



2023-24 Year End Program Reports

STEAM Program Report

Students explore STEAM concepts through arts integration learning about living things, cycles in nature, culture and community.

Design Through Code Program Report

Students learn coding basics and valuable essential skills like problem-solving, logic, collaboration, critical thinking and creativity.

Partnering with educators to foster a love of learning and brighten children's futures through innovative STEAM-based experiential programs.

2023-24 Year End STEAM Program Report

Partnering with educators to foster a love of learning and brighten children's futures through innovative STEAM-based experiential programs.

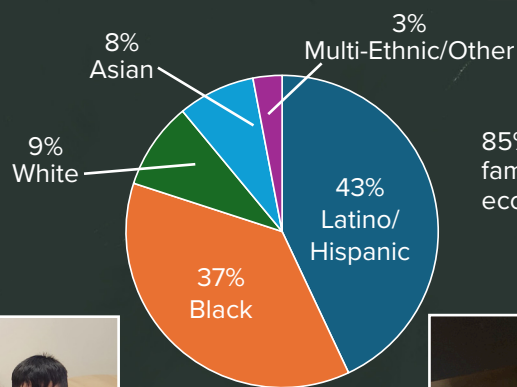
Mission and Overview



In the 2023-24 school year, SHARP partnered with 49 urban elementary schools, serving over 8,300 students, with 6,000 participating in the STEAM program and 2,375 in Design Through Code. **Our program is provided at no cost to participating schools.**

[Click here to see the list of our School Partners.](#)

Ethnic and Economic Breakdown of Student Population



85% of students come from families categorized as economically disadvantaged.



In the spring 2024 semester we provided workshops to students in K3 through 1st grade. Second and third grade programming took place in the fall of 2023. Information can be found in our Mid-Year Report. [Click here to see the report.](#)

Grade	Curriculum	Number of Schools	Number of Classrooms	Number of Students
K3	Physics	7	12	154
K4	Animals	33	47	925
K5	Plants	36	56	1,234
1st	Pollinators	42	70	1,536
Total		118	185	3,849

SHARP students explore STEAM concepts and Social Emotional Learning (SEL) through hands-on, arts integrated workshops. K3-1st grade classrooms participate in four STEAM workshops and an educational tour at a local museum or education center to bring to life what they learned in the classroom. Classroom teachers use SHARP materials and strategies to extend learning and make deeper connections for their students.

Educational Tour Experiences

Every SHARP program includes an Educational Tour Experience (ETE) aligned with the grade level curriculum. SHARP's ETEs provide students with diverse experiential learning opportunities that solidify classroom concepts while sparking a love for learning. Active and engaged learning inspires students to obtain deeper knowledge of the subjects they are studying and allows them to see how ideas are connected.

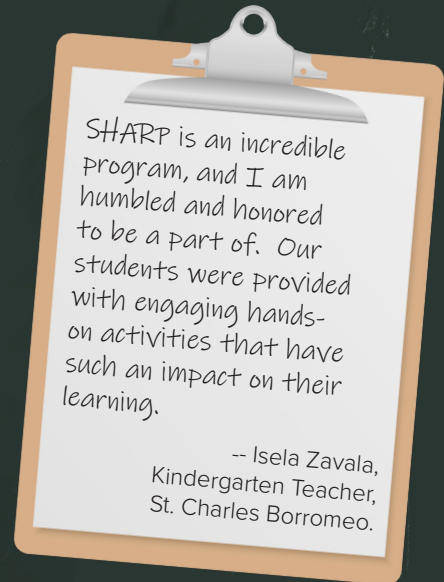
Grade Location

K3	Urban Ecology Center
K4	Milwaukee County Zoo
K5	Lynden Sculpture Garden
1st	Mitchell Park Domes
2nd	Discovery World
3rd	Milwaukee Art Museum

