



Chicago Learning  
Exchange

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## Engaging Youth in a Connected World

The promise of digital media tools  
and technologies in Chicago's  
out-of-school time programs

outlier

RESEARCH & EVALUATION  
UCHICAGO STEM EDUCATION | UNIVERSITY OF CHICAGO

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All authors contributed equally; names are listed in alphabetical order.

## Chicago Learning Exchange

### ACKNOWLEDGEMENTS

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*“If what you’ve done is memorize information...you will be utterly unprepared for [our changing] world. In fact, our kids are going to have to work with knowledge that hasn’t been discovered yet and technologies that haven’t been invented yet, to solve big problems that we haven’t been able to solve.”*

— Linda Darling-Hammond,  
Professor of Education Emeritus at  
Stanford University

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If you share an urgency and commitment to prepare youth for a connected world, CLX invites you to learn more via [chicagolx.org/joinus](http://chicagolx.org/joinus), and join the movement to remake learning in Chicago.

## Foreword

The digital revolution is powering profound change with deep implications for learners, educators, parents, and society. The last decade has generated tremendous interest in the ways digital media and technology can make education better—as well as concerns about widening the gap between those who have access to technology and high-quality learning experiences, and those who do not.

A growing body of research shows that digital media tools and technology can indeed connect youth interests and academics; learners to friends, teachers, and mentors; and learning opportunities to the kinds of skills the new economy demands. However, the Chicago Learning Exchange believes that real innovation lies not in the use of the latest tech tools for those with ready access to them, but rather in leveling the playing field so under-resourced youth are engaged in programs and experiences that unlock future opportunities.

We’re on a mission to inspire and support innovation that equips digital-age learners and leaders to close Chicago’s opportunity gap. We envision Chicago as a connected community where all learning counts—whether it’s in school, out of school, or online. Obviously, no one organization alone can transform teaching and learning to better serve today’s young people. So, we work with a growing community of over 200 youth-serving organizations, cultural institutions, city agencies, corporations, foundations, and universities who share our sense of urgency.

Maria P. Hibbs, Ph.D.  
Executive Director  
Chicago Learning Exchange

If our aim is to remake learning in Chicago so it is enhanced by technology, driven by learners’ interests, supported by their peers, and connected to future opportunity, where are we on that path? What are the contours of the current landscape? That was our purpose in engaging Outlier Research & Evaluation at UChicago STEM Education | University of Chicago to conduct this study. Where are these programs taking place? Are the tools being used to consume content in a reactive mode or are young people interacting with them to explore, create, share, and grow? How tech savvy are the program leaders, educators, and mentors, and what do they think meaningful engagement with digital media and technology might be? Do these programs connect with schools, and if so, how?

We believe that this study is the first attempt to examine the use of digital media and technology tools in informal learning programs across a city. Thus, we hope it contributes to the broader field of study, and more importantly to the practice of teachers, mentors, and youth-development professionals who engage with, and inspire, young people every day.

I would like to thank CLX Program Officer Sana Jafri for her leadership on this project. I am also grateful to the nearly 250 organizations that participated in this study, particularly those who agreed to in-depth interviews and site visits. We’ve learned not only that hundreds of programs are embracing digital media and technology tools, but also how they’re doing it. This is a promising foundation on which to continue to build.





## Executive Summary

As technology, and particularly digital media tools and technology, becomes ever more central in society, the ability to understand and use it in its various forms is critical. Youth who can access current and emerging technologies and learn not only how to interact with them to get information, but also to leverage their capabilities and create with them, will be at a distinct advantage.

Youth can learn these skills in many ways and in many places, from tinkering at home or with peers to formal training in schools. This report focuses on out-of-school time (OST) programs, which, with their flexibility and wide variety, are well positioned to connect youth to digital media tools and technologies (DMTT) and rich opportunities to engage with them.

This study examined the state of DMTT use in OST programs in the City of Chicago. Based in research conducted with nearly 250 organizations that serve the city's youth, the findings describe what DMTT learning opportunities look like, how youth interact with DMTT and to what end, where these opportunities take place, and who has access. It

also outlines the particular challenges program leaders who deliver programs with DMTT face and provides advice from those leaders on how to best address them and build supports. While the findings pertain to Chicago, they are not wholly unique to one city, and will inform practice and policy not only within the city boundaries, but for those working with youth across the country.

This summary gives a high-level overview of the major findings from each section of the report. It does not, however, sufficiently capture the rich program descriptions, examples of practice, and passionate words of program leaders included in the full report. We encourage you to immerse yourselves in their stories.



## How many and what kinds of programs use DMTT? What types of DMTT do they use?

Nearly 250 organizations responded to the questionnaire administered for this study and reported offering 2,200 programs for youth during the summer 2017 and 2017-2018 school year. Of these, 175 organizations reported offering over 1,000 programs that used DMTT. For about ¾ of these programs, learning about the DMTT themselves was not the primary focus. Rather, they used DMTT to support programming about other topics which ranged

### Defining digital media tools and technologies

In this report, and in the research that informs it, we use the term “digital media tools and technologies” or “DMTT” to represent the broad range of hardware, software, and other digital technology and resources available. We have addressed the learning strategies often associated with DMTT separately.

widely, from architecture to performing arts to civic engagement. The types of DMTT used also varied, with the most commonly used being those that are relatively accessible, such as computers, mobile phones, tablets, the internet, and social media. Other programs reported using more specialized DMTT such as audio production tools, 3D printers, and video editing tools.

## Why do program leaders incorporate DMTT?

Consistent with the fact that most programs used DMTT to enrich a program focusing on a different topic, the most commonly identified program goals were not related to specific DMTT skills. Rather, program leaders reported their interests in youth development and using DMTT as tools for empowerment and self-expression. They also highlighted their interest in helping youth to develop 21st century skills (e.g. collaboration, creative thinking), grow their civic engagement, and prepare for college and careers. Program leaders who did speak about developing specific technology skills often did so in the context of job preparation, and indicated their interest in building youth’s confidence for engaging in technology-focused careers. This confidence-building was a particular focus for some programs working with youth from groups currently underrepresented in STEM fields.

## How do programs use DMTT to reach their goals?

Some perceive that in the hands of youth, DMTT are isolating young people and turning them into constant consumers. However, leaders of programs that incorporate DMTT told a different story. They spoke of the ways that DMTT actively engages youth in their programs and allows them to create and collaborate. In many of these programs, youth use DMTT to make their own content (particularly content expressing youth views and opinions) and to share that content with their peers and their larger communities, giving them a strong voice.

## What areas of Chicago and youth populations do programs with DMTT serve?

Organizations that responded to the questionnaire were located across the City of Chicago, but many of the programs with DMTT aimed to serve the South, West, and Southwest regions of the city. Programs also tended to be racially and ethnically diverse, and almost half reported having predominantly Black or African American youth enrolled. Given that in Chicago, those communities and populations tend to be generally underserved, these findings are promising and suggest that the OST community is working to address inequities—though this work is nowhere near done. Programs also served more female than male youth. Only about one quarter of the programs reported that they target specific populations (such as girls or specific racial/ethnic groups). Regardless of the populations they serve, programs recruit youth in many ways, from school events to social media to passing out cards on the street—the priority is getting the word out and youth in the door.

## What challenges do programs with DMTT face? How can these programs best be supported?

OST programs that incorporate DMTT face a variety of challenges—some more general, such as finding funding and resources, and some more specific to using DMTT. For example, insufficient knowledge about DMTT on the part of program staff and educators can make their use difficult. This may be particularly true for those programs that do not focus on DMTT as their primary topic. Still, some program leaders reported that while technical knowledge is important, enthusiasm and willingness

to learn (from anywhere and anyone, including from the youth themselves) are the more critical pieces. Program leaders talked about the additional challenge of combatting stereotypes about who can or should be using DMTT. They also, however, described supports of many forms. Program leaders noted the importance of leadership and advocacy within their organizations at various levels, the value of learning in peer communities and other informal learning opportunities, and the usefulness of having local advocates—including funders, community members, and parents. And, among their descriptions of challenges and supports, the program leaders spoke about the youth themselves, and the critical importance of keeping them at the front and center of all of this work.

This study reveals the wide and varied ways DMTT in OST programs are used, and illustrates that program leaders focus on far more than youth learning to use the tools themselves. DMTT are used to develop confident, creative, collaborative youth who are able to engage in their communities and society and make their thoughts heard. Though much work remains, this report describes current OST program leaders’ efforts to reach youth who have traditionally been underserved, and to not only expose them to DMTT, but to engage them in finding and using their voices through it. Recognizing that the long-standing inequities seen in Chicago and around the country will only get broader if access and opportunities remain unequal, these leaders are capitalizing on the potential of DMTT to begin to put youth on even ground.



# Why was a landscape study important?

*“I do want them to learn these [DMTT] concepts, because I think they’re cool, and I’m excited about them. But at the end of the day, I really just want them to know that they are capable. That they can do it, that they’re not less than anybody else. More than anything, that’s what I want them to know.”*  
—TechGYRLS, YWCA Metropolitan Chicago

We are living in a time of constant innovation and change. As the world around us shifts, becoming simultaneously more accessible and further stratified, having the knowledge, skills, and tools to engage is critical. This is true across our evolving educational, interpersonal, workplace, and societal contexts, and it is especially pertinent for today’s youth, as we look to them to forge their individual paths while laying the groundwork for the future of society at large.

In this environment, technology—in its many forms—is an integral part of young people’s lives. It is in their homes, their hands, their conversations, their classrooms, and their communities. Youth use digital media tools and technologies (DMTT) to communicate, to manage their social lives, and to access entertainment and culture (Quinlan, 2015). And more and more, adults in youth’s lives are harnessing the power of DMTT to engage, empower, and educate them. While this likely occurs to some degree in many settings where adults and youth interact, as this report shows, it is a widely emergent practice in out-of-school time (OST) programs. OST

programming across the country has grown rapidly in the last few decades (Vandell, Larson, Mahoney, & Watts, 2015). This trend is also seen in Chicago, where many individual organizations and city-wide initiatives offer OST programs for youth. OST program experiences provide youth with important opportunities to develop relationships with caring adult mentors and peers with similar interests, and to participate in activities (including those using DMTT) that build 21st century and life skills.

OST programs also enable youth to use their skills, talents, and competencies as leaders of activities

that they are passionate about (Lerner et al., 2017; Vandell et al., 2015). Engaging in OST programs that provide these types of opportunities has been shown to benefit youth learning and development, improving academic, social, and emotional outcomes (depending on the program’s focus) for all youth, regardless of socioeconomic status, racial/ethnic background, or gender (Little, Wimer & Weiss, 2008; Lerner et al., 2017; McCombs, Whitaker, & Yoo, 2017; Vandell et al., 2015). OST programs vary in their focus and structure, serving youth before and after school, on weekends, holidays, and during the summer, in programs ranging from sports to journalism to

engineering. With youth’s lives full of competing activities and obligations, OST programs must be flexible and engage and retain youth’s interest (Vandell et al., 2015). As a result, they are adaptive and interest-driven, making them fertile ground for using current and emerging DMTT in new and creative ways. However, our understanding of what this process looks like in OST programs and how youth are engaging with DMTT has been limited.

The findings in this report are a portrait of how, why, and where DMTT are currently used in OST programs for youth in the City of Chicago. As DMTT continue to advance, their use in OST

programs is also evolving to create exciting and potentially transformative experiences for youth. In the face of this dynamic change, this study sought to take a “snapshot” of DMTT use in Chicago OST programming. Using data collected from questionnaires, interviews, and site visits, the report describes the programs and highlights how DMTT supports program leaders’ designs, learning strategies, and goals for youth. It also outlines where the programs are located, which young people the programs serve, the challenges that program leaders have faced when delivering their programs, and program leader advice about the supports that they have found to be essential. This report

shares a portrait of DMTT use today in 2018—the conditions and contexts will undoubtedly change over time, as will the needs of youth and the technologies themselves. But this report provides an important baseline for program leaders, facilitators, funders and other stakeholders who wish to understand where Chicago and the field is now, in order to track progress toward creating more opportunities and better serve the needs of all youth moving forward.





# The Chicago Context

The third largest city in the U.S., Chicago is home to arts and cultural institutions, universities and scientific organizations, and many vibrant and diverse cultures. It is also a city that experiences many racial, economic, and political tensions. Chicago’s racial/ethnic and economic inequities have a long-standing history, and have been characterized as “pervasive, persistent, and consequential” (Hendricks, Lewis, Arenas, & Lewis, 2017, p. 16). Poverty is concentrated on the South and West sides of the city, which are also the areas with the highest concentrations of Black or African American and Hispanic populations (Bloch, Ericson, & Giratikanon, 2014; Bloch, Cox, & Giratikanon, 2015). Youth in these areas are historically underserved, with schools facing greater challenges, fewer opportunities to engage with DMTT, and less access to enrichment activities and programs outside of school settings.

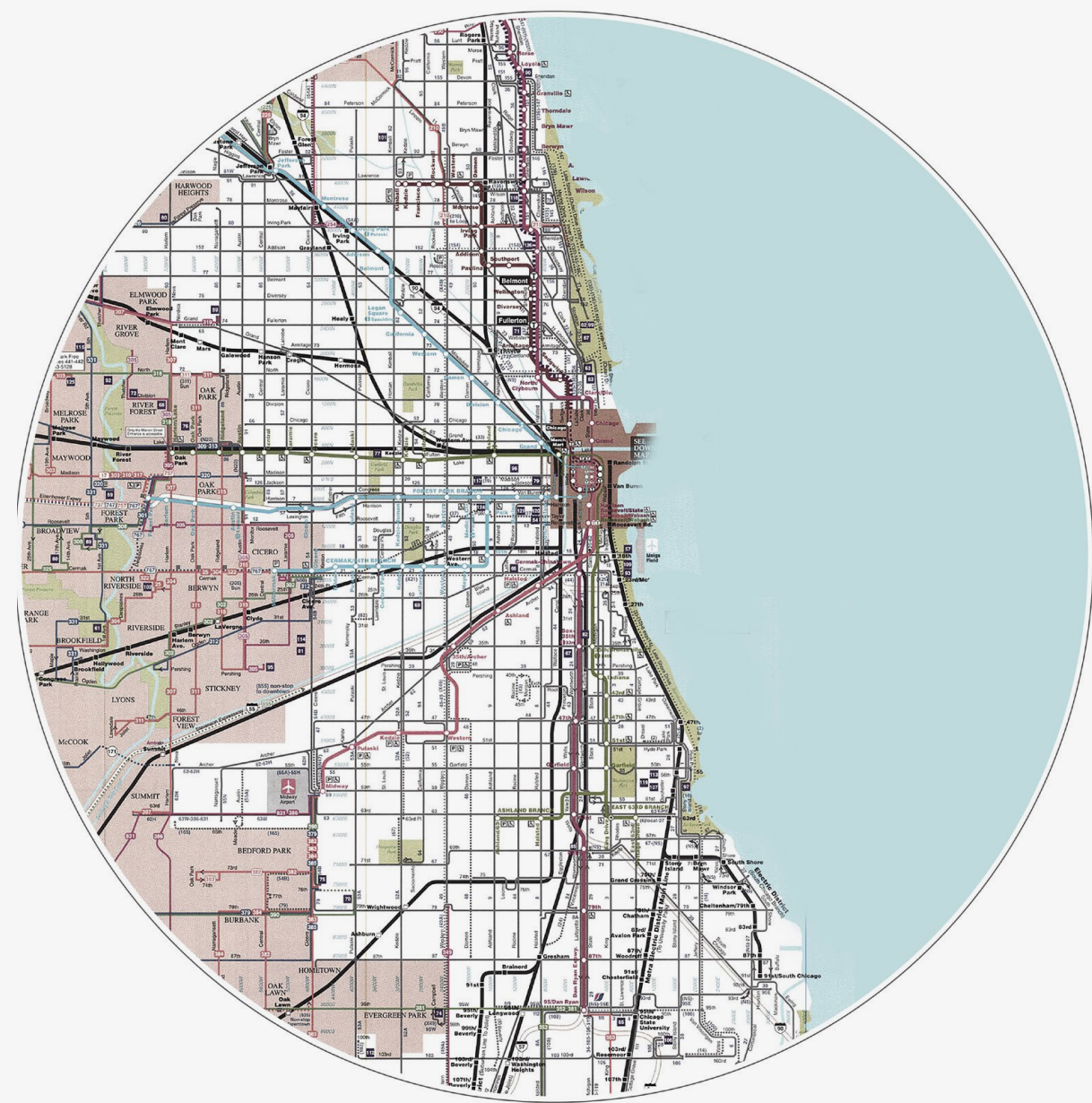
For example, it has been estimated that by the time they reach middle school, low-income youth have spent about 4,000 less hours in OST programs than their higher-income peers

(Neufield, 2013). The South and West sides of Chicago also have the city’s lowest numbers of people with access to broadband internet in the home (Eltagouri, 2016). Youth with less access to the internet and other types of DMTT have less opportunity to develop DMTT-related skills valuable in everyday life and the workplace. This issue not only limits their future employment options and income potential—internet users, particularly regular users, have been shown to outlearn non-users (Robinson et al., 2015)—but also their access to information and knowledge more generally. The geographic location of these less-resourced areas is important as well; Chicago is a large city and getting to and from one side to another takes time and money, even with public transportation.

These types of inequities in resources and access to enrichment opportunities may affect youth’s developmental, social, emotional, and academic achievement outcomes. Youth from low-income families, on average, are more likely to score lower on state and national academic achievement assessments, less likely to

graduate from high school or college, less likely to be employed, and when employed, more likely to have lower earnings (McCombs et al., 2017). Such differences further exacerbate racial and socioeconomic class tensions already present in these communities and neighborhoods.

Given this context and the potential of OST programs (especially those using DMTT) to reduce some of the existing access and opportunity gaps, it is important to understand the extent to which programs with DMTT are reaching diverse populations of youth from Chicago’s far-reaching neighborhoods. This study investigates the current landscape, as well as the nature of DMTT use in programs across the city. As a baseline, this knowledge will inform and help to support DMTT use in Chicago’s OST programs, and in programs across the country. With time, as DMTT use evolves and expands, this work can move us closer to the goal of providing equal access and opportunities to all youth.



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# Background on Technology in Out-of-School-Time Programs

In the fast-evolving field of DMTT, the findings included in this report require some context related to DMTT use with youth in general and in OST programs in particular. Studies of youth engagement with digital media are not new (Lenhart, Madden, & Hitlin, 2005; Roberts, Foehr, & Rideout, 2005). However, with the increase in variety, availability, and use of DMTT across educational settings, the last decade has ushered in a particularly rapid and visible growth in the ways in which DMTT can enhance learning and youth development. With this uptick in interest, expectations for DMTT use have shifted from youth primarily using DMTT as tools for *consuming* content toward youth using DMTT to *understand* and *create* content.

In 2007, for example, the International Society for Technology in Education’s (ISTE) standards highlighted using DMTT for communication and collaboration, research and information fluency, critical thinking, problem solving, and decision-making (ISTE, 2007). However, by 2016, these standards evolved to include far more ambitious outcomes for youth, asserting that DMTT could enable them to become empowered learners, digital citizens, knowledge constructors, innovative designers, computational thinkers, creative communicators, and global collaborators (ISTE, 2016).

The maturation of DMTT has been reflected in its use in OST programming. As OST program leaders have sought out ways to best engage youth, they have had the flexibility to explore and benefit from using many kinds of DMTT with the young people in their programs (Herr-Stephenson, Rhoten, Perkel & Sims, 2011). Although youth are often seen as digital natives, technology on its own is not enough. Educators and youth leaders are critical: they guide the learning process as youth engage with DMTT and often serve as mentors and role models. Educators orchestrate the youth learning opportunities that are hands-on, experiential, collaborative with peers, youth-centered, and connected to opportunity (Connected Learning Alliance, n.d.). These practices are among the emerging characteristics of DMTT experiences in youth programming.

## What does the term digital media tools and technologies (DMTT) mean?

This report uses the term “digital media tools and technologies” (DMTT) as an umbrella term which includes the range of hardware, software, and other digital tools and resources available. For the sake of clarity, Outlier’s approach was to separate the “tools” themselves (the DMTT) from the approaches to learning that are sometimes associated with these tools. In the research literature and popular press, this distinction is not always clearly made, and authors may focus on one piece or the other, or conflate the two. A variety of terms, including “digital media,” “digital media and technology,” and “new media,” are used, with little agreement on what they mean (Bales et al., 2012; Santo, 2017). For some, one or more of these terms refers to hardware (e.g. computers, digital cameras, mobile devices) and software (e.g. Photoshop, InDesign). Others use the terms to describe all dimensions of the digital media and learning experience, including philosophies and pedagogical approaches, in addition to the tools themselves (Buckingham, 2007).

Terms such as “media *literacy*” and “digital media and *learning*” further confuse the conversation. In the past, “digital literacy” or “media literacy” have referred to

an individual’s ability to obtain and evaluate information from given sources. However, with the evolution of technology, the intersection of digital (e.g. interactive media, social media tools) and traditional media (e.g. books, television) has shifted this perspective. Their convergence, sometimes referred to as “new media” (Buckingham, 2007; Buckingham, 2008; Ito et al., 2009), now has implications for language, communication, and cultural impact. New media refers not just to the media themselves, but also to the ways people communicate with one another, express themselves, and generate knowledge (Buckingham, 2008).





## DMTT and learning

Regardless of the specific terminology used, DMTT’s role in learning and youth development is a prominent and persistent theme in digital media discussions. For example, the Afterschool Alliance states, “digital media and technology should be viewed as tools that can...permit students to learn at their own pace, and provide interactive experiences that allow them to learn in their own style and in ways that are personal and engaging” (Afterschool Alliance, 2013, p. 1). Others hold that quality engagement with DMTT entails problem-solving and self-directed activities that are empowering, active, hands-on, and expressive (Buckingham, 2007; Radich, 2013; Lemke, Lecusay, Cole & Michalchik, 2015; Connected Learning Checklist, n.d.). Indeed, “digital media and

learning” (Gee, 2009) has been introduced as yet another term to signal connections between DMTT and the pedagogical experiences that they help create, and has been identified as a new field of inquiry that examines the ways in which digital tools, social structure, and popular culture come together to support learning inside and outside of school settings (Gee, 2009).

While looking forward in this emerging field, one can also look back in time to see digital media and learning’s pedagogical roots in the history of progressive education. Prominent education theorist John Dewey’s vision of interest-driven, participatory, and learner-relevant education has been well-established in the learning literature for over 100 years, and with the arrival

of digital media, it has enjoyed new visibility and applicability. The DMTT context creates an opportunity for Dewey’s ideas to flourish as learning experiences are created and controlled by the learner. With DMTT, youth can stand squarely in the driver’s seat with their peers, shifting adult facilitators to the roles of supporter and mentor (Afterschool Alliance, 2013; Bales et al., 2012; Herr-Stephenson, 2011). In the space where DMTT and progressive pedagogy are intertwined, youth “take ownership of their learning” (Afterschool Alliance, 2013, p.1; Bales et al., 2012).

## Where does “connected learning” fit in?

While many of the pedagogical strategies associated with DMTT are familiar, one term—connected learning—is uniquely associated with their use. Growing in part from the programmatic and scholarly work supported by the John D. and Catherine T. MacArthur Foundation, connected learning has been described in a variety of ways. Some outline it as a mode of learning that is peer supported, interest driven, and academically oriented (Chiu & Merritt, 2017; Connected Learning Checklist, n.d.), whereas others define it as an experience that can take place at any time, is relevant to youth, is “hands-on,” and supports social interaction (Afterschool Alliance, 2013; Afterschool Alliance, 2015).

Connected learning has two dimensions: a *pedagogical* component (focused on the

instructional strategies and interactions described above), and a *contextual* component (focused on the particular learning experience in relation to others). Some suggest that connected learning resides within a larger learning “ecology” that includes in-school, after-school, and other OST learning opportunities that enhance youth experiences (Herr-Stephenson, 2011; Afterschool Alliance, 2015). This contextual orientation to connected learning echoes Dewey’s interest in removing the barriers between knowledge and experiences (Herr-Stephenson, 2011), and communicates the intention to develop youth who understand that learning takes place all of the time and in all contexts of their lives.



## STUDY APPROACH

From November 2017 – January 2018, Outlier Research & Evaluation at UChicago STEM Education at the University of Chicago administered a questionnaire to approximately 750 organizations in the Chicago area. Outlier also conducted interviews with program leaders at 12 organizations and completed 5 in-depth site visits. See the Appendix B for a more complete description of the methodology.



# What kinds of programs use DMTT and what exactly are they using?

“Seeing their final projects, seeing them just pouring themselves out in these videos... and then these ideas just come through about them, and their hopes, and their dreams, and their plans, and their passions. It was amazing. It was really amazing.”

—TechGYRLS, YWCA Metropolitan Chicago

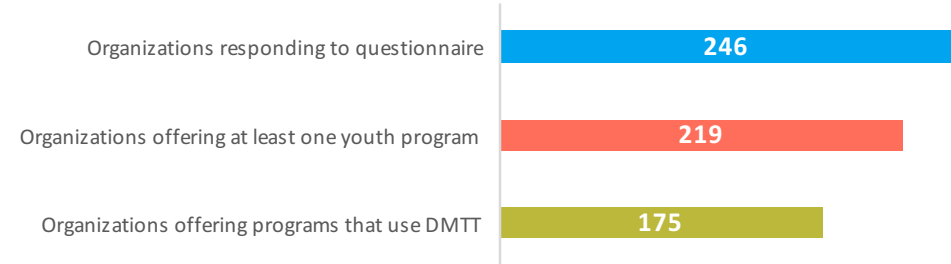
## DMTT programs are richly diverse

Of the nearly 250 organizations in Chicago that responded to Outlier’s questionnaire, 175 reported having at least one program that uses DMTT. These programs were rich in diversity, including programs where youth create and perform musicals, programs that use digital fabrication technology to explore design thinking, and programs

focused on “computational tinkering.” Just as notable and inspiring were the programs’ ambitions for youth, which ranged from providing creative opportunities for “students to use state-of-the-art software to study and learn music theory” to helping “young women develop a sense of self.”

*For an overview of the types of organizations who responded to the questionnaire, see Appendix Figure C1.*

Figure 1. Questionnaire respondents



## SECTION HIGHLIGHTS

- Almost 250 Chicago organizations, offering a total of about 2,200 programs for youth over the summer 2017 and 2017-2018 school year, responded to the survey.
- 175 of these organizations reported offering youth programs that use DMTT, for a total of over 1,000 programs with DMTT being offered during this time.
- Most reported that DMTT is a secondary focus of the program and as such, supports the program’s primary topic or focus; DMTT is the main focus for only about one quarter of the reported programs.
- Program focus topics are diverse, ranging from architecture to performing arts to civic engagement.
- While some programs used specialized DMTT, the most commonly reported types of DMTT were computers, mobile phones, tablets, the internet, and social media.



# RUNNING THE NUMBERS

## # OF PROGRAMS OFFERED

2,239

total programs  
offered for  
Chicago youth

1009

programs using  
DMTT

..... Of the 175 programs with DMTT reported on in the survey: .....

## WHEN DID THE PROGRAMS TAKE PLACE?

Participants could select multiple responses

111

took place  
after school

103

took place during  
the summer

73

were held on  
weekends

10

took place  
before school

.....

## PROGRAM STRUCTURE

90%

included multiple  
sessions within  
the program

80%

involved regular  
youth attendance

For more information about program structure and duration, see Appendix C.

## DMTT programs focus on many different topics

Rather than focus solely on DMTT skill development, a large majority of program leaders reported using DMTT to support and enhance learning goals about other topics. About a quarter of the leaders of programs with DMTT said that DMTT was the *primary* focus of their OST program while three-quarters of programs focused on *other topics*, such as architecture, entrepreneurship, and marketing. Civic engagement was the most commonly identified topic, followed by job preparation, and visual and performance arts.

For a complete list of topics and the number of programs that focus on each, see Appendix Figure C4a.

