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National Inventors
Hall of Fame®

NATIONAL INVENTORS HALL OF FAME
APS-OUT OF SCHOOL TIME
INNOVATION 365
SUMMER 2019

Prepared by:

Summit
Education
Initiative

SUMMIT EDUCATION INITIATIVE

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SYSTEM OVERVIEW

Supporting student success from cradle to career is a complex challenge. No single person, policy, or initiative can drive transformation. Only collective action can lead to system change. Individuals and organizations across the community have different skills and resources, and each plays a role in supporting student success. Some organizations provide direct services to students but cannot measure the impact of their work. Increasing technical capacity in a small nonprofit can be costly. Other organizations have the technical capacity to collect and analyze data, report program impacts, and direct community efforts to areas of need, but they do not provide direct services to students. These organizations are known as *backbone organizations*.

Through partnerships and shared funding streams, backbone organizations support the tasks of data collection and program evaluation for nonprofit partners working with students. When backbone organizations provide this support, those working with students can focus attention on the quality of their work, with fewer distractions. This collective approach has the added benefit of generating shared measures of outcomes and impact across a variety of community programs.

ABOUT SUMMIT EDUCATION INITIATIVE

Summit Education Initiative (SEI) is a research-based nonprofit backbone organization working to support personal and regional prosperity through educational attainment in Summit County, Ohio. SEI does not directly operate programs. SEI has established research partnerships with schools to analyze and report on trends in student success across the region. SEI measures cradle to career educational outcomes across the region, identifying inequities and opportunities for improvement.

SEI also works with *Out of School Time Partners* (OSTPs) that support students beyond the school day. While OSTPs work directly with students, SEI coordinates and manages their program evaluations. The same philanthropic organizations in the region financially support SEI and many OSPTs. SEI does not charge partners for small-scale program evaluations, as such costs would change the dispersion of grant funds from one nonprofit to another. Philanthropic organizations in the community view their investments in SEI and these OSTPs as a mutually reinforcing activity to drive system change.

BACKBONE SUPPORT FOR MEASURING IMPACT

SEI supports official 501(c)(3) and other recognized nonprofits, provided the majority of the served youth reside in and attend school in Summit County, Ohio. The intent is to help partners measure the impact of out of school programs on students' academic outcomes. OSTPs working with SEI meet general criteria regarding program design and length. Additionally, parents must provide written consent for their student's outcome data to be in program evaluations. SEI only shares aggregated and de-identified results with OSTPs unless parents explicitly authorize sharing personally-identifiable information.

Results of SEI's program evaluations do not necessarily represent an endorsement of any specific organization, program, or product.

THE VALUE OF SUMMER PROGRAMMING ACROSS ALL PROGRAMS

QUALITY MATTERS

Summer learning opportunities for students play a significant role in academic gains or losses[1]. The quality and quantity of learning opportunities tend to vary based on geography, demographics, and income. Low-income and minority students who live in urban settings have less access to summer learning. As a result, existing gaps at the end of each school year can widen over the summer months.

When summer opportunities exist, the structure, consistency, focus, and quality of programs become critical factors that determine their impact. In general, programs should operate for at least half the summer, and should consistently include high-quality academic instruction.

Working in partnership with seven summer program partners and the Akron Public Schools, we studied relationships between summer program participation and student attendance, grade point average, and performance on nationally normed tests of reading and math achievement. Across all summer partners, we were able to study spring and fall data for over 1,200 students in comparison with students who did not participate in the programs. In general, there are positive gains in student success consistently associated with participation in summer programs.

ATTENDANCE

Summer program participation was associated with significantly fewer absences during the first marking period of the 2019-2020 school year, after controlling for previous absences and student grade level.[2] Students who participated in summer programs were also significantly more likely to start the school year with an overall excellent attendance pattern, even if they had poorer overall attendance the preceding spring[3]. A significant majority (84%) of students who participated in summer programs missed two or fewer days of school during the first marking period of the 2019-2020 school year.

