participants was 2.98. The GPA is higher than a nationally estimated GPA for American Indian/Alaska Native and Native Hawaiian/Pacific Islander STEM graduates (2.91). The mean time to degree for University Success graduates is approximately 13 enrolled semesters.

Of the 27 Graduate Success participants, a third have completed their graduate degrees, and 56 percent are continuing their studies at the University of Alaska.

TABLE 1

University Success Participant Completion and Enrollment Status

	DEGREE COMPLETED (PERCENT)				CURRENTLY ENROLLED (PERCENT)			
	Any BS degree	STEM non-BS degree	Non-STEM degree	No bachelor's degree ^a	Any BS degree	STEM non-BS degree	Non-STEM degree	Unknown degree type
Total (n = 470)	34.7	0.2	2.8	18.3	31.7	0.6	10.2	1.5
Alaska Native (n = 353)	28.3	0.3	2.3	22.1	32.6	0.8	11.9	1.7

Source: ANSEP Administrative and Scholarship Records and UA Banner.

Note: BS = bachelor of science.

^a No degree means that the student did not earn a bachelor's degree eight years after enrolling.

How Does ANSEP Help Its Graduates Succeed?

An important part of the ANSEP model is the long-run outcomes that graduates experience in their post-secondary education and the STEM workforce. The Urban Institute examined the educational and employment outcomes of University Success participants using self-reported outcome data from the alumni surveyed in the summer of 2014. When survey respondents consented, the research team linked outcomes to respondents' information in ANSEP's and the University of Alaska's student records to understand the full trajectory of ANSEP participation. For University Success graduates, the analysis focused on three outcome categories:

Graduate study in STEM fields

The rate of respondents who reported ever enrolling in graduate school was 37 percent, as shown in table 2. This rate is substantially higher than a national estimate of 17 percent for American Indian/Alaska Native and Native Hawaiian/Pacific Islander college graduates in all majors or fields who enter graduate school within one year of graduation.

Employment in STEM professions

According to a national estimate based on relatively small sample sizes, within one year after graduation, 62 percent of American Indian/Alaska Native and Native Hawaiian/Pacific Islander STEM college graduates are employed and 19 percent are enrolled in graduate school. Based on alumni survey responses matched to university records data, within one year of graduation, 84 percent of University Success participants reported being employed and 10 percent reported being enrolled in graduate school. The vast majority of these University Success participants were employed by STEM or STEM-related employers (88 percent), in STEM or STEM-related occupations (88 percent) and in their undergraduate field of study (78 percent).

Income from their STEM professional employment

In their first year of employment, 44 percent of matched survey respondents earned the median salary band of \$40,000 to \$59,000 (not constant dollars), and 44 percent made \$60,000 or more. The mean income in 2008 at one year after graduation of American Indian/Alaska Native and Native Hawaiian/Pacific Islander college graduates across all STEM fields is estimated at \$43,257. Survey respondents also reported on their current salaries, with 25 percent earning the median salary band of \$60,000 to \$79,000, 24 percent earning between \$80,000 and \$99,000, and 17 percent earning \$100,000 or more.

TABLE 2

Graduate Enrollment and Degree Completion Rates among University Success Alumni

REPORTING UNIVERSITY SUCCESS ALUMNI	PERCENT ^a
Ever been enrolled in graduate program	36.8
Currently enrolled in a graduate program	21.1
Currently enrolled in a STEM/STEM-related graduate program	17.1
Completed graduate degree	11.8
Completed STEM/STEM-related graduate degree	11.8

^a N = 76 nonrandom, student record matched, full ANSEP respondents to the alumni survey who responded affirmatively to survey questions regarding graduate school enrollment and completion.

What Do Participants Think?

Precollege Participants

Precollege participants in focus groups shared how their experiences with ANSEP helped them learn about career possibilities, navigate the college campus, and prepare for successful completion of a science or engineering degree. Many were excited to meet other high achievers from other middle and high schools, many from Alaska Native or rural backgrounds like themselves, to be able to develop connections and friendships that would serve them during their undergraduate years. They enjoyed the hands-on activities and direct exposure to scientists and engineers that they would not have experienced otherwise. High school-age participants also valued earning college credits and future scholarships at the University of Alaska to help advance their academic pursuits in college.

University Success Participants

University Success participants in focus groups appreciated the supports ANSEP provided to help them through rigorous coursework in pursuit of science and engineering degrees. Participants emphasized the financial benefit of the ANSEP scholarship, academic advising from ANSEP staff, peer support during and outside of official study groups, internships that exposed them to future employers, and value of belonging to a community on campus.

