



DIGITAL EQUITY TO INCREASE PROSPERITY

A FOCUS ON aSTEAM VILLAGE'S
WORKFORCE DEVELOPMENT INITIATIVES

Meredith Morrison & Ali Imran Nasir

University of Missouri-Kansas City

Selected Projects in Law, Technology, & Public Policy Course | Fall 2024

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
	A. The Project.....	1
	B. The Project Team.....	2
	C. Project Components & Purposes of This Report.....	2
II.	RESEARCH METHODOLOGIES & DELIVERABLES.....	4
	A. Overview of Methods.....	4
	B. Project Deliverables.....	4
III.	PROJECT TEAM OUTPUTS PRIOR TO THIS REPORT.....	5
	A. The “Why” of Digital Equity.....	5
	B. Stakeholders Engagement.....	8
	C. Research on Data Capture and Assessment.....	9
	D. aSTEAM’s Workforce Development Agenda.....	10
IV.	RECOMMENDATIONS FOR DATA CAPTURE AND ASSESSMENT.....	15
	A. Phase-Specific Data Capture Recommendations.....	15
	B. Cross-Phase Data Integration and Reporting.....	18
V.	SUGGESTED NEXT STEPS FOR THE SPRING SEMESTER 2025 LT&PP PROJECT.....	19
	A. Early and Inclusive Stakeholder Engagement.....	19
	B. Project Scope.....	20
	C. Research and Related Activities.....	21
VI.	CONCLUSION.....	22

APPENDICES:

Appendix A:	Initial Project Description.....	23
Appendix B:	Stakeholders Tracker.....	27
Appendix C:	Stakeholder Interview Summaries.....	28
Appendix D:	Feedback & Recommendations on The Stakeholders Dilemma Guide.....	33
Appendix E:	Annotated Bibliography Re: Data Capture and Assessment.....	42
Appendix F:	“White Paper” Supplied by William Wells on 11-13-2024.....	47

I. Introduction

A. The Project

In Fall 2024 semester, the University of Missouri-Kansas City’s (“UMKC”) interdisciplinary Law, Technology & Public Policy (“LT&PP”) course undertook the “Applied Digital Equity to Replace Poverty with Prosperity Project” (the “Project”) in collaboration with aSTEAM Village, a nonprofit organization in Kansas City, Missouri, that prioritizes digital inclusion as a driver of economic equity and poverty alleviation (“aSTEAM”). As highlighted in Francella Ochillo’s paper, *The Economic Consequences and Generational Impact of the Digital Divide*, persistent digital inequities worsen societal disparities and negatively impact local economies, hampering productivity and raising public service delivery costs.¹

The National Telecommunications and Information Administration (NTIA) first coined the term “Digital Divide” in the 1990s to highlight the gap between households that could afford and effectively use computers and those that could not.² Recently, governmental programs and activist organizations have increasingly embraced the term ‘Digital Equity,’ highlighting three key elements of technological innovation—accessibility, affordability, and adoption—critical to bridging the Digital Divide. Digital Equity is essential for ensuring that all individuals can participate prosperously in a technology-driven society, a concept aptly defined by the National Digital Inclusion Alliance (NDIA) as follows:

“Digital Equity is a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy, and economy. Digital Equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services.”³

¹ Francella Ochillo, *The Economic Consequences and Generational Impact of the Digital Divide*, Belfer Center for Science and International Affairs (May 16, 2022), https://www.belfercenter.org/sites/default/files/pantheon_files/files/publication/TAPP-Francella_Impact%20of%20the%20Digital%20Divide_Final_220516.pdf.

² Cong. Rsch. Serv., R46613, *The Digital Divide: What Is It, Where Is It, and Federal Assistance Programs*, 1 (2021), <https://crsreports.congress.gov/product/pdf/R/R46613>. See also Nat’l Telecomms. & Info. Admin., *Falling Through The Net: Defining The Digital Divide* (1999), <https://www.ntia.doc.gov/ntiahome/ftn99/contents.html>.

³See “Definitions,” National Digital Inclusion Alliance (2024), available at <https://www.digitalinclusion.org/definitions/>. It is also important to note the use of “equity” vs. “equality.” Using the word “equity,” accurately acknowledges the systemic barriers that must be dismantled before achieving equality for all.

aSTEAM’s mission aligns with Ochillo’s observations of the Digital Divide, as it seeks to equip communities with the necessary digital tools and skills to participate fully in the modern economy. The organization engages individuals of all ages in Science, Technology, Engineering, Arts, and Mathematics (“STEAM”) pathways, with initiatives ranging from K-12 robotics to workforce readiness and broadband accessibility programs.⁴ An overview of the principal components of the Project is set forth in Subsection C of this Section I.

B. The Project Team

The student team assigned to the Project for the Fall 2024 semester authored this report (the “Report”). This team (“the Project Team”) consisted of two UMKC graduate-level students—Meredith Morrison (third-year law student) and Ali Imran Nasir (student in the Master of Public Administration program).⁵ Course co-instructor, Professor Anthony Luppino, served as the Project Team’s lead mentor (“Faculty Mentor”), while William Wells (the founder and executive director of aSTEAM) also provided input and connections to Project-related resources.

C. Project Components & Purposes of This Report

The initial project description presented to the Project Team early in the Fall 2024 semester (see Appendix A) envisioned a two-semester project with three focus areas, resulting in a potentially wide scope of work. The three focus areas included:

1. **Digital KC Connect Community Broadband Initiative:** This effort aims to expand broadband access in Kansas City’s 3rd District, targeting areas with at least 51 percent low-to-moderate-income populations.
2. **HUD Workforce Development:** As a U.S. Department of Housing and Urban Development (HUD) EnVision Center, aSTEAM emphasizes skill acquisition in STEAM and trades, enabling residents to achieve self-sufficiency across economic, educational, health, and leadership pillars. Partnering with the Full Employment Council (FEC), this initiative supports workforce development aligned with the needs of a digital economy.
3. **Digital Health Service Hub Initiative:** This initiative focuses on improving digital healthcare access in underserved areas. A prototype hub launched at Macedonia Baptist Church in October 2024, connecting the community to healthcare-related technology.

⁴ aSTEAM Village, <https://www.asteamvillage.org> (last visited Nov. 22, 2024).

⁵ Darin Breeden, an UMKC undergraduate senior majoring in computer science, also assisted with specific tasks related to the Project, including technical analysis and data gathering. His contributions are incorporated in the relevant sections of this Report.

Ascend Broadband Solutions, a Kansas City-based broadband provider, and St. Luke's Hospital supported this initiative by providing vital resources and guidance to Macedonia Baptist Church.

The Project's large scope presented an initial challenge for the Fall 2024 semester—how to effectively and efficiently approach the subject matter while producing informative Project-advancing deliverables within the timeframe of just one semester. Focus area 2 (“HUD Workforce Development”) appealed most to the students' interests, so with support from the Faculty Mentor, the Project Team selected it as the semester's primary focus and the driver of Fall 2024 deliverables.

The purposes of this Report are to (1) describe the importance of Digital Equity, emphasizing its impact on education, career opportunities, and health outcomes; (2) provide context related to Kansas City, Missouri's local broadband landscape; (3) offer recommendations for data capture and assessment of aSTEAM's workforce development program (called “TechFORCE”); (4) summarize Project Team deliverables produced prior to this Report (some of which are included as appendices hereto); and (5) suggest next steps for Spring 2025. Accordingly, Section II below contains an overview of the Project Team's research methodologies; Section III discusses outputs produced prior to this Report; Section IV includes recommendations on Project-related data capture and assessment; and, finally, Section V offers some “next steps” suggestions for a Spring 2025 LT&PP team to continue this Project.

Although this Report cites and discusses various laws and policies potentially relevant to digital expansion, adoption, and skills training, nothing herein is intended to be or should be construed as legal advice or legal opinion. aSTEAM and anyone else involved in, or that may become involved in, subject matters discussed herein should consider engaging legal counsel to advise them on such matters.

II. Research Methodologies & Deliverables

A. Overview of Methods

The Project Team used various methods to collect data and information for Project-related work, including this Report and other Fall 2024 semester deliverables described herein. These efforts involved reviewing materials supplied by the Faculty Mentor, aSTEAM, and other collaborators; integrating insights from LT&PP course exercises and resources; completing independent research; and conducting interviews with stakeholders.

B. Project Deliverables

The table below illustrates the Project Team’s core efforts and deliverables that were executed throughout semester:

Core Efforts and Deliverables	
Stakeholders Engagement	<ul style="list-style-type: none">• Completed a “Stakeholders” list of local and regional industry experts, government officials, community leaders, and more• Made a Stakeholder Tracker for the team’s outreach efforts (Appendix B)• Attempted to schedule ten Stakeholder interviews and circumstances allowed us to conduct five (see Appendix C for summaries of each of those five interviews)
Research & Analysis	<ul style="list-style-type: none">• Researched the context of Digital Equity• Created an annotated bibliography on the impact of STEAM/STEM education on educational, health, and career outcomes, which includes examples of quantitative and mixed-method studies, policy reports, meta-analyses (Appendix E)
Workshop Planning	<ul style="list-style-type: none">• Reviewed “The Stakeholder’s Dilemma Playdate Guide for Facilitation” for aSTEAM’s November 18 Workshop and provided an eight-page report with feedback and suggestions for facilitation methods, data capture, and assessment (Appendix D). Professor Luppino and Team Member Darin Breeden attended the Workshop
Data Assessment on Workforce Initiatives	<ul style="list-style-type: none">• Reviewed a “White Paper” on aSTEAM/ HUD EnVision Center Workforce Development plans, supplied by William Wells on November 13, 2024 (Appendix F)
Final Project Deliverables	<ul style="list-style-type: none">• Gave a final class presentation on November 20, 2024 (after taking into account feedback on the October 16, 2024 progress presentation)• Wrote this final Report

III. Project Team Outputs Prior to This Report

This section highlights the foundational elements of Digital Equity and its critical role in reducing disparities in education, career opportunities, and health outcomes. The Project Team’s efforts and aSTEAM’s mission reflect these priorities to promote equitable access and societal progress.

A. The “Why” of Digital Equity

Digital Accessibility, Affordability, and Adoption

As technology and its uses have evolved, so has the concept of Digital Equity, which now includes broadband connectivity, digital literacy, and the affordability of internet-enabled devices and services.⁶ Accessibility often refers to the physical availability of high-speed internet service with a minimum of 100 megabits per second (Mbps) download speed and 20 Mbps upload.⁷

In Jackson County, Missouri, 97.8 percent of residents potentially have access to high-speed broadband service as shown in *Figure 1* below.⁸ In other words, the existing infrastructure can provide high-speed Internet service to 97.8 percent of households in the county. Regardless of the data, theoretical access does not necessarily equate to affordable access—a crucial distinction that will be further explored in the subsequent sections of this Report.

Affordability speaks to the household costs of accessibility and remains a significant barrier to universal adoption in Missouri, despite the wide-spread availability of supporting infrastructure. As of May 2024, approximately 395,504 Missouri households, or roughly one in six, were enrolled in the Affordable Connectivity Program (ACP), a former federal program that provided eligible low-income families with discounts of up to \$30 per month for broadband services and up to \$75 per month for those on qualifying Tribal lands.⁹ The ACP ended on June 1, 2024, placing the decision on broadband providers to either maintain a monthly discount or return to standard rates.¹⁰

⁶ Infrastructure Investment and Jobs Act, 47 U.S.C. § 1721 (2021). The Act authorized \$65 billion in federal funding for broadband “access,” “adoption,” and “affordability” programs to close the availability gap. Congress allocated the funding accordingly because “access to affordable, reliable, high-speed broadband is essential to full participation in modern life in the United States.” *Id.* § 1701(1).

⁷ *Id.* § 1721(b)(1)(A).

⁸ Missouri Broadband Resource Rail, *Broadband Availability Map*, <https://broadbandmap.mo.gov/map?zoom=6¢er=-10270730%2C4574381> (last visited Nov. 22, 2024).

⁹ The White House. (2024). *Missouri Affordable Connectivity Program (ACP) fact sheet*. Retrieved from <https://www.whitehouse.gov/wp-content/uploads/2024/01/Missouri-ACP-Fact-Sheet.pdf>.