ACADEMIC ACHIEVEMENT

Results from the academic achievement analyses indicate students who participated in one of the studied summer programs had slightly higher grade point averages (GPA), after controlling for previous GPA and grade level[4]. Summer program participants who had been low-achieving students in the spring were 10% less likely to remain low-achieving and 10% more likely to earn a B average or better in the fall, compared with their district peers[5]. Summer programs do not appear to contribute significantly to gains in performance on nationally normed assessments. One explanation for this null effect may be that students who participated in summer programs already had significantly higher test scores before summer.

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[1] http:bit/ly/WallaceSummerLearning
[2] After controlling for grade level and previous attendance in regression analysis, B(summer programs) = -.273, p<.05.
[3] Chi-Square test for disproportionality = 162.5, p<.001
[4] After controlling for grade level and previous GPA in regression analysis, B(summer programs) = .131, p<.001
[5] Chi-Square test for disproportionality = 296.3, p<.001

NIHF AND CAMP INVENTION: AKRON PUBLIC SCHOOL (APS) OUT-OF-SCHOOL TIME (OST): INNOVATION 365 PROGRAM

ABOUT NATIONAL INVENTORS HALL OF FAME

National inventors Hall of Fame® (NIHF) connect inventors that have built the world around us with the innovators of tomorrow. Headquartered in northeast Ohio, NIHF operates education and outreach programs nationwide. Co-founded in 1973 by the United States Patent and Trademark Office (USPTO), NIHF recognizes the world's greatest inventors. In 1990, NIHF's mission expanded to understand not only those whose innovations influence our world but also to inspire future generations through local and national education programs. NIHF develops its programs around the six pillars: Inspiration, STEM, Creativity, Collaboration, Intellectual Property, and Entrepreneurship. Ensuring all traditionally underrepresented groups such as girls, minorities, inner-city youth, and those who are economically disadvantaged have priority access to enrichment programming to help them succeed. NIHF programming provides underserved children with exposure to innovation, introducing the invention process through diverse, relatable NIHF inductees whose stories remain integrated throughout the curriculum. In this way, children learn to see themselves as innovators early in life while challenged and inspired by the Nation's greatest innovators.

MISSION

The mission of the National Inventors Hall of Fame® (NIHF) recognizes inventors and invention, promoting creativity and advancing the spirit of innovation and entrepreneurship.

ABOUT AKRON PUBLIC SCHOOL (APS) OUT-OF-SCHOOL TIME (OST): INNOVATION 365 (I 365)

Based on NIHF's nationally scaled Camp Invention program, I - 365 brings innovation and STEM to life for APS children in grades K-6 through exciting, real-life challenges. Hands-on approaches to learning, featuring STEM concepts and highlighting the invention process, specially design the curricula. APS teachers who receive hands-on professional development before, during, and after the program lead the program. NIHF staff work with APS district administrators and teachers to provide support at every level and maintain a high level of engagement in the program. Camp Invention allows students to explore STEM concepts via hands-on, creative problem-solving activities and project-based learning through interdisciplinary modules. I365 takes this experience further to enhance ELA skills, providing participants with a deeper dive into experiences that expose them to innovation in its totality. The program provides children with increased opportunities not only to enhance their innate creativity but also to connect those engaging creative experiences to real-world literacy applications. It will transform their attitudes to traditional schooling, enhance their innovative natural abilities, and build upon ELA and STEM skills as valuable applied skills. This mental shift furthers the objective to increase student achievement and improve reading scores by instilling a joy of learning and using learned skills to solve problems.

PROGRAM GOALS

The goal of I 365, 2019, was to impact over 1,200 underserved APS children, aligning with United Way of Summit County Bold Goals Initiatives to improve 3rd-grade reading and increase high school graduation rates. The program also aimed to enhance the knowledge base of APS teachers, decrease chronic absenteeism, increase student academic achievement, and enhance children's 21st Century work readiness skills.

YOUTH POPULATION SERVED

According to the Ohio Department of Education's School Report Card, 100 percent of APS students are economically disadvantaged. A diverse district, 46.2 percent of students self-identify as African-American, 33.2 percent as White, 8.4 percent as Asian, and 8.3 percent as Multi-Racial. In the summer of 2019, I 365 served 1248 at-risk, economically disadvantaged APS kids and youth.