Enrichment Programs

Johnson Controls Garden & Greenhouse

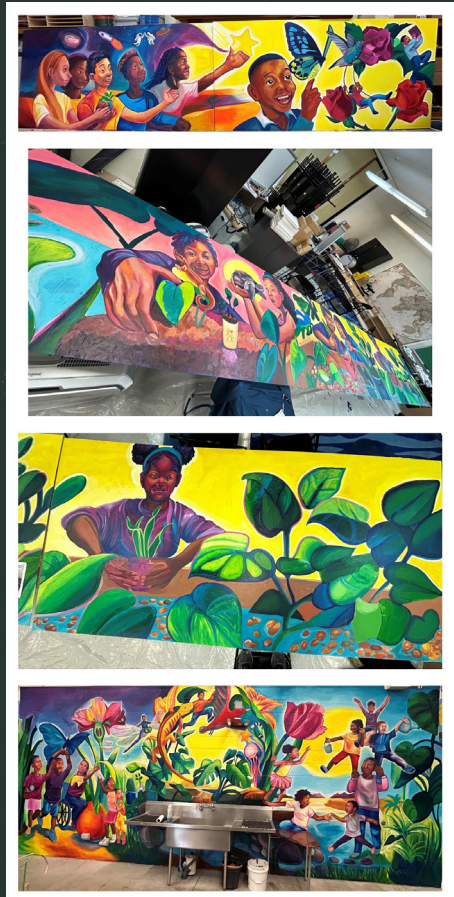
Garden and Green house spring/2nd semester programming at Craig Montessori and Silver Spring Neighborhood Center (SSNC) focused on healthy eating and nutrition. Students learned the importance of healthy eating and the use of food for life, health and growth. They engaged in hands-on art connecting the art color wheel to a healthy smart plate to introduce the food groups and portion sizes. The jobs of vitamins and minerals along with the foods that provide them was discussed through interactive activities that allowed students to identify the foods they eat and the vitamins that they can contain. The highlight of the program consisted of healthy recipes



students were introduced to and able to create to share with their families along with a few healthy ingredients that they grew in the garden and greenhouse. Students at each site chose the theme of their culminating celebration of the program with Craig choosing to have a salad party and SSNC opting for a smoothie party.

Johnson Controls Garden & Greenhouse - Community Art Project

In 2023-24, over 175 students participated in a mural project at Craig Montessori working with teaching artist Tia Richardson. Consisting of panels and direct wall painting, the Connected to Creation mural showcases a series of interconnected scenes that emphasize unity, growth, and the interconnectedness of life.



Student Assessments

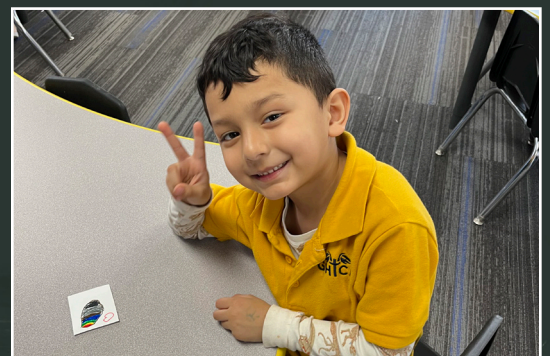
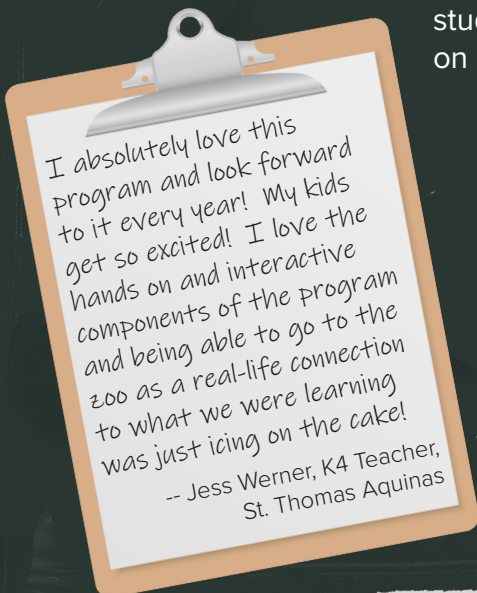
Lower elementary students (K4-1st grade) are given assessments at their final workshop that are primarily pictorial and ask them to circle or color something related to their lessons. Each assessment has four questions. Students that answer three or four of the four questions correctly are considered proficient in the material. [Click here to view the forms.](#)

