LEAD STEM Fellowship: Capstone Impact Report

Schenker Consulting Group LLC
Building Possibilities by Changing Minds

GREATER NEWARK
STEM ECOSYSTEM

Dismantling Organizational Barriers to Advance STEM Learning and Innovation

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1. Innovative Idea

What if the brightest STEM opportunities are sitting just out of reach—not because of a lack of great people and ideas, but because silos keep organizations from working together?

Across the Greater Newark STEM Ecosystem (GNSE), cross-sector partners—businesses, schools, government agencies, community organizations—are eager to collaborate. Yet organizational barriers slow progress and fragment efforts, making it harder for students to access the cohesive, high-quality STEM learning experiences they need to thrive in our future workforce.

This capstone project works to lower those barriers. We're working towards giving our ecosystem partners more opportunities to drive program solutions while using unique data science as a shared language that connects diverse stakeholders, informs strategic decisions, and drives measurable improvements to student outcomes. This isn't another effort that creates more talk and little action - it's a system to sustain collaborative actions that transforms how our region approaches STEM education.

Key Components and Innovation

Our approach targets four strategic areas:

Decentralized Small Steps: Aligning our work with stakeholders' daily workflows will encourage consistent engagement without overwhelming their professional or personal priorities.

Leadership by Example: Visible commitment from ecosystem leaders drives broader participation and models collaborative behavior.

Creating Unique Engagements: Unique collaboration and learning opportunities—such as workshops on invention education and career-connected learning—strengthen cross-sector relationships and bring more people into GNSE.

Data-Driven Collaboration: Every activity generates data that is collected, analyzed, and shared using tools like The Innovation Atlas and Quintilian AI. Projects like DROIDS (a collaboration with Morris Plains School District, Indiana University researchers, and Schenker Consulting Group) demonstrate how shared analytics can transform decision-making.

The solution lies in meeting people where they are—embedding small, manageable upstream changes into stakeholders' day-to-day roles that collectively create significant impact. By producing new data to our activities, we build momentum that attracts funding support and drives volunteer engagement across the ecosystem's 100+ represented organizations.

2. Community Opportunity

Target Audience and Ecosystem Context

This capstone encourages anyone to take a leadership role, with GNSE support - educators, business leaders, nonprofit directors, and community advocates. However, sustainable change requires buy-in from organizational leaders with decision-making authority to commit resources and align institutional priorities with ecosystem goals. Moving forward, these decision-makers become more important to our mission.

The Greater Newark STEM Ecosystem spans New Jersey's most and least wealthy communities, serving over 400,000 public school students attending a wide range of districts, more than 30 higher-ed campuses, with dozens of organizations currently engaged.. This diversity is our strength, and our challenge.

Ecosystem Challenges

Through one-on-one conversations, phone interviews, post-event surveys, proof-of-concept data projects, and review of existing research, we identified six critical barriers grouped into two categories. These barriers exist across organizations, as they pursue their own visions, goals, and objectives that don't always align with the ecosystem's shared mission. *[referenced research at bottom of paper]*

Structural Barriers:

1. **Unclear Goals & Expectations** – Orgs lack a shared, actionable STEM vision
2. **Limited Contribution** – Inconsistent priorities & focus toward shared objectives
3. **Partner Gaps** – Lack of structure and KPIs to support meaningful GNSE engagement

Communication Barriers:

1. **Ineffective Channels** – Information hoarding limits sharing best practices
2. **Inconsistent Messaging** – Conflicting communication weakens cohesion
3. **Technology Silos** – Incompatible platforms data hoarding hinder sharing new insights

Project Response

Our project addresses these misalignments by creating common ground through data and intentional collaboration structures. We rebranded to the Greater Newark STEM Ecosystem to reflect our true regional scope and align better with organizations' interests while advancing ecosystem goals.

Smaller, localized events connect stakeholders in more action oriented formats. We've explicitly included invention education, career-connected learning, and workforce development in our work. We examined STEM prevalence across the region, capturing actionable feedback through post-event surveys, and are identifying common platforms to bridge disparate data systems.

By establishing analytics as a shared language, creating valuable collaboration opportunities between organizations, we're building a more aligned and inclusive ecosystem that will improve collective impact.