EVALUATION FOCUS

OUTCOME MEASURES

ATTENDANCE
- Average and median absences from the first marking period of the 2019-2020 school year.
- Percentage of students with first marking period 2019-20 absences in three categories:
    - Excellent attendance: 2 or fewer absences in a marking period
    - Average attendance: 3 absences in a marking period
    - High-Risk attendance: 4 or more absences in a marking period

ACADEMIC PERFORMANCE ON NATIONALLY-NORMED TESTS OF READING AND MATH
- Average and median math and reading scores from fall 2019
- Percentage of students scoring below, at or above district norms

DATA SOURCES

- Student reading and math MAP test scores, spring and fall of 2019
- Student reading and math i-Ready scores from fall of 2019
- Student marking period absences before and following the summer program
- Student attendance and participation information provided by your summer program

DEFINITIONS

ATTENDANCE

Students who miss fewer than eight days of school earn higher grades, have higher passing rates on state assessments, and have a higher probability of graduating from high school college-ready.
- Students who miss 16 or more days of school in a year - or more than four in a marking period – are **high-risk attendance**.
- Students who miss eight or fewer days of school in a school year - or about two days each marking period - are considered to have **excellent attendance**.
- All other students are of average attendance. Their attendance should not negatively affect their achievement. These students' attendance is **acceptable**.

MEASURES OF ACADEMIC PROGRESS (MAP) AND I-READY READING AND MATH SCORES
Nationally normed assessments provide information about student performance and growth compared with local and national peers. For the purposes of these evaluations, all comparisons are made with local peers. Outcomes for Akron Public School students who participated in summer programs are compared with outcomes for Akron Public School students who did not participate in summer programs.

Students were grouped into three performance categories based on test outcomes from the spring of 2019 and the fall of 2019. These groupings can show the percentage of students who performed at different levels before and after the summer program. Student groups are defined as:

- Students who performed exceedingly well (top 17%) scored **significantly above average** relative to their peers in Akron Public Schools.
- Students who performed poorly (bottom 17%) scored **significantly below average** relative to their peers in Akron Public Schools.
- All other students have scored within the **average range**.

Below are a few tips for interpreting the data you will see in this report.

- When you see the word **average** used, this is the traditional, mathematical mean. To find the **average**, we add up all the values in a set of numbers, and then divide that sum by the number of values in the set. For example, the **average** of the numbers 5, 10, and 15 is 10.
  - o Averages are an accurate description of data in many cases, but extreme values can influence them. For example, if you have one student in your program who missed 29 days of school, that student will *pull* the average days missed higher.

- A **median** value is the "middle" value in a set of numbers. When you see the **median**, it means half the students in a group had scores above that number, and half had scores below that number. For example, the **median** value in the numbers 5, 10, and 42 is still 10.
  - o The **median** is not influenced or *pulled* by extreme values and can be helpful when interpreting outcomes in small groups of students.

- A **cross-tabulation** table, also known as a cross-tab, can show how groups from one outcome or with one characteristic related to another outcome or characteristic. The example below can help you interpret many of the results you will see in this report.
  - o When you read these tables, it is helpful to read from *left to right*.
  - o The values you see in each "box" on the table show what percent of students from the left (pre) row ended up in each column (post) outcome.

Sample Cross-Tabulation table with some kind of student outcomes from two different points in time, which can show you the "path" of students from *pre* to *post*.

		Distribution of student characteristics from the *post-program* data (in this case, from fall 2019)		
		High Risk	**Acceptable**	**Excellent**
Distribution of student characteristics from the *pre-program* data (in this case, from spring 2019)	**High Risk**	20%	60%	20%
	Acceptable	16%	70%	14%
	Excellent	2%	5%	93%

- Practice: If you start with the **High-Risk** box in the first row of data and slide your eyes from left to right, you will see 20% under the **High-Risk** column heading, 60% under the **Acceptable** column heading, and 20% under the **Excellent** column heading.
  - o *This means that 20% of your students who were high risk in the spring (before your program) were high risk in the fall (after your program). But 60% of your high-risk students improved to the acceptable level, and 20% of your high-risk students rose all the way to an excellent level.*
  - o You can repeat this with each row of data to understand the "impact" of your program on different *types* of students, based on how they were performing *before* and *after* your program.