¹⁰ Fed. Comm’n’s Comm’n, Affordable Connectivity Program,

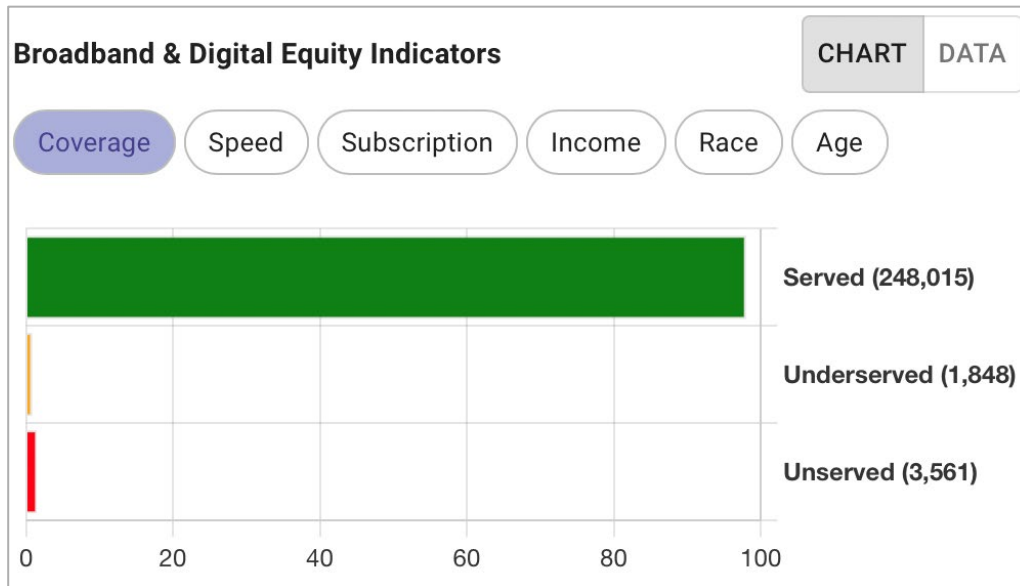


FIGURE 1: BROADBAND COVERAGE IN JACKSON COUNTY, MO

Many Missouri (and U.S.) residents lack the skills, confidence, or financial resources to fully leverage the available connectivity, even if they subscribe to high-speed service. A U.S. Department of Education study found that 16 percent of American adults remain digitally illiterate, meaning they lack the skills to confidently perform basic functions of internet use, such as emailing or online banking, isolating them from modern conveniences and much of the job market.¹¹ 92 percent of job postings nationwide require at least one digital skill, yet one-third of workers lack foundational digital proficiency to perform such tasks.¹² In Missouri, while 53 percent of jobs are classified as middle-skilled, only 46 percent of workers have access to the training required to qualify for such roles.¹³

<https://www.fcc.gov/acp#:~:text=The%20ACP%20Has%20Ended%20for%20Now&text=Effective%20June%201%2C%202024%2C%20households,longer%20receive%20an%20ACP%20discount> (June 13, 2024).

¹¹ U.S. Dep't of Educ., *Adult Literacy in the United States*, NAT'L CTR. FOR EDUC. STAT. (2019), <https://nces.ed.gov/datapoints/2019179.asp>.

¹² Fed. Rsrv. Bank of Atlanta, *Digital Skills in the U.S. Workforce*, <https://www.atlantafed.org/digital-skills-report> (2023).

¹³ Nat'l Skills Coal., *The Middle-Skills Gap: Missouri's Workforce Needs*, <https://www.nationalskillscoalition.org/resources/publications/middle-skills-gap-missouri/> (2023). "Middle-skills" refer to job requirements that demand more than a high school diploma but less than a four-year college degree. These positions typically require specific technical skills or training, which can often be obtained through vocational programs, associate degrees, apprenticeships, or certifications.

Bridging these gaps requires efforts to foster digital adoption and skill-building. aSTEAM Village, through its implementation of HUD's Workforce Development Project, is narrowing this divide by offering targeted digital literacy training, aligning workforce development programs with middle-skilled job requirements, and addressing the unique needs of underserved communities.

Education Attainment, Career Prospects, and Health Outcomes

Digital Equity—as rooted in accessibility, affordability, and adoption—proves essential to enhancing health, education, and career outcomes, with STEAM education serving as a critical catalyst.

STEAM education, an explicit element of aSTEAM's mission, significantly enhances students' academic performance and engagement, providing a strong foundation for future success.¹⁴ The *Vision 2026* initiative by the U.S. Department of Education underscores the importance of making STEAM education accessible to students of all backgrounds, specifically through classroom environments that combine technology, real-world challenges, and collaborative learning.¹⁵ Moreover, STEAM enrichment programs have demonstrated success in fostering science identity, academic performance, and a sense of belonging among underrepresented students.¹⁶ These findings highlight the critical role of STEAM education in addressing educational inequities and preparing students for advanced learning and career opportunities.

STEAM education also serves as a vital gateway to a wide range of high-demand, high-paying careers, and thus drives economic growth and innovation at micro and macro scales. The U.S. STEAM workforce, comprising 23 percent of the total workforce as of 2019, shows a diverse array of occupations that require varying levels of education, from technical certifications to advanced degrees.¹⁷ Reports, such as the National Science Board's *The STEM Labor Force of Today*, highlight the strong job stability and higher earnings associated with STEAM roles, alongside lower unemployment rates compared to non-STEAM fields.¹⁸ However, they also underline the need to diversify the STEAM talent pipeline, ensuring equitable opportunities for underrepresented groups. Early and accessible STEAM education, coupled with mentorship and skill-building, plays a crucial role in preparing individuals to succeed in the evolving STEAM labor

¹⁴ İ. Y. Kazu & C. Kurtoglu Yalcin, *The Effect of STEM Education on Academic Performance: A Meta-Analysis Study*, 20(4) TOJET: TURKISH ONLINE J. EDUC. TECH. (2021). Additionally, because STEAM/

¹⁵ U.S. Dep't of Educ., *Vision 2026 Sets Course for the Future of STEM*, https://www.ed.gov/sites/ed/files/2016/09/AIR-STEM2026_Report_2016.pdf (2016).

¹⁶ *Id.*

¹⁷ National Science Board, *The STEM Labor Force of Today: Scientists, Engineers, and Skilled Technical Workers*, NSB-2021-2, at 5 (Aug. 31, 2021), <https://nces.nsf.gov/pubs/nsb20212>.

¹⁸ *Id.*

market. These efforts not only support individual career success but also contribute to strengthening regional economies and addressing workforce gaps in technology and engineering sectors.¹⁹

Beyond economic and career benefits, Digital Equity and STEAM education play a transformative role in improving health outcomes, particularly in the context of Education for Sustainable Development (ESD). Digital tools provide access to vital health information while fostering collaboration essential for promoting health awareness and wellness practices.²⁰ The integration of technology into educational curricula further supports the development of essential skills to address health challenges in the digital age, aligning with ESD principles as championed by the United Nations Educational, Scientific and Cultural Organization (UNESCO).²¹

B. Stakeholders Engagement

Stakeholders Interviews

Early in the Fall 2024 semester, the Project Team identified key stakeholders in digital workforce development by completing their own field scans and requesting contact information for several aSTEAM students, parents/ grandparents, and collaborator organizations. Stakeholder outreach and engagement presented some challenges, such as obtaining timely responses, figuring out scheduling, and experiencing the occasional Zoom call “no-show.” The Project Team ultimately completed five stakeholder interviews regarding Digital Equity and Workforce Development (Appendix C summarizes the insights gleaned from each interview). The Project Team members coordinated with stakeholders and prepared for and participated in the interviews, alternating between asking questions and taking notes. To ensure thorough, unduplicated outreach efforts, the Project Team also created and maintained a Stakeholder Tracker (Appendix B), which noted the contacts’ names, organizations, emails, and dates of engagement.

¹⁹ Buchter, J., Kucskar, M., Oh-Young, C., Weglarz-Ward, J., & Gelfer, J. (2017), *The Issues: Why STEM Education Must Begin in Early Childhood Education*, College of Education Policy Reports, University of Nevada, Las Vegas.

²⁰ UNESCO, *Education for Sustainable Development: An Expert Review of the Role of Education in Achieving the Sustainable Development Goals* (2022), <https://unesdoc.unesco.org/ark:/48223/pf0000386165>. Through a mixed-methods approach, the UNESCO report evaluates case studies from diverse regions, surveys from educators and policymakers, and analysis of current educational frameworks to demonstrate the role of technology in improving both health education and overall health outcomes.

²¹ *Id.*

The Project Team’s Feedback and Suggestions for The Stakeholder Dilemma Workshop

aSTEAM Village notified the Project Team in mid-October 2024 about an upcoming Stakeholder Dilemma Workshop (the “Workshop”) scheduled for November 18, 2024. In late October, the Project Team and Professor Luppino participated in a Zoom meeting with Workshop facilitator and consultant, Dana Harris, and William Wells (Executive Director of aSTEAM), where the Team gathered important information about the Workshop's structure and objectives. During this meeting, Dana and William discussed the goals of the Workshop, including its focus on creating pre-apprenticeship opportunities and mentorships through interactive gameplay. Following the call, Dana sent the Project Team a “Facilitation Guide” to (1) better understand the specifics of the game mechanics and the facilitator roles and (2) use the information in the guide to offer feedback and suggestions for data capture during the Workshop.

The Project Team reviewed the facilitation guide and compiled a Feedback & Suggestions document for Dana and William to consider while planning and implementing the event. A copy of this document is incorporated in this Report as [Appendix D](#). The Project Team made suggestions regarding communication and outreach about the event, the logistics of the game setup – from facilitator roles to questions for participants, and methods for live and post-Workshop data collection to track the effectiveness of skills assessments.

Additionally, Team Member Darin attended the Workshop on November 18 and relayed his specific observations to the Project Team. He emphasized the importance of having clear instructions for facilitators, especially since many participants might not be familiar with the game format. He also noted that it would be helpful to build in extra time for participants to become familiar with the game mechanics before diving into the full competition. This would ensure a more inclusive experience and allow participants to focus on the objectives of the game.

C. Research on Data Capture and Assessment

In between early stakeholder conversations, the Project Team conducted extensive research to establish a strong foundation of knowledge about aSTEAM's mission and focus on STEM/ STEAM education. This involved reviewing articles, studies, and reports about the effects of STEM/STEAM education and skills training on educational attainment, career prospects, and health outcomes. The Project Team’s review of these resources, compiled in the annotated bibliography included in this Report as [Appendix E](#), revealed several key insights relevant to data capture and assessment. Significant examples of those insights are:

1. **Meta-Analysis Approaches:** The Kazu & Kurtoglu Yalcin (2021) study demonstrated the effectiveness of using statistical analysis to assess STEM intervention outcomes across different educational disciplines. This suggests that aSTEAM could benefit from implementing similar quantitative approaches to measure program impacts, particularly in tracking academic achievement and skill development.

2. **Mixed-Methods Assessment:** Carlone & Johnson's (2007) research utilized both qualitative interviews and quantitative performance metrics, providing a comprehensive framework for program evaluation. Their approach of combining focus groups, interviews, and performance data offers a model for aSTEAM to develop a more robust assessment methodology.
3. **Longitudinal Tracking:** The National Math and Science Initiative's 2020 report highlighted the importance of long-term tracking of student performance data across multiple schools. This suggests the value of implementing systematic data collection methods to monitor participant progress over time.
4. **Demographic Analysis:** Several studies, particularly the National Science Board's report on the STEM workforce, emphasized the importance of collecting and analyzing demographic data to assess program effectiveness in reaching underserved populations. This underscores the need for comprehensive demographic tracking in aSTEAM's assessment protocols.
5. **Skills Assessment Framework:** Research by Topsakal et al. (2022) demonstrated the effectiveness of using experience diaries and interviews to assess the development of critical thinking and problem-solving skills. This suggests potential assessment tools for measuring similar outcomes in aSTEAM's workforce development programs.

These findings from the literature review suggest that effective data capture and assessment should:

- Combine quantitative and qualitative measures,
- Track both immediate and long-term outcomes,
- Include demographic analysis to ensure equity,
- Measure both technical skills and soft skills development, and
- Incorporate regular feedback from participants and stakeholders.

This research also informed the Project Team's recommendations for aSTEAM's data capture and assessment strategies, which are detailed in Section IV of this Report.