Grade	# of Students	% Scoring 0 out of 4	% Scoring 1 out of 4	% Scoring 2 out of 4	% Scoring 3 out of 4	% Scoring 4 out of 4	% Proficient (3 or 4 out of 4)
K4-Animals	763	2%	6%	7%	9%	78%	87%
K5-Plants	969	1%	1%	7%	2%	88%	90%
1st-Pollinators	1,109	1%	3%	0	17%	70%	87%

SHARP Educator Observations

SHARP educators observe student behavior to assess whether students are exhibiting Engagement, Persistence and Collaboration on a scale from 1 (none or very few) to 5 (all or almost all).

- **Engagement** – average score of 4.8 (170 responses)
- **Persistence** – average score of 4.8 (170 responses)
- **Collaboration** – average score of 4.7 (148 responses)
 - not all workshops contain a collaborative element



I was entranced to see one student adding all the parts of a plant to his tree sculpture - roots, stem, branches, leaves, apples, a squirrel hollow hole and falling leaves! The students just GLOW with excitement. They are so dialed in!

– Hope, SHARP Educator at Greater Holy Temple Christian Academy (K5)



When we were doing our internal weather report I saw two girls drawing pictures together - one with a stormy landscape and the other sunny. The girl with the sunny picture asked the girl with the stormy one if she was okay. The stormy girl said yes and that she LOVES storms so her stormy picture actually means happy to her! I thought it was cool that two second graders could have this discussion together!!

– Emily, SHARP Educator at Aug Prep (2nd grade)

One of the lessons talks at length about the many different jobs that bees can hold within their hive. It slowly morphed into a discussion of different jobs that grown-ups can have. Children were happy and comfortable discussing their own personal dreams about what they would like to be when they grow up.

– Kate, SHARP Educator at Messmer Saint Mary (1st grade)



The students really enjoyed the program and talked about it and referenced the things they learned during the program throughout the school year. We were able to connect the SHARP learning to lessons and projects we were already doing in class

-- LaToya Damasus, 2nd Grade Teacher, Metcalfe Elementary

Thank you for contributing to the SHARP Program at my school. The SHARP Program helps my students better understand the world around them in a more concrete way.

-- Jason Rusch, 1st Grade Teacher, Forest Home Avenue Elementary School

Classroom Teacher Surveys

All SHARP classroom teachers were surveyed at the end of the school year. 80 of the 289 K3 through 3rd grade STEAM teachers responded (28%). Second and third grade teacher responses are included here even though their workshops took place in the fall semester.

When asked if the lessons and activities provided by SHARP Literacy were valuable for their students, 75 out of 80 responding K-3rd grade teachers (94%) selected Agree or Strongly Agree.



When asked on a scale from 1 to 5, how likely they would be to recommend SHARP workshops to other teachers, the average score was 4.6, with 74 of the 80 responding teachers (93%) choosing either 4 or 5.

To improve the response rate of participating classroom teachers, the SHARP team will be assessing whether this was influenced by the timing of the end of programming at the end of the school year or by factors such as motivation or follow-up.



Thank you, SHARP Literacy! The program is so well structured and engaging for our kids! They loved the awesome art projects

-- Katherine Galvan,
K4 Teacher,
St. Adalbert.

The SHARP educators are thoughtful and engaging and work hard to provide meaningful literacy activities for our scholars. The week SHARP comes to our school is one of our students' favorite weeks of the year!

-- Meghan McGorey,
K4 Teacher
St. Martini Lutheran School.



2023-24 Year End Design Through Code Program Report

Partnering with educators to foster a love of learning and brighten children's futures through innovative STEAM-based experiential programs.

Overview

SHARP Literacy's Design Through Code (DTC) standards-aligned curriculum for 3rd-5th graders intertwines the fundamentals of coding, computer science, and physical computing to equip students with the essential tools to tackle real-world challenges through technology. Through hands-on activities and interactive projects, students discover topics traditionally left out of elementary schools, including computational thinking, engineering, and design thinking.