Figure 2. Proportion of programs that use DMTT

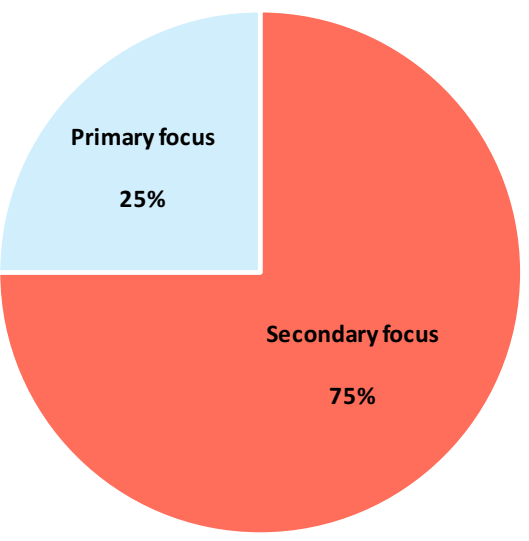
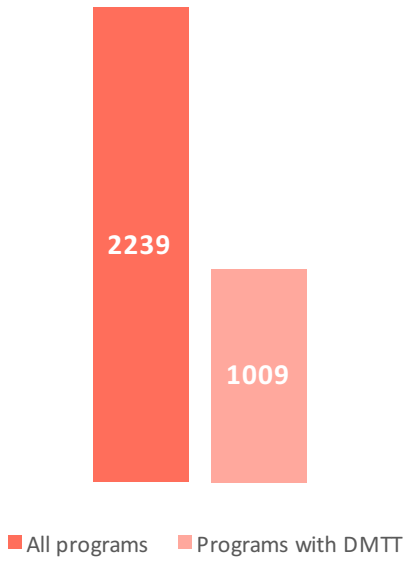
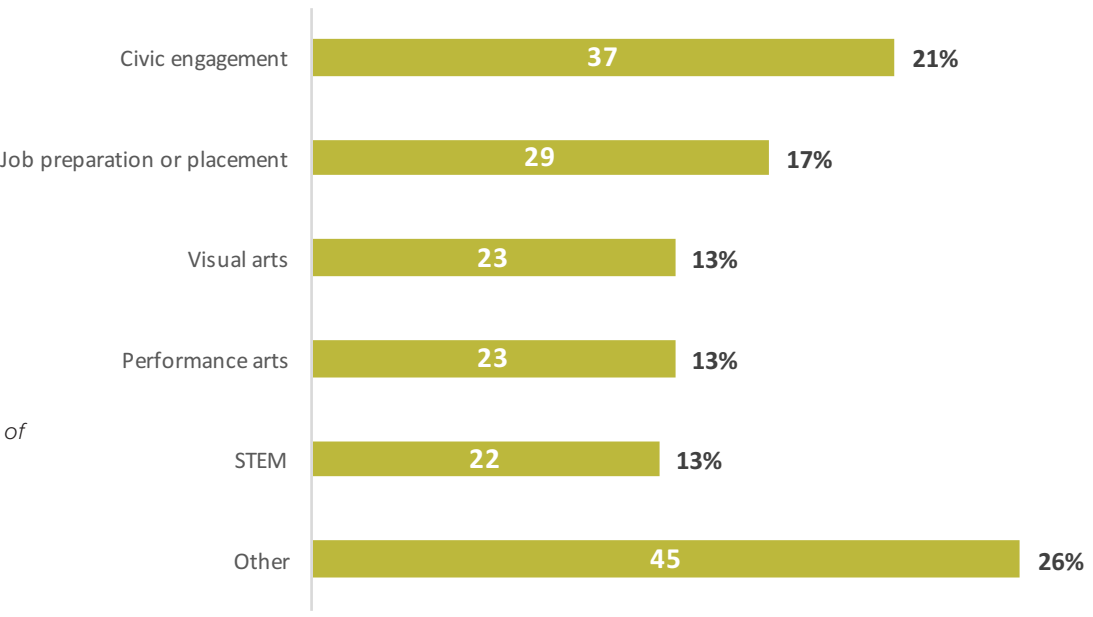
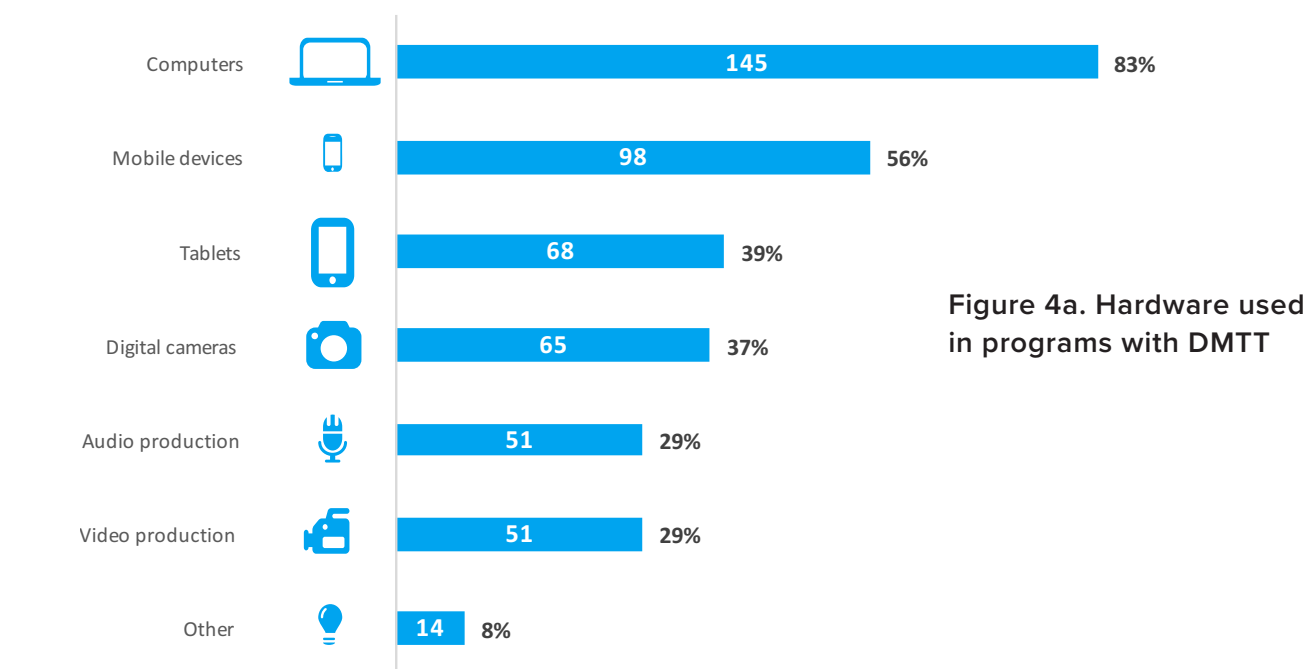


Figure 3a. DMTT as a primary versus secondary program focus

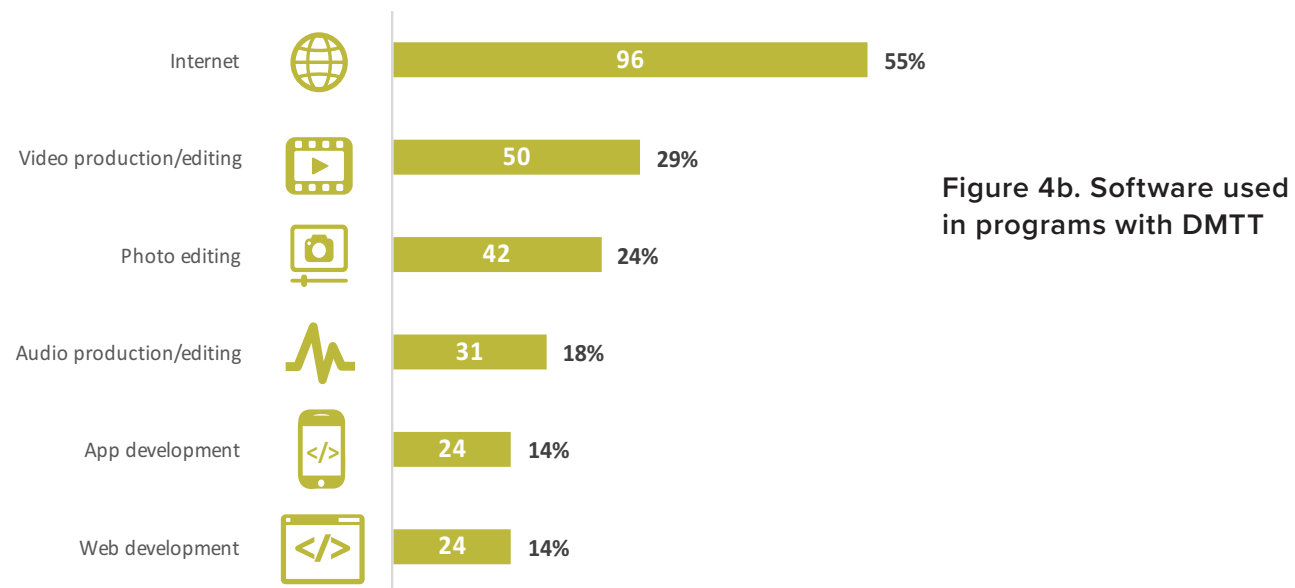
Figure 3b. Most common topics programs with DMTT identified

Note. Organizations could select up to three program topics; percentages indicate the proportion of organizations selecting each topic. .

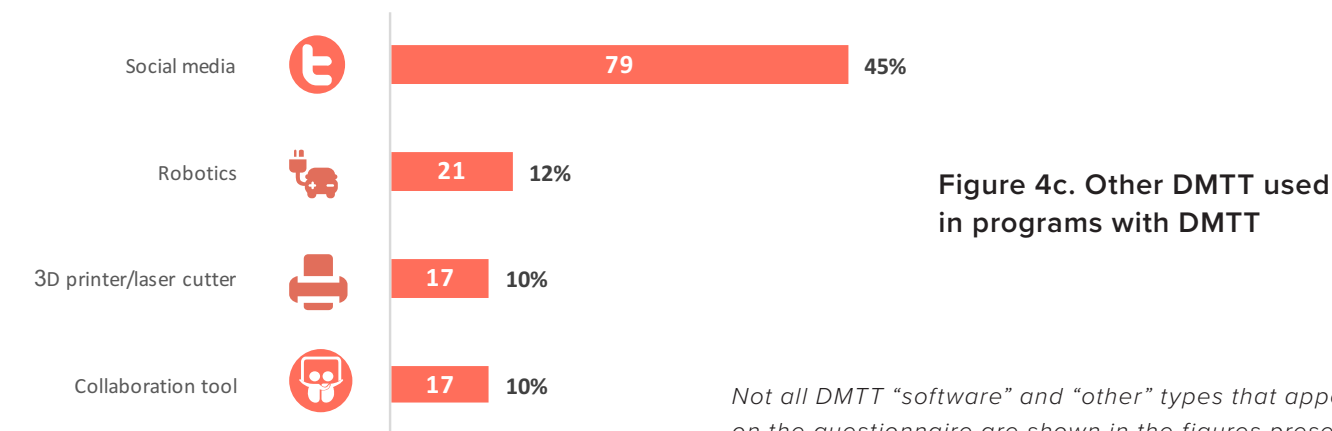




**Figure 4a. Hardware used in programs with DMTT**



**Figure 4b. Software used in programs with DMTT**



**Figure 4c. Other DMTT used in programs with DMTT**

*Not all DMTT “software” and “other” types that appeared on the questionnaire are shown in the figures presented here; for a complete list, and the number of programs that reported using each, see Appendix figures C5 and C6.*

## DMTT programs use the full gamut of hardware and software

Although some of the programs used highly specialized DMTT, the vast majority used more common and accessible hardware and software. When asking about the types of DMTT used, the questionnaire organized them into three categories: 1) hardware; 2) software; and 3) “other.” Respondents were able to select as many types of DMTT as they wanted from each category, and given space to write in any types of DMTT that were not listed. The most common hardware used were computers (83%), mobile devices (56%), and tablets (39%).

Consistent with the focus on creation and “making” often associated with DMTT use, many programs used production hardware and software. Digital cameras were reported to be used in over a third (37%) of the programs; audio production hardware (29%), and video production hardware (29%) were each used by similar numbers. For software, after the “internet” (used by 55% of programs; the internet was categorized as software for the purposes of this project), about a third (29%) used video production/editing software, and a quarter used photography editing software. Social media was the most common “other” DMTT, used by 45% of the programs.

*“For the most part, [we use the DMTT] as the students feel it’s best for them...we try to incorporate it so it becomes something that’s comfortable...we’re not deterring them from using their phones, posting things on Snapchat, Instagram, and so on because there’s so much expression through digital tools, we’ve found that if we try to hinder them, it’s not gonna work.”*

*—After School Advocates, Anti-Cruelty Society*



THE UNIVERSITY OF  
**CHICAGO**

### Collegiate Scholars Program

Founded in 2003, the University of Chicago Collegiate Scholars Program strives to prepare stand-out Chicago Public School students for placement at top academic institutions. Beginning after their 9th grade year and continuing through graduation, high-achieving students participate in enrichment activities during the school year, as well as a summer program. Activities focus on core academic subjects, plus additional elective

courses or topics that students may not be exposed to through CPS curriculum. The program helps prepare students for college and careers in science, technology, engineering, and math, and to be culturally competent, civically engaged leaders. Through interaction with University of Chicago faculty and doctoral candidates, these students, who are often members of underserved groups, are supported as they

prepare for their futures. The podcasting portion of the program engages youth with technologies they can apply to their everyday lives and use to communicate their ideas. As the program leader explained, “the goal [is] for us to provide the students with enrichment and the ability to really express themselves and enhance their own world view.”





SITE STORY

## The Anti-Cruelty Society

*“When it comes to community building, that’s a perfect example of what we’re trying to achieve. Kids that would never have even met each other, coming together because of their mutual love of animals and giving back to the community and having a beautiful friendship form out of that.”*

*—Sarah, Program Leader*

## The Anti-Cruelty Society – After School Advocates

*Using the Power of Social Media for Animal Advocacy*



The After School Advocates Teen Volunteer Program upholds the mission of The Anti-Cruelty Society by helping to build a community of caring individuals dedicated to animal advocacy. Participation in this program provides Chicagoland teens with opportunities to become educated about the issues shelter animals face, and how to raise awareness in their communities about these animals’ needs. Program manager, Elliot Serrano, and Program Lead Facilitator, Sarah Williams highlight the importance of utilizing a well-thought-out curriculum while also allowing teens to engage in self-directed learning. Doing so provides a well-rounded set of experiences that they believe can help transform today’s youth into conscientious media consumers and animal advocates.

Based on that philosophy, After School Advocates operates based on a three-part curriculum model, which incorporates academic, hands-on learning, and advocacy experiences to foster relationship-building, and to maximize participants’ collaborative learning. In the academic experience portion of the program, youth learn about animal behavior and training, such as B.F. Skinner’s principles of operant conditioning and Pavlov’s classical conditioning approaches. They then use this knowledge to develop behavior plans, which are in turn, carried out during in-kennel cat and dog training exercises aimed at improving animal adoptability. When teens apply what they have learned in action with shelter animals they are transformed into “better animal advocates, because of what they know.”





*“It’s a lot of raising awareness in the community about the needs of animals in animal shelters.”*  
—Sarah, Program Leader

*“So, I think that’s a big part of the reason why Facebook is way more effective, because it does reach that wider audience and people who are actually potentially looking to adopt an animal.”*  
—Marie (pseudonym), age 17

The main end goal of all volunteer work at the Anti-Cruelty Society is animal adoption. After School Advocates supports this goal by providing teens with opportunities to facilitate animal adoption. Each group of teens is assigned a shelter cat and shelter dog, serving as the “virtual foster” for their animals.

Teens get to know their animals in the shelter, and then use social media platforms, including Facebook, Instagram, and Snapchat—“up-to-date tech that they’re comfortable using”—to help their animals get adopted by potential “forever families.” They create “adoption campaigns” where they share video footage, pictures, and stories about their cat and dog with the community. Program leaders and teens both felt that social media, and especially Facebook, is a powerful advocacy tool, as adoption campaigns have the potential to “go viral” and spread to many people across Chicago’s far-reaching neighborhoods.

Teens’ animal advocacy campaigns have the potential to reach individuals interested in animal adoption in ways that flyers and newspaper advertisements, alone, never could.

Students highlighted how social media is a platform that empowers them to be advocates, and also provides them with a space to use their voices for issues they care about. Using digital media tools and technology (DMTT) in this way also shows them, according to program manager Elliott Serrano, “Oh, I have this tool [DMTT] that can be used for more than just my day to day [life]. It can be something impactful in the community. It can be something that makes a difference in something that I care about.” Although the majority of teens reported joining this program because of their existing love of animals, creating adoption campaigns and serving as “virtual fosters” opened their eyes to the power of animal advocacy, and the importance of providing a voice for animals’ rights.

*“They not only have this information floating around in their head, but they get to see it in action... not only from them doing stuff in the shelter and then participating, whether it’s training animals, whether it’s getting to know animals, whether it’s seeing how a shelter works behind the scenes, but also from the guest speakers we bring in. They get to see how people are using what they’re learning to make a career.”*  
—Sarah, Program Leader

*“I have always been interested in having a career with animals, but I’ve never really had opportunities at school to learn about these types of things. And I think it was the perfect way to be able to do that and educate myself about not only the animals, but having that ability to now tell people about this is what goes on, and these are what these animals are going through so that I can give them a voice too.”*  
—Sarah, Program Leader

“The main reason why I got into it [the program] was to use my voice,” one participant said, “and you know, speak of issues, and I think in this case, just being an activist, is another reason why I joined.” Another teen stated, “I feel like animals don’t get advocated for enough – there are other problems we tend to focus on more. And I think this program is a great way for me to learn how to advocate, and the best ways to use social media and other devices to advocate.”

In addition to animal adoption advocacy, youth in the program create products that give back to the shelters they work with. Teens created animal behavior plans, engaged in social media share-outs (e.g., Facebook Live), drafted letters to elected officials about animal welfare, and oversaw an animal-supply donation drive where hundreds of items were collected for the shelter. Program leaders Elliot and Sarah also work to increase teens’

awareness of the different careers that are available for individuals interested in working with animals, and the educational pathways to obtaining those careers. They bring in guest speakers from many different animal-focused career fields to share their experiences with teens in the program, and educate them on the academic pathways leading to veterinary science or medicine, shelter management, or animal behavior training.

The After School Advocates program aims to give youth with a love for animals the information to channel that interest into a future career and to spread knowledge and compassion in their communities through social media platforms. “Our hope,” said Elliott, “is that, when [youth] leave here, they see the knowledge that they’ve gained, [and] they can disseminate it in the language of their generation in a way that is effective.”





# What are program leaders who use DMTT trying to accomplish?

*“I’m very adamant about teaching these young people how to navigate to where we are right now. So, if social media’s a big thing, let’s unpack what that really means. How is that being marketed? How are things growing? What’s the business behind a lot of these things happening? So for me, 21st Century learning is about learning how to navigate through where we are socially.”*

—Restoring Hope and Giving Direction, Chasing23

## DMTT support a range of learning goals, from youth development to specific DMTT skills and knowledge

When asked about what they hoped to accomplish with their youth, program leaders focused far more on broad youth development goals rather than particular expertise with specific types of DMTT. In identifying their top three program goals, 40% of the respondents selected “youth development and leadership.” This goal far outranked the next most-commonly selected goals, which included “social-emotional skill development,” “21st century skill learning,” “fostering youth creativity,” “civic engagement,” and “job preparation;” some of these goals themselves are themselves interrelated and tied to the growth of “youth development and leadership.”

## SECTION HIGHLIGHTS

- Program leaders generally reported using DMTT as a means to support youth development, rather than to learn specific DMTT skills.
- Leaders spoke about youth empowerment and self-expression; 21st century skills, such as collaboration, creative thinking, and problem-solving; and fostering civic engagement as major goals of their programs.
- Program leaders also noted the goal of preparing students for college, careers, and being part of their community.
- Acquiring specific technology skills was mentioned as a program goal, but less often than others.





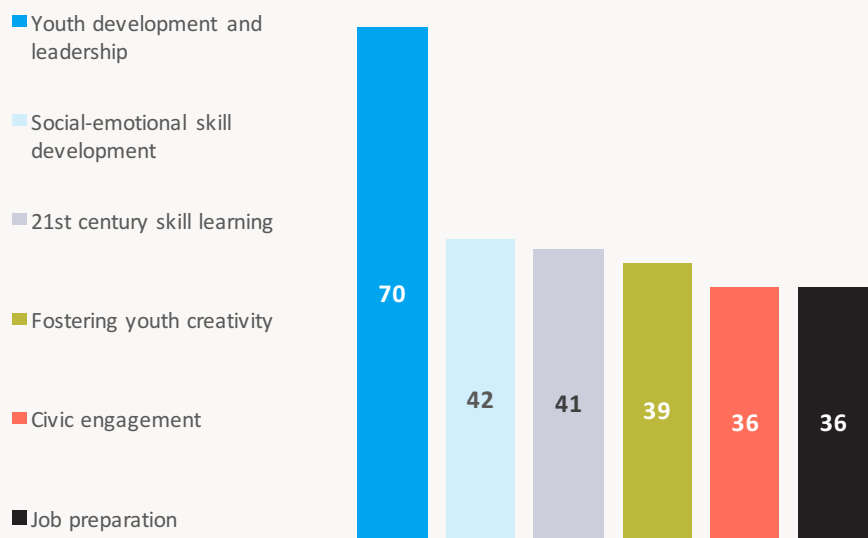
Only 17% of the program leaders identified “familiarity and comfort with DMTT” as one of their top three goals for youth, which suggests that although skilled understanding of the DMTT themselves is important, program leaders view DMTT as tools for supporting or enhancing the other program goals.

Program leaders spoke passionately about their goals during interviews. Similar to questionnaire responses, these leaders also primarily discussed program goals related to broader youth development. When they did reference specific technology skills, it was often connected to building youth’s

confidence in themselves and their abilities, and empowering them to understand that they have options for their futures.

*For a complete list of program goals, and the number of programs that reported each one, see Appendix Figure C7.*

**Figure 5. Most-commonly identified program goals**



The leader explained, “she has so much now; knowledge and understanding of different technological concepts that she could do anything... [and] she knows now that there are technologies that she can use to help her in her career as a pediatrician. And that is something that she didn’t have before.” Like several other programs that participated in interviews, TechGYRLS seeks to help their participants understand how technology can be beneficial to them no matter what they decide to do in the future.

Program leaders also described how using DMTT in their programs provides youth with unique opportunities to share their work and perspectives, and to “talk about issues that matter...[and] what they’re passionate about.” The Chicago Architecture Foundation’s DiscoverDesign.org program leader

described how DMTT provide an accessible route for young people to “have their [design] work out there to kill the stereotype and the perception that some people may have of people of color, especially youth of color,” and it can “lay the blueprint for some other young people to come behind them and do something completely more innovative than them.” Young people are excited to “put down their thoughts and express themselves,” said the leader of the University of Chicago’s Collegiate Scholars program. Youth in the program, he said, routinely tell him, “I can’t wait until Common Event [the public presentation event], so everybody can hear my podcast.” that they can say “this is what that barrier looks like [and] what the impact of that barrier looks like.”

DMTT that allow for youth creation and self-expression can have

immense impact. The Love, Unity, and Values Institute’s (LUV) program leader described a time when “200 kids [were] standing in the middle of 47th Street asking for their voices to be heard...to honor the 17 [high school] victims that were killed in [Parkland,] Florida.” She reflected, “Wow, what an opportunity for these kids to have a tool to be able to share their voice,” and continued, “we need to be able to give young people tools where they [aren’t] just testing tools, but they [receive] training to be able to create something.” This sentiment was also echoed by the Mikva Challenge’s City Wide Youth Advisory Councils leader, who spoke about the power of DMTT to help youth create their own stories about structural inequalities, so that they can say “this is what that barrier looks like [and] what the impact of that barrier looks like.”

### Leaders use DMTT to support youth empowerment and self-expression

*“The goal for us was providing the students with enrichment and the ability to really express themselves and enhance their own world view.”*  
—Collegiate Scholars, University of Chicago

Young people may often feel that their ideas are dismissed or overlooked by adults, and they may be taught—directly or otherwise—that their voices and opinions are less important. DMTT can provide a platform for expression and access to a range of audiences. For program leaders, giving students the confidence to make choices, develop their interests and passions, and have “the ability to really express themselves” was key. They felt

that using DMTT helped students learn self-expression, and that the technological knowledge their youth gained would also empower them in their day-to-day lives and help them think about the future. A program leader for the YWCA’s TechGYRLS program explained, “we definitely just want them to be empowered,” and went on to describe a girl who had been coming to the program for four years and who wanted to be a pediatrician.





## Leaders use DMTT to build 21st century and lifelong skills

“It’s important for us to do work like this so that as our young people transition into adulthood, they now have the tools that just get them into the door so they can start to think through how to be successful in life,” said the program leader at the LUV Institute. Several program leaders spoke similarly about using DMTT to help youth develop critical thinking, creative problem-solving, and collaboration skills so that their participants would, as one phrased it, “view themselves as active, lifelong learners.” Research has shown that these types of skills are critical not only for academic achievement, but also for success in the workplace, for building relationships, and for engaging in society (National Research Council, 2013). High-quality OST programs serve as one important context where youth can acquire and develop these valuable life skills (Vandell et al., 2015).

At the Chicago Park District, the Inferno Mobile Recording Studio program leader described a focus on 21st century skills through their intention to foster collaboration among their youth in this way:

*They’re engaged in a process of creation where they’re doing it shoulder to shoulder, collaboratively, and not in competition with peers. [We want] them to realize that they can replicate that over and over and over again... the goal is to replicate that...to push young people’s competitive sensibilities into the background and push their collaborative sensibilities into the foreground.*  
—Inferno Mobile Recording Studio, Chicago Park District

Contrary to the popular idea that modern technology often isolates youth, several program leaders noted that youth possess the ability to collaborate with others through DMTT. Other leaders highlighted the role of DMTT in facilitating problem-solving skills development. The Chicago Arts Partnership in Education’s SCALE: North Grand Video program leader, for example, spoke about the problem-solving that happens as youth create their videos.

She explained, “it teaches them to apply that sort of problem solving to everything else...like, here’s a problem in my neighborhood, how to resolve the problem...what’s the next strategy?”

## Leaders use DMTT to foster civic engagement

*“By the end of the program, they are like, ‘yeah, young people can actually effect change.’“*  
—City-Wide Youth Advisory Councils, Mikva Challenge

Program leaders also focused on engaging youth in community awareness and advocacy. One noted, “the civic engagement piece, getting out in the community talking about the issues...that’s the core of it.” At the Anti-Cruelty Society, program leaders described their desire to awaken a sense of awareness and a taste for advocacy in their youth participants. They wanted to help young people learn how to engage in their communities, regardless of whether it had to do with the animal-focused mission of the group:

*It doesn’t even necessarily have to be an animal welfare track. If it’s something having to do with advocacy... dealing with an issue that goes on in your community... They learn about animal cruelty, how it hurts communities and society. Maybe from that they’ll say, “Hey, you know what? I want to get into more – I see why domestic violence is wrong. What are things we can do to address that in our community?”*

Through the work of these programs, leaders do find that youth internalize and embrace the mindset that they can make a difference. In questionnaires administered at the beginning of their program, the Mikva Challenge leaders ask youth, “Do you feel like young people have power, or do young people in your community or in your city, Chicago, have power to make change, influence change?” Program leaders told Outlier that many young people did not feel they had a voice in their communities. “By the end of the program,” however, “they’re like, yeah, young people can actually effect change.”



## THE INFERNO MOBILE RECORDING STUDIO

The Inferno Mobile Recording Studio, run by the Chicago Park District, is about ten years old. It was created when a group of teens in Marquette Park in Chicago were organizing a youth arts program. One of the ideas they brainstormed was to build a recording studio at the park. This grew into the Inferno Mobile studio that serves all parks in the city. Chicago artists who are making music and media are hired to lead the program. During the academic year, they provide after-school programming and work with the libraries and other partners throughout the year. But summer is the season when the Inferno Mobile Recording Studio shines. The artists use a basic lesson plan to run collaborative media creation sessions all around the city. They post all of their music to their SoundCloud and all videos to YouTube. By the end of the summer, they have had dozens of sessions that they use to create something larger and what the program leader describes as “beautiful and different.”

*“These are not just skills that we kind of pulled out of the sky, 21st century learning is critical to the survival of any young person.”*  
—Project Lab Program, Ladies of Virtue



## Leaders use DMTT to prepare youth for the future

*“We want to make sure that we are setting these young people up on some type of career path or some type of feeling in which they can use what they possess in their talents and their skills and shine at a different level.”*

*—City Wide Youth Councils,  
Mikva Challenge*



Preparing youth for future employment and college attendance was another common goal articulated by program leaders in interviews. At MAPSCorps, program leaders want participants to have a clear place to go once they graduate from high school: “we want them to be enrolled in...it could be the Army or college, two-year college, or four-year college, or whatever. We want them to have a home, a place somewhere.” Other programs, such as TechGYRLS, expressed more specific career goals for their youth, describing their intention to direct program participants toward STEAM (science, technology, engineering, arts, and mathematics) careers. As a leader at that program explained, “we really believe that we need more women to be in STEAM careers. We try and find women to come talk to the girls that are in STEAM careers, and it is so difficult, so difficult, because there aren’t that many.”

For program leaders, DMTT played an important role in helping them realize these types of goals for youth. LUV’s program leader explained that the experience

young people get now with DMTT positions them to be able to “use these tools for their future careers,” and continued, “if we can get [DMTT] tools to young people at an early age, then we have an opportunity to really prepare them for the future.” The MAPSCorps program leader described the importance of DMTT similarly, noting that the program’s goal to ensure youth are “on the right path to be successful in college and career” is linked to exposure to DMTT and “being able to use them successfully...wherever they end up.”