D. aSTEAM's Workforce Development Agenda

Strategic Overview

The Project Team received a two-page "white paper" from aSTEAM on November 13 that outlined its plans for a workforce development and skilled trades initiative, the RedTails TechFORCE Initiative (TechFORCE), with the anticipation of receiving funding from the U.S. Department of Housing and Urban Development (HUD) (see [Appendix F](#)). TechFORCE operates within the framework of the HUD EnVision Centers initiative, which recognizes that financial support alone

cannot solve poverty – rather, a holistic, collaborative approach across organizations is needed to foster lasting self-sufficiency. As a current HUD EnVision Center, aSTEAM's workforce development agenda is structured around HUD's four fundamental pillars: (1) Economic Empowerment, (2) Educational Advancement, (3) Health & Wellness, and (4) Character and Leadership.

Beyond HUD, aSTEAM's workforce development efforts also advance the goals of the City of Kansas City, Missouri's AdvanceKC Strategic Plan (AdvanceKC 2.0), particularly its goals to bridge barriers, stabilize the population base, and increase local wealth.²² This alignment addresses the Digital Divide, which the COVID-19 pandemic exposed as a critical issue in unserved and underserved communities. Through its focus on Digital Equity and workforce readiness, aSTEAM contributes to regional economic growth and community resilience.

To meet the regional goals of Advance KC and the broader pillars of HUD Envision, aSTEAM designed specialized tracks and pathways within the TechFORCE initiative that focus on market-relevant skills and STEAM certifications, while addressing digital inequities. TechFORCE specifically offers STEAM education for both youth and adults through comprehensive training and certification pathways under the following two "tracks":

Track 1 – IT Workforce Development: aSTEAM's IT workforce development track, branded as "aSV Tech Education," offers participants a structured pathway to gain industry recognized certifications, including:

- IC3 GS6 Levels 1-3 (foundational digital literacy),
- CompTIA A+ certification preparation (courses 1001 and 1002), and
- CompTIA A+ Industry Exam Voucher (professional certification opportunity).

Track 2 – Skilled Trades: For those drawn toward skilled trades, the initiative provides eight specialized pathways to accommodate a wide variety of professional aspirations:

- Plumbing
- Solar Installation
- Electrical Systems
- HVAC

²² AdvanceKC 2.0, developed in 2021, updates Kansas City's original 2012 economic development framework by emphasizing affordable housing, infrastructure maintenance, and job creation to address evolving community needs. See City of Kansas City, *AdvanceKC 2.0 Community Survey*, <https://data.kcmo.org/stories/s/AdvanceKC-2-0-Community-Survey/nvia-x3rd> (last visited Dec. 12, 2024).

- Facilities Management
- Multi-Family Maintenance
- Appliances
- Commercial HVAC

Each pathway begins with an initial skills assessment and progresses through specialized technical training. Successful participants receive a Certificate of Completion and Mastery, underscoring their readiness for industry roles.

aSTEAM took a long-term career and job placement approach by entering into an annually renewable, one-year contract with the Full Employment Council (FEC) to deliver workforce training program.²³ While aSTEAM focuses on equipping participants with key skills and certifications, job placement at the end of each cohort is handled by the FEC through the State of Missouri Job Placement program.

The initiative ensures that participants achieve the following milestones:

- Digital literacy skills and receipt of a working laptop.
- Foundational knowledge in Project Management, Community Development, and Financial Literacy through Community OnDemand, powered by NEXT Step YEP.²⁴
- Advanced technical skills in Building Information Modeling (BIM), GIS, Alternative Energy, and Telecommunications.
- Completion of a specialized Industry Certification Pathway or apprentice course in IT or Skilled Trades.

Critical Infrastructure and Financial Needs

In the TechFORCE white paper, aSTEAM outlined the critical infrastructure and resources needed to effectively implement its pathways.

- **Physical Infrastructure:** Smart classrooms equipped with cutting-edge technology will provide interactive learning environments at the 1600 Paseo Boulevard headquarters.

²³ See Full Emp. Council, <https://www.feckc.org> (last visited Jan. 2, 2025).

²⁴ See Next Steps YEP, <https://nextstepsyep.org/codce/ps/> (last visited Jan. 2, 2025). The NEXT Steps Youth Entrepreneur Program (YEP) is a nonprofit workforce intermediary organization that specializes in creating interconnected, project-based learning programs.

Dedicated spaces for skilled trades practice will ensure participants gain practical, hands-on experience.

- **Digital Infrastructure:** Virtual classroom environments (2D and 3D formats), booking and scheduling systems, software licenses for development platforms, and advanced AI resources will enable innovative, flexible learning experiences.
- **Human Resources:** Teams of educational consultants, program development staff, technical instructors, and mentors are essential to delivering high-quality training. Administrative personnel will oversee recruitment and logistical support, ensuring program efficiency.

The program operates on a cost-effective model, with an estimated cost of approximately \$1,000 per participant. To support the initiative, a minimum funding requirement of \$250,000 is needed. This budget will cover the training for 250 participants, including costs for delivering educational content, hands-on training, and certification. It will also fund staffing, which includes salaries for educational consultants, program development staff, technical instructors, and mentors. The budget will further cover equipment and supplies such as smart classrooms, training devices, software licenses, and advanced AI development resources. Finally, funds will be allocated for program administration and outreach efforts, ensuring efficient management and effective communication with stakeholders.

Four Phases of the TechFORCE Program

The TechFORCE program unfolds in four phases (see also *Figure 2* below):

- **Phase 1 – Recruit and Enroll:** Participants are recruited and enrolled in the IC3 GS6 Digital Literacy Certification curriculum. Successful participants earn a working laptop and progress to further pathway training, which includes completing Levels 100, 200, and 300 of STEM Career Pathways for STEM enthusiasts.
- **Phase 2 – Career Pathway Assessment and Planning:** Participants undergo a Skilled Trade Pathway Assessment to determine their strengths and interests. They then select two career pathways—Plan A (first choice) and Plan B (second choice)—for flexibility. This phase also includes Community OnDemand workshops, where participants build financial and project management literacy while earning stipends.
- **Phase 3 – Community-Centered Skill Development:** Participants engage in virtual workshops to enhance problem-solving and project management skills. They contribute to community-centered projects, simulating real-world scenarios while gaining advanced skills in BIM, GIS, and energy systems. Stipends are provided for active participation.

- Phase 4 – Certification and Graduation: Participants complete their chosen certification pathways, earning credentials, such as CompTIA A+ Certification for IT professionals or trade certifications in Electrical, Plumbing, HVAC, etc. Graduates qualify for industry-specific exams and job placement services through FEC’s Missouri Job Placement program.

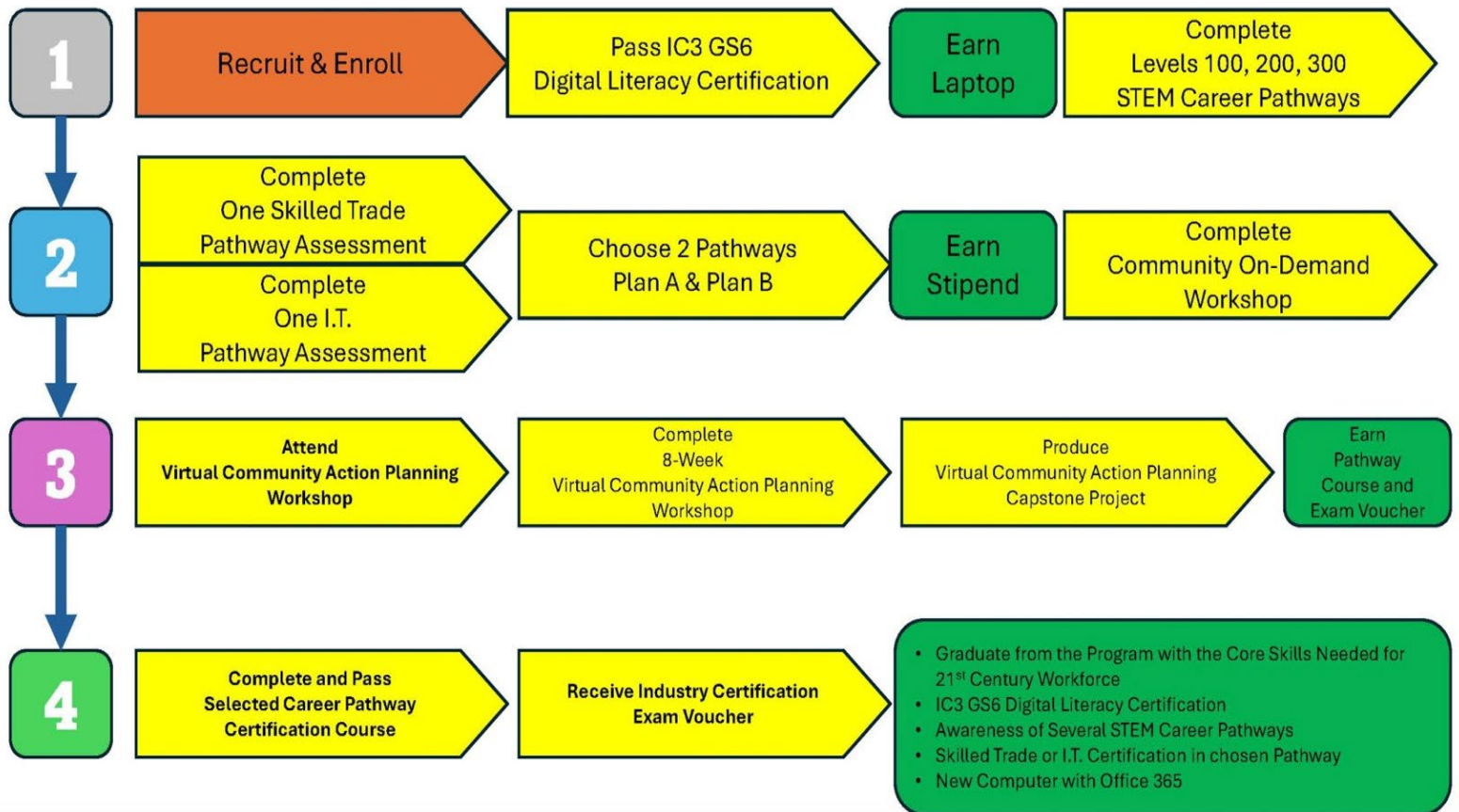


FIGURE 2: TECHFORCE PHASES 1 – 4

By empowering individuals with the tools they need to thrive in today’s workforce, the RedTails TechFORCE Initiative exemplifies aSTEAM’s commitment to creating equitable opportunities for professional advancement.

IV. Recommendations for Data Capture and Assessment

To ensure the success and sustainability of the TechFORCE program, it is crucial to establish a robust data capture and assessment framework. The Project Team, therefore, suggests a framework that will enable the collection of both quantitative and qualitative data to evaluate program effectiveness, track participant outcomes, and provide actionable insights for continuous improvement. The following recommendations outline phase-specific data points and methods, as well as an integrated approach to longitudinal analysis and reporting.

A. Phase-Specific Data Capture Recommendations

Phase 1: Recruit and Enroll

During the recruitment and enrollment phase, capturing participant demographics and initial performance metrics is vital to establish a strong foundation for the program.

→ Recommended Data Points:

1. Collect participant demographics, including age, gender, educational background, and employment status at the time of entry. These data points will provide a baseline for understanding the diversity and needs of the participants.
2. Track enrollment metrics, such as total number of enrollees, enrollment rates over time, and retention rates following enrollment, to monitor recruitment effectiveness and participant commitment.
3. Record initial IC3 GS6 assessment scores to evaluate participants' baseline digital literacy skills, enabling tailored support as needed.

→ Recommended Capture Methods:

1. Use digital registration forms to streamline the collection of demographic and enrollment data, ensuring accuracy and efficiency.
2. Administer the IC3 GS6 pre-assessment to gauge participants' starting digital literacy levels.
3. Implement automated attendance tracking during recruitment events and workshops to measure engagement and participation rates effectively.

By focusing on these measures, the program can establish a data-rich starting point that informs subsequent phases.

Phase 2: Career Pathway Assessment and Planning

In this phase, participants make critical decisions regarding their career pathways. Collecting data on their preferences, engagement, and achievements will ensure the program aligns with their goals.

→ Recommended Data Points:

1. Document pathway selection trends, such as participants' choices between Plan A and Plan B, to identify preferences and areas of high interest.
2. Track engagement with Community OnDemand workshops, focusing on participation rates and learning outcomes in financial literacy and project management.
3. Monitor NEXT Step YEP milestone achievements, a key indicator of participant progression.
4. Record stipend disbursement details, including amounts provided and the number of participants receiving financial support, to ensure transparency.