Participants spoke of the impact of ANSEP facilities and of the physical and symbolic importance of having a dedicated building on the Anchorage campus. Participants at the Fairbanks campus felt that not having a dedicated facility was a disadvantage.

University Success Alumni

The alumni surveyed during the summer of 2014 reported that the most important reason they joined and stayed in University Success was the scholarship, followed by peer and academic support. Peer support was highlighted as an important factor for a higher share of Anchorage alumni than Fairbanks alumni. Alumni placed the connection to Alaska Native culture and community, career planning support, and employment during college as some of the lesser important reasons they joined the program. Alumni saw ANSEP's help in their navigating the university as the least important reason to participate.

Alumni were also asked to rank the activities that had the most impact on their academic and professional success. Similar to the reasons they joined, alumni highlighted scholarships as well as formal and informal peer studying opportunities as the biggest influences on their success. When considering their career development, alumni felt that connections to potential employers that ANSEP facilitated were the most important, followed by summer internships and weekly meetings.

When asked to elaborate on their experiences, many highlighted the ANSEP building on the Anchorage campus and the connections to other STEM majors for support in completing difficult coursework. Participants also highlighted the value they placed on the Alaska Native cultural references and traditions, which were central to ANSEP.

What Are the Key Implementation Study Findings?

ANSEP combines academic and experiential learning with a wide range of supports, including all the elements that have been identified in previous literature as valuable components of successful STEM enrichment programs.

Though ANSEP is organized as a multi-stage educational model—from middle school to post-secondary education and into the workforce—the various components are generally discrete and autonomous with regard to a comprehensive curriculum. Though some of the components are relatively new, many participants are enrolling in multiple components as encouraged by ANSEP staff and aligned with the model.

ANSEP is not a static, easily replicable program, although individual components may potentially be replicated. It is a dynamic and evolving model that continues to adapt as the program expands to a wider range of STEM fields, to additional University of Alaska campuses, and earlier into K-12 education. However, with leadership's efforts to continuously improve the program, better data systems and more rigorous evaluation of the model may be challenging to develop.

ANSEP rewards students who are high achieving relative to their geographic and racial group cohorts, particularly in the precollege components. Rigorous academic requirements drive eligibility standards and ongoing participation. However, many participants, in particular those who have not taken part in ANSEP precollege components, may still suffer from academic and personal barriers in pursuing their degrees.

In its recruitment, ANSEP targets groups who are underrepresented in Alaska's STEM workforce, specifically Alaska Native and nonurban students. Its programming is open to all students, however, and many beyond the target groups benefit from ANSEP's activities and resources.

To date, 164 ANSEP scholarship recipients have graduated from the University of Alaska with bachelor's degrees in STEM fields. These STEM and STEM-related professions are in demand in Alaska's industries. Eighty-eight percent of a nonrandom sample of graduates who were employed in the first year after graduation report being employed in STEM occupations.

ANSEP has an employer-centered model, built on a wide range of partnerships with STEM organizations in the private and public sector that are important funders and also provide internships and other career exposure to link participants to STEM employment. These relationships make the program highly dependent on the strength of the industries that hire scientists and engineers.

Stakeholders credit ANSEP for contributing to an improved climate for Alaska Natives at the University of Alaska and in the state's STEM industries. One strategy shaping these perceptions has been ANSEP's use of marketing, branding, and advocacy efforts as well as promotion of Alaska Native cultural identity.

The climate for the program at the University of Alaska has been and generally continues to be tense because of the program's significant resources and unique status, but has improved as ANSEP has won support from key university leaders. Many university stakeholders and programs express admiration for ANSEP's visibility and success and note benefiting from it.