Using DMTT in programs can also support the development of a young person’s sense of identity as a creator of and contributor to knowledge, rather than just the traditional notion of consumer. The leader of the Chicago Park District’s Inferno Mobile Recording Studio spoke about how as youth “play” with DMTT, they “begin to be more comfortable with them and... inherently create more and feel like that’s a normal thing, and that that’s a good thing and that that’s a fun thing.”

He went on: “If from a young age [you] start to identify yourself as a creator and get used to a flow of output rather than input, then later on in your life, you’re more likely to continue that and to build on that and to further that [and] contribute to your communities and to society as a whole.”

## Leaders use DMTT to develop specific technology skills

While learning specific DMTT skills was mentioned less frequently as a major goal of these OST programs, it was present for leaders, often as a way to build confidence in addition to technical capabilities. In some cases, program leaders referred to basic technology skills that might be needed in youth’s lives or in any future careers. Other leaders noted more concrete goals related to specific technologies. For example, the Adler Planetarium’s Team Stratonauts program provides youth with tools that require them

to learn and use the “same skills [as] professionals in the field.” Youth in the program become “meaningful participants in [a] program that challenges them to do real science.” This type of empowerment is also central to the YWCA’s TechGYRLS program’s desire to teach DMTT skills to youth; the program is built to “empower [girls] to know that they can do it [work with technology] if they want.”

Despite some progress, inequities persist for underrepresented groups, including women, in technology-related fields, and stereotypes about who is able to and should be working with technology continue. Programs such as TechGYRLS work explicitly to combat these stereotypes as a means to reduce inequalities in technology-related fields in the long-term. As the leader further explained, it’s about “being able to have that confidence to go into a situation and say, ‘Well, this has got technology. I’m not afraid of it. I know how that works. I’ve seen that. I’ve done that. I’ve mastered that. Here, let me show you how it’s done.’”







SITE STORY  
Adler  
Planetarium

*“I feel, like critical thinking is imaginative, or creative, problem solving. Giving them a task that hasn’t been accomplished before takes some creativity and that creativity leads to critical thinking and that critical thinking is imperative in 21st century skill building.”  
—Team Stratonauts, Adler Planetarium*

## Adler Planetarium - Team Stratonauts

*Using DMTT for Authentic Teen Challenges*

### ADLER PLANETARIUM

*“...if you want to learn about science, if you want to learn about engineering, you have to do it.”  
—Kelly Borden, Organization Leader*

The Adler Planetarium strives to inspire exploration and an understanding of the universe. To engage youth with this mission and in science and space exploration, Teen Programs Director Kelly Borden highlights the importance of aligning teens’ interests with opportunities for hands-on learning. In its second year of existence, the Team Stratonauts program achieves these goals by providing Chicago teens with opportunities to use digital media tools and technology (DMTT) to solve authentic, real-world scientific challenges. Through the use of the different types of DMTT offered by this program, teens move from thinking of themselves just as students to identifying as practitioners invested in solving science-related challenges that their communities are faced with. Gaining increased confidence and competence with science, technology, engineering, and math (STEM), and working with DMTT, helps Team

Stratonaut teens transform into “citizen scientists” who are able to partner with science and STEM mentors in the broader research community to pursue their science and space exploration interests and solve real-world problems.

Teens participating in Team Stratonauts said they joined the program because they wanted more opportunities to contribute to scientific research in meaningful ways. As Michael, age 15, said, “we’re actually contributing to a research project. We’re here because we want to contribute to actual scientific research, and [involvement in] this [program] is allowing us to do it.” Christina, age 18, emphasized the role of DMTT in her decision to join the program. She said, youth are “given the freedom to kind of dive into technology and... make it work for us and the project[s] that we’re trying to accomplish.”





*“I want to major in computer science and maybe have my own software company in the future.”*  
—Christina (pseudonym), age 18

*“I want to work in astronomy. I want to work in professional research science for the rest of my life.”*  
—Michael (pseudonym), age 15

*“I definitely want to go to college and major in engineering. Yeah, my dream job has always been to work at NASA.”*  
—Michelle (pseudonym), age 16

The DMTT they use includes TinkerCAD, 3D printing, soldering circuits, and programming languages, among others. This sort of interaction with science is very different from how the subject is sometimes presented in schools. “In school,” said Michelle, age 16, “you learn your basic biology, chemistry, and physics, and it is very text-book oriented, and you do a lot of math worksheets.” However, through participation in Team Stratonauts, the theoretical concepts and scientific processes she read about in her textbooks were transformed into a new version of science dominated by hands-on learning.

This model is very intentional—the program “thrives on hands-on, applicable science,” said Program Manager Chris Bresky. He and his colleague, Ken Walczak (the program manager for Adler’s Far Horizons Intern Program), do their best to incorporate

opportunities for creativity and active learning as a way to promote teens’ confidence in their ability to contribute to authentic and complex scientific research. They are firm in their beliefs that hands-on learning and having access to different types of DMTT are important, and they emphasize that resourceful and successful scientists are literate in a number of technologies, and possess the ability to adapt to figure out how to use new tools and technologies to benefit their research.

Ken also underscored that science is a creative endeavor. Through the Aquarius Project, teens in Team Stratonauts are currently incorporating DMTT to create a magnetic underwater meteor sled that is able to retrieve meteorites, or meteorite fragments, from the bottom of Lake Michigan.

This project is the first systematic process designed to retrieve meteorite fragments from a body of water through the development of an under-water rover craft that is also capable of mapping marine landscapes. To create this sled, teens work independently with different types of DMTT, according to their interests. However, creation of the sled ultimately depended on teens’ teamwork skills, since they needed to collaborate to figure out how all the different pieces of DMTT fit together to finalize the sled. The role that DMTT plays in the experience is key, Chris said, “Because of the DMTT, you are able to both build it in the digital landscape and see it come to life in the physical, which is valuable.” More specifically, he said, “from the coding side of things, it allows students to experiment and sample and experiment with writing code that has a real-world application and a tangible result as opposed to something that lives completely in the computer.”

Clearly, both youth and adult mentors are excited by the Aquarius Project work, and the teens valued the collaborative and collegial mentorship approaches taken by their program leaders. “It’s kind of like a symbiotic relationship,” one said. “Like we need them as much as they need us, so if they need help, we’re going to help them, and vice versa.”

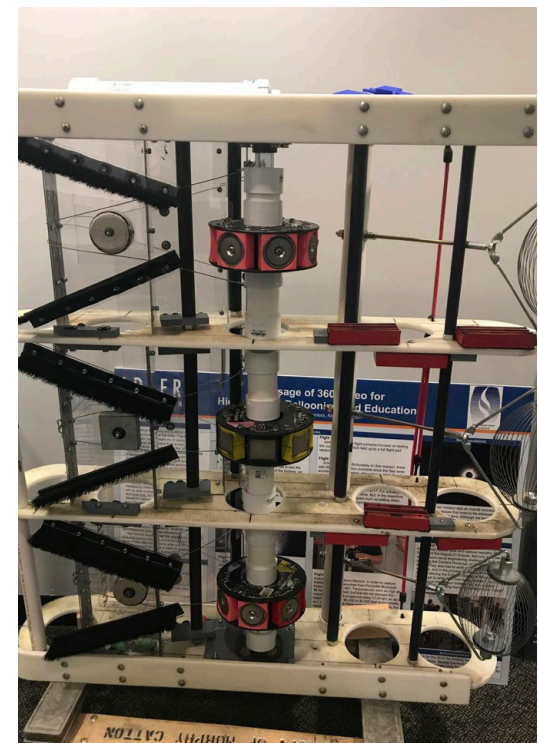
Through this project, the teens have also had the opportunity to collaborate with leading research professionals in engineering,

meteorology, computer science, and marine biology, including researchers and scientists from the Museum of Science and Industry and the Shedd Aquarium. Engaging with experts in these fields has allowed teens to learn from and network with scholars in scientific fields they may want to pursue for their future careers. Youth also spoke with excitement about being treated as true collaborators. As one said, “it’s been great working with professionals, with experts. And yeah, they have college degrees, they’re doing this for a living, but at the same time, they’re our colleagues, and we work with them.” Abigail, age 16, reinforced this idea, saying, “I think being in these programs really helps because you have access to these people who know a lot about it, and professionals, and you can use it to apply to specific projects, as opposed to just dabbling in it, or seeing it at your school or at the library or something.”

Through STEM-rich experiences and interaction with professionals in the field, the Team Stratonauts program strives to not only teach teens the skills they need to pursue STEM-related careers, but also, and more importantly, to inspire today’s youth to pursue their science and exploration passions. Incorporating cutting-edge DMTT not only peaks their interests in STEM, but allows youth to act as—and see themselves as—true scientists.

*“I’ve figured out that I’m really interested in astrospace, astrophysics, and then this year, I also realized I want to double-major astrophysics-math, kind of thing, because calculus is really fun. I’d like to go to college for that and work as an astrophysicist at NASA.”*  
—Abigail (pseudonym), age 16

*“We’re not teaching them how to be an engineer as much as inspiring them to become engineers.”*  
—Ken Walczak, Program Manager, Far Horizons Intern Program





# How do programs using DMTT reach their goals?

*“My job is to engage them in the project itself; so my job is to craft this narrative that ‘You are the first people to helm an underwater meteorite challenge, [it is] a meteorite hunt, so that is your end goal.’ My job, I guess, is to stoke that fire or even light that spark. “*  
—Team Stratonauts, Adler Planetarium

## DMTT program leaders use student-centered and student-driven teaching and learning

When asked about the strategies they use for learning in their programs, questionnaire respondents overwhelmingly identified approaches that put the learning experience in the hands of their youth participants, highlighting the importance of relevance and ownership in youth learning experiences. The questionnaire asked them to select up to three strategies (derived from the DMTT literature) that they emphasize in their program. They were also given a chance to

write in their own strategies. Three learning strategies stood out as the most common selections. First is “youth are actively engaged” (43%), followed by “participants collaborate” (38%), and “participants engage in creation and ‘making’” (29%). When Outlier spoke to program leaders, they provided examples of these strategies in action, as well as the ways they intersect with DMTT to accomplish the program goals.

*For a full list of questionnaire findings on program learning strategies see Appendix Figure C8.*

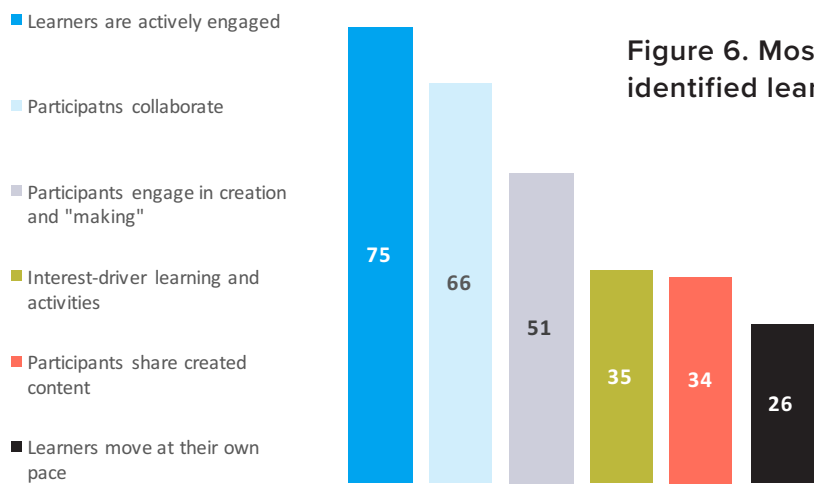


Figure 6. Most-commonly identified learning strategies

## SECTION HIGHLIGHTS

- Programs using DMTT tend to report youth being actively engaged and working together, rather than merely consuming media and technology.
- DMTT help to engage youth, and keep them engaged, by catching their attention and by allowing them to work in a variety of ways.
- Many programs focus on utilizing DMTT for youth collaboration, which challenges the perception that DMTT use isolates youth. Programs foster collaboration in different ways depending on the types of DMTT they use and the program focus.
- DMTT are used in programs for creation and making, often with the goal of self-expression and empowerment.
- Sharing youth-created content is an important aspect of some programs; DMTT use facilitates this goal.
- Programs are often designed to not only be flexible to accommodate varying needs, but also to be driven by youth interest and desires.





Youth are actively engaged

A common theme across programs, “active engagement” took many forms. In the Mikva Challenge City Wide Youth Advisory Councils, for example, active learning was considered the foundation of the entire program, whereas the MAPSCorps program described the curriculum they use as “an active learning process.” In the After School Advocates program at the Anti-Cruelty Society, active learning entails youth putting their knowledge about animal behavior “into practice,” and in the Chicago Architecture Foundation’s DiscoverDesign.org online platform, active learning means that youth not only “solve a design challenge, but design design challenges” for others.

It was clear from leaders, however, that getting initial engagement

from youth was not enough—they also had to work to maintain it. One explained, “you want the students to show up, especially with high school. So, it needs to be something.... that the students are interested in investigating...[that] students actually care about learning.” DMTT played a role here as well. Leaders said, “I gotta keep their attention... [and DMTT will] grab their attention.” The leader of the Mikva Challenge City Wide Youth Advisory Councils highlighted how engaging with DMTT enabled youth to learn in the same space in different ways. They can “contribute in their own way to the program by using tools like video and media, [which] provide different on ramps and entry points for young people to engage with the program and develop and utilize their skillset in [different] ways.”

Program leaders also try to be responsive to youth needs and give in-the-moment feedback to keep them interested and engaged. In one program, adults make an effort to work “on the spot” with youth and to “utilize[e] small teaching moments.” In another, a recording artist worked alongside an assistant who was there to support youth while recording sound samples for their musical creations. The TechGYRLS program leader explained the important role of adults in maintaining engagement, saying, “We give the girls as many tools as we can in the beginning, outlining everything that we’re going to be working on. And then they get stuck and they want to give up, and the adult [says] ‘Hey, what about this?’ as a way to highlight ...options, or different ways, to approach a project.”



*“We consider ourselves as guides on the side. It is a student-led program, and the instructors really support the goals and objectives of the program.”*

— Project Lab, Ladies of Virtue



Participants collaborate in various ways

Although many programs shared the goal of facilitating collaboration, the ways they achieved this were shaped by their topic areas and the DMTT they used. At the Adler Planetarium’s Team Stratonauts program, for example, one form of collaboration involves the use of Google Docs and Sheets for content creation. On the other hand, in the Chicago Arts Partnership’s SCALE: North Grand Video program, youth work in groups to “help each other film [and] make suggestions” to each other as they watch and critique videos. At the YWCA’s TechGYRLS program, they build “foundations” for the way participants interact, both inside and outside of the program, and the Mikva Challenge City Wide Youth Advisory Councils program emphasizes collaboration even for youth who say they prefer to work alone or who do not like working in groups.



*“[If students] are doing AR (augmented reality), one girl is designing what’s called an AR marker, and the other girl is designing the app to interact with the marker... when one has an idea, the other... implements it [and] gives feedback so that they collaborate... and come out with something together.”*

— YWCA Metropolitan Chicago





*“We had a workshop around knowing your rights as a young person if you want to go to DC and be part of a protest or just protest in your neighborhood. Through all of these unofficial and informal conversations with young people...they really wanted to be heard. But there’s many ways in which they can be heard and that’s how we then started to think about digital tools and we said, “well, what about creating their own podcast?”*

*—Collegiate Scholars, University of Chicago*

*“We just did a documentary for the Chicago Public School engagement team... CPS said, “hey, we want you guys to create a video of young people talking about how there is no protocol set up for CPS for re-entry.” So, if a young person is expelled for three days, or if a young person is out sick for five days, or a 10-day suspension, or a transfer student, or a refugee, or hospitalization [there is no protocol]. [The youth said] “Hey let’s create a documentary of all of these different scenarios and descriptions of these young people.”*

*—City Wide Youth Advisory Councils, Mikva Challenge*

## Participants engage in creation, making, and expression

Creation and making with DMTT was a frequently-reported theme associated with program leaders’ goals to facilitate youth self-expression and empowerment. The Chicago Park District’s Inferno Mobile Recording Studio program leaders, for example, encourage fearless, hands-on engagement, telling youth, “don’t be afraid to touch the gear and experiment,” and “if there’s something that you don’t know how to do or there’s something that you want to do, don’t wait for an adult to tell you how to do it.” They aim to empower youth with the agency to “use these creative tools instead of...engaging in a more passive learning process.”

## Participants share created content with others outside of the program

For some programs, it was important for youth to not only create, but also share their created content publicly. In the MAPSCorps program, for example, youth present their asset-based community data with program partners weekly, to “get feedback from the community-based organizations [and] other stakeholders” about their work process and findings. These weekly interactions culminate in a final symposium at the end of the program, where youth engage in conversations with community members about their work.

The Mikva Challenge City Wide Youth Advisory Council program also emphasizes creation and making, but in the context of juvenile justice. Here, youth work with program leaders to identify the juvenile justice issues they care about, and then they figure out how to address each issue, and the best tools for the job. Youth often use “videos... create their own websites, create apps [and] create policy reports,” but they are also encouraged to go “off the menu” of usual DMTT options, if they find something else that is a good fit for a particular project.

In other programs, youth use social media to share their work with wider audiences, such as in the Anti-Cruelty Society’s After School Advocates program, where young people harness the power of social media to share “their experiences with animals...take pictures of them... [or share] a short video” as way to support animal adoption efforts central to the program. The Mikva Challenge City Wide Youth Advisory Council program similarly noted that youth “have their phones in their hands, so, hey, let’s go live or send out a tweet or let’s write a blog or whatever it may be” to share the program’s work, goals, and message.

Programs harnessed the power of DMTT to tell and share stories as well. Participants in the LUV Institute’s The Journey to My Better Self media program learn to use cameras and computers to conduct interviews with each other and guests to tell their stories through videos. Mikva Challenge program leaders also observed the value of sharing content as a means for youth communicating their

## Learning and activities are driven by youth interests

The flexible nature of many OST programs enables program leaders to account for the particular needs and interests of different program participants. “I run my programs to adapt organically with the students,” one leader explained, “so I monitor their engagement [in activities] as we go along” and adjust as needed. In another program, students decide how they want to spend their time, telling the program leader, “Hey, this is what I want to do [with video equipment]. How do I do it? Show me what’s going on.” In the Inferno Mobile Recording Studio program, students decide what they are going to talk about and make recordings based on their own interests and current happenings in their lives: “If somebody’s upset about the way that their brother or sister is treating them, we use that as a springboard for what we’re going to talk about, record, and create that day.”

authentic stories, saying, “we need people to know that our young people are doing amazing things, and they’re future politicians, or your future stakeholders that you wanna have in your community or at the forefront of work...We need to use DMTT, because if we don’t, then it’s like a hidden gem... we want everybody to know what they do and what they can do.”

The importance of following youth interests, however, is not overshadowed by the commitment to learning. The leader of Team Stratonauts at the Adler Planetarium explained, “I help guide them in the direction that is both going to align with their interests, but also challenge them and [help them] learn something.” There, youth are exposed to different activities, but “if someone isn’t gravitating toward coding and they have been disengaged for several lessons [the leaders will]... start encouraging them to explore other options.” Ladies of Virtue’s Project Lab also asks participants to “come up with the topics themselves,” with the intention of creating more engagement. Youth tell the program leaders, “this is what impacts me, and this is what I want to talk about.” The drive to complete the work is enhanced because it comes from “their own hearts and passions.”

*“[Youth] each design[ed] digital versions of vision boards. The girls were looking at themselves, looking at their future, potentially, what it is that they felt about themselves. How they saw themselves. Where they saw themselves being in five, ten, fifteen, twenty years. What they wanted to do, what they hoped to do. What they planned to do... just pouring themselves out in these videos through this medium of Adobe After Effects...So you had animation, and you had visual effects all going together with music, and then these ideas just come through about them, and their hopes, and their dreams, and their plans, and their passions.”*

*—TechGYRLS, YWCA Metropolitan Chicago*

*“It is youth driven...the sessions that we do are always [inspired by] things that come directly from the young people.”*

*—Inferno Mobile Recording Studio, Chicago Park District*





Mikva Challenge  
develops youth to be  
**empowered, informed**  
and **active citizens**  
who will promote a just  
and equitable society.

SITE STORY

Mikva  
Challenge



Mikva  
Challenge

*"I really want our programming to be accessible to all young people. Not just the young people that are interested in this type of stuff [issues facing youth in the Juvenile Justice System]. I want to reach out to the young people that would never see themselves as leaders."*  
—Michelle Morales, Chief Executive Officer

## Mikva Challenge – City Wide Youth Advisory Councils (Juvenile Justice Council)

*Using DMTT to Give Youth a Voice in their Communities*

Mikva  
Challenge

*"[Without DMTT], we would lose our ability to create our own story."*  
—Steven Rosado,  
Senior Program Director

Mikva Challenge was founded in 1997 based on the vision of Abner Mikva—a former White House Counsel, Judge, U.S. Congressman, and well-known Democratic politician in the City of Chicago—who sought to increase access to democratic spaces for youth living in under-resourced communities. Mikva and his wife Zoe, who was also a political and educational activist, worked to provide opportunities for young people to engage in positive political experiences in order to empower them to be more civically-engaged and informed about issues facing their communities. Current programs, including the City Wide Youth Advisory Councils, continue this work, "tackling issues of equity" and creating "an environment where youth, especially underprivileged youth, are encouraged to use their voice to advocate for changes in policy." This emphasis on youth voice is at the heart of the organization and

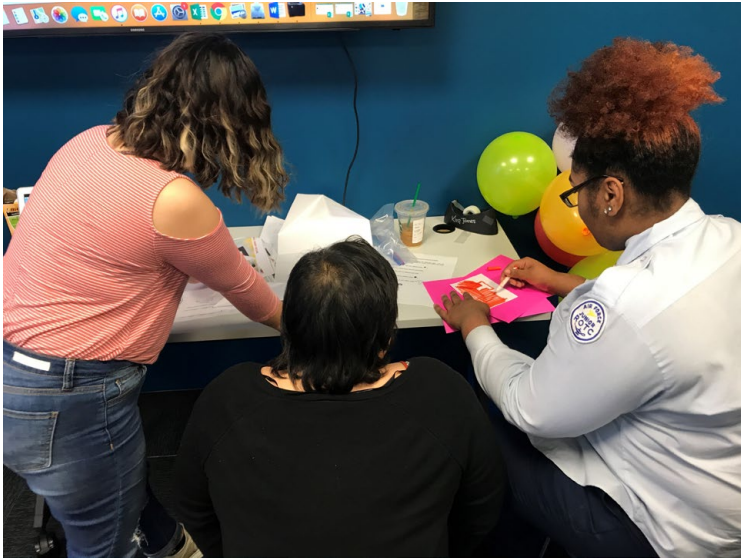
its programming, and leaders speak emphatically about the importance of democracy reflecting those individuals that it serves. Michelle Morales, Chief Executive Officer at Mikva Challenge, explains, "[we want youth] to really see themselves as an agent of change in government....to understand that they have a role, and a right to demand accountability from their government... what we ultimately want is for young people to see themselves running for office, and see themselves holding positions of authority."

Giving youth a voice in local government and policy allows them to grow to self-identify as positive agents of change in their communities. At Mikva Challenge, the City Wide Youth Advisory Councils provide the arena where youth voices can be heard, and digital media tools and technology (DMTT) helps to amplify their voices.



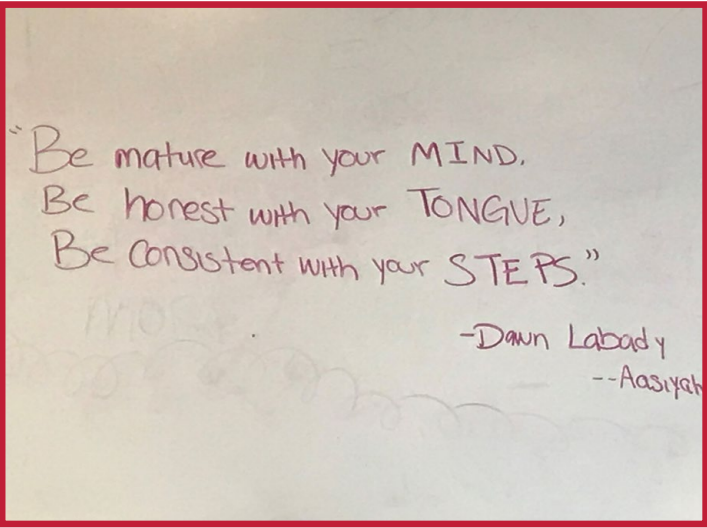
The councils were created to connect youth with major policy-making institutions such as health care, affordable public housing authorities, and education leaders, so that their perspectives can be accounted for in policy decisions in these areas. The Juvenile Justice Council, focuses explicitly on helping young people become experts in the juvenile justice field so that the barriers faced by those involved in “the system” can be communicated to parole and probation officers, Cook County detention center staff, public defenders and states attorneys, and elected officials. The Council works to “[reach] out to people who have power to change the system that isn’t working for us,” says an 18 year-old council member.

Sixty percent of the young people on this council are court-involved youth. “We can’t have a council that represents the interest of the juvenile justice system without having young people currently or formerly involved in the system,” said Senior Program Director Steven Rosado. Program Leader James Fields said he specifically seeks out youth from these backgrounds, to empower them and to ensure they bring balanced and diverse perspectives to the issues youth are advocating for and focusing on. Together, these youth engage in community outreach with Chicagoland and county



*“I think as an organization that is youth facing, and youth centered where we are working with youth, and developing youth....we have to be on the cutting edge of technology and media.”*  
—Michelle Morales, Chief Executive Officer

officials to make research-based recommendations to public defenders, states attorneys, and judges to improve youth experience within the juvenile justice system in Cook County, IL. DMTT supports the work carried out by the Juvenile Justice Council in a number of ways. Council members create a variety of work products using DMTT, including digital “White Papers” to be shared with state and local government representatives, presentations and public-service announcements to generate community awareness, and documentaries, vlogs, and blogs to share more information about relevant issues. Computers, the internet, and Microsoft Office Suite provide youth with the tools to conduct research and to evaluate the current state of affairs around the juvenile justice system so that they can present informed recommendations. Recently, for example, council members shared their research on the importance of public defenders offering multiple communication platforms, such as WhatsApp, when reaching out to their parolees.

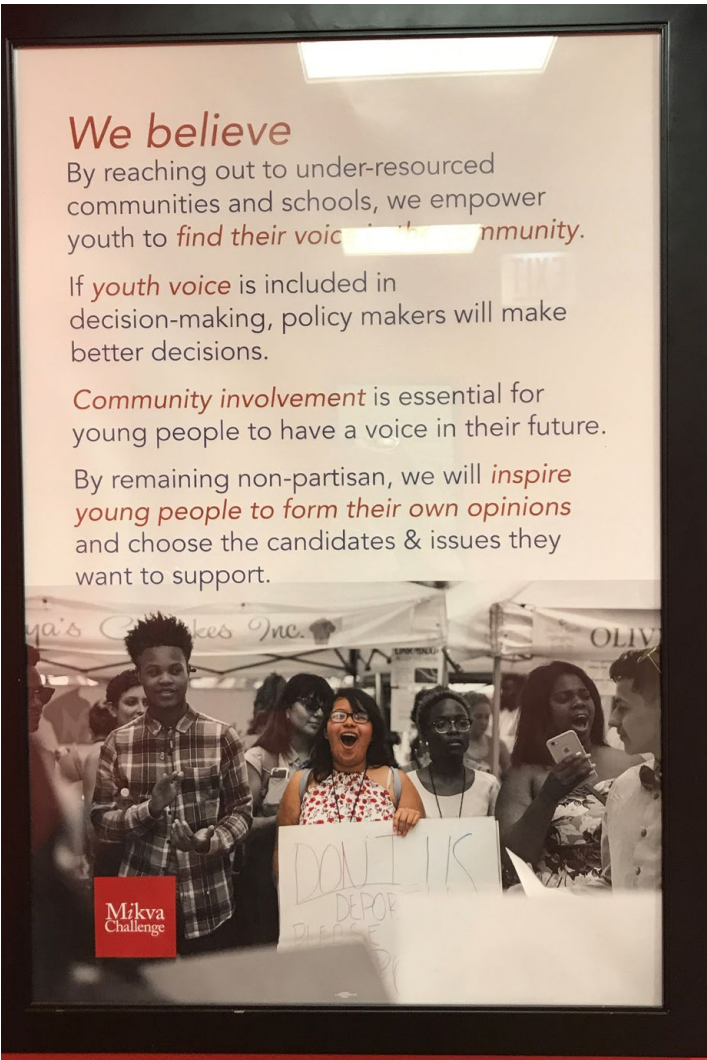


The program and organization leadership were in agreement on wanting young people to have their “fingerprints” all over the program, their belief that engaging with DMTT, particularly social media, provides a unique platform to reach audiences across Chicago’s diverse political landscape. For instance, council members used computers, audio and video production hardware/software, photography editing software, and cameras to create a mobile/web-based app that provides information about how to expunge juvenile criminal court cases. James, a program leader, believes that “just using what [DMTT] they love to highlight something that they’re passionate about is the perfect solution for us to share our work,” and he hopes to continue to “be scrappy” when it comes to providing council members with more opportunities to engage with a variety of DMTT in the future.