→ Recommended Capture Methods:

1. Conduct pathway selection surveys to collect data on participant choices and preferences.
2. Use post-workshop evaluations to assess knowledge retention and satisfaction with Community OnDemand sessions.
3. Maintain a financial database to log stipend disbursement and ensure transparency.

Through these data collection efforts, the program may provide personalized guidance and measure the effectiveness of career planning resources.

Phase 3: Community-Centered Skill Development

This phase emphasizes hands-on training and the development of technical skills. Data capture here focuses on participation, skill acquisition, and project outcomes.

→ Recommended Data Points:

1. Monitor attendance and completion rates for Virtual Community Action Planning sessions to track participant engagement.

2. Measure skill acquisition metrics across specialized areas, including Building Information Modeling (BIM), GIS, alternative and traditional energy systems, water systems, and telecommunications.
3. Document community-based projects completed by participants to evaluate real-world application of skills.
4. Gather participant feedback on each module to identify areas for improvement.

→ [Recommended Capture Methods:](#)

1. Leverage digital learning platforms to monitor attendance and participation in virtual workshops.
2. Utilize skills assessment tools or quizzes to evaluate progress in advanced training modules.
3. Establish a project repository for participants to upload completed deliverables, allowing for comprehensive evaluations.
4. Implement hands-on project evaluations to provide qualitative insights into skill application.

This approach ensures that the program captures the full scope of participant progress and community impact.

Phase 4: Industry Certification and Apprenticeship

The final phase focuses on equipping participants with certifications and connecting them to employment opportunities. Data collection at this stage will assess program effectiveness in transitioning participants into the workforce.

→ [Recommended Data Points:](#)

1. Track certification exam pass rates to measure participants' readiness and success in earning credentials.
2. Collect data on employment rates within six months of program completion in collaboration with FEC.
3. Measure post-program satisfaction and perceived readiness for employment through participant surveys.
4. Analyze employment outcomes, including job placements and career growth.

5. Assess post-program income changes as a key indicator of economic mobility.

→ Recommended Capture Methods:

1. Use industry certification tracking systems to log completion rates and exam outcomes.
2. Employ employment placement tracking tools to monitor participants' career trajectories.
3. Conduct six-month follow-up surveys with graduates to gather employment data and job satisfaction levels.
4. Organize focus group sessions with graduates to gain qualitative insights into program effectiveness.
5. Collect employer feedback to evaluate participant performance in real-world settings.

These measures will provide a comprehensive view of the program's long-term impact on participants' professional success.

B. Cross-Phase Data Integration and Reporting

To maximize the utility of collected data, a centralized and integrated approach to data management is essential. Therefore, the Project Team suggests that aSTEAM consider the following approaches for data management:

- Implementing a centralized data management system to consolidate data from all four phases for longitudinal analysis.
- Using data visualization tools (e.g., dashboards) to track key performance indicators (KPIs), including digital literacy advancement, program completion rates, employment placement rates, income improvement metrics.
- Conducting quarterly reviews to identify trends, address gaps, and refine the program as needed.

By combining phase-specific data collection with a cross-phase integration strategy, the TechFORCE program should be well-equipped to adapt with needs while demonstrating its impact with clarity and precision.

V. Suggested Next Steps For The Spring Semester 2025 LT&PP Project

The following recommendations are designed to ensure a seamless transition for the Spring 2025 project team while addressing key priorities of the Digital Equity Workforce Development initiative. By building on the progress made in Fall 2024 and incorporating feedback from stakeholders, the next phase of the project can maximize its impact through structured engagement, comprehensive data collection, and evidence-based program development.

A. Early and Inclusive Stakeholder Engagement

Effective stakeholder engagement will remain crucial to the project's success. Building and strengthening relationships with key stakeholders can foster trust, encourage collaboration, and ensure the program's objectives align with community needs.

Priority Stakeholder Outreach

To expand the network of engaged stakeholders, the Project Team suggests consideration of the following steps:

- **Build on Existing Relationships:** Leverage the connections established with stakeholders during the Fall 2024 semester to deepen collaboration. Follow up with interviewed stakeholders to maintain momentum and explore their ongoing needs and contributions.
- **Focus on Reconnecting with Unresponsive Contacts:** Review records of stakeholders who were previously unresponsive or unavailable and develop targeted outreach strategies to reinitiate communication.
- **Development New Relationships.** Develop relationships with new program participants and graduates.

Enhanced Communication Strategies

- **Develop a Structured Engagement Plan:** Schedule regular check-ins with aSTEAM Village leadership and other stakeholders to share updates and address challenges. Establish a consistent cadence for communication that aligns with stakeholders' availability.
- **Implement a Feedback Loop:** Create systems for program participants to provide feedback on their experiences, ensuring their voices inform future program development.

- **Maintain Documentation Methods:** Use the Stakeholder Tracker to record interactions, insights, and outcomes consistently. Templates for interview protocols should be created to standardize and simplify stakeholder engagement processes.

B. Project Scope

The Project Team believes the next project phase will benefit from refining the scope of work to prioritize measurable impact and sustainable growth. This may include collecting meaningful data, evaluating program performance, and planning deliverables to guide decision-making.

Data Collection Implementation

Data-driven insights are essential to measure program success and inform future strategies, and this Project Team suggests the Spring 2025 Team prioritize the following to support aSTEAM in this area:

- **Follow Through on Fall 2024 Recommendations:** Assist aSTEAM Village in implementing data capture methods proposed during the Fall 2024 semester.
- **Establish Baseline Metrics:** Work with program leadership to set clear, achievable metrics for evaluating success. Metrics may include participant progress, certification rates, and job placements.
- **Develop Assessment Tools:** Collaborate with stakeholders to design and refine tools that effectively measure program outcomes.

Program Evaluation

Regular evaluation of the TechFORCE program will ensure that it continues to meet its objectives and adapts to challenges. Here are the Project Team's recommended next steps for program evaluation for aSTEAM with guidance from the Spring Team:

- **Monitor Initial Cohorts:** Track the performance of the first cohorts to complete the IC3 GS6 certification program.
- **Evaluate Against Metrics:** Use established baseline metrics to assess the program's effectiveness and identify areas for improvement.
- **Identify Opportunities for Improvement:** Based on initial findings, propose adjustments to enhance program delivery and impact

C. Research and Related Activities

Ongoing research may help the Spring Team stay informed about industry trends, assess program impact, and identify opportunities for innovation and growth. This Project Team recommends focusing efforts on the following areas of research, documentation, and analysis.

Primary Research

- **Participant Experience:** Conduct interviews with program participants to gather qualitative data about their experiences. Collect feedback on what aspects of the program work well and what could be improved. Document success stories to highlight program impact and address challenges constructively.
- **Workforce Development Trends:** Stay informed about emerging practices in workforce development, especially those relevant to Digital Equity. Monitor trends in funding opportunities and policy changes that could affect program sustainability.

Documentation and Analysis

Comprehensive documentation will provide continuity and clarity for future teams and stakeholders.

- **Program Documentation:** Maintain detailed records of all program processes, including case studies of successful participants. Document any modifications to the program for future reference.
- **Impact Assessment:** Use participant outcome data to evaluate program effectiveness against stated goals. Regularly prepare impact reports to share progress with stakeholders and provide transparency.

These recommendations aim to set a clear direction for the Spring 2025 Project Team while allowing flexibility to adapt to emerging opportunities and challenges. Success will require close collaboration with aSTEAM Village leadership, thoughtful data collection and analysis, and a commitment to sustainable program development. By building on the work completed in Fall 2024, the next semester's team can continue to make meaningful progress toward reducing digital inequity and empowering program participants.

VI. CONCLUSION

This report has explored aSTEAM Village's workforce development initiatives, emphasizing the vital connection between Digital Equity and economic prosperity in Kansas City. Through research and stakeholder engagement conducted during Fall 2024, the Project Team uncovered several important findings that highlight both the challenges and opportunities in addressing digital inequity. While Kansas City boasts existing broadband infrastructure, significant barriers to adoption remain, particularly in low-to-moderate income areas where over 51 percent of residents face economic disadvantages. Issues such as affordability, lack of digital literacy, and inadequate support systems hinder access to the digital economy, perpetuating inequality and limiting opportunities for upward mobility. Addressing these systemic challenges is essential to ensuring that all residents can fully participate and prosper in the digital age.

aSTEAM Village's TechFORCE program offers a thoughtful and comprehensive approach to these challenges. With its phased structure that includes digital literacy, project management, workforce skills, and industry certifications, the program equips participants with the tools needed to thrive in today's technology-driven economy. Additionally, its alignment with HUD's EnVision Center framework reflects a commitment to addressing economic empowerment, educational advancement, health and wellness, and character development, ensuring a well-rounded approach to workforce development. This strategic design not only enhances the program's effectiveness but also ensures it aligns with broader community goals.

The Project Team's stakeholder interviews underscored widespread community support for Digital Equity initiatives while also revealing opportunities for improved coordination and resource allocation. Programs like the Digital Health Service Hub at Macedonia Baptist Church exemplify the power of community-based solutions to address digital inequity. By building on such successful models and fostering collaboration among stakeholders, aSTEAM Village can further expand its reach and impact.

The Project Team's recommendations for data collection and program assessment also aim to provide a solid foundation for continuous improvement. Robust systems for tracking outcomes and gathering feedback will enable aSTEAM Village to measure its success, refine its strategies, and communicate its impact effectively to stakeholders and funders.

The Spring 2025 Project Team is well-positioned to continue this important work. Their focus on implementing data collection mechanisms, strengthening relationships with stakeholders, and supporting program evaluation will likely be instrumental in advancing aSTEAM Village's mission. As Kansas City continues to grow and evolve, initiatives like TechFORCE will be essential in bridging the digital divide and ensuring equitable access to opportunities. Through collaboration among community organizations, government agencies, and educational institutions, the community can create a future where Digital Equity drives economic prosperity for all residents.

Appendix A

Applied Digital Equity to Replace Poverty with Prosperity Project

(Fall 2024 Law, Technology & Public Policy Course)

This project in the 2024 Fall semester interdisciplinary Selected Projects in Law, Technology & Public Policy (“LT&PP”) course involves opportunities to collaborate with three Kansas City area initiatives, coordinated and connected by local nonprofit aSTEAM Village (“aSV”).²⁵ All three harness the combined power of digital inclusion, applied digital training and projects-based apprenticeship, and the capacity of students at various stages in their education to effect positive change in neighborhoods and communities.²⁶ Among the many publications exploring the need for digital inclusion, perhaps the most on point for this project is Francella Ochillo’s May 2022 paper entitled *The Economic Consequences and Generational Impact of the Digital Divide*, which, in addition to many other perceptive and data-supported observations, emphasizes that: “Persistent digital inequities exacerbate other societal inequalities which, combined, cause a ripple effect in local and state economies. They also hobble domestic productivity and competitiveness while increasing the cost of public service delivery nationwide.”²⁷

Consistent with the themes of that Ochillo paper, this LT&PP course project adopts the view that digital inclusion and training to use it productively are essential to equitable economic development and to addressing still insufficiently met challenges identified in the important 2014 Brookings research report *Prosperity at a Crossroads: Targeting Drivers of Economic Growth for Greater Kansas City*, which stated in its preamble: “New analysis on the performance of the Greater Kansas City economy provides evidence that the region is becoming less competitive, weakening its ability to create jobs and sustain higher standards of living” and “This report aims to arm the region’s leaders and citizens with information and analysis to spark an important community-wide conversation about the choices to be made to position the region for continued prosperity.”²⁸ As late friend of the LT&PP course Bill Mullins would say, the type of community-wide conversation called for must focus on using data, other information, and technology as tools

²⁵ See <https://www.asteamvillage.org/>.

²⁶ See, for example, <https://www.asteamvillage.org/redtails-digital-engineering-alliance.html>.

²⁷ Available at https://www.belfercenter.org/sites/default/files/files/publication/TAPP-Francella_Impact%20of%20the%20Digital%20Divide_Final_220516.pdf (May 2022).

²⁸ Authored by Peter J. Easton, Barbara Hensley, Dean Katerndahl, Frank Lenk, Jeff Pinkerton, David A. Warm, Amy Liu, Chad Shearer, and John Ng and available at <https://www.brookings.edu/articles/prosperity-at-a-crossroads-targeting-drivers-of-economic-growth-for-greater-kansas-city/>.

to enhance and leverage for shared prosperity the region’s “human capital system”—this project will act on that call to action through the data and technology infused, community involved and community-centric “Virtual Community Action Planning” (VCAP) approach developed by Michael Rendler of E7 Architecture²⁹ and embraced and previously applied by aSV’s RedTails Digital Engineering Alliance Group of students on projects with which prior UMKC student teams were involved.