Beyond the technical aspects, SHARP's curriculum instills a deep understanding of computer science principles, empowering students to analyze problems systematically and develop efficient solutions. Through project-based learning, students engage in collaborative

problem-solving experiences, honing their communication and teamwork skills while applying computational thinking to address real-world issues. By emphasizing the relevance of coding and computer science in modern society, SHARP inspires students to become active contributors to the ever-evolving technological landscape, preparing them for future success in an increasingly digital world.

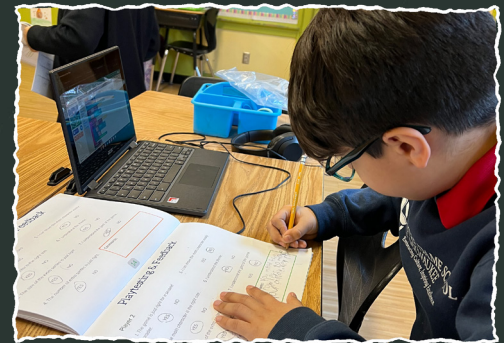
"Loved how the kids had the opportunity to be creative and problem solve. Students were able to realize their own strengths."

- Browning Elementary School Teacher

DTC 3 - Video Game Design

Program Overview

The DTC 3 program was piloted at Cass Street and Notre Dame schools in fall 2023 and expanded to 12 additional schools in spring 2024. This new program enabled students to practice video game design fundamentals such as algorithms, sequencing, loops, debugging, and events through Code.org lessons. Using Code.org Sprite Lab, students created unique games using block coding, choosing their own theme and selecting elements such as characters and backgrounds to match, learning how to bring their creative visions to life through coding.



SHARP developed a student Video Game Design Notebook that reinforced coding concepts, outlined daily project goals, and mapped out each of the steps for completing the video game. The notebook facilitated students' practice of new vocabulary and divided the project into manageable segments. With the steps clearly outlined, classroom teachers and aids were able to learn alongside the students and provide individual support when students missed a workshop.

Curriculum Changes Since the 2022-23 School Year

During the 2023-24 school year, the DTC 3 curriculum theme shifted from urban gardening to video game design. Focusing on algorithms, sequencing, loops, debugging and events, students developed fundamental coding skills through Code.org practice lessons and applied these skills in a culminating project of a video game. This hands-on experience reinforced basic coding skills and vocabulary and encouraged creativity. The culminating project was a unique collaborative problem-solving opportunity as students "play tested" each other's games, gave feedback and then made revisions.

The DTC 3 experience with block coding and creating a digital artifact lays the foundation for success in DTC 4 where students use coding to create a digital rendering of a prototype. In DTC 5, students advance to physical computing, incorporating circuit building to create a transportation-themed prototype.



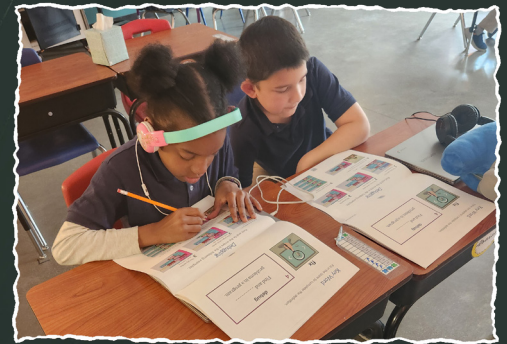
Educational Tour Experience

DTC3 students participated in an educational tour experience at Discovery World, where they engaged in robotic challenges based on block coding, building on what they had learned in SHARP workshops.