*“Communication skills. Communication is everything. If you don’t have the communication then you have misunderstanding.”*  
—Rebecca (pseudonym), age 19

In an organization that stresses the power of communication and the importance of youth voice, DMTT plays a valuable role in enabling young people to be critical analyzers of potential changes they would like policy makers and elected officials to advocate for to the benefit of their communities. Youth serving on the council learn to be respectful and accountable in a collaborative and creative environment that allows Chicago’s “unheard voices” to be heard; with DMTT, their voices reach an even wider audience.

*“We want to see a democracy that’s made up of the people that it impacts.”*  
—Michelle Morales, Chief Executive Officer





# Where are the programs that use DMTT and who do these programs serve?

An essential piece of capturing Chicago's DMTT program landscape involved understanding where the organizations offering these programs are located and who the programs are serving. Outlier's questionnaire asked respondents to provide this information in order to establish baseline data that would allow for tracking growth and progress of DMTT programs over time. While the programs included in this analysis are a modest portion of the many programs offered to youth in the City of Chicago, these data provide an important starting point for dialogue, development, and future study of DMTT use in youth-serving OST programs.

In the sample of programs that completed the questionnaire, program leaders indicated that efforts are being made to serve Chicago communities and groups (particularly female and Black or African American youth) who are underserved and underrepresented in fields related to DMTT. This finding is promising, and suggests that youth-serving OST programs, and their leaders, possess an awareness of the inequities that exist in the City of Chicago and are making intentional efforts to address them. Future research is needed to understand the proportions of youth in specific gender, racial/ethnic, or socioeconomic status groups who are benefitting from participation in OST programs with DMTT, and how to make opportunities more readily available to all youth.



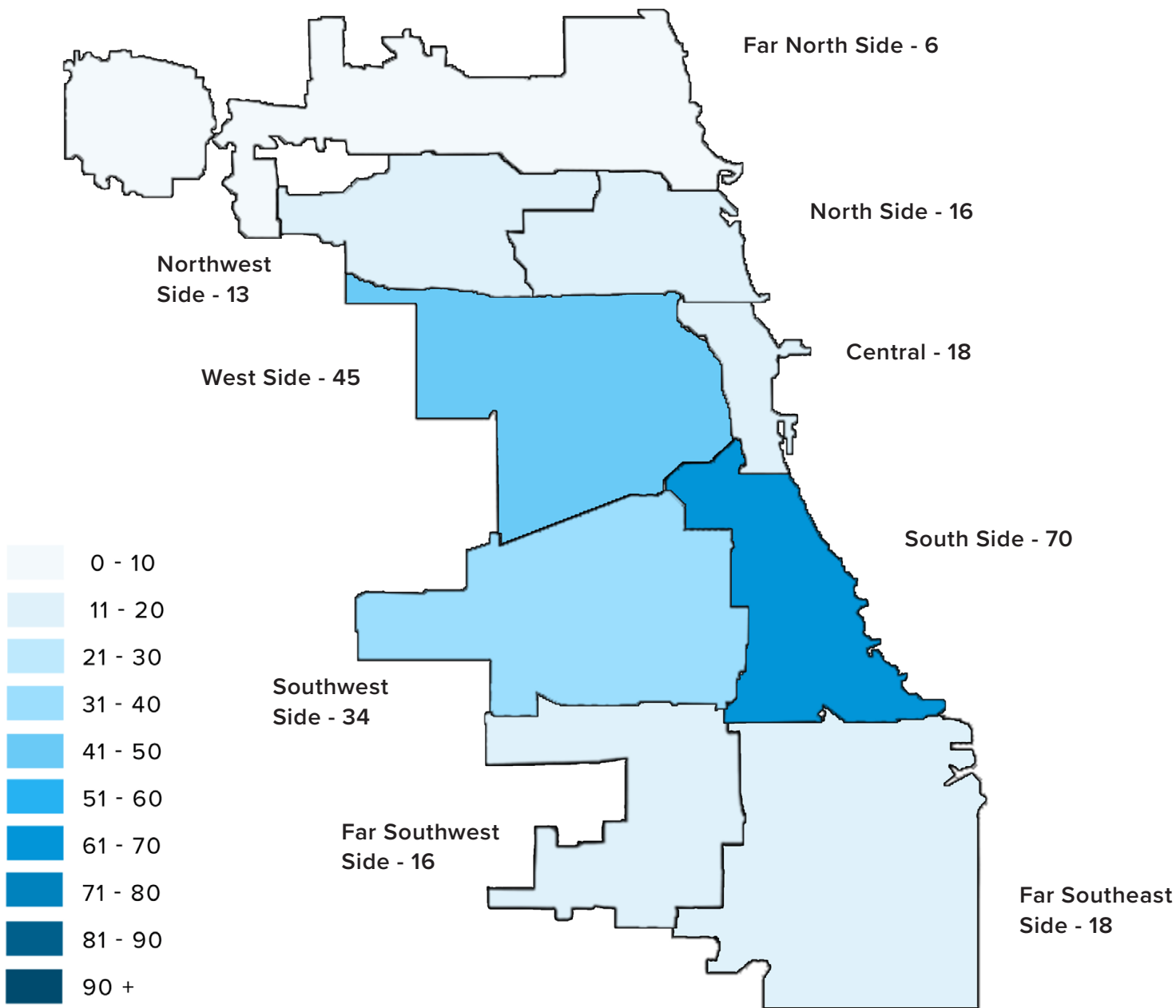
## SECTION HIGHLIGHTS

- Responding organizations were located throughout the City of Chicago, but the programs with DMTT that they reported on often aimed to serve the South, West, and Southwest sides of Chicago.
- About a quarter of the programs targeted specific populations, such as girls or specific racial/ethnic groups.
- The programs tended to be racially and ethnically diverse, although almost half reported having predominantly Black or African American youth.
- The programs served more female than male youth, and served mainly youth in the 13-18 year-old (e.g., high school) age range.
- Programs tended to serve relatively small groups of participants, with most serving under 40 youth at a time.
- Programs with DMTT used many avenues—from school events to social media to targeted strategies—to recruit youth to join their program.



Figure 7. Regions where programs intended to serve youth

Note. Organizations could select as many regions as applicable.



## Organizations that provide OST programs for youth reside across the City of Chicago

The organizations that responded to the questionnaire were dispersed across Chicago's far-reaching neighborhoods, as were the organizations that offered programs with DMTT. It is important to note that an organization's location does not necessarily reflect the regions that the organization targets for its programming;

however, the fact that organizations were not solely located in highly-resourced areas of the city is meaningful. Additionally, organizations offer relatively similar numbers of programs with DMTT across all regions and generally have comparable numbers of staff (full-time, part-time, and volunteer) running those programs.

## Programs with DMTT targeted the traditionally under-resourced South Side more than any other region

The questionnaire provided respondents with a map of nine Chicago regions (e.g., Central, Far North Side, South Side, West Side) and asked each individual completing the questionnaire to identify the regions their program intends to serve (Figure 7). The respondents could be categorized into three relatively equal groups. Thirty percent ( $n = 53$ ) of the organizations indicated that their program intended to serve

all regions. Thirty-six percent ( $n = 63$ ) reported that they served only one region, and the remainder (33%,  $n = 59$ ) served multiple areas of the city, indicating anywhere between 2 and 7 regions. The South Side was the most commonly identified region that programs intended to serve, selected by 70 program leaders; this was followed by the West Side ( $n = 45$ ) and Southwest Side ( $n = 34$ ).

## Programs with DMTT report serving youth from the three typically under-resourced Chicago communities identified above as targeted areas. However, they do not appear to serve all of the regions they intend to

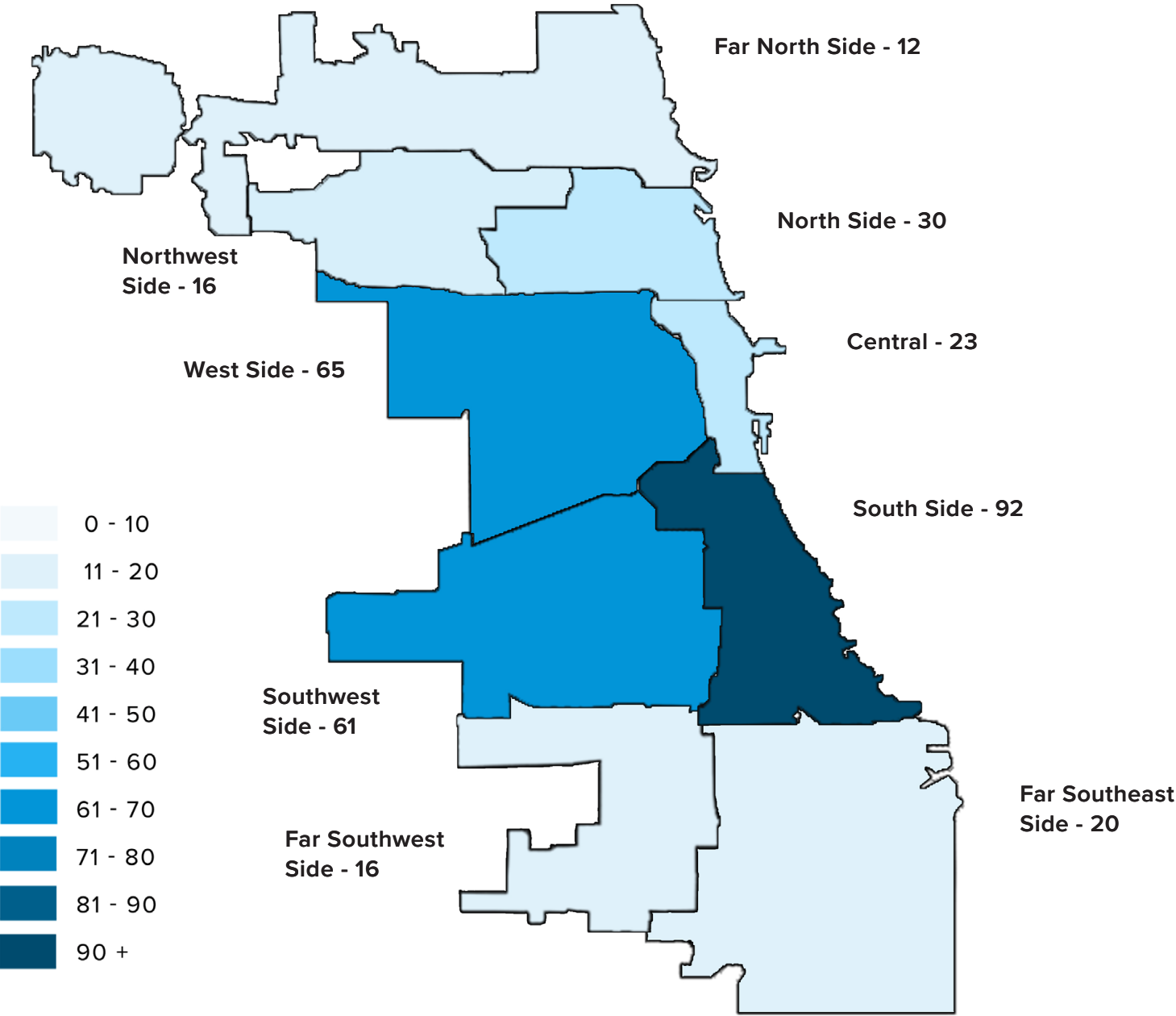
The three regions respondents reported that they aimed to serve were in fact the regions that they reported their participants came from (Figure 8). These regions included the South Side ( $n = 92$  responses, 53%), the West Side ( $n = 65$ , 37%), and Southwest Side ( $n$

$n = 61$ , 35%). However, while fifty-three (30%) programs indicated that they *intended* to serve *all* Chicago regions, only eighteen programs (10.3%) reported that they have participants who come equally from all of them.



Figure 8. Regions where youth attending programs came from

Note. Organizations could select up to 3 regions.



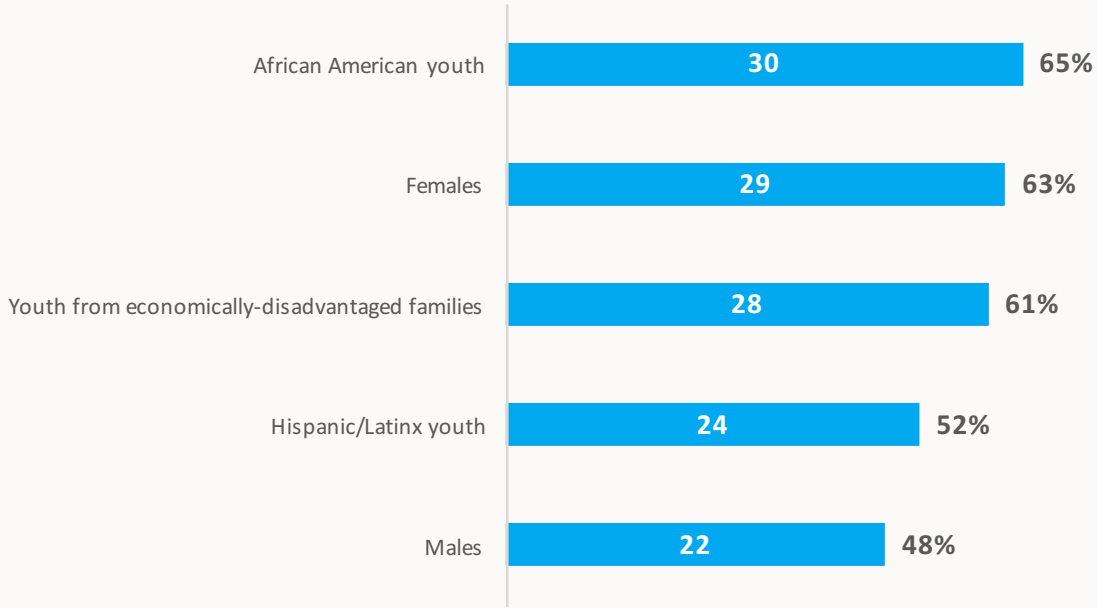
## Only some programs with DMTT report targeting specific populations of youth to serve, but those that do targeted diverse groups of youth.

Forty-six programs with DMTT (28.8%) reported that they target at least one specific population of youth when recruiting participants to join their program. Respondents were able to select more than one target population in their responses. See Figure 9.

Additionally, respondents were asked to describe the populations *currently* being served in their programs, including the gender identity, racial/

ethnic identity, and age group compositions of youth program participants. It is important to note here that these demographic data were provided by the program or organizational leader who completed the questionnaire, *not* firsthand by the youth participants attending these programs. In each question, respondents were also given the option to indicate that they did not know.

Figure 9. Program target populations



Note. Forty-six organizations reported that they target specific populations of youth for their programming. Organizations could select as many youth populations that applied.

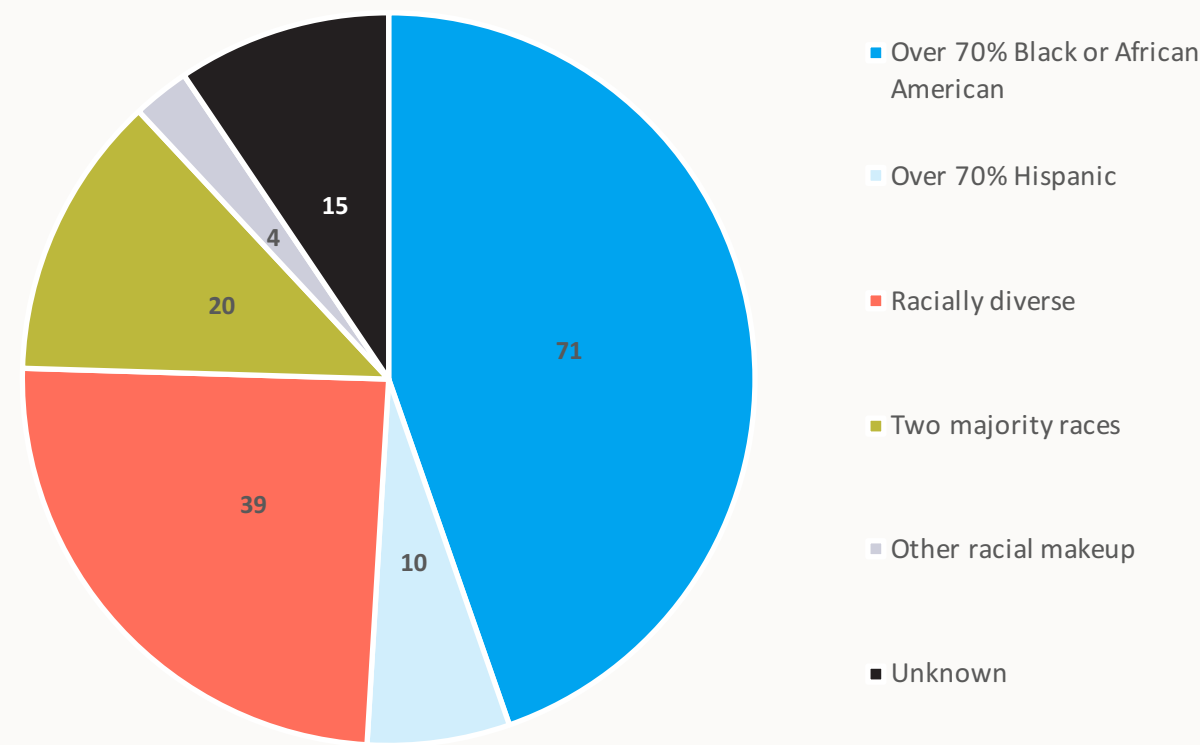


The reported racial/ethnic identity composition of program participants was diverse

Outlier devised a set of criteria to help describe the racial/ethnic identity composition of participants in programs with DMTT. Seventy-one of the organizations (44.7%) reported serving populations consisting of at least 70% Black or African American participants, with the remaining program participants being youth from any other racial/ethnic group (non-Black or non-African American; e.g., LatinX, White, Asian, Other). These programs were considered “predominantly Black or African American.” Twenty (12.6%) program leaders reported that at least 70% of participants in their program came from only two racial/ethnic identity

groups. These programs were considered “majority two racial/ethnic groups.” Thirty-nine organizations (24.5%) reported serving populations that were diverse (i.e., at least 70% of their participants come from three or more ethnic/racial identity groups). Ten (6.3%) program leaders reported serving populations consisting of at least 70% LatinX participants (“predominantly LatinX”), with the remaining program participants being youth from any other racial/ethnic identity group (i.e., non-LatinX). The remaining respondents (9.4%) reported that they did not know the racial/ethnic composition of youth participating in their program.

Figure 10. Reported racial/ethnic composition of program participants



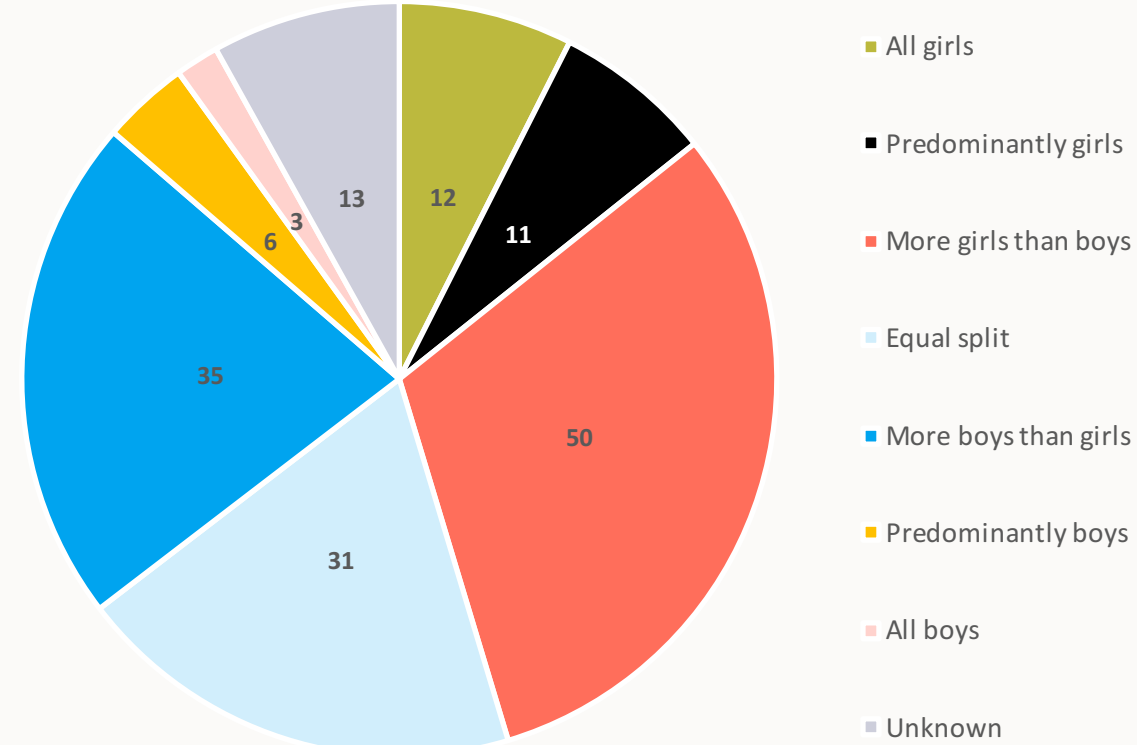
Note. The “other racial makeup” category included organizations who reported that their program participants were mostly Asian (3 organization) and mostly White (1 organization).

Programs with DMTT serve females more than males

Although only twelve programs (7.5%) reported serving only female participants, as a whole, programs with DMTT served more females than males. Fifty program leaders (31.1%) reported that they served more (greater than 50%) females than male participants, whereas only 35 (21.7%) reported serving more male than female youth. This is consistent with the finding noted above that more programs specifically target females than specifically target males or non-binary/third gender youth. About twenty-percent (19.3%, *n* = 31 programs) of the respondents reported that their programs included an equal number of male and female participants, and only three (1.9%) reported

serving only males. Thirteen program leaders reported that they did not know the gender identity of the youth participating in their program. On the questionnaire, program leaders were presented with options to select non-binary/third gender or “other” gender. Seventeen organizations (10%) reported that their program participants included youth identifying as non-binary/third gender (1-50% of program participants in the organization). Four organizations (2%) reported that their program participants included youth identifying as “other” (2-10% of program participants in the organization).

Figure 11. Reported gender identity composition of program participants



Note. Seventeen organizations reported that their program participants included youth identifying as non-binary/third gender (1-50% of program participants in the organization). Four organizations reported that their program participants included youth identifying as “other” (2-10% of program participants in the organization).

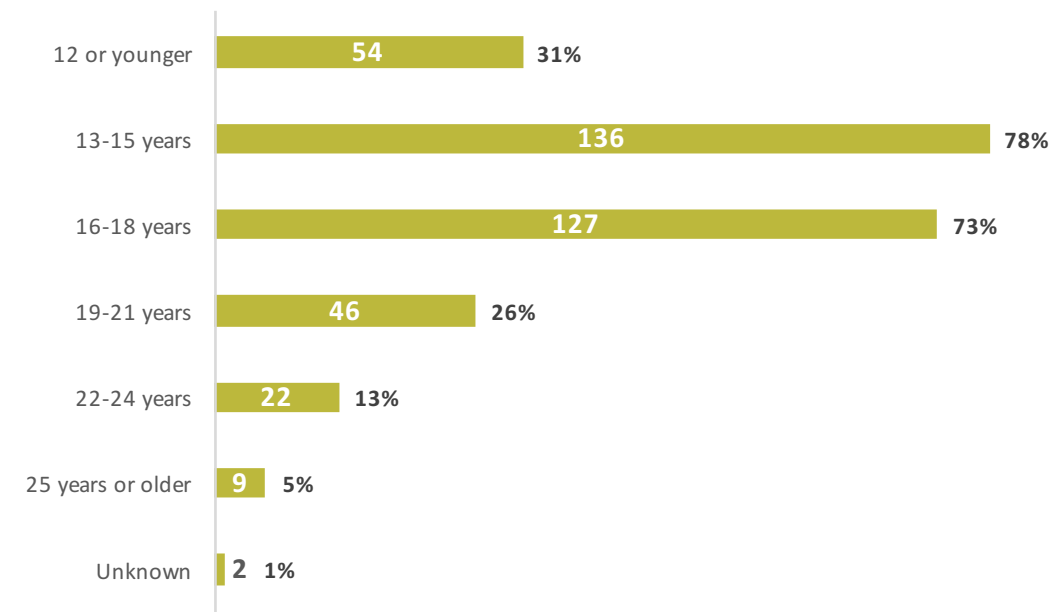


Most participants in youth-serving programs with DMTT are between 13 and 18 years old

Youth participating in organizations offering programs with DMTT ranged in age from 12 years old (or younger) to 25 years (or older). Programs with DMTT most often served young people between the ages of 13 to 18 years (i.e., high school age

youth). One-hundred and thirty-six organizations (78%) reported that youth in their programming were between the ages of 13 to 15 years. Seventy-three organizations (*n* = 127) reported that youth were between the ages of 16 to 18 years old.

Figure 12. Participant composition by age in programs with DMTT



Note. No organizations reported that their program participants were all “12 or younger” or “25 years or older”.

A majority of programs with DMTT serve 40 or fewer youth at a time

When asked how many participants their programs served, programs reported numbers ranging from one to over 200 youth participants. However, most leaders (59%) reported that fewer than 40 youth participate in their program at a time, with the majority of those programs (*n* = 37; 23% of the total) reporting between 10-19 youth participants. At the

other end of the spectrum, 19 organizations (11.8%) reported that 200 or more youth are participating in the program. The variation in these numbers may be due to program structure (i.e., drop-in versus enrollment/regular attendance), duration, and timing (i.e., summer, after-school, and weekends).

Programs with DMTT recruit participants every way they can

When asked how they recruit participants, respondents’ answers included using everything from maker fairs, school events, and social media to reach participants. Some took advantage of events run by Chicago Public Schools (such as back-to-school fairs), whereas others worked with existing organizations that conduct youth programming, such as After School Matters, Move Media, and Park Kids. Programs also capitalized on events run by community partners (e.g. churches, libraries, local businesses), resources from other programs that reach youth (e.g. Chicago City of Learning, One Summer Chicago), and word of mouth to recruit young people.

Some program leaders carry out targeted recruitment:

“I’ll go to the JTDC [juvenile temporary detention center]. I’ll pretty much wait till they get out of court or go in the court, tell them a little bit about the program, and pass out my cards there, say, hey, this is a great opportunity for you to participate and hone these leadership skills that you definitely possess...”  
—City Wide Youth Advisory Councils, Mikva Challenge

Others, in contrast, cast as wide net as possible:

“I’ve been to so many different educator meetups, and workshops, and back-to-school fairs, after school fairs, summer school fairs ... Just everywhere I can.”  
—TechGYRLS

Getting youth in the program’s door is not just a recruitment challenge for program leaders; youth face financial and structural barriers as well. Even when youth are aware of the programs, physically getting to the programs is a challenge of its own. One leader spoke about the fact that some youth need to work to help support their families, which can prevent them from enrolling or staying in OST programs.

Others referenced the challenge of transportation even when programs provide youth with fare cards to help deter the cost of public transportation. The program leader of the After School Advocates program at the Anti-Cruelty Society noted the challenge of achieving gender balance: “we’re trying really hard to get more young boys into the program...animal welfare, like any other type of social service, is female dominated.” On the other hand, the leader of Ladies of Virtue’s Project Lab, which focuses exclusively on girls, indicated that it simply did not have enough space to accommodate all who wanted to participate, saying, “the challenge now with recruiting is that we have so many girls, and we have to turn down girls from participating.”







SITE STORY  
TechGYRLS

*“In so many ways, [their experience with DMTT] makes them leaders and educators in their own right. Taking the knowledge and experience that they have and imparting it to others, and story after story after story of them wanting to show off the knowledge that they have gained.”*  
—David Lane, Program Leader

## YWCA Metropolitan Chicago – TechGYRLS

*Building Girls’ Confidence in STEAM through DMTT Use*



YWCA Metropolitan Chicago is the oldest and largest women’s organization in the Chicagoland region. As an organization, it focuses on empowering women and eliminating racism. The TechGYRLS program carries out this mission by empowering 9-14 year old girls, and fostering their interest in science, technology, engineering, mathematics, and the arts (STEAM) through exposure to and interaction with digital media tools and technology (DMTT). For the last five years, the program has provided girls with opportunities to engage in critical thinking, problem-solving, and creative learning using DMTT, helping them to become less intimidated by the tools and technology, and hopefully, to see themselves in future STEAM careers. The program aims to increase interest in STEAM careers, yet program leader David Lane notes

that TechGYRLS is also about giving girls confidence and options—“it was really all about empowering them to know that they can do it [DMTT/STEAM], if they wanted. That it was not off-limits to them. That it was totally possible for them to go into this field, if they so choose. Because they were capable, and they were powerful, and they were smart.”

With STEAM and female empowerment at the forefront of the program, DMTT is truly its heart. All programming sessions involve the use of DMTT, and TechGYRLS prides itself on providing its participants with access to the most up-to-date DMTT, including CAD software, robotics, video production hardware/software, and computers, among other types of DMTT.