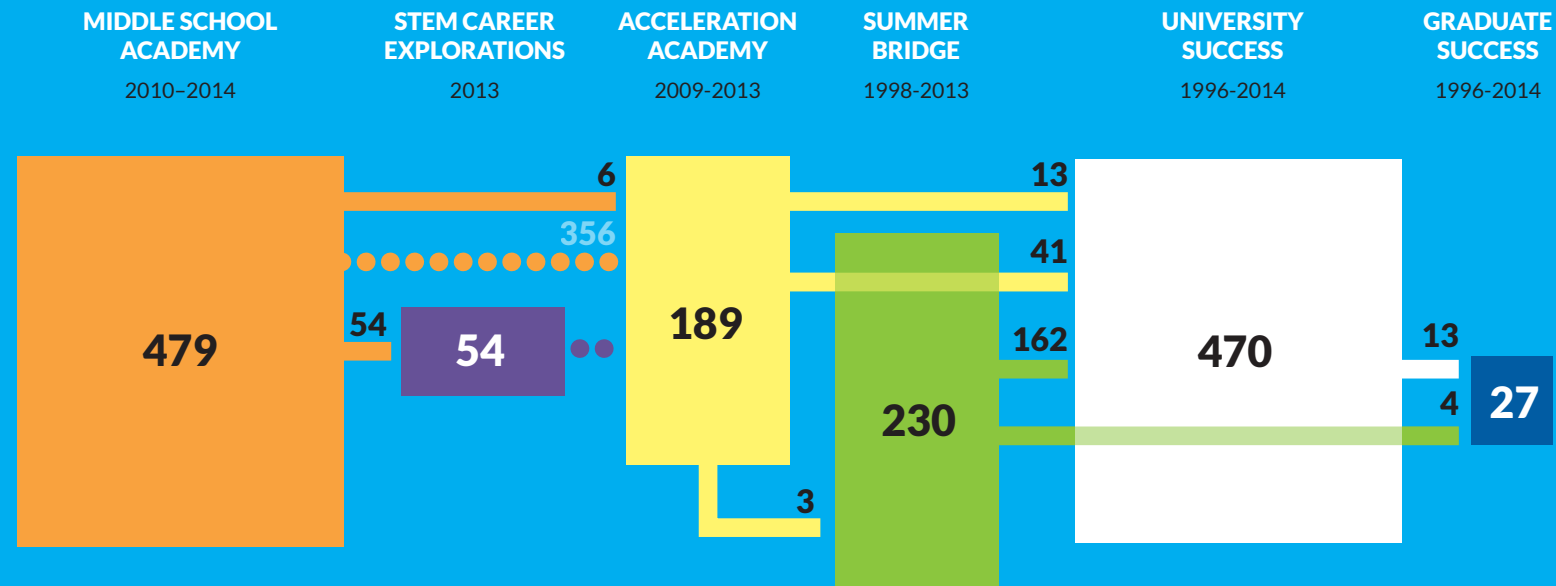
ANSEP has benefited from a charismatic leader whose personality is central to the program, and who has developed the program's visibility and connections to significant funding resources. Careful sustainability planning, which is currently under development, will be crucial to ANSEP's long-term success.

Program expansion to additional university campuses and to additional participants has faced and will continue to confront operational challenges in terms of providing sufficient staffing and facilities to maintain consistent supports to all participants and ensuring fidelity to the model.

ANSEP's approach offers important lessons for other STEM education programs for underrepresented minorities, especially in its engagement of students from middle school to graduate school. However, Alaska's unique social and economic conditions and the unusual institutional placement of ANSEP at the University of Alaska may pose a challenge to replication in other contexts outside of Alaska.

FIGURE 4

Participant Flow Between Components



Notes: Dotted lines and figure in light blue indicate the potential pipeline of recent Middle School Academy and STEM Career Explorations students who were not yet age-eligible for Acceleration Academy in 2013, the most recent year for which Acceleration Academy data are available. Participants are only counted once, even if they participated in a component multiple times.

What Is ANSEP's Future?

ANSEP's Pipeline

As ANSEP has evolved, it has increasingly followed a pipeline model to prepare and support Alaska Native and rural students to enter and complete college by providing earlier intervention during their K-12 education.

This pipeline has begun to work effectively, although further data collection and analysis in the coming years will be crucial for understanding the pipeline's flow (see figure 4). According to student records that the Urban Institute analyzed, 47 percent of all University Success participants also took part in a previous ANSEP component, including those who participated in Summer Bridge (35 percent of University Success participants), those who participated in Acceleration Academy (3 percent), and those who participated in both (9 percent).

Although the precollege components were created later, many precollege participants are moving on to enroll in later components and University Success. According to college admission reports, the majority of Acceleration Academy participants, 79 percent of those who were age-eligible for college, applied to a University of Alaska campus. Eighty-five percent of Acceleration Academy students who applied to the University of Alaska were admitted, and 86 percent of that group enrolled.

Expansion Plans

ANSEP plans to expand operations in the coming years, focusing resources on Middle School Academy to increase the number of participants entering the pipeline at the first stage of the multi-stage model. ANSEP's strategic plan envisions running 12 Academies a year as soon as 2015, supporting around 650 participants each year. The vision is for Middle School Academy participants to return to ANSEP repeatedly throughout the multi-stage model, steering them to enrollment in STEM majors and participation in University Success. Although most of the precollege components are too new to have shown significant effects, ANSEP leadership plans for a pipeline of students to emerge from the multi-stage model and provide leadership in Alaska's STEM industry.