Project Objectives and Interdisciplinary Suitability

aSV’s special enrichment projects service underserved communities, allowing a new innovation model to emerge. Students aSV involves will have solid STEM career pathways based on their early and continued support in a cross-pollinated learning environment. The intent is to leverage this transition into a Smart City with baseline data and sustainable, measurable targets related to energy, education, income, asset condition value, access, safety and security, culture, and worship. This whole community model will support better civic engagement and long-term economic prosperity. UMKC students on Project Team for this LT&PP course project will be positioned to engage with one or more of the following three aSV coordinated service-learning initiatives (the “Initiatives”):

- **Digital KC Connect Community Broadband Initiative**—which is a community project centered around engaging the citizens of KCMO’s 3rd District to generate increased broadband capacity and supplement connectivity resources in underprivileged areas. This ASV project includes community improvement activities in the form of broadband investment targeted at the Low and Moderate Income (“LMI”) national objective described by the U.S. Department of Housing and Urban Development (“HUD”) as an area benefit in which the service area for the investment is primarily residential and the population of the service area is at least 51 percent LMI; and as a jobs benefit in which at least 51 percent of the jobs created

²⁹ As described by Michael Rendler: “Using VCAP, (Virtual Community Action Planning) as an Open Data Model is crucial as it unifies City, Education, Nonprofits, and Faith-Based Organizations under a shared understanding, fostering collaboration and synergy. Intelligence is core, as data-driven insights optimize decision-making and resource allocation. Participation empowers the community, granting stakeholders a voice and ownership in problem-solving. Wellness is the goal, ensuring holistic growth and resilience. By leveraging VCAP, organizations access comprehensive, real-time information, enabling evidence-based actions and avoiding redundant efforts. This integration enables a sustainable ecosystem, leveraging collective intelligence and resources to address community challenges effectively, thus ensuring its ability to thrive in the face of adversity.”

or retained by the investment are held by or made available to LMI persons.³⁰ ASV's Broadband project seeks to use effective tools to increase connectivity to and adoption/use of high-speed internet to help grow Kansas City's economy and raise levels of local wealth through enhanced broadband access. Principal collaborators in it include aSTEAM Village, RedTails Digital Engineering Alliance, Full Employment Council, St. Luke's Health System, Cambrae Business Strategies, Ascend Broadband Solutions, and the Wendell Phillips Neighborhood Association.

- **HUD Workforce Development Project**— aSTEAM Village is a designated HUD EnVision Center,³¹ which provides communities with a centralized hub for support in the following four pillars: 1) Economic Empowerment, 2) Educational Advancement, 3) Health & Wellness, and 4) Character & Leadership. Access to Workforce Development and Skilled Trades Programs serve to support residents' self-sufficiency in all four pillars, through skill acquisition for STEM career pathways. aSTEAM village will provide training in IT demand occupations and skilled trades. Principal collaborators in it include the Kansas City Full Employment Council ("FEC") and HUD.
- **Digital Health Service Hub Initiative**— is an aSTEAM Village Proof of Concept ("POC") for the creation of Saint Luke's Health System (SLHS) Digital Health Services Hubs within "Community Anchors" east of Troost. This project aims to outline a comprehensive strategy to enhance accessibility and utilization of digital health services of SLHS and other HealthCare Providers, Practitioners, Insurers focusing on Senior, Maternal and Child health services in underserved communities. These hubs will serve as centralized points where residents can access a range of digital health resources and services, fostering improved healthcare outcomes and overall well-being. The initial Digital Health Service Hub launches at Macedonia Baptist Church in September 2024 with principal collaborators being aSTEAM Village, St. Luke's Hospital, Ascend Broadband Solutions, and Macedonia Baptist Church.

The project is well-suited for involvement by UMKC faculty and students from the Law School and other related academic schools/departments (including, without limitation, Business, Computer Science & Engineering, Economics, Political Science, Public Affairs, Urban Planning & Design, and other Social Sciences).

³⁰ See generally HUD definition of LMI at <https://www.hudexchange.info/programs/cdbg/cdbg-low-moderate-income-data/#:~:text=Most%20activities%20funded%20by%20the,housing%2C%20jobs%2C%20and%20service>

³¹ For information about HUD EnVision Centers, see <https://www.hud.gov/envisioncenters>.

Deliverables:

The UMKC LT&PP Project Team's principal "deliverables" will be to engage in relevant research and co-design data collection and analysis plans and protocols, tailored to track and measure the progress, impact, and innovation of the Initiatives—each driven by what William Wells of aSTEAM Village has described as the collision of informal and formal education when Post-Secondary Academia, Secondary Academia, Community, Industry, and Not-For-Profits come together with a block by block approach to community development through the development and investment in people and the vehicles of technology, education, healthcare, entertainment, and workforce development. In other words, UMKC students would be contributing to efforts to disrupt poverty through innovative, collaborative engagement between informal and formal education vehicles.

Potential Collaborators and Networking Opportunities:

In addition to the experience of interacting with students and faculty from other academic disciplines, and the collaborating organizations referenced above, students on the Applied Digital Equity to Replace Poverty with Prosperity Project Team would have opportunities to engage with such other individuals, organizations, and activities as: Community Serving Organizations, Wendell Phillips Neighborhood Association, Lincoln University, and other aSTEAM Village Workshops, Seminars, and Community Convenings.

For more information about the Applied Digital Equity to Replace Poverty with Prosperity Project in the LT&PP course: Please send an email request to Prof. Tony Luppino at luppinoa@umkc.edu.

Appendix B

Last Name	First Name	Org.	Role/Title	Email	Contact Notes	aSV Reference?	Interview Date	Int. Complete?	Addit. Notes
Brown	Linda	aSTEAM Village	aSTEAM Village Parent Liason (Grandparent)	lkbrown4161@sbcglobal.net	10/29 - Ali scheduled interview for 11/7 @ 8:30AM 10/30 - Ali cancelled, follow-up sent to reschedule 11/? - Ali sent direct (no cc) follow-up to resched.	Y		N	No response
Graor	Amanda	MARC	Chief Innovation Officer and Deputy Director of Research Services	agraor@marc.org judy_hardman62@gmail.com	10/? - TL made initial contact abt interview 10/29 - Ali sent follow-up email abt interview sched times	N	8-Nov	Y	
Hardman	Judy	aSTEAM Village	AmeriCorps VISTA	judy_hardman62@gmail.com	10/23 - Ali sent initial email abt interview	Y		N	No response
Harris	Dana	NEXT Steps Youth Entrepreneur Program	Executive Director	djharris@nextstep.org huneymc@yahoo.com	10/24 - Dana sent game instructions 11/11 - TL sent Dana doc of our feedback/ data capture recs	Y	24-Oct	Y	Facilitation guide in interview folder
McDonald	Sharon	aSTEAM Village	AmeriCorps VISTA	huneymc@yahoo.com	10/23 - Ali sent initial email abt interview	Y	14-Nov	N	No show for interview
Patterson	Ebony	BJC Health System	Director of Technology Service Delivery at BJC Health System	empatterson@saint-lukes.org		Y		N	
Primos	Johari	aSTEAM Village/ RedTails	RedTails Digital engineer, student at Lincoln College Prep, aSTEAM village, NSBE Chapter President	johariloveprimos@gmail.com jordyn@asteamvillage.org	10/29 - Ali emailed 10/23 - Ali sent initial email abt interview	Y		N	No response Mother (Tufanza) - 816.686.5419; Father - 816.305.4929
Rowe	Jordyn	aSTEAM Village	AmeriCorps VISTA	jordyn@asteamvillage.org	10/23 - Ali sent initial email abt interview	Y		N	No response
Scott	Leslie	KC Digital Drive, UMKC Digital Equity Working Group	Program Manager	lscott@kcdigitaldrive.org	10/16 - Leslie emailed follow-up w/ surveys after interview 10/23 - Ali sent initial email abt interview 11/7 - stakeholder didn't show for interview, Meredith emailed to reschedule	N	16-Oct	Y	Surveys/ other materials in interview folders
Weaver	Mark	Macedonia Baptist Church	Pastor & IT Manager	itmanager@macedonia.org doniakc.org	11/9 - resched. for 11/14	Y	14-Nov	Y	
Wells	William	aSTEAM Village	Executive Director & Founder		*Consistent contact throughout project	N/A	18-Sep	Y	

Appendix C

Stakeholder Interview Summaries

Stakeholder 1: William Wells, Executive Director of aSTEAM Village

The Project Team conducted an interview with William Wells, the Executive Director of aSTEAM Village, a key partner in the Digital Equity and Workforce Development project. William shared that aSTEAM's mission focuses on three primary areas: community healthcare, digital literacy, and workforce development. Specifically, aSTEAM is dedicated to ensuring that underserved communities have access to healthcare resources and education, improving digital literacy to empower individuals with the skills needed to thrive in a digital world, and creating sustainable pathways to employment to disrupt cycles of poverty and promote upward economic mobility. William emphasized that the organization's target is to disrupt poverty, ensuring that individuals' trajectories are upward, and that progress is measured through tangible milestones, including consistent client interviews and input from digital ambassadors.

In terms of addressing digital inequity in Kansas City, William discussed the ongoing challenges, particularly in connecting urban and rural areas through the digital economy. He highlighted a need for a "people-first" approach, where resources are provided to empower communities. He expressed frustration for "the ones who are trying to get it right," citing the lack of authentic, community engagement and community-driven initiatives as the cause of many socio-economic problems. For William, this point of view came to light after spending 6 weeks working directly with senior citizens. "No one no one is teaching or saying to these communities [senior and low-income communities, 'here is how you develop and then empower them to develop your own communities, just as everyone else is developing their own communities.' In a world where community is heavily dominated by digital transmissions and communications, if one does not become digitally literate, they face grave consequences that can easily be averted with a focus on digital literacy across all age groups." After leveling the playing field through digital literacy, it then becomes more possible to inclusively implement digital healthcare, digital education, digital government, and digital commerce.

William also outlined aSTEAM's theory of change, which is based on the belief that providing access to community healthcare, digital literacy training, equitable digital access, and workforce development opportunities will disrupt cycles of poverty and empower underserved communities. By tracking progress through milestones and engaging with clients and digital ambassadors, aSTEAM is able to see tangible improvements in quality of life and economic stability.

In terms of funding, the MARC and Health Forward Foundation are providing \$50k in total for aSTEAM's workforce development program. William clarified that 300 students are expected to complete Phase I of the program, while 200 students will participate in Phase II. If more applications are received than anticipated, the organization will decide whether to cap the number of participants, expand the program, or place rejected applicants on a waitlist.

For follow-up, William suggested the Project Team reach out to HUD, Missouri Office of the Regional Administrator for a joint meeting with aSTEAM and the Full Employment Council. He also agreed to provide contact information for Macedonia Baptist Church and two or three aSTEAM high school students to further support the Project's stakeholder outreach.

Stakeholder 2: Leslie Scott, Program Manager at KC Digital Drive

Building on William's input, Leslie Scott's perspective offered a closer look at grassroots-level efforts and the intersectionality of digital equity barriers in Kansas City. Leslie shared her background, including her time at Connecting For Good, where she began working as a Volunteer Coordinator. This role highlighted the gap in digital literacy and affordability and shaped her career focus, later leading her to become a Digital Inclusion Fellow at the Full Employment Council. She emphasized how financial and educational barriers, such as lack of affordable childcare and transportation, compound the impact of not having access to digital tools.

Leslie identified several significant barriers to digital access and literacy in Kansas City, including challenges faced by single parents who struggle with work-life balance, lack of digital literacy, and affordability issues, such as unpaid internet bills. She highlighted KC Digital Drive's dual focus on access and adoption of technology, noting how the organization helps individuals optimize their internet service, such as identifying affordable internet plans or upgrading outdated routers.

When asked about the connection between digital literacy and workforce development, Leslie pointed out the gap between basic digital skills and advanced technical skills like coding. She emphasized the need for programs that focus on fundamental skills, such as email, Microsoft Word, and online security, to help individuals gain the digital literacy and confidence necessary for securing jobs that offer a family-supporting income.

Leslie shared how the Affordable Connectivity Program (ACP) has made a significant impact on access and affordability. However, she noted that even with the \$30 monthly discount, internet service remains unaffordable for many households.