3. Alignment to the 5 Pillars of Thriving STEM Ecosystems

This capstone project primarily addresses three interconnected pillars: **Partnerships, Data Management, and Workforce Development**. By focusing on these pillars simultaneously, we're creating a multiplier effect that strengthens the entire ecosystem.

Partnerships: Catalyzing Cross-Sector Synergies

Our work creates intentional connection points between educators, industry, and community organizations. The National Inventors Hall of Fame (NIHF) partnership exemplifies this approach. Following our January 2025 convening, NIHF added six school districts, two private schools, and two NGOs to the program in New Jersey, reaching over 1,000 PreK-8th grade students, training 29 educators, and engaging 35 families by summer. This suggests that our convenings can connect passionate educators

to proven solutions. Our collaboration with Union County College of Union County, NJ (UCNJ) provides a model for more localized summits to bring more educators and workforce partners together.

Data Management: Pioneering Data-Driven STEM Advancement

Establishing data as the common language across sectors will demonstrate how new analytic tools can answer critical district questions. The work with The Henry Ford on the Innovation Atlas will help partners identify where investments can have the greatest impact.

Workforce: Building Future-Ready STEM Talent Pathways

We're creating forums where educators and workforce partners can identify and solve critical disconnects, such as employers reporting new hires lacking critical core skills. Our upstream mindset, including our focus on PK-8, will help workforce partners understand the importance of investing in younger students with the potential to reduce their overall resource investments.

4. Insights & Lessons Learned

Insight 1: External Forces Require Adaptive Partnership Models

Federal policy changes disrupted a planned fall workshop when a workforce partner lost grant funding, forcing internal focus over ecosystem collaboration. This reinforced the need to create flexible partnership models. We learned that follow-through and communication remain persistent challenges even among committed partners. We were reminded that educational institutions may need support in “normal business operations”, and may lead to misalignments in how sectors approach our collective work.

Insight 2: Hunger for Knowledge Exceeds Access to Information

Stakeholders consistently seek data that exists somewhere in some system, but isn't easily accessible and the time required to assemble resources far exceeded expectations. Moving forward, we are focused on avoiding "mission creep", that would dilute our focus and results.

Insight 3: Upstream Thinking Transforms Strategic Focus and Expectations

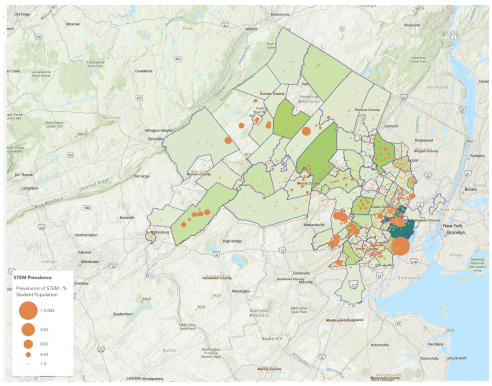
Adopting an upstream mindset fundamentally changed our implementation strategy. It helped us understand innate organizational structural challenges and those barriers will slow our work. Critical success factors emerged: in-person meetings generate stronger engagement, visuals matter for complex work, and exceptional note-taking provides continuity.

5. Impact

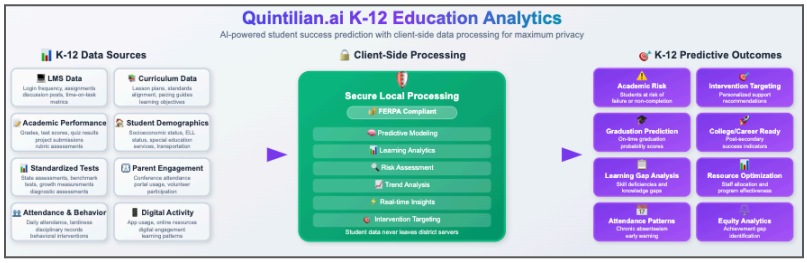
Demonstrating Tangible Progress

The capstone project generated measurable outcomes across multiple dimensions. The STEM Prevalence analysis with The Henry Ford's Innovation Atlas identified opportunities for targeting industry participation, creating a framework for understanding where investments can generate the greatest impact.