"My students looked forward to our coding sessions. The thought they put into their video games and the attention the SHARP teacher and I gave is something the students will remember. I truly believe some of my students will go into the field of computer science due to this introduction to coding."
--Notre Dame School Teacher

DTC 3 Successes

- Performance outcomes on all four Code.org checkpoint lessons exceeded 75%, surpassing the goal of 65% proficiency on specific coding activities.
- 11 out of 14 schools scored above 70% on the final project. The final project was completed over six workshops, with students demonstrating their understanding of fundamental coding concepts and video game elements.
- 12 out of 14 schools demonstrated improvement in content knowledge (one lacked pre-survey data), with 61% of all students scoring at least 70% on the post survey.
- 78% of the students surveyed reported feeling confident in their STEAM ability.
- When students were surveyed about their interest in STEAM and coding, three responses were below the program goal of 75%. However, these areas do show improvement over responses from the prior school year Urban Gardening program.
 - Interest in STEAM: 67%
 - +9% from 2022-23
 - Interest in learning to code: 69%
 - +5% from 2022-23
 - Persistence: 72%
 - +16% from 2022-23



DTC 3 Challenges

- Completion of Code.org checkpoint lessons ranged from 54%-70%. The SHARP team is evaluating the curriculum to better understand the completion rate and whether students need additional instruction and practice, additional time to complete the lessons or if there are other issues.
- Only 20% of DTC 3 classroom teachers responded to the Teacher Survey. The SHARP team is assessing whether this was influenced by the timing of the end of programming at the end of the school year or by factors such as motivation or follow-up.
- Low performance in Code.org checkpoint lessons and/or final project scores at some schools correlates with educator reports of low classroom teacher support and engagement. To improve classroom teacher support for the workshops, SHARP is going to create and provide a master teacher notebook for the 2024-25 school year.

*"It was a great experience for my students as they were engaged and had so much fun. For me, I was able to also learn more about code.org. My students further developed their problem-solving skills. I strongly recommend this program because it gives students the opportunity to be critical thinkers and be creative."
--ALBA Teacher*

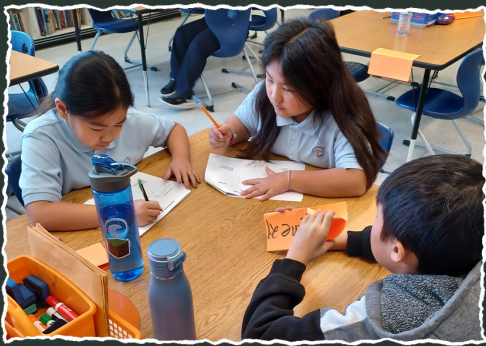
**VIEW COMPLETE
DTC 3 ASSESSMENT
RESULTS HERE**



DTC 4 - Code and Build

Program Overview

Over 700 students from eleven schools participated in Design Through Code 4 in 2023-24. DTC 4 was developed to tap essential skills such as problem-solving, collaboration, critical thinking, and creativity. During 18 workshops, DTC 4 students completed intermediate coding challenges on Code.org in algorithms, loops, debugging, functions, and creating art with code, building on the fundamentals learned in DTC 3. The primary focus of DTC4 was to provide students with the opportunity to work in teams to identify a community problem, design a tech-based solution, construct a physical prototype and use their coding skills to create a digital rendering of that prototype. Milwaukee area professionals volunteered their expertise at various checkpoints, assisting teams with their prototypes and judging the final presentations.



The program culminated in a Design Challenge where teams pitched their innovative ideas to guest judges for a chance to advance to the Interschool Design Challenge. The winning team from each participating school presented their projects to a panel of judges at Fiserv Forum on March 19.

2024 Interschool Design Challenge

Twenty-two groups from eleven schools participated in this year's Interschool Design Challenge on March 19 at Fiserv Forum. Students shared the projects with guests and judges in a science fair style showcase. The top group from each school made a live presentation to a panel of judges.

1st Place – Escuela Vieau – Robbi

The all-girl team from Escuela Vieau designed Robbi, a robot that cleans the school and classroom. Their digital rendering looked just like the prototype, even including a red heart.

2nd Place – Rogers Street Academy – Hungry Filter Robot

The bilingual team designed a solar-powered robot that delivers hot and cold food to the homeless and puts air filters on vehicles to reduce pollution.

3rd Place – Hadfield Elementary – Coffee Reminder Watch

This project helps people live a healthier life. The watch detects the amount of coffee a person drinks and notifies them when they reach the limit.



"We built and messed up over and over again, but we kept trying until we got it right."