Leslie discussed the Digital Life Exchange, an NTIA-supported 5-year initiative that focuses on growing the efficiency and effectiveness of the digital equity ecosystem by facilitating partnerships and collaborations among more than 40 organizations. This initiative aims to create digital skills pathways and offer devices through strategic partnerships.

KC Digital Drive will evaluate the Digital Life Exchange using a framework that includes qualitative and quantitative data from pre- and post-surveys and focus groups. Programs like the North Star Digital Literacy program and KC Goes Tech measure digital literacy and confidence through surveys that track changes in participants' tech usage and perceptions of their skills.

Many community organizations face capacity challenges in effectively delivering digital skills programs. Leslie highlighted KC Goes Tech as an example of addressing this issue. This KC Digital Drive program provides microgrants to nonprofits, enabling them to deliver tailored digital literacy classes to the communities they serve. Participants who complete the training can

purchase a device for \$50. Leslie views this model as crucial for local capacity building and ensuring that training aligns with the community's specific needs.

Looking ahead, Leslie emphasized the importance of educational institutions like UMKC in promoting digital equity. She shared that the UMKC Midwest Center for Nonprofit Leadership was selected to evaluate the Digital Life Exchange. She recommended collaborating with the UMKC Digital Equity Working Group and pointed to the Missouri Office of Broadband Development's "Digital Opportunity Plan," which includes workforce development metrics relevant to digital equity. Leslie also mentioned KC Digital Drive's upcoming projects, such as AI workshops, and offered to share resources, including KC Goes Tech survey data and the Repair Café press release.

Stakeholder 3: Dana Harris, Stakeholder in Workforce Development

Dana Harris provided actionable insights on designing and implementing impactful workshops to bridge the gap between digital literacy and workforce development. Dana shared her vision for the Workshop on November 18, 2024, where aSTEAM Village will bring together various stakeholders to explore STEAM pathways through a unique card game competition, The Stakeholder's Dilemma. Through the workshop, Dana aimed to engage as many stakeholders as possible, representing 18 STEAM pathways, and provide them with the opportunity to play the game from a top-down perspective. Dana emphasized that the goal of this workshop was to facilitate conversations that connect digital literacy with real-world applications, such as workforce development.

The Project Team discussed how their involvement in the workshop would align with the workforce development goals of the Project. Team Member Darin suggested a before/after skills assessment to gather empirical data that would support the effectiveness of the program. Ultimately, the Project Team agreed to review the Workshop Facilitation Guide and provide tangible feedback and suggestions for live data gathering and assessment. Dana confirmed that she would send the team the *Facilitation Guide*, along with a deck of playing cards for the workshop.

Stakeholder 4: Amanda Graor, Chief Innovation Officer at MARC

Amanda Graor, MARC's Chief Innovation Officer and Director of Data and Digital Services, discussed MARC's role as both a convener of resources and a facilitator for collaboration among regional stakeholders in the Digital Equity space.

In terms of increasing digital access, Amanda noted the importance of targeted marketing to build community awareness about existing Digital Equity programs. She also highlighted the increasing cost of digital devices and services, which restricts abilities to increase access and adoption.

On the subject of skills training and workforce readiness, Amanda explained that there is a growing need for workforce development programs that align more closely with the specific technical skills that employers are seeking. For example, while some apprenticeship programs

have been really successful, there have areas of disconnect between the workforce skills taught to future employees and the specific requirements that employers demand. The absence of employers' direct input on workforce development can lead to this disconnect between job seekers' skills and employers' needs.

Amanda mentioned the need for a comprehensive source of workforce development data in the region, although MARC provides various reports, including those on architecture and skills trades, which do not focus specifically on Digital Equity in the workforce. MARC collects demographic data on the communities it serves but does not track individual program participants or their outcomes. Amanda stressed the importance of distinguishing between output and outcome metrics, explaining that while organizations may track the number of people trained, it is more difficult to determine the long-term impact or track longitudinal data of those training efforts.

Stakeholder 5: Pastor Weaver, Macedonia Baptist Church

Complementing the perspectives of other stakeholders, Pastor Weaver, the IT Director at Macedonia Baptist Church, highlighted the critical role of community-based organizations in addressing Digital Equity through culturally responsive engagement and outreach. Pastor Weaver shared details about the newly launched Digital Health Service Hub at the church, which is designed to provide telehealth access to community members. The Hub includes two computers and two tablets, each with links to healthcare providers like St. Luke's and University Health. Church members are able to take the tablets home, while the computers are available in a private space to allow for confidential telehealth appointments. This initiative, still in its "proof of concept" phase with St. Luke's, has been operational since October 2024 and aims to expand the number of churches and community centers involved. Ambassadors assist users in navigating the system, and all printed documents are shredded in compliance with HIPAA regulations.

The idea for the Hub originated with the vision to help people access healthcare more easily. The church partnered with aSTEAM and St. Luke's, and other local health organizations like Swope Health and University Health have approached the church about expanding their partnership. Additionally, several local churches have inquired about replicating Macedonia Baptist's model. Despite its success, Pastor Weaver noted that one of the biggest challenges faced so far has been outreach — specifically, making sure the community is aware of the Hub's services. The church has advertised the service on its website and through aSTEAM, but there are plans to engage news stations and radio for broader outreach.

Pastor Weaver emphasized the ongoing partnerships between aSTEAM, St. Luke's, and Macedonia Baptist, particularly in building pathways for upward mobility in underserved communities. He also discussed the challenges faced by communities east of Troost Avenue, which lack adequate resources. He expressed a need for collaboration between the City and telecommunication carriers to improve digital access and adoption.

Pastor Weaver believes that faith-based organizations have a significant role in fostering social change, particularly around issues like Digital Equity. He explained that COVID-19 played a major role in bringing the church's technology forward, especially in terms of streaming services and improving access to digital tools for the congregation.

In terms of measuring the success of the Hub, Pastor Weaver explained that the church tracks user participation during the 10-month "proof of concept period" through assessments, which launched. Although the church does not view success strictly in terms of numbers, it aims to ensure accessibility and will evaluate the program's success by monitoring user engagement. They plan to implement ID scan cards for individuals to track their participation.

Looking to the future, Pastor Weaver shared plans for a community center that would be driven by technology and open to all, with the Hub eventually transitioning there.

Appendix D

UMKC Law, Technology, and Public Policy Course

November 11, 2024

Stakeholder's Dilemma Playdate Guide Facilitation: UMKC Digital Equity Project Team's Feedback & Suggestions

Background/Context and Disclaimers

A student team ("Project Team") consisting of Darin Breeden, Meredith Morrison, and Ali Imran Nasir, with input from their faculty mentor, Professor Anthony (Tony) Luppino, created this document as part of the "Applied Digital Equity to Replace Poverty with Prosperity Project" ("LT&PP Project") in UMKC's Selected Projects in Law, Technology, and Public Policy (LT&PP) course. On October 24, 2024, the Project Team met with Dana Harris of Next Steps Youth Entrepreneurship via videoconference. That same day the Project Team received from Ms. Harris *The Stakeholder Dilemma's Playdate Facilitator's Overview* (the "Guide") for a scheduled November 18 workshop (the "Workshop"), hosted by aSTEAM Village in Kansas City, MO and some related materials on the contemplated Workshop activities. This document includes, for consideration by Ms. Harris/Next Steps Youth Entrepreneurship and aSTEAM Village (the "Workshop Hosts"), the Project Team's feedback and suggestions on facilitation of the Workshop activities described in the *Guide*, covering: (1) materials and roles, (2) data points and capture methods, and (3) general considerations for planning and facilitation.

Neither UMKC nor the Project Team is a co-host of the Workshop, nor are they obligated to participate in its conduct or facilitation. Individual members of the Project Team may choose to assist with Workshop facilitation if offered the opportunity, under terms they agree upon with the Workshop Hosts. Additionally, the Project Team has not reviewed any grant or contract terms that may impact the Workshop Hosts' ability to adopt or implement one or more of the suggestions provided below. This document is not intended, nor should it be construed, as legal advice. The Project Team assumes that the Workshop Hosts will consult with their legal advisors to address any legal, contractual, or other obligations they may have when adopting or using one or more of these suggestions, or in other aspects of conducting the Workshop.

Proposed Facilitation Materials and Roles

To help in effectively executing the proposed capture methods, the Project Team recommends delegating and using the following facilitation roles and materials. We suggest the Workshop Hosts consider arranging for each Workshop team (a small group of participants) to have their own set of materials, one Facilitator, and one Scribe.

Facilitation Roles

- **Facilitator** – selected by Workshop Hosts in advance of the Workshop, would pose specific questions to their designated team while following the framework in the *Guide*. They would also take their own notes on a clipboard to capture the responses of participants.
 - These notes might be more substantive than what the Scribe captures on flipcharts.
 - At the beginning of the Workshop, the Facilitator would ask their designated team for someone to volunteer as a Scribe (described below). To appoint a Scribe, it may help to ask the participants if they have ever engaged in a formally facilitated session, facilitated a session themselves, or taught school.
 - If applicable, the Facilitator would be responsible for any team report-outs delivered to all participants. In other words, they will be the team’s spokesperson.
- **Scribe** – a designated participant on the team, would write the participants’ responses on a flip chart.

- The Scribe’s notes not need be “jot-for-jot,” but it would be the Facilitator’s job to try to ensure that the participants’ answers are understood and correctly captured.

- However, if the Scribe needs clarification, they may ask the participant if they accurately captured their response, or simply ask them to repeat their answer.

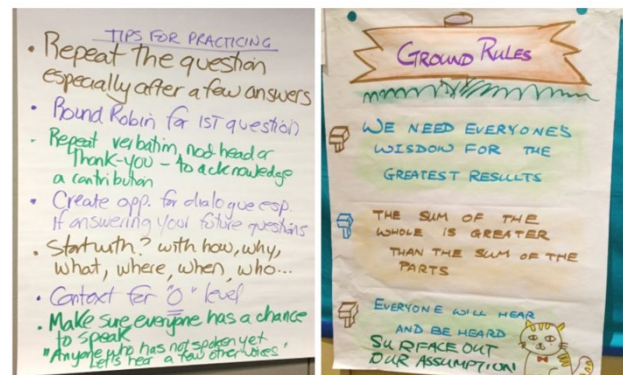


FIGURE 1: EXAMPLES OF FLIPCHART NOTES

- The flipchart method provides a visual aid to help sustain participants’ engagement and ensures the participants feel understood by seeing their responses in real-time.

- For visual appeal, it is recommended that the Scribe use a variety of colored markers to take notes. Darker colors are easiest to read. *Figure 1* shows two examples of “visually appealing” flipcharts made during a facilitated session.³²
- When the Workshop ends, a Workshop Hosts staff member would collect the notes from each Facilitator and take photos of the flipchart notes to ensure the data is recorded.

Facilitation Materials

1. Flip charts
 - At least one per team
2. Sharpies or “flip chart markers”
 - Enough for each team to have at least two to three colors
3. Easels (or chairs) to prop up the flipcharts
 - One per team
4. Clipboards
 - For each Facilitator
5. Pens
 - For Facilitators
6. Notepads or blank sheets of paper
 - In case the Facilitators need space to take additional notes

Materials to Print:

7. Questions [suggestions and examples of questions are in the next section]
 - Two to three questions per page, so the Facilitator has space to write responses
 - Enough copies for each Facilitator
8. The *Guide*
 - Enough copies for each Facilitator

³² North Star Facilitators, *Keep Flipcharting from Becoming a Dying Art*, (Oct. 4, 2016), <https://northstarfacilitators.com/2016/10/keep-flipcharting-from-becoming-a-dying-art/>.

- The Workshop Hosts could send the *Guide* to Facilitators several days before the Workshop or any related facilitation training, asking them to thoroughly familiarize themselves with the process.
9. (1) Pre-play questionnaire and (2) post-play questionnaire
- Several extra copies for participants who don't have a device to complete the online questionnaire.
10. *Any other handouts that the Workshop Hosts want to provide to the Facilitators and Workshop participants

Proposed Data Points and Capture Methods

The following offers for the consideration by the Workshop Hosts suggestions on potential data points and capture methods, with direct references to the *Guide*.