Jarell Brown, Director of Analytics & Business Intelligence (B.I.R.A), The Henry Ford
"Our collaboration on leveraging the Innovation Atlas to to visualize STEM programming gaps in northern New Jersey has been a powerful example of how data can illuminate IMPACT opportunity. By identifying areas with minimal STEM resources, we're helping educators, businesses, and industry leaders outline where their investments and programmatic solutions can have the greatest impact. With sustained funding and support from communities and corporate partners, this work has the potential to scale significantly — bringing transformative STEM access to the entire state." (to the right: STEM Program Prevalence Map)



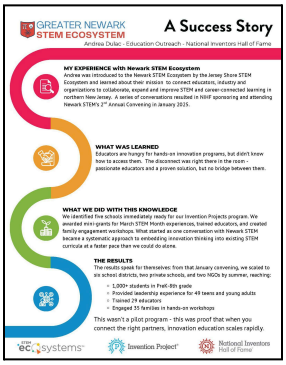
Project DROIDS is developing a platform to provide unique insights that answer critical questions school districts consistently raise. *(Graphic: Data Capture Implementation Process for Quintilian Solution)*



Planning for the 2026 convening is opening to collaborative processes that welcome stakeholders willing to assume ownership of specific planning components, shifting from centralized coordination toward distributed leadership.

Engagement Metrics Tell the Story

The 2025 convening six-month follow-up survey revealed strong sustained engagement. Over 86% of attendees engaged in follow-up conversations, with 68% making three or more new connections. More importantly, 52% reported new partnerships, projects, or business opportunities developing.



The NIHF partnership (detailed in Section 3) exemplifies rapid, scalable impact when strategic ecosystem convenings successfully connect passionate educators with proven solutions.

Andrea Dulac, National Inventors Hall of Fame
"This wasn't a pilot program - this was proof that when you connect the right partners, innovation education scales rapidly.

The April 2025 STEM Showcase with ecosystem partner Teq demonstrated similar engagement patterns. Educators valued collaboration opportunities with fellow attendees (4.0/5.0) and meaningful interactions with technology providers (3.9/5.0). Ninety percent indicated involvement in technology purchasing decisions, with 50% serving as influencers and 40% as decision-making team members. Respondents expressed strong interest in future participation (4.3/5.0), signaling sustained momentum.

Unexpected Discoveries

Several unanticipated impacts emerged throughout this capstone project. It revealed that maintaining momentum requires sustained energy and more community outreach hours than expected, with the ecosystem coordinator needing to consistently marshal resources and track progress.

Perhaps most encouraging was stakeholders' natural willingness to collaborate. Whether providing expertise training, making introductions, or offering referrals, partners are increasing their reliance on GNSE to meet their organization's goals. This suggests the ecosystem has developed genuine trust and shared commitment beyond formal structures.

6. Scaling & Sustainability

Immediate Next Steps

Completing the DROIDS proof-of-concept remains a priority as does the work with the Innovation Atlas to drive value to our ecosystem partners. Establishing consistent communication streams and meeting opportunities ensures stakeholders remain engaged between major convenings. It will also help recruit additional volunteers for the 2026 convening planning.

Scaling Requirements and Resource Needs

Expanding our work will require funding for data projects, covering the costs of data scientists, project managers and compute time. More forward thinking organizations and individuals willing to push their own boundaries to create change can be supported by creating a presentation that tells our ecosystem story. Increasing coordinator capacity to manage ecosystem activities, facilitate connections, and maintain project momentum can only improve results further, and developing community college relationships can result in more locations serving as primary meeting locations within each NJ county.

Adaptation and Recommendations

The approaches developed through this capstone can easily transfer to other ecosystems. The data analytics framework, collaborative planning models, upstream mindset and stakeholder engagement strategies offer replicable templates. Ecosystems pursuing comparable initiatives should connect to reveal collaboration opportunities. When multiple organizations share responsibility for projects rather than relying on single points of contact, capacity expands and sustainability improves.

Additional Materials

National Inventors Hall of Fame Success Story
2025 Convening Post Event Survey and Outcomes
2025 Convening 6-month post event survey
2025 EdTech Showcase and PD

National Institutes of Health - 2025 Leading public sector interorganizational collaboration in healthcare: Lessons from the intersection of climate and health
Databricks - 2024 Data Silos Explained: Problems They Cause and Solutions
Marquette University - 2010 Strategies and Benefits of Fostering IntraOrganizational Collaboration
International Journal of Sociotechnology and Knowledge Development - 2024 Breakthrough Barriers to Knowledge Sharing Using Modern Technologies in Academic Libraries in South Africa