- HAPA DTC 4 student

LEARN MORE AND SEE HIGHLIGHTS HERE

Educational Tour Experience

SHARP partnered with the Milwaukee School of Engineering (MSOE) and Quad to provide educational tours where students were exposed to higher education and career opportunities in STEAM fields. Students in Milwaukee schools visit the MSOE STEM Center and students at Waukesha schools visit Quad.



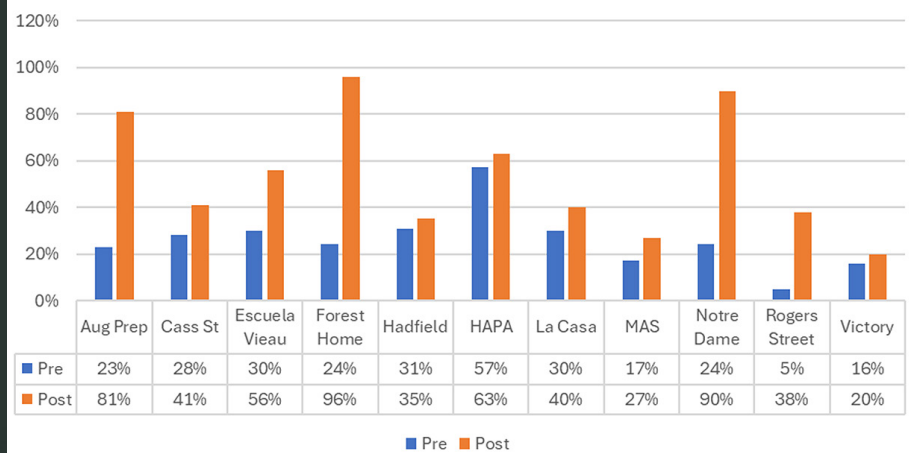
DTC 4 Successes

- 78% of teams scored at least 70% on the final project. This project, completed over 9 workshops, is the major component of the program.
- Overall, students showed significant gains over last year in attitudes towards STEAM:
 - Interest in STEAM: 68%
 - +13% from 2022-23
 - Interest in learning to code: 64%
 - +11% from 2022-23
 - Confident in ability in STEAM: 71%
 - +23% from 2022-23
 - Persistence: 72%
 - +25% from 2022-23
- All eleven participating schools demonstrated learning and growth from the pre- to the post-survey, with some schools showing significant gains of 58% (Aug Prep), 72% (Forest Home), and 66% (Notre Dame).

"I had fun with the people I was building with, even when we disagreed with each other. We all did our part and I felt like I had a great time with people I have never worked with before."
 -Aug Prep DTC 4 student

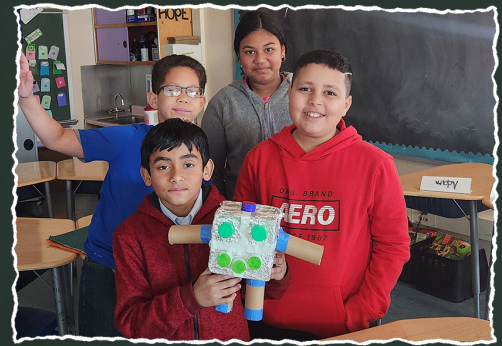
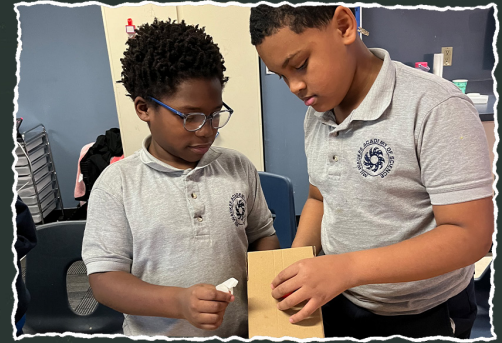
"This year was amazing! Perhaps the surveys could be translated into Spanish for bilingual students and newcomers. That would help if the teacher is out on that day."
 - Forest Home Avenue Elementary Teacher