1. Skills Self-Assessment Results

- **Reference:** “*Conduct A Skills Self-Assessment*” (p. 6)
- **Data Point:** Skills identified by participants.
- **Purpose:** To reveal each participant's strengths and gaps, which could influence team strategies.
- **Capture Overview:** Track the results of each participant's skills self-assessment, which creates a foundation for their contributions. The *Guide* dictates that this self-assessment aligns participants' skill cards into achievement domains (e.g., *Career Awareness & Exploration, Workforce Readiness & Personal Branding, STEAM Career Cluster*) to inform team dynamics and roles.
- **Method:** Pre- and Post-Play Surveys or Polls
 - The Project Team recommends giving participants two self-assessment “pre-play” and “post-play” questionnaires—one at the beginning of the Workshop and the other at the end. The self-assessments might take the form of live public polls or surveys. There are benefits to using either, and the Workshops Hosts can determine which best meets their needs and resources.
 - If time allows, the Facilitator might ask if anyone marked additional skills sets in their post-play questionnaire, compared to what they marked in the pre-play one.
 - Regardless of the questionnaire platform, the Project Team suggests asking participants to bring a device to the Workshop, such as a laptop, iPad, or smart phone, so participants can complete the online questionnaires and access their responses. If a participant cannot complete the questionnaires online during the workshop, the Workshop Hosts could provide paper copies.

Polls v. Surveys

- Here, the most significant differences between a live poll and a survey include (1) timing – when to share the questionnaire with participants and how long it takes them to complete it and (2) shareability and accessibility – if the skills sets are displayed for all to see.
- **Live polls** are designed to capture the participants' immediate reactions or insights. They are usually quick to complete and give instant results. The results could be displayed on a large screen for all to see, engaging the audience in real-time. The screen could show the aggregated skills of each team, e.g., what percentage of the team has XYZ skills.
 - Some suggested platforms to consider: Kahoot! or Mentimeter
- **Surveys** are more comprehensive and can include a mix of question types (multiple-choice, open-ended, ratings, etc.). Surveys can gather detailed feedback and insights about the participants and their experiences. In addition to a skills self-assessment, a post-play survey could ask for general feedback about the Workshop itself, e.g., “would you recommend this workshop to your peers?”, “Is there anything you would add or change?”, etc.
 - Some suggested platforms to consider: Google Survey or Survey Monkey
 - Note for consideration: Google Survey is free and offers a variety of question formats, e.g., multiple-choice, ranking, short answer, and essay. Answers are automatically recorded in a Google Sheet, which can be downloaded into an Excel spreadsheet. Google Survey also emails the participants their own responses. In this scenario, it could be beneficial for participants to view their responses.

2. Community Impact Metrics (Social ROI)

- **Reference**: “*Social ROI & Implementation*” (p. 8)
- **Data Point**: Proposed social impacts, including job creation, improved health outcomes, or community engagement.
- **Purpose**: To help measure whether the proposed solutions align with the broader project goals (such as Digital Equity and economic empowerment). The emphasis on Social ROI highlights the need for evidence-based metrics to validate the solution's potential.
- **Capture**: We suggest keeping a record of discussion points where participants define how their strategies will impact socio-economic conditions and community development. According to the *Guide*, each team must show a measurable Social Return on Investment (ROI), which includes “long-term benefits for community reinvestment and sustainability.”
- **Method**: Facilitators would pose questions to their team on Social ROI methods and measurements related to their team’s professional focus(es). The team’s Facilitator asks pre-drafted questions while the Scribe notes them on the flipchart. After gathering and sharing individual responses, the team collectively determines the measurements and

methods that they want to track and prioritize based on the list of individual ideas. The Scribe could mark the “priority data points” on the flipchart.

- **Potential Questions and Talking Points on Social ROI:** Here are several potential talking points and questions for the Facilitators to pose to their teams and capture as data points during the exercise:
 - *[Facilitator] provide the team with examples of measurements for Social ROI, such as the number of community events and attendance, devices in the home, engagement with community anchor institutions (e.g., libraries and schools), employment rates, etc.
 - Will you identify the groups that should be the targeted priorities of Social ROIs?
 - How do you know your Social ROI program is successful?
 - What are the measurable outcomes?
 - How do you know your program is serving your targeted population(s)?
 - Is there existing data to suggest that there is a gap in social benefits?
 - Is there existing data to support the creation of your Social ROI program?
 - Are there similar Social ROI programs in practice?

3. Stakeholder Engagement Levels

- **Reference:** “*Stakeholder Engagement & Impactful Solutions*” (p. 8)
- **Data Point:** Engagement and collaboration within teams and across community sectors
- **Purpose:** To show how well each team incorporates stakeholder perspectives and community needs into their strategies and engagements. This information can be valuable in assessing the real-world applicability and inclusivity of their solutions.
- **Capture:** Document each team’s strategies for engaging diverse stakeholders (e.g., representatives from education, healthcare, and government). The *Guide* notes that winning teams must demonstrate “effective collaboration by engaging all stakeholders and aligning their resources toward a common solution.”
- **Method:** Could use the same method as the previous section.
 - **Potential Questions and Talking Points:**
 - How might your strategies impact your target audience in other areas of their lives?
 - Is there a ripple of effect of one benefit?

- How does your proposed solution align with the mission and values of the other stakeholders?
 - This question might require discussion amongst the participants about their organizations and industries.
- What challenges do you anticipate when trying to collaborate with community stakeholders?
- What strategies will you use to engage the stakeholders?
 - The Facilitators might suggest categorizing stakeholders based on different levels of required engagement, such as “inform, monitor, collaborate, or engage.”
- Did stakeholder input inform your team’s solutions?
 - If yes, how so?

4. Budget Allocation and Resource Management

- **Reference:** *“Completion of the Funding Goal” (p. 8)*
- **Data Point:** Budget and resource decisions made by each team.
- **Purpose:** To capture the team’s capacity for practical resource management, highlighting their approach to financing initiatives. How teams balance operational needs, outreach, and impact can indicate their strategic alignment with project goals, such as digital inclusion and job creation.
- **Capture:** Monitor how each team allocates their budget to different aspects of their solution. Teams might be asked to simulate real-world budgeting by “determining a budget for their solution,” pooling contributions, and tracking expenditures through skill cards, ultimately working toward a crowdfunding-like funding goal.
- **Method:** Same as above.
 - **Potential Questions and Talking Points:**
 - Identify major budget line items, such as facilities, operational costs, staffing, etc.
 - What is your contingency plan if your programmatic costs exceed the budget?
 - Who is the accountable party for resource management?
 - How can you effectively fulfill your resource needs?
 - For example, this could involve using event space from another stakeholder or fundraising.

5. Quality of Final Presentations (Social ROI Presentation)

- **Reference:** “*Persuasive Final Presentation*” (p. 8)
- **Data Point:** Scoring of final presentations might be based on clarity, feasibility, creativity, and alignment with Workshop objectives.
- **Purpose:** To assess the effectiveness of each team’s communication and the strength of their arguments. This method could help assess whether the teams can persuasively convey the importance of their solutions and demonstrate measurable impacts, which is critical for gaining real-world stakeholder buy-in.
- **Capture:** Score each team’s final presentation against key criteria outlined in the *Guide*. Teams are evaluated on their ability to present a clear, feasible, and impactful solution that meets project objectives, using strategic communication skills to advocate for their approach.
- **Method:** The judges use a presentation rubric in which scores are based on resource management, detailed strategies for stakeholder engagement, short-term and long-term measurements of success, realistic expectation for implementation, use of data-based evidence in their presentation, etc.

6. Use of Skill Cards and Value Creation

- **Reference:** “*Highest Skill Card Contributions & Value Creation*” (p. 7)
- **Data Point:** Skill cards applied, and the value generated from their use.
- **Purpose:** To capture how effectively each team draws upon varied skill sets to address challenges. Recording the skills used offers insight into which areas (e.g., leadership, entrepreneurship) are most valued for tackling Digital Equity issues.
- **Capture:** Track which skill cards each team uses and the corresponding value contributions. The *Guide* explains that each card “represents a skill or resource applied to the solution,” with teams aiming to leverage diverse skills across the Career Awareness & Exploration, Innovation & Entrepreneurship, and Workforce Readiness domains.
- **Method:** Facilitator would note which skill cards are and are not used by the team. The Facilitator could also ask the team the questions below.
 - **Potential Questions and Talking Points:**
 - Are there gaps in your team skills sets?
 - In what context do you plan to use a specific skill [card]?
 - What is the best place(s) for this skill set in your program?
 - What is the value being created by using the specific card?

- What will be the outcome(s) of using the specific card(s) in specific places?

By using these such points, the Workshop Hosts and the Facilitators could assess participant engagement, resource allocation, and stakeholder alignment throughout the Workshop. This structured approach would guide the Facilitators in analyzing both team performance and the broader impact of their proposed solutions.

General Considerations for Workshop Planning

The following includes the Project Team's general considerations for those involved in the Workshop's planning and execution processes.

1. Post-Play Reflection

- If this is not already on the agenda, we suggest the Workshop Hosts consider adding a brief reflection session where participants share key takeaways or skills they plan to apply outside the Workshop. This could reinforce the Workshop's goals and inspire participants to bring these lessons into their own communities. It may also be worthwhile to ask participants for their "reactions," such as "next steps" and "thoughts about your industry's future," implicitly encouraging stakeholders to share if or how they will follow-up after the Workshop.

2. Equity, Diversity, and Inclusion in Skills

- Consideration might also be given to expanding the skills on the Community On-Demand cards to include elements of cultural competence, inclusivity, and equity-minded decision-making. For instance, the cards could focus on skills like "Inclusive Communication," "Community Empathy," or "Cultural Awareness" based on professional, academic, or personal experiences, or trainings.

3. Community Agreements

- The Workshop Hosts might also consider establishing community agreements that promote respect, encourage active listening, and empower everyone to voice their perspectives without fear of judgment. Community agreements could be drafted in advance, and the Facilitators could simply ask their team of participants for additional terms, feedback, and ultimate agreement. Alternatively, Workshop participants could draft their own community agreements in their small teams. The latter method, of course, requires more time than the former.

Appendix E

Impact of Youth STEM/ STEAM Education and Skills Training

Annotated Bibliography

Meredith Morrison & Ali Nassir

Last Updated: October 2, 2024

The following comprises an annotated bibliography of articles, studies, and reports about the effects of STEM/ STEAM education and skills training on educational attainment, career prospects, and health outcomes. The focus groups or target populations in most of the resources encompass youth, ages 13 to 18, but some include early-childhood and adulthood statistics.

Educational Attainment

1. Kazu, İ. Y., & Kurtoglu Yalcin, C. (2021). *The Effect of STEM Education on Academic Performance: A Meta-Analysis Study*. TOJET: The Turkish Online Journal of Educational Technology, 20(4). This meta-analysis examines the influence of STEM education on students' academic performance by synthesizing data from various studies. The authors utilized statistical analysis to assess the effect size of STEM interventions across different educational disciplines, with a focus on science subjects. The results indicate a significant positive impact of STEM education on academic achievement, particularly in science disciplines, highlighting the importance of integrating STEM approaches in educational practices. The study underscores the need for enhanced support and resources for STEM initiatives to foster essential skills in 21st-century learners.
2. U.S. Department of Education (2026). *Vision 2026 Sets Course for the Future of STEM*. This article envisions a future where STEM education is integrated into all grade levels, starting from preschool and continuing through high school and beyond. It emphasizes creating classroom environments that combine technology, real-world challenges, and community learning to engage diverse students. The initiative aims to address educational inequities by ensuring equal access to STEM education for all students, regardless of race, gender, or socioeconomic background. Examples of innovative programs like the Children's Museum of Pittsburgh's MAKESHOP® and National Geographic's BioBlitzes highlight the potential of hands-on, collaborative STEM learning experiences.
3. Carlone, H. B., & Johnson, A. (2007). *The Role of STEM Programs in Science Identity Development*. Journal of STEM Education, 21(1), 5-15. This study employs a mixed-methods approach, integrating qualitative interviews and focus group discussions with quantitative analyses of student performance metrics to investigate the effectiveness of

STEM enrichment programs for underrepresented students. The findings reveal that these programs significantly enhance students' science identity, sense of belonging, and overall academic success through proactive care and individualized support from program staff. By establishing trusting relationships, staff were able to tailor their mentoring approaches to meet diverse student needs, ultimately promoting a more inclusive and motivating educational environment. The research contributes a multifaceted framework for program administrators, highlighting essential strategies for designing, implementing, and assessing the impact of STEM enrichment initiatives on student outcomes.