*“I came anyway because I wanted to learn coding.”  
—Danielle (pseudonym),  
12 years old*

*“We try and have as many females [mentors] as possible so that they [the girls] can identify with them. They can talk to them in ways that they can’t talk to me, and that’s just real.”  
—David Lane,  
Program Leader*



Mentors encourage the girls to try working with different types of DMTT that they may be less familiar with, and the program activities are designed to have the girls collaborate in their DMTT use. While the adult mentors help motivate the girls and keep them focused, the program is meant to be “driven by the girls,” with them leading the activities that are broken down into different parts, each with their own milestone to be achieved. The program is also as “drop-in friendly as possible” with the understanding that the girls may be involved in other activities that make it difficult for the girls to attend the program every Saturday.

This year’s program strives to “expose [the girls] to as many concepts as possible,” including program sessions focusing on each of the five STEAM content areas. The program session emphasizing technology will focus on augmented reality (AR) and virtual reality (VR). Working in pairs, the girls will design a “virtual world” that will include AR markers that can be accessed from different mobile/web



applications to allow the girls to gain more information or learn something new. The girls will work together, with one group member designing the AR marker and her partner responsible for creating the application that will be used to interact with it. In the science portion of the program, the girls will work with the National Aeronautics and Space Administration (NASA) to use satellite imagery data to study the clouds and atmosphere to learn how cloud systems impact weather patterns. The mathematics and engineering components of the program will be competition based; during the engineering portion, the girls will compete in a bridge-building contest using K’NEX ©, whereas, in the math session, they will participate in “Math Bonanzarama” where all activities will incorporate a math challenge and require the girls to solve a math-related problem before advancing in the game. Finally, TechGYRLS will be collaborating with the Chicago Architecture Foundation to design a new community library in the arts portion of the program.

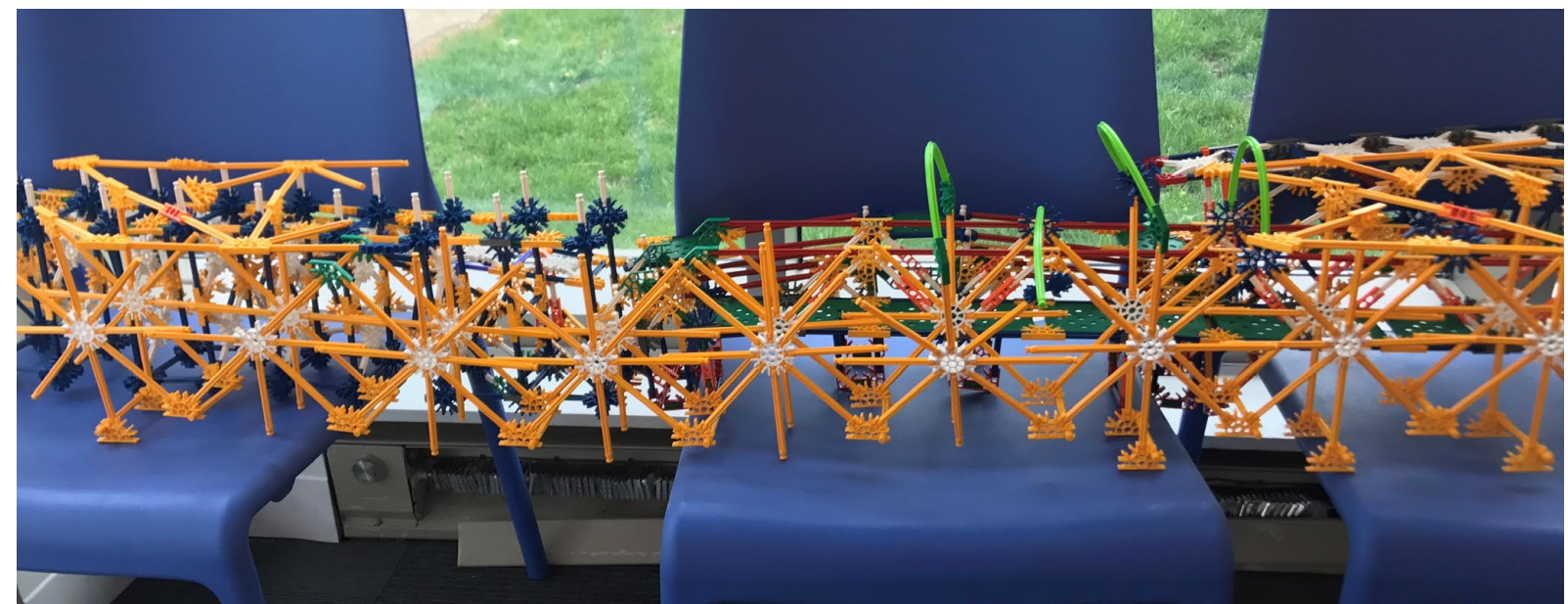
The use of DMTT brings with it a number of benefits, according to the program leaders and the TechGYRLS. Not the least of these are the technical knowledge and skills the girls gain. In one experience, for example, David recounted “you’ve got so many different concepts all rolled into one. Because they had to learn aeronautics concepts, robotics concepts, electrical concepts. You had coding in the mix. How the different sensors all worked together in order for the drone to actually fly. So it was just really very comprehensive.” In last year’s program, the girls used Adobe After Effects to design digital vision boards. They incorporated material about their current lives, and how they viewed themselves 5, 10, 15, and 20 years into the future, as well as their hopes and dreams in each one of these time periods. David described this activity as a great success from more than just a technical standpoint: “seeing their final projects, seeing them just pouring themselves out in these

videos through this medium of Adobe After Effects...so you had animation, and you had visual effects all going together with music, and then these ideas just come through about them, and their hopes, and their dreams, and their plans, and their passions. It was amazing. It was really amazing.”

Hopes for the program for the future are that it will continue to grow and expand, in greater depth, into new curriculum areas, simultaneously with advances in DMTT. The girls expressed interest in doing “outside nature-type science” during the summer months as well as learning how to do computer coding. Regardless of the particular topics they cover, TechGYRLS will continue to be a place where girls are empowered to explore with DMTT, where they can gain confidence in STEAM subjects, and where they can see themselves as just as knowledgeable and capable of having a STEAM—or any—career as anyone else.

*“We had the virtual reality hooked onto drones so we could see where the drones are going but we can’t see where the drone is, but we see from the point of view of the drone. First person view – like when they be sending drones to space and stuff like that.”  
—Kendall (pseudonym),  
13 years old*

*“And so our idea with the Chicago Architecture Foundation was to get the girls thinking about architecture in that way, which is not necessarily just an artistic endeavor, but also a technological one and an engineering one, and design.”  
—David Lane, Program Leader*





# Advice from program leaders: **Where to find supports and ways to address challenges**

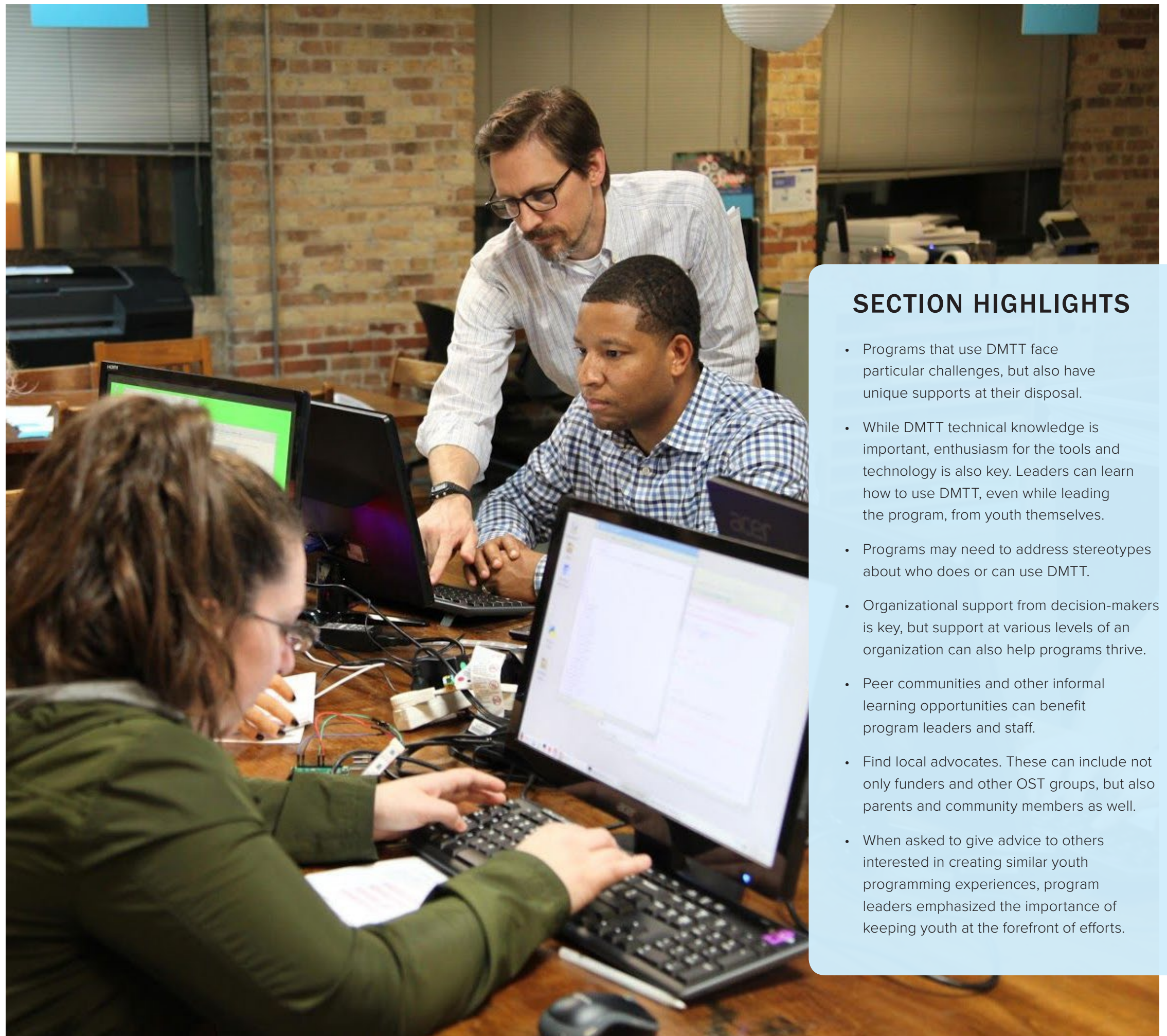
*“Actually, weirdly....not weirdly, I think that what supports [the program] the best is actually the students, and the students’ interest in new and emerging developments in technology.”*

—SCALE: North Grand VIDEO, Chicago Arts Partnerships in Education

**T**he work of conducting youth programming, while important and gratifying, is not easy work; it comes with an assortment of challenges, and program leaders rely on key supports in order to succeed. This is true of all youth programs, but those that use DMTT face particular challenges, and anticipating them and knowing how to take advantage of supports is essential. Program leaders give advice about these challenges and supports in this section.

## SECTION HIGHLIGHTS

- Programs that use DMTT face particular challenges, but also have unique supports at their disposal.
- While DMTT technical knowledge is important, enthusiasm for the tools and technology is also key. Leaders can learn how to use DMTT, even while leading the program, from youth themselves.
- Programs may need to address stereotypes about who does or can use DMTT.
- Organizational support from decision-makers is key, but support at various levels of an organization can also help programs thrive.
- Peer communities and other informal learning opportunities can benefit program leaders and staff.
- Find local advocates. These can include not only funders and other OST groups, but also parents and community members as well.
- When asked to give advice to others interested in creating similar youth programming experiences, program leaders emphasized the importance of keeping youth at the forefront of efforts.





## Scarcity of resources is part of the landscape; program leaders have to be creative and nimble

As with many youth-serving efforts in Chicago and beyond, financial and material resources are a challenge. Some programs are faced with an “inability to access more hardware, like computers and cameras, leaving them wondering “how much more [youth] could do if they actually had some new, cutting-edge devices.” The MAPSCorps program leader spoke about having the tools—in this case mobile devices—for youth to do initial data collection, but not enough of those tools readily available for data analysis, saying, “we’re a non-profit so we always have to find ways to... make sure that we’re getting the resources so that

we can continue to run.” The Mikva Challenge City Wide Youth Advisory Councils program leader described their approach to “making it work,” saying:

*“We don’t have a lot of resources with DMTT. So we have to become scrappy with what we do [have]. You know, we have to figure out how one person can use [something] for two hours, and then we’re gonna film for another hour, then we’re gonna come digitize, and edit it and put it all together, and just share with the resources that we have here.”*



## Program facilitators need to put aside hesitation and get comfortable with DMTT, or with learning about them alongside youth

For some program facilitators, “there’s a learning curve when it comes to digital technology,” and they need to embrace the process and take on the role of being life-long learners themselves. Taking on this mindset is not always easy; therefore training and support in DMTT use for program facilitators, within or outside the organization, is important. On the other hand, facilitators do not need to know everything. Indeed, as the TechGYRLS program leader advised, it may be more important that facilitators “be as passionate as possible about technology”—that enthusiasm will transfer to inspire youth.

This idea of facilitators’ attitudes being as important as their technical knowledge came up across programs using all different types of DMTT. Especially in programs that use multiple types of DMTT, it may not be possible for the adults in the room to know everything. For example, the Adler Planetarium’s Team Stratonauts leader described supporting students using multiple types of DMTT in the program, and the fact that problems that come up with one type of DMTT are often different from those that emerge with others. The facilitator does not have to know everything about all types of technologies, but should be, as the leader of the Chicago Arts Partnership in Education program said, “adventurous” and ready to step-in and provide whatever guidance they can to young people.



The leader of the Inferno Mobile Recording Studio program suggests to facilitators to “give yourself time to play and learn the tech before you teach the tech.” And when needed, program facilitators can sometimes look to their own youth participants to help. As the Mikva Challenge City Wide Youth Advisory Councils leader explained:

*“We don’t have someone who specializes in audio. Who don’t have somebody who specializes in photos either. We don’t have somebody that specializes in videos... we all have different skills, and then... hopefully, by luck or by intention we identify a young person who already is skilled in this.”*



It is also important for program leaders to think about the best uses of DMTT for supporting learning and meeting goals in their particular program. The Anti-Cruelty Society After School Advocates leader explained that program leaders need to think carefully about the types of DMTT students are currently using, what is most appealing to them, and then “figure out a way to make [it] work” for what they want students

Acknowledge and be prepared to address stereotypes

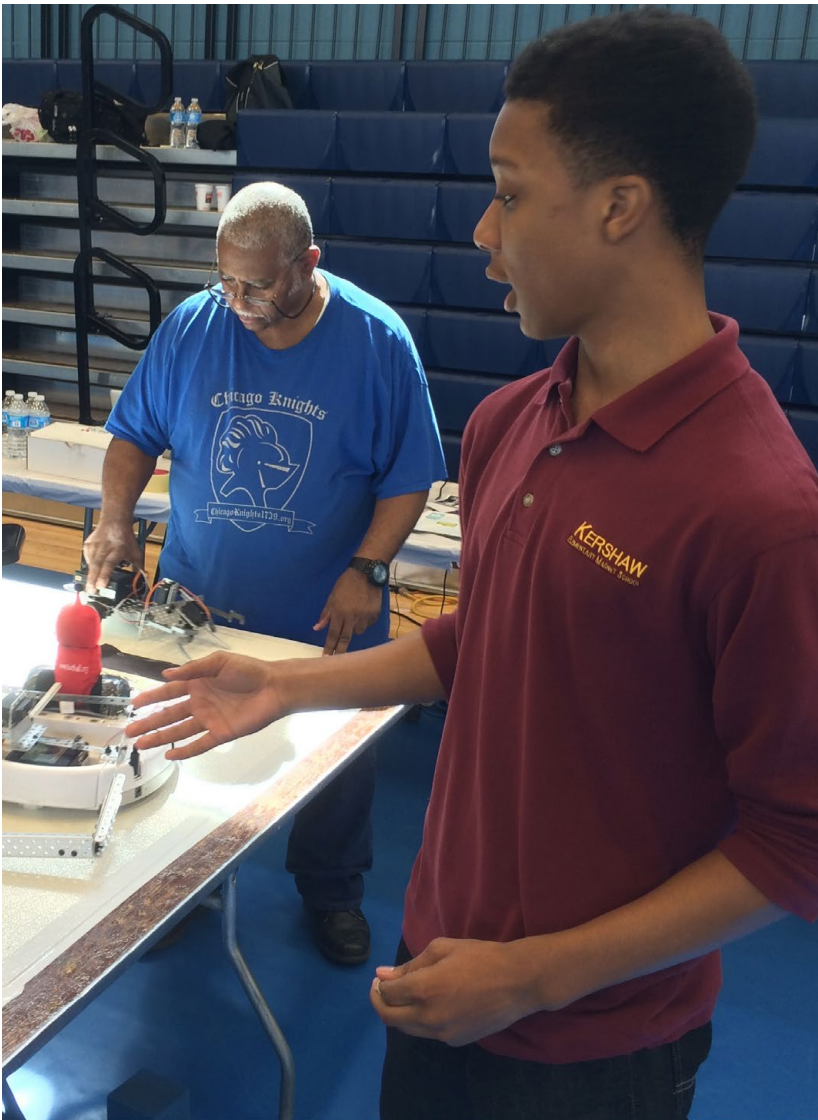
There are many persistent stereotypes about who does or should engage with DMTT, especially more advanced and specialized types of DMTT. These enduring stereotypes can be particularly difficult to challenge when the perceptions of the adults closest to youth align with such views. For example, in the YWCA’s TechGYRLS program, which focuses on developing girls’ DMTT skills in the hope that program participants pursue STEAM careers, the program leader has needed to address gender stereotypes

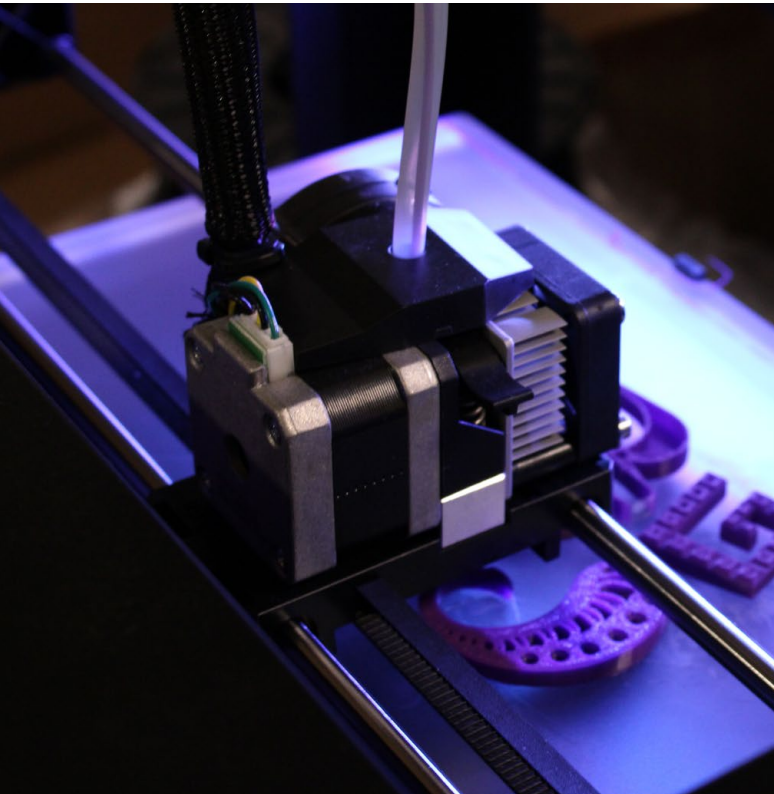
to learn and take away from the program. A program leader at the Chicago Architecture Foundation’s DiscoverDesign.org advised leaders to consider why and how DMTT can support their program and overall organizational goals, saying, “What [are] the affordances that this digital tool is giving you for your program? Does it align with your program goals? Does it align with who you are as an organization?”

head on. In conversations with parents and guardians, the leader explains, “so many of them tell me, ‘Well, girls aren’t really into technology like that. Where’s your program for boys?’” Challenges are also present at the school level, because “society in general is totally biased against girls in technology, and the schools are like, ‘We’ve got these cheerleading programs. Come on Saturday for cheerleading.’ And I’m like, ‘No, we got TechGYRLS on Saturday.’”

Organizational support is critical for programs with DMTT that operate within larger contexts

Program leaders spoke enthusiastically about the importance of internal organizational support for their programs. At the most fundamental level, the programs needed, and had, organizational commitment. “We wouldn’t have been able to even do this program if we didn’t have [that] support,” leaders at the Anti-Cruelty Society’s After School Advocates shared. Mikva Challenge City Wide Youth Advisory Councils leaders described being told by decision-makers, “you don’t have any boundaries, be innovative...Just dream big.” Support within an organization may also be found in other places. Volunteers, for example, “help fill in the gaps” at the Adler Planetarium’s Team Stratonauts program. At another organization, the program benefits from other staff who “bring all this educational leadership [that has helped] not only in our curriculum construction, but [also] how prepared our instructors are.”





### Take-Aways

- Take time to learn DMTT to successfully support youth learning.
- Be as passionate as possible about DMTT.
- Be clear about why you are using DMTT and how it will help meet program goals.

Informal learning opportunities and peer communities enhance programs and nourish program leaders

Program leaders spoke about the ways that informal learning and community groups provided them with important growth and networking opportunities that supported their work. For example, an Anti-Cruelty Society After School Advocates leader explained that partnerships with “communities and schools that offer pretty much year-round workshops for informal educators” allow them to continue to learn and “to create impactful programming for youth.”

A Chicago Architecture Foundation DiscoverDesign.org program leader spoke about how the “learning communities that we’re a part of... [and] having access to all of that collaborative kind of thought power” is an asset that helps him figure out the program direction and focus. Other leaders spoke about how seeing what other community programs are doing helps their programs improve. As one explained, “there are always organizations that I’m learning [from].”

*“[The] learning communities that we’re a part of...having access to all of that collaborative kind of thought power...it’s been really great to be part of the community in Chicago... that really is thinking critically and thinking collaboratively when it comes to the kinds of work that we’re all involved in.”*  
—DiscoverDesign.org, Chicago Architecture Foundation



Local communities are important advocates and supports for programs

Some programs described the benefits of early support from others in Chicago. While some referred to funding, particularly from the Hive Chicago Fund for Connected Learning at The Chicago Community Trust and the Hive Chicago Learning Network at the Mozilla Foundation (now at the Chicago Learning Exchange), they also recognized the benefits that came from partnerships with local schools or organizations and having others advocate for the importance of their programs. In some cases, program leaders found that community members were excited about the programs and really “wanted to give back to young people” through sharing expertise and skills.

One Anti-Cruelty Society After School Advocates leader spoke about the benefit of awareness of the program within the community, and how it helps keep a steady flow of interested participants and other external supports. This support, in turn, enables them to keep providing opportunities for youth. Other leaders described the value of sharing program products with the community in order to raise visibility of the work being done. The program leader of Inferno Mobile Recording Studio suggested that leaders consider “what you want to do with the output [from the program],” and how to share the work with others. “If you don’t take the work and process it and post it somewhere, then nobody knows about it.”



Awareness and support from families can be important as well

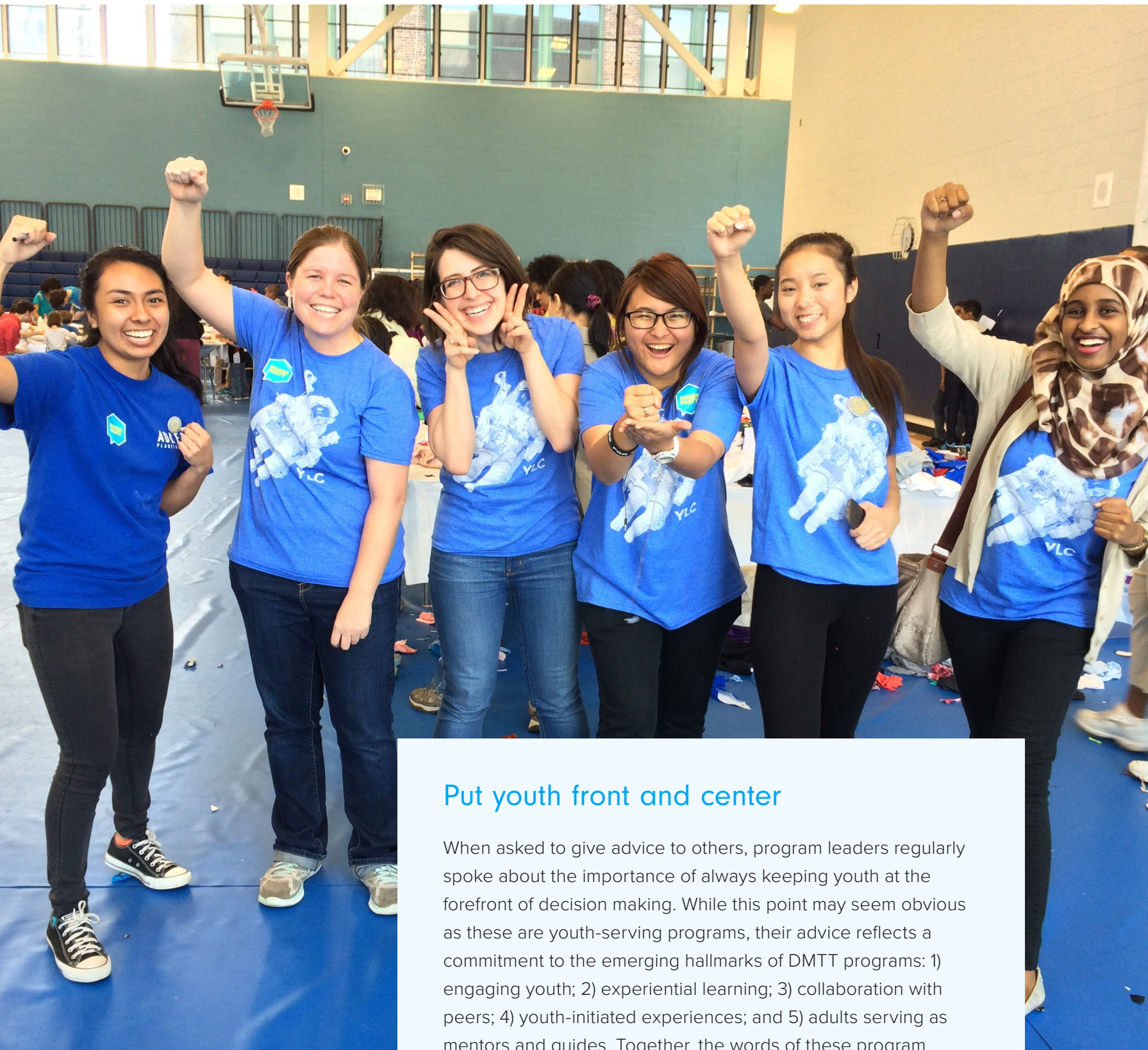
The YWCA’s TechGYRLS leader also advised other program leaders to “as much as you can, communicate with parents.” Given that they have “so many other things that they have to deal with and worry about,” they may not be aware of what youth are doing in these programs, but if kept engaged and informed, parents and guardians can also act as program advocates, and can reinforce and validate what youth learn in the programs at home.



LADIES OF VIRTUE

Ladies of Virtue (LOV) is a mentoring and leadership organization that aims to empower girls to be confident leaders who are prepared for college, careers, and can be leaders in their communities. LOV is seven years old and serves 150 girls. LOV’s Project Lab program includes college and career preparation as well as a team project focused on a topic—ranging from black history to homelessness to teen pregnancy—that is interesting to the girls. With mentorship and support from the Project Management Institute, they develop a marketing awareness campaign, create videos, and share their ideas and messages over social media. LOV’s founder explains, “I wanted to have a true hands-on component of not just showing them what leadership is or telling them what leadership is, but actually having them practice it and... do it.”





## Put youth front and center

When asked to give advice to others, program leaders regularly spoke about the importance of always keeping youth at the forefront of decision making. While this point may seem obvious as these are youth-serving programs, their advice reflects a commitment to the emerging hallmarks of DMTT programs: 1) engaging youth; 2) experiential learning; 3) collaboration with peers; 4) youth-initiated experiences; and 5) adults serving as mentors and guides. Together, the words of these program leaders offer a primer for creating DMTT programs that will enable youth to engage on their own terms, express themselves, and learn skills and lessons that they can use for years to come.