Pre vs Post Test Results
 DTC 4 Content Knowledge

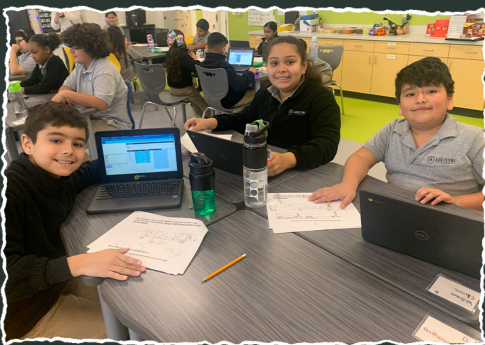


DTC 4 Challenges

- Cass St School and the Milwaukee Academy of Science experienced SHARP educator turnover mid-program, necessitating a consolidation of workshops to prepare students for the Design Challenge. This disruption may have been the most significant factor negatively impacting their Code.org checkpoint lesson completion rate.
- For underperforming schools on the checkpoint lessons and post survey it is possible that additional training may be necessary to ensure the SHARP educators can effectively teach all components of the program. Despite underperformance on checkpoint lessons and the post-survey, some of these same schools excelled on the final project, indicating that educators were well-prepared to teach the prototyping and presentation aspects of the program.
- Overall, students struggled with the Code.org Lesson on Loops. The SHARP team is assessing whether students had sufficient time in the workshop to complete the practice lessons or if additional instruction was necessary.
- Forest Home Avenue School scored unusually low on the final project score, with only 33% of teams achieving at least 70%. However, 8 out of 9 teams scored above 63%, indicating that the scoring difference is not as significant as it initially appears.
- Rogers Street Academy had a lower final project score with only 40% of teams scoring at least 70%. However, 16 out of 20 teams achieved at least 60% on the final project, indicating the performance gap is not as significant as it first appears.
- 58% of DTC 4 classroom teachers responded to the Teacher Survey. While better than the DTC 3 results, there is still much room for improvement in the response rate here as well.



VIEW COMPLETE DTC 4 ASSESSMENT RESULTS HERE



*"I love this so much
I wish it never end."*

*- Forest Home
Avenue Elementary
DTC 4 student*

*"SHARP is an opportunity for
students to think about the
world, and grow and use their
own personal thoughts and
abilities to be a quality
citizen. Students are pushed
to envision a world made
better with their help,
which I think will help them
grow into thoughtful and
caring adults."*

-HAPA school teacher

DTC 5 - Code and Circuits

Program Overview

In the 2023-24 academic year, over 700 students participated in DTC 5, where they explored physical computing—a combination of electrical engineering and coding. Through hands-on activities, students designed and constructed circuit-based prototypes. They utilized Arduino UNO kits to undertake projects like illuminating LEDs, activating buzzers, and controlling servos. Emphasizing reading and modifying C++ programming through the Arduino online editor, DTC 5 culminated in a collaborative project to create transportation-themed prototypes. This interdisciplinary program integrates computer science, the engineering design process, and collaborative problem solving.

This year SHARP developed a student engineering notebook that included diagrams of the circuits, code for students to annotate, and activities to support the project-based learning environment. The notebook was offered in Spanish as well to accommodate for the large number of bilingual classrooms. The notebook mapped out each step of the final project completed over five workshops.