4. Topsakal, Ü., Kurt, G., & Güneş, G. (2022). *The Effect of Problem-Based STEM Education on the Students' Critical Thinking Tendencies and Their Perceptions for Problem Solving Skills*. Science Education International, 33(2), 136-145. This study utilizes a quasi-experimental design, incorporating experience diaries and interviews to assess the impact of problem-based STEM activities on secondary school students' problem-solving skills and critical thinking tendencies. The results show that students in the experimental group, who participated in STEM activities, demonstrated significant improvement in both areas compared to the control group, highlighting the positive influence of interdisciplinary, problem-solving-based STEM education.
5. Kevin Neese, *What Is STEAM and Why Is It Gaining Popularity?*, CONNECTIONS ACADEMY BY PEARSON (Aug. 17, 2023). <https://www.connectionsacademy.com/support/resources/article/what-is-a-STEAM-education/>. This article briefly summarizes the shift from STEM to STEAM curricula. Traditionally, educational curricula have placed a strong emphasis on STEM (Science, Technology, Engineering, and Mathematics), with the aim to prepare students for a technology-based world. There has been a growing realization that the arts should not be overlooked, so in recent years, the “A” was added to holistically integrate arts into the traditional STEM model. For example, in a STEAM-based curriculum, students might explore the connection between geometry and art by examining the shapes and symmetry used in various architectural designs. This blend of disciplines not only enhances the learning experience for students but also makes learning more engaging, captivating, and relatable overall.
6. Matt Weyer, Mary Dell’Erba, *Research and Policy Implications of STEAM Education for Young Students*. Education Commission of the States (Apr. 2022). <https://www.ecs.org/wp-content/uploads/Research-and-Policy-Implications-of-STEAM-Education-for-Young-Students.pdf>. This policy brief uses a combination of literature reviews, case studies, and examples of existing education programs to inform

recommendations for integrating STEAM into the classroom. STEAM can enhance learning outcomes by fostering creativity, problem-solving, and critical thinking. Key takeaways include: (1) Learning Rationale -- STEAM encourages holistic learning by merging technical and creative disciplines; (2) Impact on Equity -- STEAM helps bridge educational gaps, making learning accessible to diverse populations because by including the arts, students may find more entry points into subjects like science and engineering and can engage in ways better suited for their learning styles; and (3) Policy Implications -- educators and policy makers should advocate for curriculum changes, educator training, and increased research to support STEAM initiatives.

7. National Math and Science Initiative, 2020 NMSI i3 Project Report (2020), <https://www.nms.org/getmedia/7cdd44ad-0941-4ecb-b078-8b1e47ba17f2/2020-NMSI-i3-Project-Report.pdf.aspx>. This report analyzes the National Math and Science Initiative's (NMSI) efforts to enhance student performance in STEM Advanced Placement (AP) courses, especially among underrepresented groups. The initiative involved 56 total schools in Texas, New Mexico, and California, each tracking student performance data. The STEAM initiative improved overall student outcomes significantly, with increases in AP exam participation and passing rates, more students qualifying for college credit, and better preparation for STEM-related college majors and careers. These outcomes emphasize the importance of targeted support for both teachers and students in achieving educational equity.
8. Ahmet Tayfur Akcan, Bekir Yildirim, *Teachers' Views on the Effect of STEM Education on the Labor Market*. *Frontier Psychology*. (Jun 2023), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10292747/pdf/fpsyg-14-1184730.pdf>. The study explores teachers' views on the impact of STEM education in the labor market, focusing on the relationship between the two. Qualitative data was collected from 32 teachers using a semi-structured interview form, then analyzed via inductive content and descriptive analysis. The findings show that STEM education offers new fields of work, promotes entrepreneurship, and increases job opportunities. Additionally, it helps reduce social costs, makes participants satisfied with their work, prevents brain drain, improves soft skills, and decreases underemployment rates.
9. Nat'l Sci. Bd., *The STEM Labor Force of Today: Scientists, Engineers, and Skilled Technical Workers* (Aug. 31, 2021), <https://nces.nsf.gov/pubs/nsb20212>. This report examines the US STEM workforce, highlighting its diversity in education, occupation, and demographics. As of 2019, STEM workers made up 23% of the total workforce, with many lacking a bachelor's degree. The report notes lower unemployment rates and higher

earnings for STEM workers compared to non-STEM workers and emphasizes the need for greater demographic diversity in STEM fields. The report's analysis is based on various data sources, including education and workforce surveys conducted by the National Center for Science and Engineering Statistics (NCSES). These surveys cover most occupations in the STEM labor force with a bachelor's degree or higher. Data from the U.S. Census Bureau and the Bureau of Labor Statistics (BLS) are also used to analyze the STEM workforce at all education levels, providing analysis of the STEM workforce as defined by those with at least a bachelor's degree and those without. Topics covered in this report include the definition, size, and growth of the STEM workforce as well as the relationship between training and occupation. Salary and unemployment rates provide information on the position of STEM workers in the economy and their labor market conditions.

Career Prospects

10. Buchter, J., Kucskar, M., Oh-Young, C., Weglarz-Ward, J., & Gelfer, J. (2017). *The Issues: Why STEM Education Must Begin in Early Childhood Education*. College of Education Policy Reports, University of Nevada, Las Vegas. This article emphasizes the importance of integrating STEM education into early childhood education, outlining the critical role it plays in neurological development and setting a foundation for future academic success. The authors argue that starting STEM education early, during the birth-to-age-5 period, is key to fostering scientific inquiry, improving educational outcomes, and preparing children for STEM-related careers. The report highlights the benefits of play-based, hands-on learning approaches, which embed STEM concepts into everyday activities, thereby encouraging early cognitive and motor skill development while supporting Nevada's long-term economic growth in technology sectors.

11. Nat'l Sci. Bd., *The STEM Labor Force of Today: Scientists, Engineers, and Skilled Technical Workers* (Aug. 31, 2021), <https://nces.nsf.gov/pubs/nsb20212>. This report examines the US STEM workforce, highlighting its diversity in education, occupation, and demographics. As of 2019, STEM workers made up 23% of the total workforce, with many lacking a bachelor's degree. The report notes lower unemployment rates and higher earnings for STEM workers compared to non-STEM workers and emphasizes the need for greater demographic diversity in STEM fields. The report's analysis is based on various data sources, including education and workforce surveys conducted by the National Center for Science and Engineering Statistics (NCSES). These surveys cover most occupations in the STEM labor force with a bachelor's degree or higher. Data from the U.S. Census Bureau and the Bureau of Labor Statistics (BLS) are also used to analyze the STEM workforce at all education levels, providing analysis of the STEM workforce as defined by those with at least a bachelor's degree and those without. Topics covered in this report

include the definition, size, and growth of the STEM workforce as well as the relationship between training and occupation. Salary and unemployment rates provide information on the position of STEM workers in the economy and their labor market conditions.

Health Outcomes

12. UNESCO, *Education for Sustainable Development: An Expert Review of the Role of Education in Achieving the Sustainable Development Goals* (2022), <https://unesdoc.unesco.org/ark:/48223/pf0000386165>. The report discusses technology's crucial role in enhancing education for sustainable development (ESD), highlighting how digital tools can facilitate access to information, foster collaboration, and promote innovative teaching methods. The report also underscores the need for educators to integrate technology effectively into ESD curricula, helping students develop skills for the digital age. The authors employed a mixed-methods approach of quantitative and qualitative data, including case studies from various countries to illustrate effective ESD practices, surveys from educators and policymakers, and analyses of existing educational frameworks.

Appendix F

White Paper from aSTEAM Village



Owning the Solution | Workforce Development / Skilled Trades Programs

Executive summary

The biggest challenge to achieving success is poverty -- of the general area, as well as the students and families served by aSTEAM Village (aka, aSV). Just as the health of downtown Kansas City (KC) and the KC Kansas/Missouri region are linked, so are the health of the downtown core and its surrounding neighborhoods. Diverse challenges face downtown neighborhoods including: increasing development pressures, affordable housing and displacement concerns, outdated plans, economic distress, issues related to homeless encampments, and inadequate infrastructure. As stated in the AdvanceKC Strategic Plan, "what KC needs to do is connect -- come together in new and meaningful ways across all barriers to grow its economy, stabilize its population base, and raise levels of local wealth". aSV's Workforce Development and Skilled Trades Programs are the perfect tool to help make this happen.

The consequences of the digital divide during the pandemic have been severe. The COVID-19 pandemic has made it necessary for jobs, classrooms, and businesses to switch to virtual/remote, which has highlighted the disparities in internet connectivity and with it, access to digital learning, telehealth, and public and residential broadband service. Although there have been some temporary stop-gap measures enacted to tackle near-term challenges and temporarily expand internet service in some states, addressing these inequities ultimately demands long-term solutions -- to provide more citizens with reliable broadband access in their homes.

The existing digital divide has increased current inequities and punished low-income families during the pandemic. aSTEAM Village programs include community improvement activities in the form of broadband investment that meets the LMI national objective as: an area benefit in which the service area for the investment is primarily residential and the population of the service area is at least 51 percent LMI; and as a jobs benefit in which at least 51 percent of the jobs created or retained by the investment are held by or made available to LMI persons.

aSTEAM Village, a Missouri nonprofit corporation, is a 501(c)(3) non-profit organization whose mission is to inspire students and families to pursue education and career pathways in Science, Technology, Engineering, Arts, and Math (STEAM), through community-based project learning

and innovative programs. aSTEAM Village works to engage students, families, and educators in STEAM pathways to facilitate career and education readiness for participation in the economies of today and tomorrow.

Proposed Solution:

Like the Gaia theory, which postulates that Earth is a self-regulating complex system involving the biosphere, atmosphere, hydrospheres, and pedosphere, tightly coupled as an evolving system; Digital Gaia involves incorporating climate, economic development, and infrastructure needs to build a complex system that engages government, education, and industry to support equitable services to disadvantaged | marginalized | underserved communities. We can only achieve the [Justice40 goal](#) if we provide coordinated resources to communities to help overcome the barriers between available funding and the places/communities that need it most.

The Biden-Harris administration is making historic investments that address climate, economic development, and infrastructure needs in communities around the country thanks to the Infrastructure Investment and Jobs Act, aka. "The Bill". To make the most of these once-in-a-generation, transformational commitments, the White House and Cabinet agencies are coordinating closely on the planning, implementation, and technical support needed to ensure investments create long-term benefits nationwide.

aSTEAM Village's Workforce Development and Skilled Trades Programs focus on STEAM education for youth and adults including: IT and Computer Science certification preparation; and certifications for college readiness, workforce development, and entrepreneurship. aSTEAM Village is a partner in the US Department of Housing and Urban Development (HUD) [EnVision Centers](#), which are premised on the notion that financial support alone is insufficient to solve the problem of poverty. Rather, intentional and collective efforts across a diverse set of organizations are needed to implement a holistic approach to foster long-lasting self-sufficiency.

EnVision Centers, like aSTEAM Village, provide communities with a centralized hub for support in the following four pillars: 1) Economic Empowerment, 2) Educational Advancement, 3) Health & Wellness, and 4) Character & Leadership. Access to Workforce Development and Skilled Trades Programs serve to support residents' self-sufficiency in all four pillars, through skill acquisition for STEM career pathways.

a. IT Workforce Development: [aSV Tech Education - aSTEAM Village Inc](#)

1. Course - IC3 GS6 Level 1
2. Course - IC3 GS6 Level 2
3. Course - IC3 GS6 Level 3
3. Course - A+ 1001
4. Course - A+ 1002
5. CompTia A+ Industry Exam Voucher

b. Skilled Trades: [Workforce Skilled Trades - aSTEAM Village Inc](#)

1. Select Pathway (8 Pathways: Solar; Electrical; HVAC; Plumbing; Facilities Management; MultiFamily Maintenance; Appliances; or Commercial HVAC)
2. Skilled Trade Assessments
3. Earn Certificate of Completion and Mastery

Financial requirements:

- Smart classrooms in aSV headquarters at 1600 Paseo Boulevard require funding for equipment and devices to add smart features throughout, and develop the hands-on training program for students.
- Virtual classrooms require funding to develop the classroom in 2D and 3D environments, including software licenses for development, booking/scheduling system integration, and training programs for students, educators, and mentors.
- Digital resources require funding to compensate advanced AI developers for their expertise in programming languages such as Python, R, Java, and C++ and web development technologies such as HTML, CSS & JavaScript.
- Increase staffing by employing experts, including educational consultants, to support program development, marketing, administration, physical outreach, etc..
- A minimum of \$250,000 in funding to accommodate the above-listed workforce development and skilled trades curriculum to train at least 250 persons, as well as the necessary accompanying staffing, supplies, etc., which equates to \$1,000 per person.