- 1. Design the program to embrace the student voice.** Make the program “student led and student driven,” where the youth are doing the work “with adults supporting their vision.” (Project Lab, Ladies of Virtue)
- 2. Offer multiple entry points.** Make sure the program is structured so that youth less experienced with DMTT can “start small,” whereas those more familiar can “take it to that next level pretty quickly.” Plan for appropriate scaffolding so that “everyone can be engaged.” (MAPSCorps, MAPSCorps)
- 3. Give youth choices.** Present youth with different options for engaging in the program, as “one set path isn’t always the right option for every single student involved.” Consider ways to offer “freedom of choice, but not too much that it is paralyzing...find structured entry points that can lead them to choice” so they are ultimately “choosing their own path.” (Team Stratonauts, Adler Planetarium)
- 4. Communicate expectations.** “Provide an overall vision for what’s expected [from youth]” so that it is clear to all involved what youth will be doing with DMTT, and how that supports the overall program goals. (After School Advocates, Anti-Cruelty Society)
- 5. Don’t make assumptions about youth experiences with DMTT.** You “might assume that someone of a certain age is really good at a certain tool... Or you might assume that someone of a certain age doesn’t understand a certain tool.” Youth have not all had the same experiences with DMTT so it is important to not generalize about prior DMTT experience or understanding “based on just age.” (MAPSCorps, MAPSCorps)
- 6. Be ready for and welcome creativity.** “A lot of times, young people who don’t have access a lot to these tools are more creative than people who have grown up around them... that imagination and wonder grows a lot when you don’t have those things always at your disposal, so once you do get a hold of something like an iPad with recording capabilities...then you’ll do a lot more strange and interesting things with it.” (Inferno Mobile Recording Studio, Chicago Park District)
- 7. Encourage youth experimentation with DMTT.** Create a program that provides youth with the encouragement and support to try new things. “Make sure they try it. Like really try it. They don’t have to like it or love it or do it forever, but they have to at least give it a fair shot so that they know that they’ve done it.” (TechGYRLS, YWCA Metropolitan Chicago)
- 8. Invest in people who can connect with youth.** Program facilitators must be skilled at making meaningful connections with youth. “Investing in people has been the most valuable tool, because when you invest in your people, they connect with your young people, and you have a more successful program.” (The Journey to My Better Self Media Empowerment Program, The LUV Institute)
- 9. Be consistent: Show up and support youth.** “It’s not just as simple as putting them in a room with a bunch of computers...There is nothing worse, especially to a young person who might not be as confident, to go to somebody, put their trust and hope in them, form a relationship with them, and then two weeks later, never see them again.” Find facilitators who will make a commitment to the youth; consistent presence and support is critical. (TechGYRLS, YWCA Metropolitan Chicago)





## SITE STORY

# Chasing23

## Chasing23 Youth Empowerment Group - Restoring Hope and Giving Direction Program

### *Mastering the Art of Mentoring*

*"I think everyone has to search their own soul. If we wait on our president, if we wait on our elected officials, if we wait on our business person, if we wait on the senior citizen or the young person in our community to be better for us, we do ourselves a disservice by not being better for our ourselves."*

—Darius Ballinger, Program Leader

Founder and CEO Darius Ballinger describes his organization, Chasing23, as "...a brotherhood, it's a movement." The program aims to improve the quality of life for young men residing in Chicago's South Side neighborhoods, and to involve them in a community that strives to leave the world a better place than they found it. After overcoming personal tragedy and the loss of his own mentor, Darius created Chasing23 in the spirit of Chicago Bulls basketball legend Michael Jordan—known for his iconic #23 jersey—with the goal of "chasing greatness."

Although many of the young men involved in the program idolize current hard-court superstars, LeBron James, Steph Curry, James Harden, and Russell Westbrook, participating in this program helps them "chase Jordan," and emulate his grit, perseverance, and determination in their own lives. Through Chasing23's programming, young men of color have the opportunity to take ownership in an organization whose mission is to provide support as they pursue, achieve, and surpass their goals.

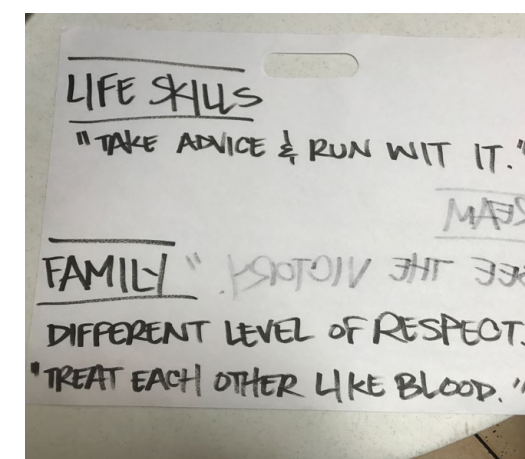
Youth are attracted to participate in Chasing23 because of its charismatic leader, who is often quick to shift the focus from himself to the group—always "we" not "he." These young men describe Darius as a role model, an older brother, a leader, someone to look up to, and an inspiration. They explain that they enjoy being in the program because they are able to build a bond, like a family, with other young men in their schools and

community, and that their options for engaging in other after-school programs, aside from sports like basketball and football, are limited. Chasing23 provides a space where they learn that it is okay to be themselves, that you have to respect others, and that "your current situation is not your final destination." The impact can be profound. As one young man said, "[before] I was failing all of my classes. Basically, I made a whole turn around after hearing what he [Darius] had to say."

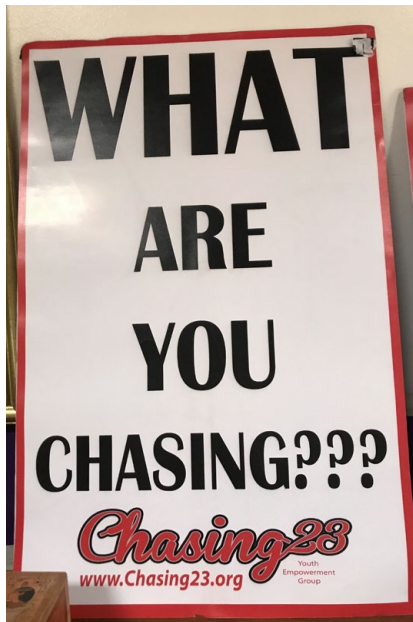
To achieve its goals, Chasing23 focuses on forging and developing relationships between youth and adult mentors. Group mentoring involves young men coming together and engaging with older "folks from all walks of life" who are interested in "living through their truths" to share life lessons and to give back to young people. At every Restoring Hope and Giving Direction Monday Meetup, at least two to three volunteer mentors, oftentimes individuals with a personal or professional connection

to Darius, attend the program and engage with the young men to create fellowship. Chasing23 is not only about listening to and learning from the mentors, though; it takes the relationship a step further by incorporating youth voice so that all perspectives, regardless of age, can be heard. Offering these opportunities to the young men gives them a voice, autonomy, and a sense of equity. It allows the program to truly be "youth-led," helping to build their confidence, creativity, teamwork, and learning, while at the same time promoting Chasing23 as a safe-space where they can express themselves.

**Chasing23**





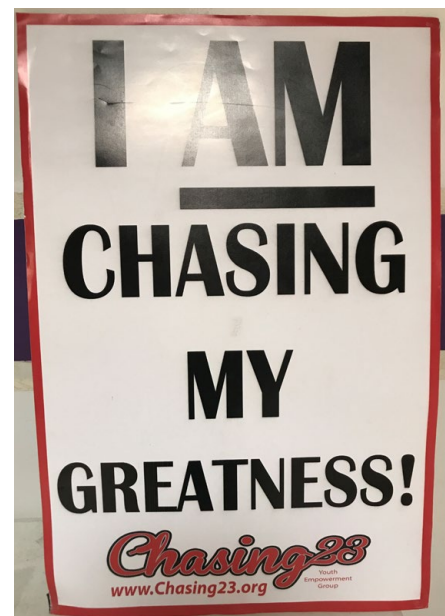


*“This right here, what we have here is brotherhood. I think of Darius as an older brother. He’s like a brother to me. When I come here though, Darius to me is someone you can look up to. His past – ain’t no one you want to be. The fact that he ain’t give up and he’s still trying to become something. He’s someone who will stand up for you. That’s inspiration to me there. He just – he’s an inspiration. He’s like a brother at the same time, because he’ll let us know no matter what the situation is, he’ll be there for us. He’ll still go out of the way for us, no matter what the situation is.”*  
—Chris (pseudonym), age 15

During one “Monday Meetup,” the younger and older men worked together to brainstorm the “Group Vision.” Youth and mentors were asked to identify a series of “buzz words” that come to mind when describing Chasing23, and then to define how these words are enacted, or should be enacted, in the program. After working together in small groups, the youth and mentors came together to share how they feel the organization can strike a balance between being a “strict ‘do this, do that’” environment, similar to what youth voiced experiencing throughout the school day, and a fun, social, yet productive after-school space empowering young men to navigate different life obstacles and holding them accountable for their actions. This discussion evolved into an open forum where youth voiced concerns about their futures—both in academics and employment. Mentors, including Darius, emphasized the need to dedicate time to academics, and that the young men should consider a variety of career pathways in addition to being professional athletes or in the entertainment industry. These conversations were open, supportive, and grounded in the belief that the young men participating in the program have the potential to positively impact others in their communities, to, as Darius put it, “chase greatness.” It is not a surprise, then, that one young man, age 16, emphasized, “we don’t want to be out in the streets like all these other boys. We’re trying to be like Darius. We got something we’re looking forward

to.” when describing why he attends Chasing23 meetings every week.

The program uses digital media tools and technology (DMTT) primarily to reinforce to youth that they can be “creators,” and to promote teamwork and collaboration. Darius noted that the program makes use of whatever DMTT they have at their disposal, much of which is made available through the digital media lab at Wendell Phillips High School. Although the program is still in its early years, youth used DMTT for a variety of projects. For example, youth in the program used DMTT to create the organization’s logo and t-shirts for all members, and during the organization’s first year, the young men were also in-charge of video production and editing footage captured at a three-on-three basketball tournament that Chasing23 sponsored.



Video production and photography editing software were used to create a highlight video of the top moments from the tournament, and social media, particularly Facebook and Instagram, were used in a social media campaign to broadcast not only the highlight reel that was created, but also information about the tournament, with the community. Exploring additional opportunities to provide youth with hands-on learning experiences with DMTT is also an important next step in Chasing23’s future goals. In the up-coming year, through the “South Side Print Shop” Apprenticeship Program, youth will fine-tune their screen-printing and design skills. Darius also expects that social media will continue to be leveraged to

recruit young men and mentors to champion the mission of Chasing23.

Darius talked about Chasing23’s future with his characteristic enthusiasm and excitement. He plans to increase the level of engagement with the young men as well as with stakeholders in the community and local universities in Chicago. The Restoring Hope and Giving Direction Monday Meetup program, which began as an in-school mentoring program at Wendell Phillips High School in Chicago’s Bronzeville neighborhood, will continue to expand to provide employment and apprenticeship opportunities for young men during the summer and after-school hours, empowering and inspiring them to “chase greatness.”

*“Two of the young men helped out with the cameras. So they filmed the actual event, and they got to learn about filming, and then also, they worked with the mentor that was a part of the program last year to do a soft course of film editing and what that looked like to navigate a film editing software.”*  
—Darius Ballinger, Program Leader



# Looking to the Future



This portrait of youth-serving DMTT programs in Chicago shows a city with rich and diverse DMTT experiences for its youth. Programs are flourishing throughout the city, providing youth with opportunities to learn new skills, explore new topics, engage with others, and express themselves. However, these findings represent only a piece of the larger story of DMTT experiences in OST youth programming in the City of Chicago. The work is not done.

While OST programming with DMTT is reaching youth, and reaching youth who are traditionally underserved or not included in conversations about who “does” technology, many young people are not yet involved. Researchers, practitioners, families, funders, and the City at large must continue to work together to close equity gaps in order to provide all youth with access to high-quality OST programming and DMTT-related experiences. The diverse programs described in this report all share a commitment to serving youth and generating opportunities for them to have the knowledge, expertise, and experiences they need to excel in the 21st century. These programs are weaving DMTT into youth experiences so that young people can truly take advantage of the possibilities DMTT bring to communication, creation, learning, and advocacy. This is a promising foundation for the future of youth OST

programming in Chicago that must continue to grow in order to reach all Chicago youth.

DMTT are now part of daily life, but acknowledging that idea and embracing it are two different things. While not representing all of Chicago programming, this report offers a baseline for understanding the *who*, *where*, *what*, and *how* of the role DMTT is playing in the lives of young people during OST program experiences. Looking ahead, unanswered questions remain: How can DMTT programs better complement what youth learn in schools to help their 24/7 learning experience be more coherent? What parts of DMTT programs are essential for learning and which can be adapted or dropped as contexts and conditions evolve? How can DMTT program leaders best reach youth populations who are not yet engaged? What are the best ways to use particular types of DMTT for different populations? Can DMTT influence the choices youth make about their futures? These questions and others are important to consider in future investigations, especially as DMTT become more infused in the day-to-day practices of youth-serving OST programs. The answers will help organizations, funders, teachers, program leaders, and communities provide opportunities that will help Chicago’s diverse youth thrive in their learning and flourish in their lives.



# Appendix A



## About Outlier Research & Evaluation

This study was conducted by Outlier Research & Evaluation at UChicago STEM Education at the University of Chicago. UChicago STEM Education is a Center devoted to improving K-adult education that resides in the Physical Sciences Division (PSD) of the University. UChicago STEM Education's work is composed of three interconnected strands: Tool Development, School Support Services, and Research and Evaluation. More information on the Center can be found at [stemed.uchicago.edu](https://stemed.uchicago.edu).

Outlier is the research and evaluation arm of UChicago STEM Education. Outlier is a cross-disciplinary group committed to applied research and evaluation that directly informs practitioners, education leaders, and policymakers. In addition to digital media tools and technologies, Outlier's research portfolio includes projects focused on implementation, spread and sustainability of educational innovations, computer science education, and STEM schools. Outlier's evaluation work spans a range of K to adult programs, including K-12 education programs in school districts, higher education settings, museum-based and other out-of-school learning programs, and adult learning and leadership programs. All of Outlier's work reflects our belief that efforts to improve education should be grounded in principled knowledge and relevant to the contexts and conditions shaping educational settings today. For more information on Outlier and current and past work, visit [outlier.uchicago.edu](https://outlier.uchicago.edu).







## Chicago Learning Exchange



### About Chicago Learning Exchange

Chicago Learning Exchange (CLX) is a Chicago-based nonprofit organization that works with a growing community of more than 200 organizations to remake learning so that it is enhanced by technology, driven by learners' interests, and connected to future opportunities. CLX was formed in 2018 when two initiatives—the Hive Chicago Learning Network at The Mozilla Foundation and Hive Chicago Fund for Connected Learning at The Chicago Community Trust—combined. Since 2009, these initiatives have partnered to catalyze collaborative and innovative approaches to learner-centered practices, platforms, credentials, and spaces across the city.

Technology is integral to the CLX DNA. CLX believes in the power of technology to open up opportunity, democratize voice, and foster creation, while recognizing that it alone is not enough to help young people flourish in the world. Educators, mentors, peers, and family are critical in supporting young people alongside technology as they pursue long-term success and lifelong learning.

CLX collaborates across sectors to ensure that youth who are most in need have access to engaging opportunities that utilize technology as a tool for learning. CLX networks educators, parents, technologists, employers, and researchers; ignites innovation through grants; champions ways to remake learning; and equips educators, youth, and families with the skills, knowledge, and insight necessary to succeed in the digital age. Whether in school, out of school, or online, CLX envisions Chicago as a connected community where all learning counts.



# Appendix B



## Study Methodology

The study design was driven by three main principles:

### 1. Clear Language

Language used throughout the study had to be **clear and consistent**;

### 2. Replicable

the study had to be **replicable** by others wishing to take a “snapshot” of DMTT landscapes (in Chicago or elsewhere) in the future; and

### 3. Representative

it had to be **representative** of the wide range of out-of-school time (OST) programs offered to youth the City of Chicago.

## Clear Language:

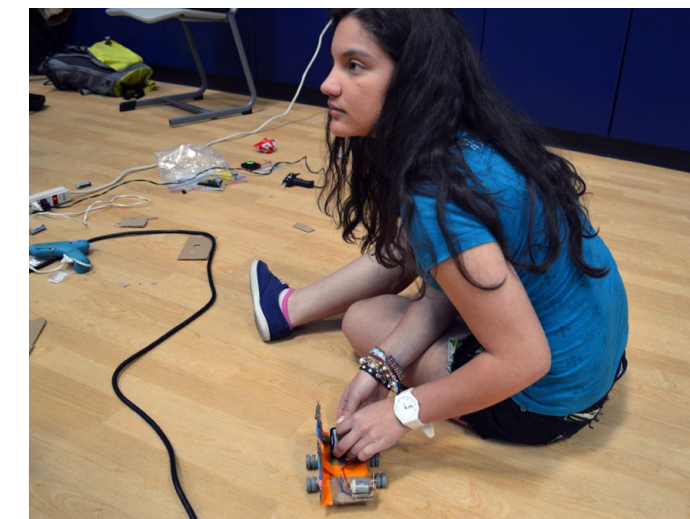
It was essential that the study accounted for the dynamic, evolving field of digital media. Therefore, the design had to avoid ill-defined terms and terms that had multiple meanings to ensure that the findings would confidently and accurately reflect the broad digital media landscape in Chicago’s OST programs. One challenge came from the fact that some terms used to refer to DMTT (e.g., digital media and learning, connected learning) conflate descriptions of digital media tools with particular pedagogical approaches. In order to avoid misinterpretation and to ensure the accuracy of the information collected, the questionnaire separated the digital media themselves (i.e., the hardware, software, and other tools) from the pedagogical expectations (e.g. program goals and learning strategies) for DMTT experiences.

## Replicable:

The study is intended to be a foundational framework for future studies. The questionnaire had to be brief in order to increase completion rates, while also collecting key information that would be of interest now and in the future. Additionally, questionnaire items needed to be designed to allow for shifts in digital media use, such as the emergence of new tools or prominent instructional approaches.

## Representative:

Outlier took careful steps to ensure that the data collected, and the findings in the report, represent the range of programs reported on in the data set. These steps were taken so that youth development practitioners reading the report would be able to see organizations and programs like their own represented in the results presented. The program landscape is rich and diverse, and although this report draws from relatively small portion of programs in Chicago, every effort was made to communicate that diversity.





The data sources used to create this report included:

- 1. **A questionnaire** for organizations that serve Chicago;
- 2. **Interviews** with program leaders facilitators at 12 organizations; and
- 3. **Site visits** to 5 programs that included additional interviews, a youth focus group, and observations of the program in action.

Each is described in more detail below.

Questionnaire: Organizations Providing Youth Programming for Chicago

Outlier, with input from the staff at the Hive Chicago Fund for Connected Learning at The Chicago Community Trust (now at the Chicago Learning Exchange), developed an online questionnaire to administer to organizations that provide OST programming for Chicago youth between the ages of 13 and 24 years. The aim of the questionnaire was to ascertain whether these organizations offered youth programs that use DMTT, and if so, how DMTT was involved in program experiences. It included items about the organization and their general youth program offerings before moving to program-specific questions about their use of DMTT and the youth participants they serve. Respondents who indicated that their organization had at least one youth program with DMTT were then asked to identify one in-person, OST program that they felt best incorporated DMTT into youth learning experiences and was offered during the summer 2017 or 2017–2018 academic year. Organizations that did not offer youth programming

that involved DMTT use stopped providing answers to the questionnaire items at this point.

Next, respondents provided details about their selected program, including its duration and structure (e.g., when the program occurs, duration of each session, fee-structure), the youth participants (e.g., quantity, age, racial/ethnic/gender identities), use of DMTT in the program, program goals, learning strategies, and evaluation practices. Before completing the questionnaire, respondents who reported on a program with DMTT were asked about their willingness to participate in an interview about that program, as well as a follow-up site visit. All organizations (with and without programs that use DMTT) completing the questionnaire were eligible to receive one of six \$50 store cards for their program, to thank them for participation.

THE SAMPLE:

With input from the same Hive Fund staff, Outlier assembled a list of organizations with a connection to Chicago and potentially serving youth. This list included contacts from the Chicago Community Trust, as well as organizations connected to After School Matters (an organization that provides after-school and summer program opportunities for teens), the Digital Youth Network, the city’s Department of Family Support Services, the Chicago Housing Authority, and Get IN Chicago. This resulted in a list of nearly 20,000 organizations.

In order to identify a subset of the most appropriate organizations to receive the questionnaire, Outlier created a set of guidelines to determine which organizations should be contacted. These rules allowed Outlier to exclude organizations that, for example, were located outside of Illinois (and did not, on the

face of it, serve youth in Chicago), universities, public and private schools, hospitals and medical centers, and theater and dance programs (that did not otherwise demonstrate that they had a youth-serving program that fit the criteria). If, in the information provided to Outlier, there was some indication that the organization did in fact provide some type of youth programming, that organization was included. For any organization with only minimal information included in the list about their core purpose or population served, Outlier searched their website and employed a “2-click” rule: if sufficient information was not identified through a search of their website within 2 clicks, the organization was excluded from the sample. This process resulted in a list of 787 organizations that were invited to participate in the questionnaire.

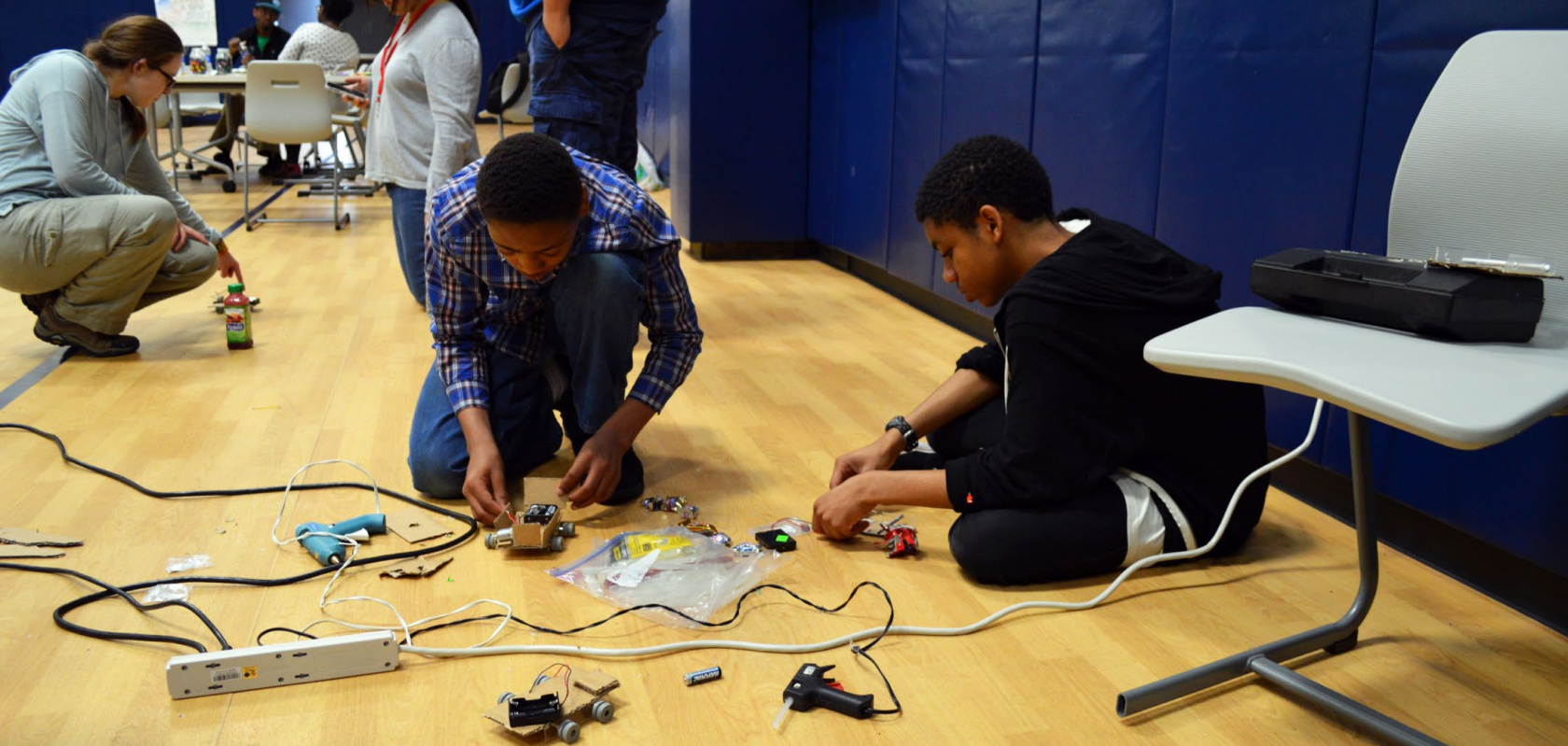
QUESTIONNAIRE ADMINISTRATION:

The questionnaire was administered between November 13, 2018 and January 19, 2018. Outlier sent an initial link to the online questionnaire, as well as follow-up emails in November 2017, mid-December 2017, and early January 2018. Several of the organizations who had provided organization lists contacted their partner organizations directly during this time period to remind them about completing the questionnaire. Of the 787 organizations who were sent the questionnaire link, 246 (31%) completed the questionnaire and provided usable data. There were a few cases of multiple responses from organizations, and

these were handled on a case-by-case basis to eliminate one of the two responses.

Of the 246 organizations, 219 organizations reported offering at least one program for youth in the City of Chicago, and 175 of these organizations reported that at least one of their programs incorporated DMTT. As with any questionnaire administration, some respondents did not answer all questions, which resulted in missing data for some questionnaire items. All results included in this report reflect the data available for each questionnaire item.





## Program Leader/Facilitator Interviews

Outlier conducted interviews with 12 leaders or facilitators of programs that incorporate DMTT (see Appendix Figure C22). These interviews were conducted in February and March 2018, and focused on gathering in-depth information about the programs reported on in their questionnaires. Interviews covered

areas related to the organization and the extent to which programs with DMTT contribute to the organization’s broader goals, as well as questions about the specific program described in the questionnaire, including its goals, learning strategies, and the use of DMTT.

### THE SAMPLE:

Ninety-two organizations indicated on the questionnaire that they would be willing to participate in an interview about their program with DMTT. From this list, 12 organizations were selected through a carefully structured process that aimed to identify a group of programs representative of respondents in the entire questionnaire sample (all of the 175 organizations reporting offering programs with DMTT). That is, consideration was given to: 1) the role of DMTT in the program (i.e., DMTT as the primary focus, or as a support to a program topic); 2) the identified priority program goals; and 3) the digital media learning strategies used in the program. Programs

were categorized into groups that represented the distribution of goals and learning strategies across the entire questionnaire population. Then, within these parameters, Outlier used a random number generator process to select 12 organizations to invite to participate in interviews. Of the original 12 organizations selected, four were eventually replaced due to lack of responsiveness to the interview request or because they declined to participate. In each case, alternate organizations were selected through the same process used to identify the original invitees.

## Site Visits (Interviews, Youth Focus Group, Observation, Student Artifact Collection)

In March–May 2018, Outlier completed site visits with five programs selected from those interviewed. The site visits focused on understanding the context of the programs’ questionnaire and interview data, seeing the programs in action, and having an opportunity to talk with a wider range of program stakeholders, such as youth participants and organizational leaders. These visits were designed to include observation of one program session, two to three interviews with organizational and program leaders/facilitators, and one youth focus group (with four to six youth), and lasted, on average, 3 hours. Site visits served as the basis for this report’s series of “site stories.”

The additional program facilitator/leader interviews addressed the same areas as the initial program leader interviews. Organizational leader interviews covered these same areas, with additional focus

on understanding the importance of programming utilizing DMTT to the organization’s broader goals. Student focus groups investigated youth experiences in the program, use of DMTT in and outside of the program, learning goals, plans for future use of DMTT, and general background questions. Finally, program observations were conducted with an open-ended protocol to capture how students and adults interacted, the types of program activities and use of DMTT, and student engagement in the program overall. During program leader/facilitator interviews and site visits, interviewees were given the opportunity to share examples of student work or artifacts to demonstrate how DMTT was used to support the organization’s primary program topics and goals.

### THE SAMPLE:

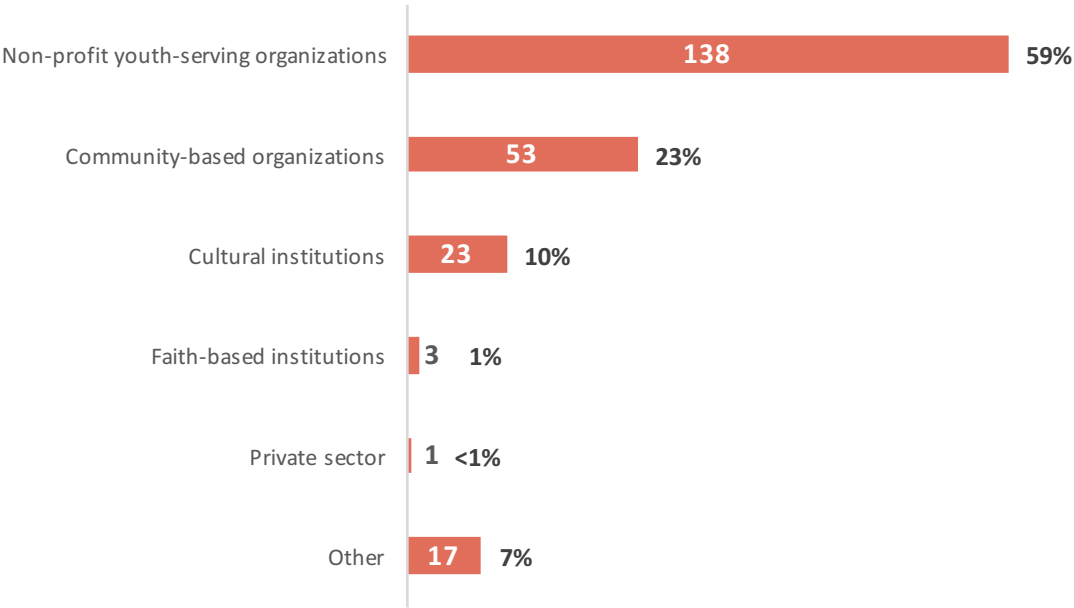
Programs participating in site visits were selected from the sample of 12 organizations where program leaders/facilitators were interviewed. Of those 12, six did not have programs to observe in the spring, so they were excluded from consideration. Five programs were selected from the remaining six, based on program focus, participants, DMTT use, and program responsiveness.