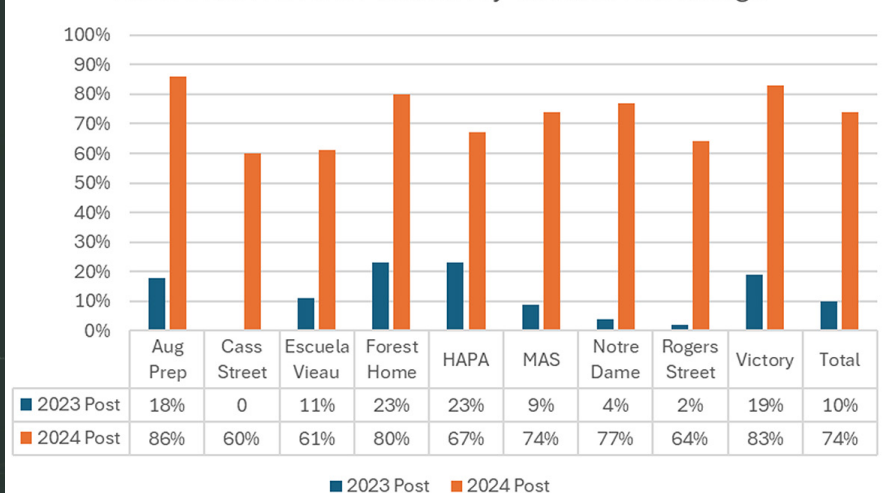
Educational Tour Experience

DTC 5 students attended an educational tour at Discovery World where they participated in a block coding challenge, creating a group light show using RGB LEDs. They also explored a model of the Hoan Bridge, drawing parallels between its lighting design and their coding challenge experience.

DTC 5 Successes

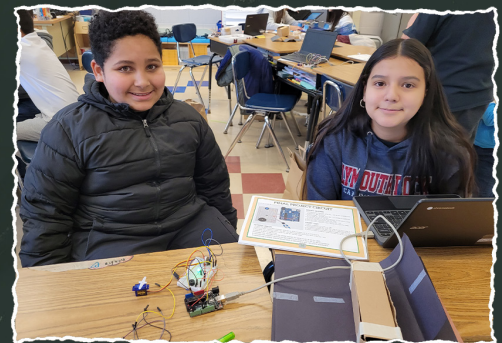
- 74% of students met the goal of at least 70% content knowledge score on the post survey, marking a significant improvement from last year's 10% success rate. This gain is largely attributed to SHARP's initiative in creating its own student notebook this year, moving away from reliance on external partner materials.
- 89% of Teachers that responded to our survey felt SHARP's instructional methods applied to their classroom instruction, and 94% of Teachers that responded to our survey would recommend SHARP Literacy programming to a colleague.
- Eight of nine participating schools achieved a 90% final project completion rate.

2023 v 2024 DTC 5 Post Survey Content Knowledge



DTC 5 Challenges

- Due to SHARP educator turnover, Milwaukee Academy of Science received an abbreviated program. Despite not completing a culminating final project, students demonstrated strong comprehension of coding and circuit building concepts. 74% of students achieved 70% or higher on the post survey, and they maintained an average of 69% on weekly projects.
- The data does not show this, but the program was affected by changes to the Arduino online editor. The change to the interface mid-program was confusing for the students and frustrating for the educators. Further complicating matters, another Arduino update partway through the program at HAPA and MAS rendered it impossible for students' Chromebooks to upload code to the UNO board. As a result, SHARP plans to discontinue the use of Arduino UNO next year.
- On the post survey, students did not meet our program goals of 75% for interest in STEAM, interest in coding, confidence in my ability in STEAM or persistence. Although the scores did not meet our goal, they do show significant improvement over last year:
 - Interest in STEAM: 62%
 - +16% from 2022-23
 - Interest in coding: 57%
 - +12% from 2022-23
 - Confident in my ability in STEAM: 66%
 - +28% from 2022-23
 - Persistence: 66%
 - +10% from 2022-23
- 57% of DTC 5 classroom teachers responded to the Teacher Survey. While better than the DTC 3 results, there is still much room for improvement in the response rate here as well.



VIEW COMPLETE DTC 5 ASSESSMENT RESULTS HERE

"What I like about our program is how much creativity it takes. I like how it developed my skills and how I worked with my team and connected with the people in my group."

-Rogers Street Academy
DTC 5 student

"This program provides my students with opportunities I would not have been able to provide."

- Forest Home Avenue
Elementary Teacher

"When I first started doing the SHARP workshop, I was confused and did not know what to do, but once I got to know it better, I was actually great at it."

- HAPA DTC 5
student

Thank you to our generous Design Through Code program sponsors!



"Thank you for the opportunity to learn new things! It was challenging, but worth it. Scholars used critical thinking skills, problem solving and collaboration, all very useful skills that can be applied to anything in life."
-HAPA School Teacher