RESULTS

DEMOGRAPHICS

Your program participants, enrolled in schools in Akron Public Schools during the 2018-2019 and 2019-2020 school years, were included in this analysis. With these parameters, **1062 APS students of over 1200 students were the pool of students used for the analysis**. The gender, ethnicity, and grade distribution of your program compared to the district and campsite distribution is below.

	Gender		Ethnicity					
	F	M	Asian	Black	Hispanic	Multi-Race	Pacific Islander	White
All Students in Akron Public Schools	49%	51%	9%	47%	4%	9%	<1%	31%
Students in All Summer Programs	50%	50%	10%	46%	5%	10%	0%	29%
% (No.) of Students in NIHF Summer Program	50% (545)	50% (551)	6.5% (61)	44% (418)	4% (40)	11% (107)	0%	34% (318)

	Grade												
	KG	1	2	3	4	5	6	7	8	9	10	11	12
All Students in Akron Public Schools	8%	8%	7%	7%	7%	8%	7%	7%	7%	7%	8%	7%	7%
Students in All Summer Programs	10%	10%	12%	12%	19%	21%	10%	2%	1%	4%	4%	1%	0%
Students in NIHF Summer Program	1% (13)	12% (115)	14% (134)	13% (124)	22% (204)	25% 240)	11% (102)	1% (9)	0%	<1% (1)	<1% (1)	0%	<1% (1)

Campsite Student Distribution													
Site	Crouse CLC	David Hill CLC	Findley CLC	Glover CLC	Hyre CLC	I Promise	Resnik CLC	King CLC	Leggett CLC	McEbright CLC	NIHF STEM	Sam Salem CLC	Seiberling CLC
% of NIHF students	6.9%	9.5%	5.5%	6.6%	6.6%	11.3%	7.2%	7.6%	6.0%	8.0%	9.5%	6.4%	9.5%

Results below highlight absence events – average and median absences from school – and also attendance patterns. Attendance pattern categories are in line with the definitions provided earlier.

Absences Before and After Summer 2019

	Absences in Marking Period 4 of 2018-2019 School Year		Absences in Marking Period 1 of 2019-2020 School Year	
	Mean	**Median**	**Mean**	**Median**
All Students in Akron Public Schools	3.2	2.0	2.2	1.0
Students in All Summer Programs	1.6	1.0	1.1	0.5
Students in NIHF Summer Program	1.9	1.0	1.2	1.0

District Attendance Patterns from the end of 2018-2019 and the beginning of 2019-2020

		Distribution of Student Attendance Patterns in Marking Period 1 of the 2019-2020 School Year		
		High Risk	**Acceptable**	**Excellent**
Distribution of Student Attendance Patterns in Marking Period 4 of the 2018-2019 School Year	**High Risk**	42%	21%	37%
	Acceptable	13%	20%	67%
	Excellent	5%	9%	86%

Attendance Levels for Your Students from the end of 2018-2019 and the beginning of 2019-2020

		Distribution of Student Attendance Patterns in Marking Period 1 of the 2019-20 School Year		
		High Risk	**Acceptable**	**Excellent**
Distribution of Student Attendance Patterns in Marking Period 4 of the 2018-2019 School Year	**High Risk**	26%	24%	50%
	Acceptable	7%	15%	78%
	Excellent	2%	9%	89%

READING AND MATH PERFORMANCE ON NATIONALLY NORMED ASSESSMENTS

District Reading Performance from Spring to Fall 2019

		Student Performance Levels in Fall		
		Significantly Below Average	Within Average Range	Significantly Above Average
Student Performance Levels in Spring	Significantly Below District Average	62%	36%	2%
	Within the Average Range of District Performance	15%	60%	25%
	Significantly Above District Average	2%	21%	76%