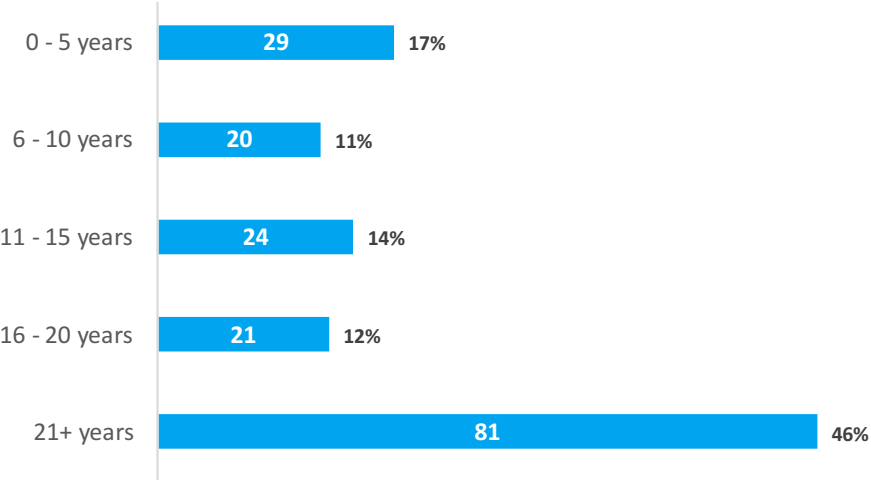


# Appendix C Additional Findings

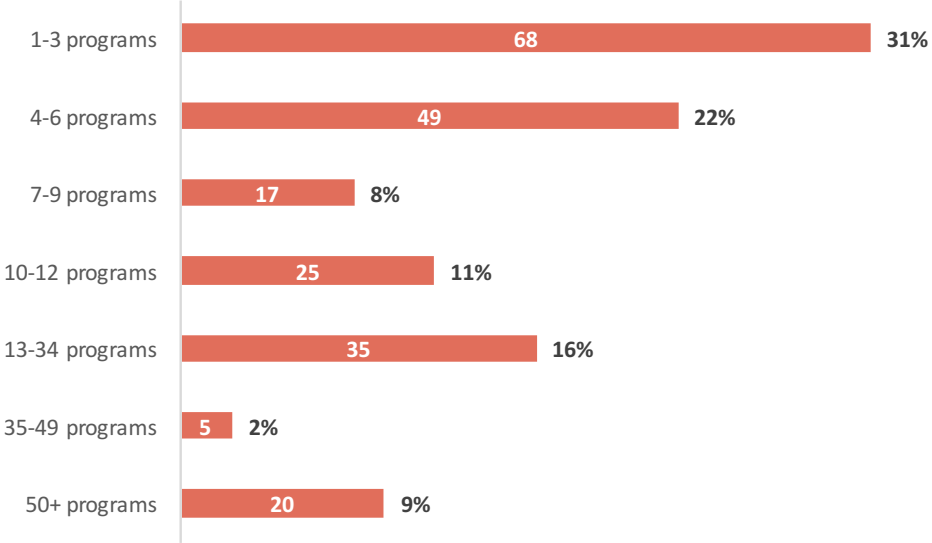
C1. Types of organizations that responded to the questionnaire



C2. Number of years the organizations have been in existence

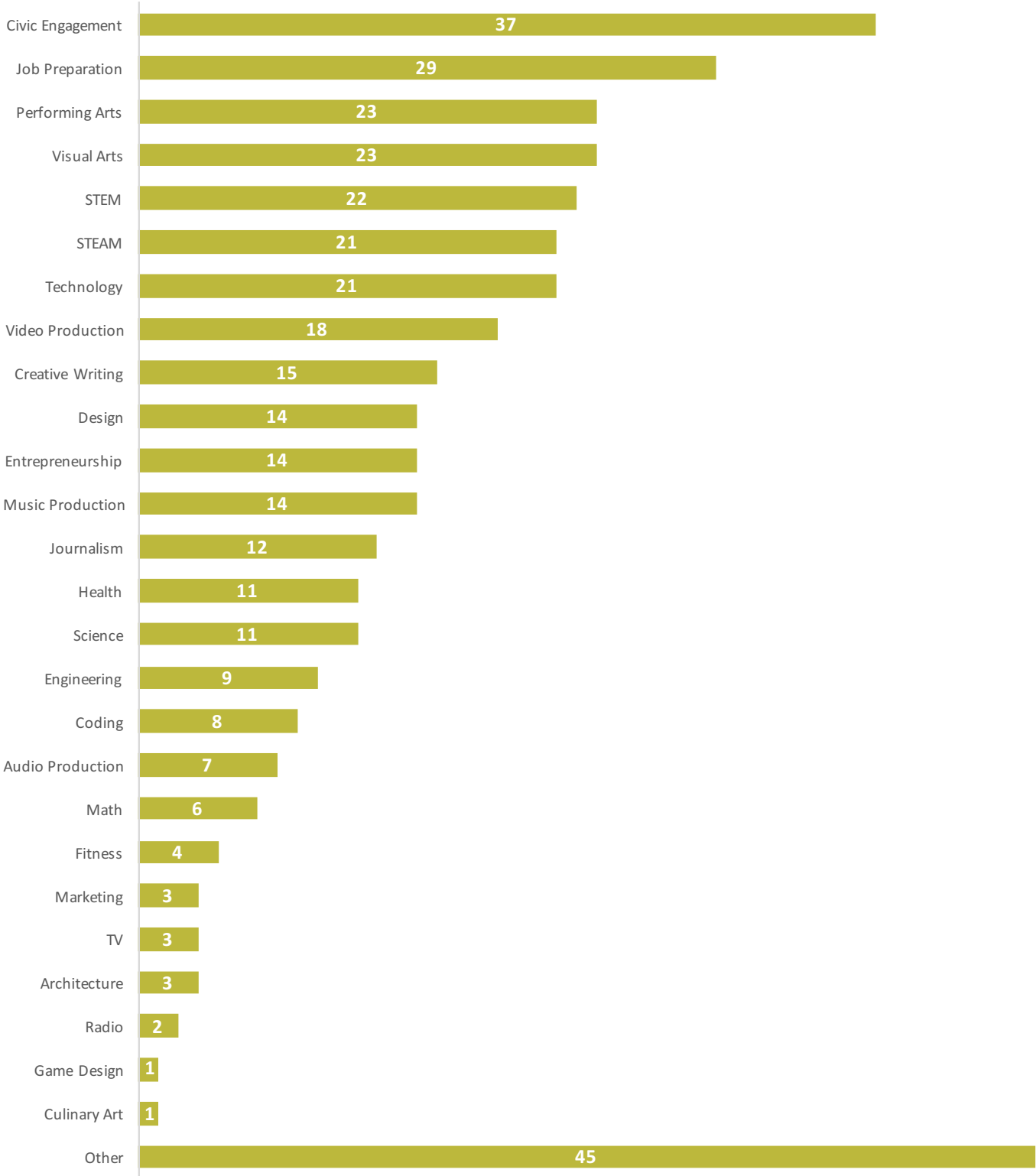


C3. Number of programs offered by the organizations



C4. Number of DMTT programs selecting each topic as program focus

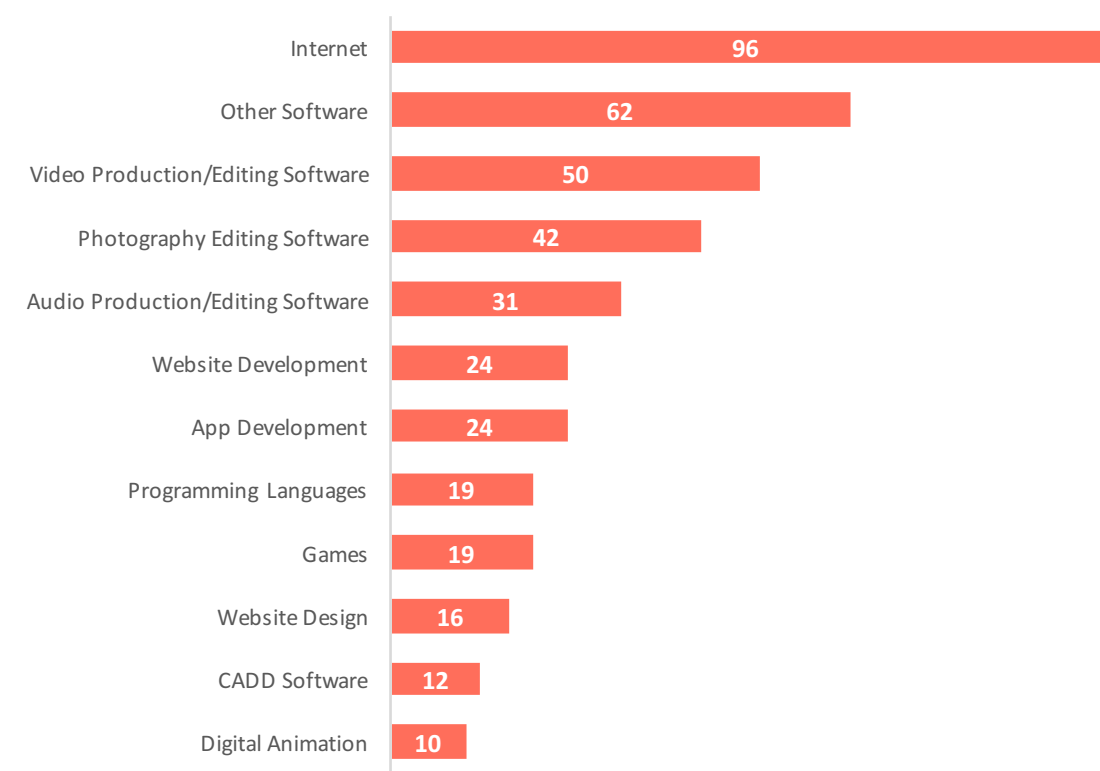
Note. Organizations could select up to three program topics.





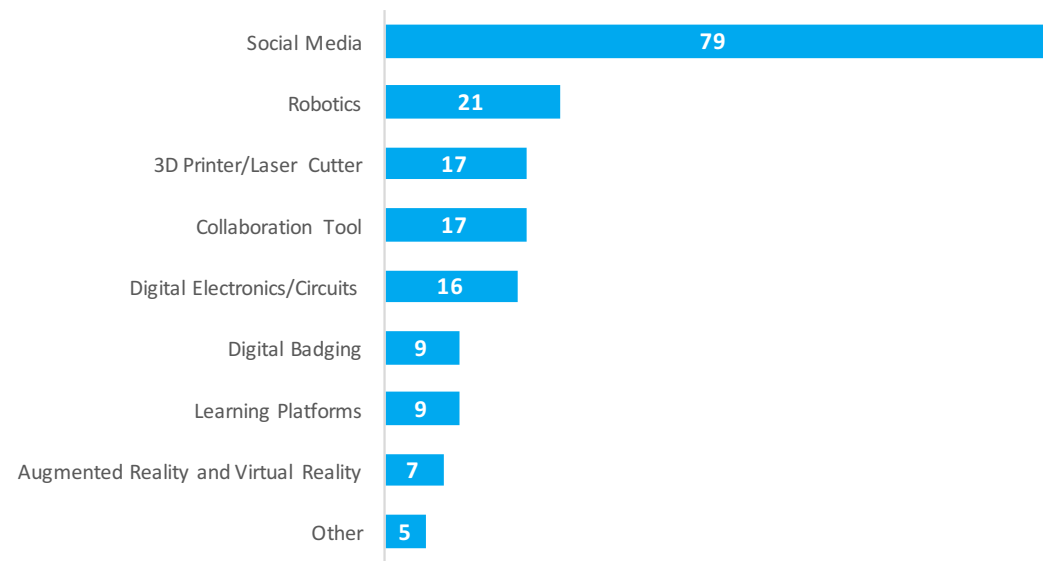
C5. Complete list of DMTT used (software and other)

Note. Organizations could select as many types of software as were applicable.



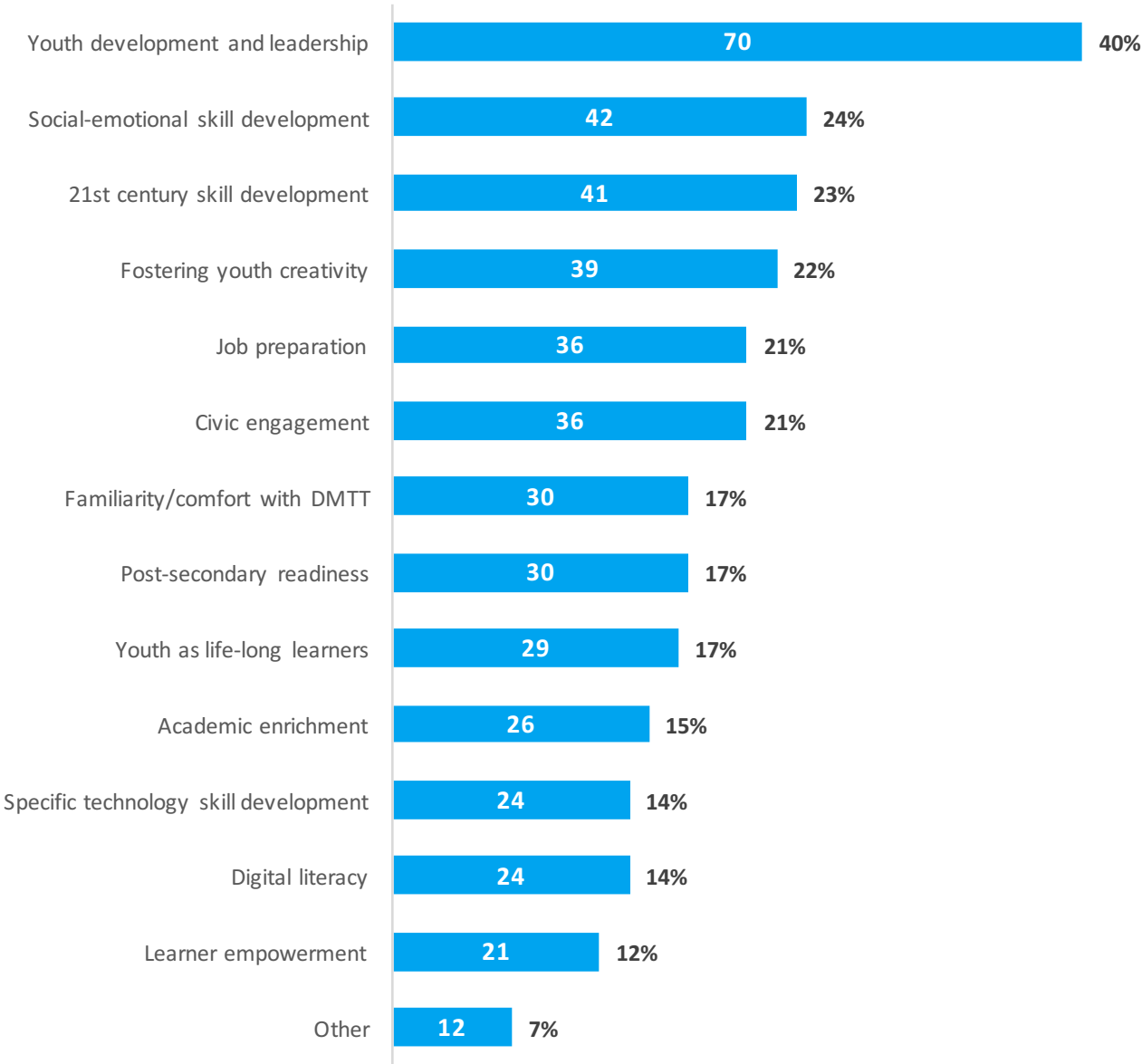
C6. Complete list of “other” DMTT used by programs with DMTT

Note. Organizations could select as many types of “other” DMTT as were applicable.



C7. Complete list of program goals

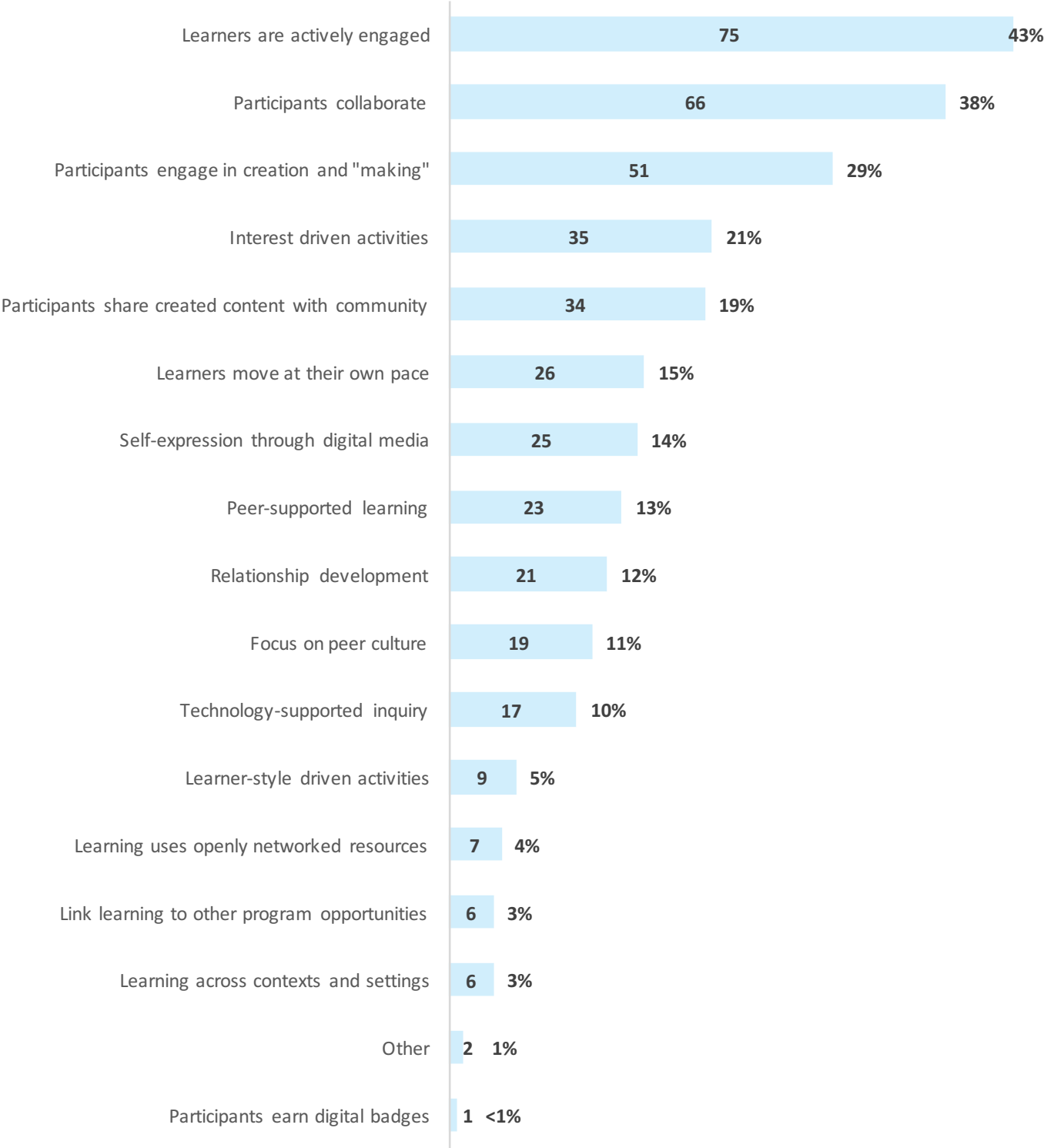
Note. Organizations could select up to three program goals.



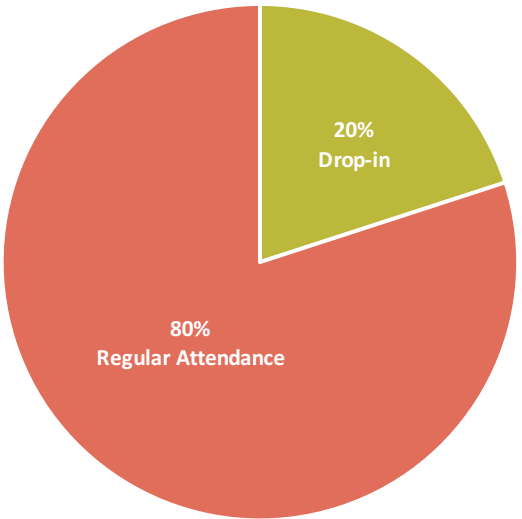


C8. Complete list of learning strategies used by programs with DMTT

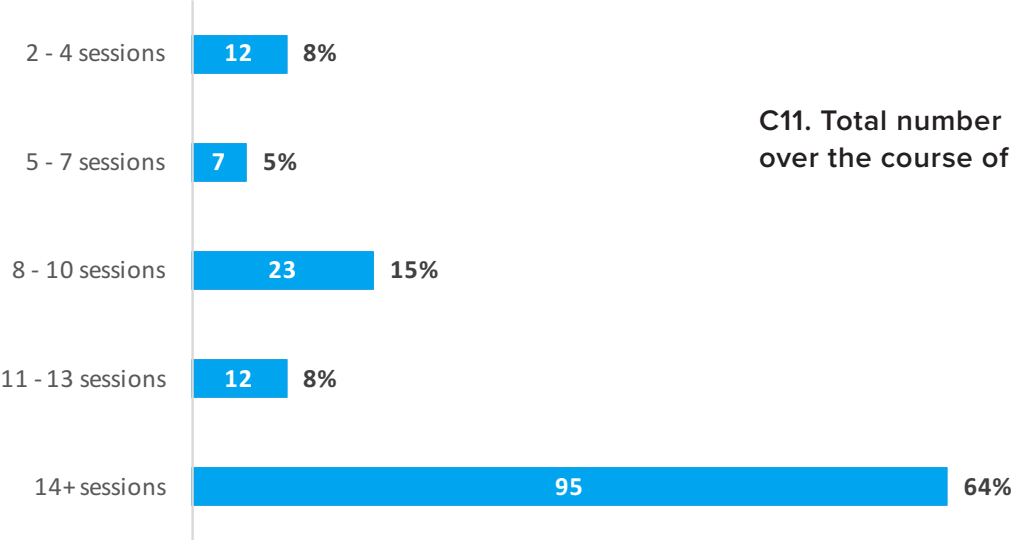
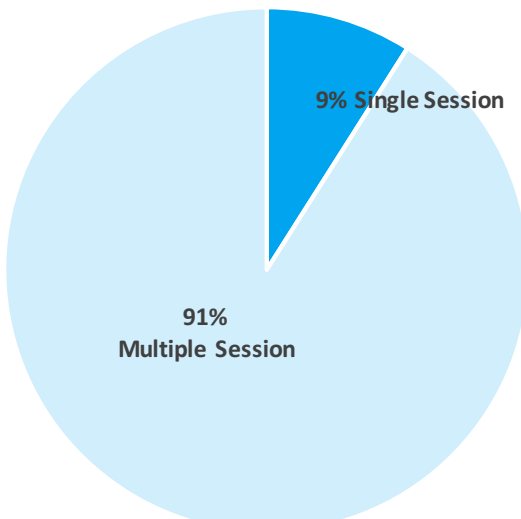
Note. Organizations could select up to three learning strategies.



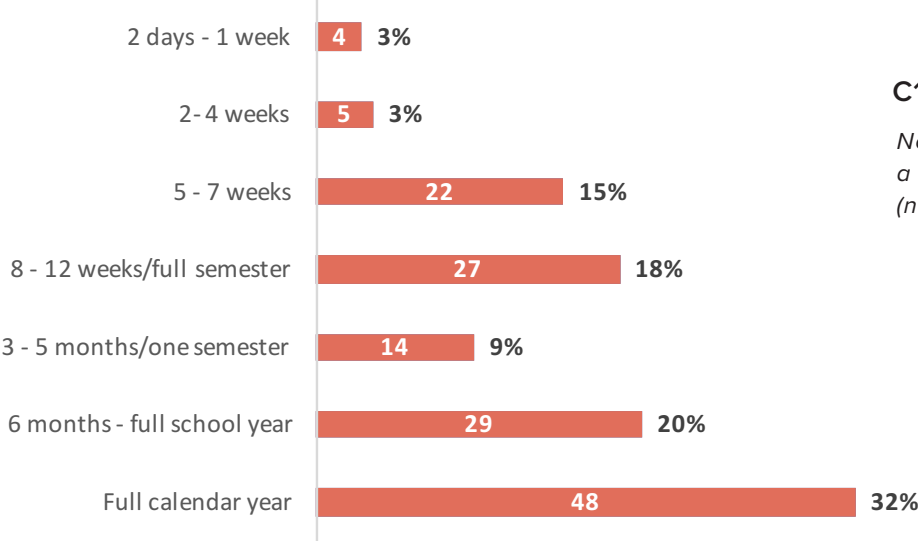
C9. Drop-in vs regular attendance programs



C10. Single session vs multiple session programs



C11. Total number of sessions over the course of programs



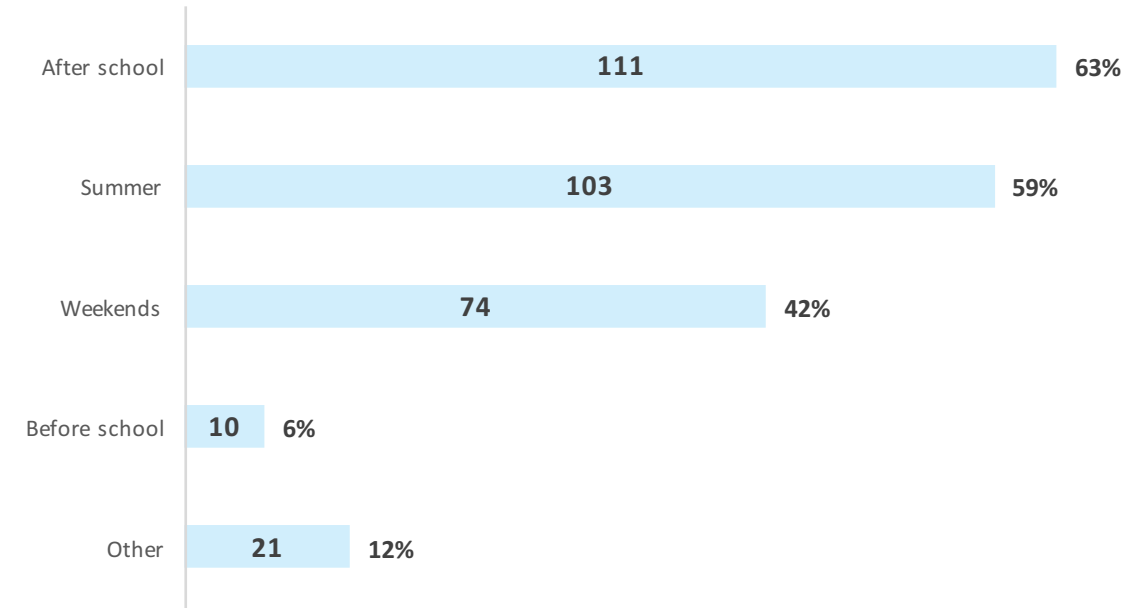
C12. Total duration of programs

Note. Only organizations that indicated a program with multiple sessions (n=149) were shown this question.