Partnership with the K-12 school system is crucial to this expansion, as the component will be increasingly decentralized to school districts as they take on some of the operational costs as well as recruitment and administration tasks. Recent new funding from Alaska's Department of Education and Early Development suggests a deeper institutionalization of ANSEP in Alaska's K-12 system.

ANSEP is also developing plans to improve data management and performance monitoring. ANSEP leadership is exploring ways to improve tracking ANSEP applicants' and participants' advancement, which would be helpful for reporting and evaluation purposes to the University of Alaska, funders, policymakers, and other stakeholders. ANSEP leadership is working on making operational adjustments, such as hiring additional staff and securing facilities to support a year-round Middle School Academy component. The program is also developing current management staff to ensure sustainable leadership for the program as well as ANSEP-affiliated Alaska Native faculty in the University of Alaska system.

Notes

- 1 Erik Stimpfle, and Todd Mosher, "Science, Tech, Engineering, and Math: Knowledge-based workers in Alaska," *Alaska Economic Trends* 31 no. 2 (2013): 4-12.
<http://labor.alaska.gov/trends/feb11.pdf>.
- 2 This figure and the remaining Alaska Native demographic figures in this section on Alaska state context also include non-Alaska-Native American Indians. This is the standard categorization in the decennial Census, the American Community Survey, and the Department of Labor Bureau of Labor Standards and is the only statistically sound benchmark secondary data source.
- 3 Occupation data from the 2013 American Community Survey 1-Year Estimates.
- 4 Alaska Department of Education and Early Development, *Alaska's Public Schools: 2012-2013 Report Card to the Public*, Juneau: Alaska Department of Education and Early Development, 2013.
<http://education.alaska.gov/reportcard/2012-2013/reportcard2012-13.pdf>.
- 5 US Department of Education, "2009-10 National and State Estimations," Civil Rights Data Collection, accessed December 10, 2014.
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This project was funded by The Alaska Native Science & Engineering Program (ANSEP).

The views expressed are those of the authors and should not be attributed to the Urban Institute, its trustees, or its funders.



I feel that ANSEP really prepared [my son]. He's a freshman at [University of Alaska] and said, "No surprises. When I went to Acceleration Academy and Summer Bridge I knew how hard college was going to be." It just served him

beautifully... It helped him focus here academically. He was offered courses that started to challenge him but he also knew that if he wanted to get involved in the summer programs then he needed to stay and do really well here.

— A parent

What I thought was really good is that the students also had exposure to different professions in math, science, and engineering. They had little projects that went with each one of those fields. So it was just deep enough to get some exposure, see what it was about, see what skills you need to do that, what type of projects you're working on and then moving on to another project. I thought that exposure piece, just all the different areas they put in just those twelve days, was great.

— A middle school partner

Most definitely, that's probably my favorite thing about ANSEP. They let you get to know your future employer, but they also let you get to know your most likely future coworker.

— A University Success participant

I think this is an incredibly inspiring program that really is transformational and has the ability to make such a difference to Alaska Natives and to us, as employers. I really think it is something that has the opportunity to change the soul of companies who hire STEM graduates.

— An employer partner

I live in [a] small village with only 800 people and we don't get much experience of college life and major road systems and it's helped me boost my confidence about what I want to do in the future.

— A Summer Bridge participant

We don't have an unlimited source of money, space, and supplies to reach every single student out there. We need to focus on students who are at least on track and keep them on track and keep them excited. These students have younger siblings, these students have friends who see what they're doing, who hear what they're doing, who see the fun that they're having, the success that they're having, the cool science things that are going on in their life because they are part of ANSEP and that, I think, is really what's going to create a better understanding, or better thought about what Alaska Native students are capable of and the goals they need to meet to be successful.

— An ANSEP staff member

[W]here I think [other programs] fall short is that they expect that that one summer...is going to be enough to prepare [a] student for college. It's going to take a lot more than that...We learned that the hard way. [We] saw that all these students were coming in underprepared, so we said "Well, we'll do something in the summer before they start. We'll give them a college math course to prepare them." And even those students who were doing that, they weren't prepared enough. So we said, "Okay, we have to go back into high school" and that's when the computer assembly stuff started. Then you realize some of these high school students are even behind by the time they started high school, so you have to go further back into middle school. So it's kind of been a domino effect of opportunities that we realized need to be there in order for the students to have the chance to be successful.

— An ANSEP staff member