District Math Performance from Spring to Fall 2019

		Student Performance Levels in Fall		
		Significantly Below Average	Within Average Range	Significantly Above Average
Student Performance Levels in Spring	Significantly Below District Average	66%	33%	1%
	Within the Average Range of District Performance	20%	57%	23%
	Significantly Above District Average	2%	27%	71%

Reading Performance for Your Students from Spring to Fall 2019

		Student Performance Levels in Fall		
		Significantly Below Average	Within Average Range	Significantly Above Average
Student Performance Levels in Spring	Significantly Below District Average	62%	37%	1%
	Within the Average Range of District Performance	14%	64%	22%
	Significantly Above District Average	0%	13%	87%

Math Performance for Your Students from Spring to Fall 2019

		Student Performance Levels in Fall		
		Significantly Below Average	Within Average Range	Significantly Above Average
Student Performance Levels in Spring	Significantly Below District Average	33%	65%	1%
	Within the Average Range of District Performance	3%	79%	18%
	Significantly Above District Average	0%	28%	72%

CONCLUSION

SUMMARY OF THE RESULTS

IMPROVED ATTENDANCE

Students in your program had excellent attendance patterns in school after your summer program. A significant majority (89%) of your students with a history of excellent attendance maintained that level of excellent attendance during the first marking period of the 2019-2020 school. Seventy-eight percent of your students with acceptable attendance began the year with excellent attendance. Half your students who had high-risk attendance before attending your program started the 2019-2020 school year with excellent attendance. This increase in excellent attendance among your students can lead to increased success throughout the 2019-2020 school year.

READING PERFORMANCE

Overall, patterns of reading performance among your students were similar to district patterns from spring to fall. Among your students with a significantly low reading performance during the 2018-2019 school year, more than one-third (37%) improved to score within a typical district range by the fall. Of the students who were high-achieving readers in the spring, a significant majority (87%) continued to be high-achieving readers in the fall. Most of the students in your program with typical levels of reading performance continued to perform within the average district range in the fall, while more than one-fifth (22%) improved to significantly above average district performance. Overall, reading performance trends of your students indicate more improvement than decline.

MATH PERFORMANCE

Among your students with average district math scores at the end of the 2018-2019 school year, 18% improved their math performance to be significantly above district peers in the fall. Additionally, roughly two-thirds of your students (65%) whose math scores were significantly below the district average in the 2018-2019 school year improved to perform in the average range on their math test in the fall. Of the students who were achieving significantly above their district peers in spring, a substantial majority (72%) maintained a similar level of math performance in the fall. As with reading performance, math performance trends of your students indicate a greater rate of improvement than decline.

RECOMMENDATIONS

Program evaluations should be seen as a blueprint for future growth and success. Look over your results to find *bright spots* and *opportunities for improvement*. Did you move a noticeable percentage of students from "high risk" to acceptable or high levels of achievement? Were there certain groups of students or certain outcomes where you expected more favorable results?

Have internal conversations with members of your organization. These numbers only tell part of the story. Talk about what parts of your program went well, and what you could change. Check your thoughts and conversations against the data in this report. If you believe there is a reason to change one or more aspects of your program model, consider talking with other community organizations that are doing similar work. You don't have to come up with solutions on your own. You have partners and colleagues who can help.

IMPLICATIONS

Your organization was one of the eight programs that worked collaboratively with SEI to measure the impact of summer learning experiences on student academic success. Together, these seven programs supported over 1600 students across Akron and Summit County. We pooled the data from all our summer partner programs together so that we could better understand how, as a community, we can support student success.

The early results of our analyses have been quite promising. We believe that high-quality summer programs that focus on both academic and personal development have the power to reduce or eliminate achievement gaps that occur from summer learning loss. Were it not for your participation in this work, we would not be able to measure the power of positive summer experiences.

With your continued engagement and support, we will advocate for the importance of summer programming with schools, families, government agencies, and funders in our community. Together, we can prevent the traditional summer learning losses that occur among low-income and disengaged students. In the future, we believe summer will become a time to accelerate student learning and achievement by providing engaging opportunities and experiences for all Summit County students.