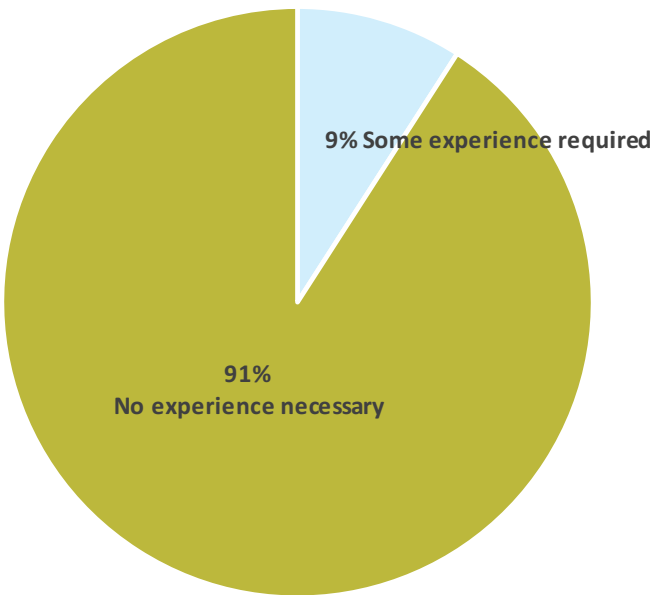


C13. When programs with DMTT take place

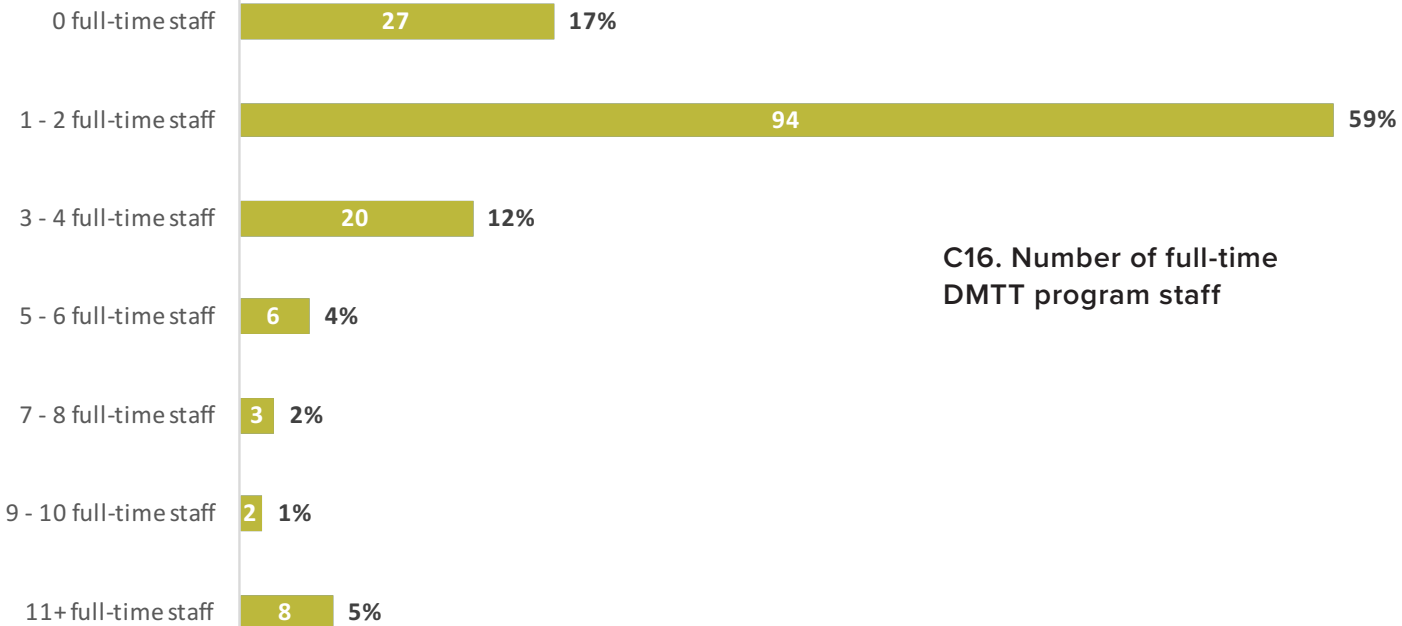
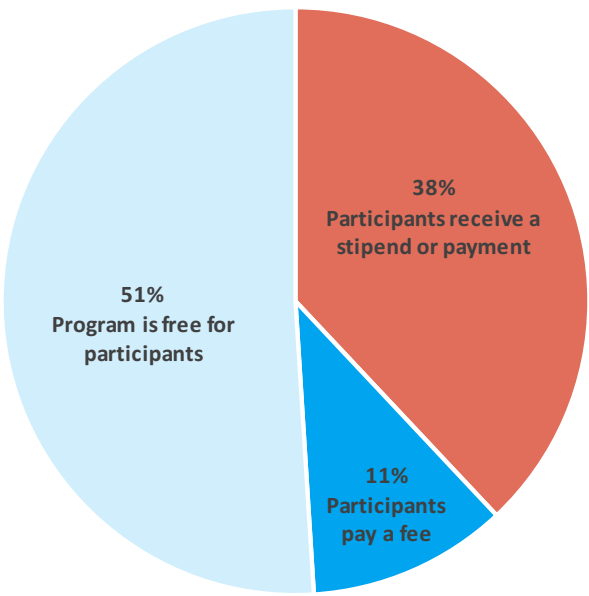
Note. Organizations could select as many program times as applied.



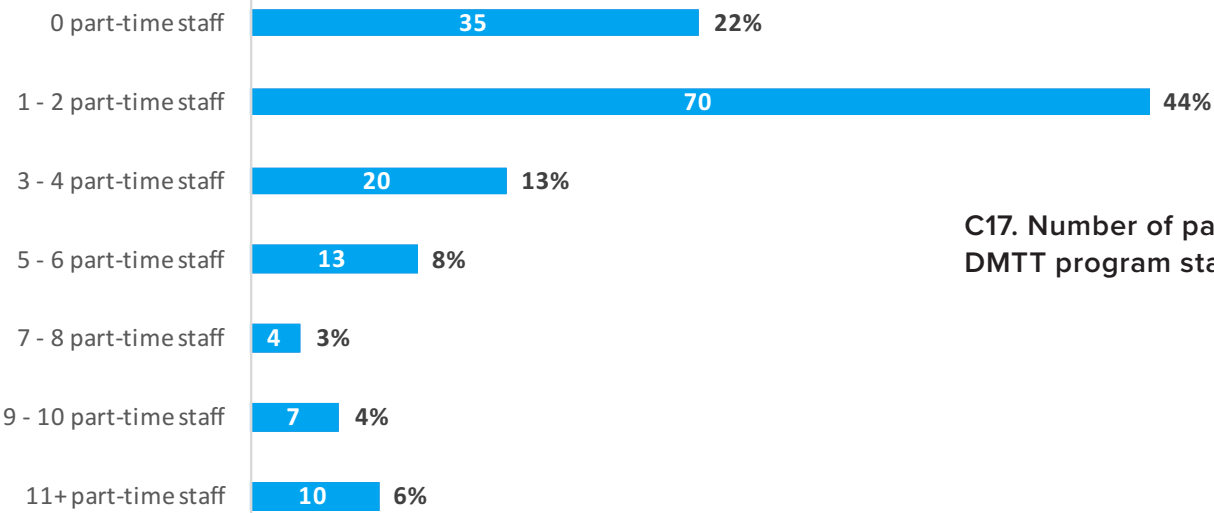
C14. Participant experience necessary for DMTT programs



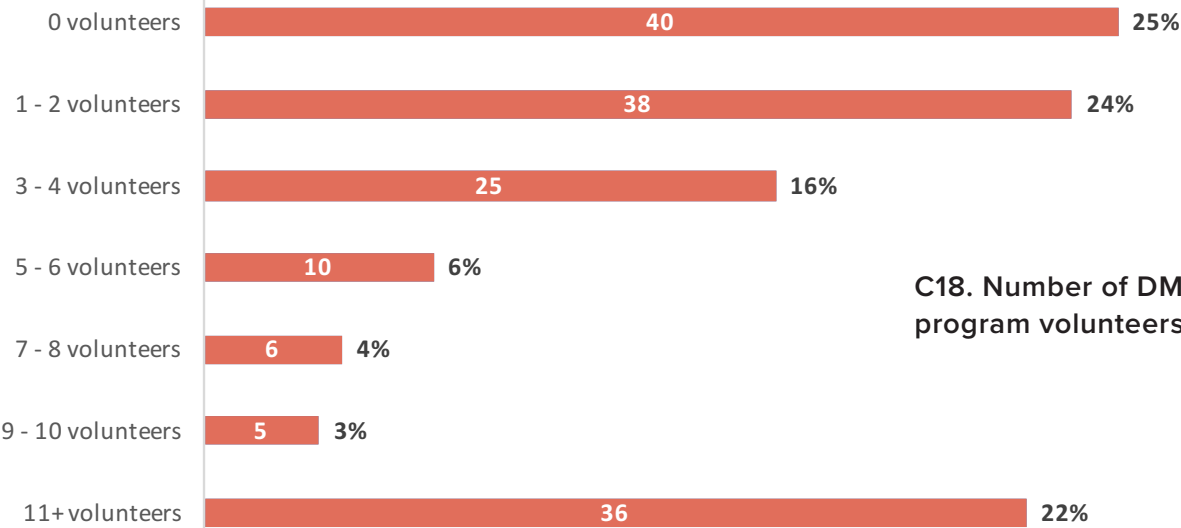
C15. Program fee structure



C16. Number of full-time DMTT program staff



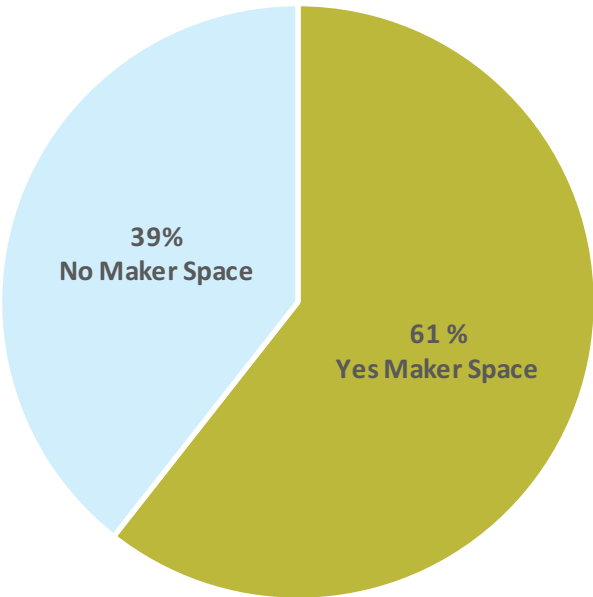
C17. Number of part-time DMTT program staff



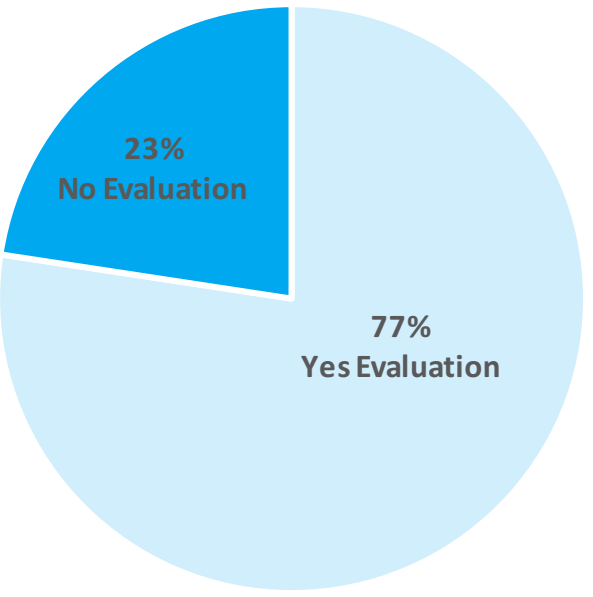
C18. Number of DMTT program volunteers



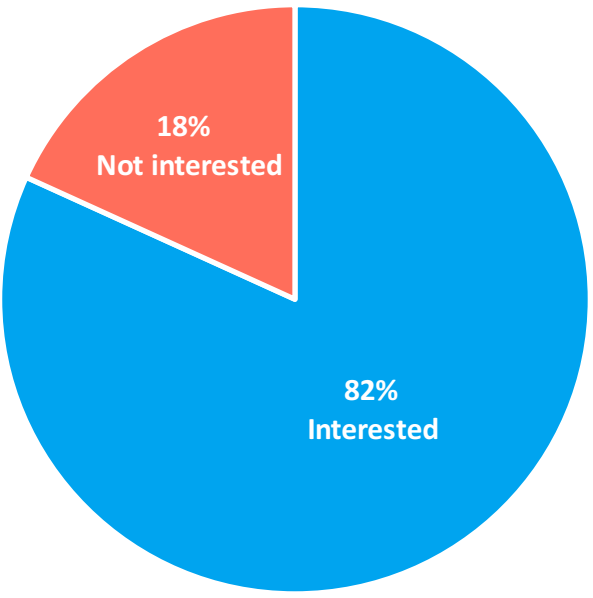
C19. Organizations that report having maker spaces



C20. Organizations that evaluate their program with DMTT



C21. Interest in future DMTT use by organizations that do not currently have programs that use DMTT



C22. Organizations interviewed

Organization Name	Program Name	Organization Location (Chicago region)	Program Focus (from list provided)
Adler Planetarium	Team Stratonauts	Central	Design, engineering, STEM
Chasing23 Youth Empowerment Group	Restoring Hope and Giving Direction	South Side	Journalism, marketing, entrepreneurship
Chicago Architecture Foundation	DiscoverDesign.org	Central	Architecture, design, STEAM
Chicago Arts Partnerships in Education	SCALE: North Grand Video	Central	Visual arts, other - inquiry mindset
Chicago Park District	Inferno Mobile Recording Studio	South Side	Video production, audio production, civic engagement
Ladies of Virtue	Project Lab	South Side	Technology, civic engagement, job preparation or placement
MAPSCorps	MAPSCorps	South Side	STEM
Mikva Challenge	City Wide Youth Advisory Councils (Juvenile Justice Council)	Central	Civic engagement, health, job preparation or placement
The Anti-Cruelty Society	After School Advocates	Central	Science, civic engagement, other – animal welfare
The Love, Unity & Values (LUV) Institute	The Journey to My Better Self Media Empowerment Program	South Side	Journalism, video production, job preparation or placement
University of Chicago	Collegiate Scholars Program (Podcasting Class)	South Side	Civic engagement, STEAM, other – leadership development
YWCA Metropolitan Chicago	TechGYRLS	South Side	STEAM, other - empowerment



# Appendix D

## List of All Participating Organizations

(who agreed to have their names listed)

The following list includes the organizations who participated in the questionnaire and agreed to have their name listed in the report. Organizations are listed in alphabetical order, followed, where applicable, by the name of the program with DMTT on which they reported.

826CHI, Animation Station

About Face Youth Theatre

Adler Planetarium, Team Stratonaut

After School Matters, Chicago Opera Theater Senn High School

After School Matters, Colored Girls are Cover Girls

Alternative Schools Network, Alternabots

Alternatives Inc., Girl World

ARK of St. Sabina, Journalism

Art Therapy Connection, NFP, Art Therapy Connection After-School Art Therapy Program

Artifice NFP, @rtifice

Alpha Kappa Alpha Sorority, Incorporated, ASCEND Mentoring Program

Automotive Mentoring Group (AMG)

Back of the Yards Neighborhood Council, After School

Beverly Arts Center, Teen Artist Mentorship: Film focus

Big Shoulders Fund, Girls Who Code

Bishop Shepard Little Memorial Center, Computer Literacy

Borderbend Arts Collective, Multi-Arts Program at Oakley Square

Breakthrough Urban Ministries, Film-making

Business and Career Services, Manufacturing Career Internship Program

Center on Halsted, Youth Leadership Academy

Centers for New Horizons, One Summer Chicago

Chasing23 Youth Empowerment Group, Restoring Hope and Giving Direction

CHI-RISE, CHI-RISE Media Program

Chicago Academy of Sciences / Peggy Notebaert Nature Museum, Nature Museum TEENS

Chicago Architecture Foundation, Teen Fellows

Chicago Architecture Foundation, DiscoverDesign.org

Chicago Area Project, Youth Mentoring Training & Employment

Chicago Area Runners Association (CARA)

Chicago Arts Partnerships in Education, SCALE: North Grand Video

Chicago Arts Partnerships in Education, Supporting Communities through Arts Learning Environments

Chicago Botanic Garden, College First

Chicago Design Museum, Hey! Make! Creating Game Controllers from Everyday Objects

Chicago Filmmakers, Teen Digital Filmmaking Bootcamp

Chicago Freedom School, Freedom Fellowship

Chicago Park District, Inferno Mobile Recording Studio

Chicago Public Library, YOUmedia

Chicago Run, Running Mates

Chicago Scholars Foundation, Launch Program

Chicago Summer Business Institute, Summer Internship Program

Chicago Youth Centers, Photography/ I Am We, Photograph and Video program

Chicago Youth Shakespeare, The Chicago Youth Shakespeare Ensemble

Chicagoland Chamber of Commerce Foundation, Pathways to Pipelines - STEM Intern Program

CircEsteem

Civic Leadership Foundation

CodeCreate Technology Education, My Family in Motion: Stop Motion Studio Workshop

CodeNow, CodeNow Immersive Program

CoderSpace, CoderSpace Summer Apprenticeship

Columbia College Chicago I Scientists for Tomorrow, Junior Research Scientists

Community Film Workshop of Chicago, Youth In Motion

Contexture Media Network, Creative Tech Expo

Dancing with Class

David L. Hoyt Education Foundation

Divine Purpose Youth Performing Arts Center, Media Arts

DMI Information Processing Center, Inc., Youth Can, Youth Can After School

DuSable Museum of African American History, Will To Adorn

East Village Youth Program, College-Bound Career Exploration

Elijah’s House, Urban Teen Magazine

Empowerment through Education and Exposure, EEEimation

En Las Tablas Performing Arts

Erie Neighborhood House, Visionaries

Facets, Documentary Film Lab

Facets, Film 101

Family Matters, Community Tutoring

Field Museum ASM H2O Games, H2OGames

Focus on Tomorrow, Video Production

Forest Preserve Foundation

Forest Preserve of Cook County, Youth Outdoor Ambassador

FOUS Youth Development Services

Free Spirit Media, Free Spirit Media News South

Free Street Theater, Tech for Students with Disabilities

Free Write Arts & Literacy, Free Write Sound & Vision

Friends of the Forest Preserves

Future Ties, NFP, Future Ties Summer Mentoring Camp

Garfield Park Conservatory Alliance, Urban Roots

Gary Comer Youth Center, First Lego League

Girls Like Me Project, D.I.V.A.S (Digitally Innovative Voices of Advocacy Sisters)

Girls Rock! Chicago, Girls Rock! Chicago Summer Camp

Global Girls, Inc.

Global Glimpse, Global Glimpse



Grand Boulevard Prevention Services, Youth Talk

Holy Family School, Robotics

Hyde Park Art Center, Teen Photo Studio

Hyde Park Neighborhood Club, After School Program

iGrow Chicago, Survive to Thrive

i.c.stars, Technology, Leadership and Business Bootcamp

Illinois Council Against Handgun Violence, Student Voices Activist Institute

Illinois Holocaust Museum & Education Center, Take A Stand Center

IMPACT Family Center, Digital Media Exploration/ Creative Digital Media (updated name)

Institute for Positive Living, Development of a video using computer animation

Intuit: The Center for Intuitive and Outsider Art, IntuiTeens

Jewish Council on Urban Affairs, JCUA Organizing Fellowship

John G. Shedd Aquarium, Teen Learning Lab

Junior Achievement of Chicago, JA Finance Park Virtual

Juvenile Protective Association

Kidz Express NFP, Computer Program

Ladies of Virtue, Project Lab

LBBA Labs Program, CityLab

Life Directions, Peer Motivation

Lookingglass Theatre Company, Lookingglass Lab

Lost Boyz Inc., Girlz Softball

Love To Serve, Inc., Kroc Center Summer 2017

Lumity, Student Based Enterprise

Major Adams Community Committee, Computer Tech

MAPSCorps, MAPSCorps

Marwen, Render to Blender (3D design course)

Math Circles of Chicago, Kovalevsky

Metro Vision Partners, NFP, Girls on the Go

Mikva Challenge, City Wide Youth Advisory Councils

Musical Arts Institute, Community Beginners Piano Class

Near North Development Corporation, Upward Bound

NeuroKitchen Arts Collective, NeuroKitchen Performance Ensemble

New Moms, Job Training

Options for Youth, Mayor’s Mentoring What’s Up with Manhood?

Partnership to Educate and Advance Kids (PEAK), Freshmen Orientation

Peer Health Exchange Chicago, Peer Health Exchange Relationship-Centered Model (RCM)

Phalanx Family Services, Project Innovation

Phoenix Diverse Holistics Collaborative, Urban IT program

Pre-Freshman Program in Engineering and Science at Chicago State University, Prep to Succeed

Project Education Plus, Photography Club

Project Exploration, Explore Engineering

Project SYNCERE, E-CADEMY

Project Tech Teens, Englewood Codes

Project: VISION, High School Scholars Program

Proyecto Juventud Mujeres Latinas en Accion, Green Technology Electromechanical Automation Engineering and Coding

Public Media Institute, Wattz Up!

Pui Tak Center, Lego Robotics

ReCondition Community Cooperative, Learning to Lead

Saint Anthony Hospital, Adolescents and Parents Educating Themselves

Saving Lives, Inspiring Youth, Love Your Love Life

Shine On, Chicago!, Neighborhood Photo Safari Summer Program

Smart Museum

South Shore Drill Team & Performing Arts Ensemble, Performing Arts

South Side Community Art Center, Teen Talk Theatre

Southwest Organizing Project, Teen REACH

Spark, High School Pathways Program

St. Joseph Services, The SJS After School Program

Summer Advantage USA, Learn and Earn Program (Chicago Housing Authority)

Telpochcalli Community Education Project, OLLIN Youth Group

Territory NFP, Territory Design Build Internship

The Anti-Cruelty Society, After School Advocates

The Chicago Urban League, Opportunity Works

The Jazz Institute of Chicago, Jazz Links Ambassadors Program

The Love, Unity & Values (LUV) Institute, The Journey to My Better Self Media Empowerment Program

The Mary L. Greenwood Community Center, Sight and Sound

The Neighborhood Boys and Girls Club, Summer Camp

The People’s Music School, Uptown Academy

The Student Conservation Association, Summer Park District Community ConservationCrew

The WasteShed

True Star Foundation

University of Chicago Collegiate Scholars Program, Podcasting Class

UpBeat Music and Arts, UpBeat Music and Arts

Urban Alliance, High School Internship Program

Urban Habitat Chicago, Green LUNGS

Valentine Boys & Girls Club of Chicago, Digital Arts

West Town Bikes, Youth Plan! Biking & Advocacy

Working Bikes

Working in the Schools (WITS)

YMCA of Metropolitan Chicago, Tech Teens

Young Men’s Educational Network, Saturday University

Youth Guidance, Yearbook Club at Fenger

YWCA Metropolitan Chicago, TechGYRLS



# Appendix E

## References

Afterschool Alliance. (2013). *Digital media & learning in afterschool*. Retrieved from: [http://afterschoolalliance.org/issue\\_briefs/issue\\_digital\\_learning\\_58.pdf](http://afterschoolalliance.org/issue_briefs/issue_digital_learning_58.pdf)

Afterschool Alliance. (2015). *Afterschool programs: Inspiring students with a connected learning approach*. Retrieved from: [http://afterschoolalliance.org/documents/Afterschool\\_and\\_Connected\\_Learning.pdf](http://afterschoolalliance.org/documents/Afterschool_and_Connected_Learning.pdf)

Bales, S. N., Lindland, E., O’Neil, M., Simon, A., Lorick-Wilmot, Y., & Kendall-Taylor, N. (2012). *A hands-on approach to talking learning and digital media*. Retrieved from: [http://frameworksinstitute.org/assets/files/DML/dml\\_message\\_memo\\_v2.pdf](http://frameworksinstitute.org/assets/files/DML/dml_message_memo_v2.pdf)

Bloch, M., Cox, A., & Giratikanon, T. (2015). *Mapping segregation: New government rules will require all cities and towns receiving federal housing funds to assess patterns of segregation*. New York Times. Retrieved from: <https://www.nytimes.com/interactive/2015/07/08/us/census-race-map.html>

Bloch, M., Ericson, M., & Giratikanon, T. (2014). *Mapping poverty in America: Data from the Census Bureau show where the poor live*. New York Times. Retrieved from: <http://www.nytimes.com/newsgraphics/2014/01/05/poverty-map/index.html>

Buckingham, D. (2007). Digital media literacies: Rethinking media education in the age of the Internet. *Research in Comparative and International Education*, 2(1), 43-55.

Buckingham, D. (Ed.). (2008). *Youth, identity, and digital media* (pp. 119-142). Cambridge, MA: MIT Press.

Chiu, J., & Merritt, E. (2017). Digital media and learning. In K. Peppler (Ed.), *The SAGE Encyclopedia of Out-of-School Learning*, (220-223). Thousand Oaks, CA: SAGE Publications, Inc.

Connected Learning Alliance. (n.d.) *What is connected learning?* Retrieved from: <https://clalliance.org/why-connected-learning/>

Connected learning checklist. (n.d.) Retrieved from: [http://www.californiawritingproject.org/uploads/1/3/6/0/13607033/connected\\_learn-checklist-k12educators.pdf](http://www.californiawritingproject.org/uploads/1/3/6/0/13607033/connected_learn-checklist-k12educators.pdf)

Eltagouri, M. (2016). *Study shows Chicago slow in bridging digital divide*. Chicago Tribune. Retrieved from: <http://www.chicagotribune.com/news/ct-digital-divide-broadband-study-met-20160415-story.html>

Gee, J. P. (2009). *New digital media and learning as an emerging area and” worked examples” as one way forward*. MIT Press.

Hendricks, K., Lewis, A. E., Arenas, I., & Lewis, D. G.. (2017). *A tale of three cities: The state of racial justice in Chicago*. Chicago, IL: Institute for Research on Race & Public Policy at the University of Illinois at Chicago.

Herr-Stephenson, B. (2011). *Digital media and technology in afterschool programs, libraries, and museums*. MIT Press.

Herr-Stephenson, B., Rhoten, D., Perkel, D., & Sims, C. (2011). *Digital media and technology in afterschool programs, libraries, and museums*. MIT Press.

International Society for Technology in Education. (2007). *2007 ISTE standards for students*. Retrieved from: <http://www.iste.org/standards/standards/for-students-2007>

International Society for Technology in Education. (2016). *ISTE standards for students*. Retrieved from: <http://www.iste.org/standards/for-students>

Ito, M., Horst, H. A., Bittanti, M., Stephenson, B. H., Lange, P. G., Pascoe, C. J., ... & Martínez, K. Z. (2009). *Living and learning with new media: Summary of findings from the Digital Youth Project*. MIT Press.

Little, P., Wimer, C., & Weiss, H. B. (2008). After school programs in the 21st century: Their potential and what it takes to achieve it. *Issues and Opportunities in Out-of-School Time Evaluation*, 10(1-12).

Lemke, J., Lecusay, R., Cole, M., & Michalchik, V. (2015). *Documenting and assessing learning in informal and media-rich environments*. MIT Press.

Lenhart, A., Madden, M., & Hitlin, P. (2005). *Teens and technology. Youth are leading the transition to a fully wired and mobile nation*. Washington, DC: Pew Internet and American Life Project, 2005.

Lerner, R. M., Wang, J., Hershberg, R. M., Buckingham, M. H., Harris, E. M., Tirrell, J. M., ... & Lerner, J. V. (2017). Positive youth development among minority youth: A relational developmental systems model. *In Handbook on positive development of minority children and youth* (pp. 5-17). Springer, Cham.

McCombs, J. S., Whitaker, A., & Yoo, P. (2017). *The Value of Out-of-School Time Programs*. RAND Corporation.

National Research Council. (2013). *Education for life and work: Developing transferable knowledge and skills in the 21st century*. National Academies Press.

Neufield, S., (2013). *Anatomy of a 6,000 hour deficit*. Retrieved from: [http://hechingered.org/content/anatomy-of-a-6000-hour-deficit\\_6457/](http://hechingered.org/content/anatomy-of-a-6000-hour-deficit_6457/)

Quinlan, O. (2015). *Young digital makers: Surveying attitudes and opportunities for digital creativity across the UK*. London: Nesta.

Radich, J. (2013). Technology and interactive media as tools in early childhood programs serving children from birth through age 8. *Every Child*, 19(4), 18.

Roberts, D. F., Foehr, U. G., & Rideout, V. J. (2005). *Generation M: Media in the lives of 8-18 year-olds*. Henry J. Kaiser Family Foundation.

Robinson, L., Cotten, S. R., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., ... & Stern, M. J. (2015). Digital inequalities and why they matter. *Information, Communication & Society*, 18(5), 569-582.

Santo, R. J. (2017). *Working open in the Hive: How informal education organizations learn, collaborate, and innovate in networks* (Doctoral dissertation). Retrieved from ProQuest.

Vandell, D. L., Larson, R. W., Mahoney, J. L., & Watts, T. W. (2015). Children’s organized activities. In Bornstein, M. H., Leventhal, T., & Lerner, R. M. (Eds.) *Handbook of child psychology and developmental science*, 7th Ed., Vol. 4: *Ecological settings and processes in developmental systems*. New York: Wiley.