About the Greater Newark STEM Ecosystem

The Greater Newark STEM Ecosystem (GNSE) is a cross-sector network of K–12 educators, higher education institutions, nonprofits, community organizations, and industry partners working collaboratively to strengthen STEM learning and career-connected pathways across Newark and Northern New Jersey. GNSE focuses on coordination, shared learning, and collective action to improve access, alignment, and long-term outcomes for students from early learning through career entry.

Purpose of the Convening

In January 2026, GNSE convened ecosystem partners for a co-design session focused on identifying shared challenges, opportunities, and near-term actions to strengthen STEM education and career-connected learning. Participants engaged in small-group discussions to surface barriers, enablers, and potential areas for coordinated action.

This document captures:

- key insights from small-group discussions
- cross-cutting barriers and enablers
- A proposed action roadmap with two initial pilot working groups

Key Themes Emerging Across the Ecosystem

Across all groups, five consistent themes surfaced that point to where coordinated, cross-sector action could have the greatest impact:

1. STEM Is a System Experience
2. Access ≠ Awareness ≠ Participation
3. Educators Are the Linchpin
4. Sustainability Matters More Than Splash
5. Industry Engagement Is Essential but Under-Structured

This Document Captures

1. Group Work Summaries
2. Synthesis of Cross-Group Themes and Roadmap
3. What We're Asking Partners = Success
4. Action plan roadmap outlining two pilot working groups:
    a. STEM Professional Learning Collaboration
    b. Centralized STEM Information & Pathway Navigation
5. Group Artifacts Addendum

This document was authored by Brad Schenker, co-lead and coordinator for the Greater Newark STEM Ecosystem. AI tools assisted in efficiently gathering, scanning and organizing group artifacts, and was a thought-partner in the writing process. This final document is grounded in the group artifacts, the author's direct experiences, and interactions with STEM education stakeholders nationwide.

Summary of Group Work with artifacts of collaborative work

The planned 60-minute post-lunch co-design session was shortened to 30 minutes due to schedule constraints, resulting in fewer participants and the elimination of some planned activities. While all focus areas were included in the session design, time constraints and participant distribution meant that not all groups were able to convene. The insights captured reflect where participants were most ready to engage and helped surface initial areas for action.

Group A – Developing Persistence in Young Students to Envision STEM Careers

Focus: How early STEM identity, confidence, and persistence are shaped by learning experiences, adult influence, and exposure to real-world applications.

Barriers / Challenges

- Sustaining relevant STEM experiences amid funding, equipment, and technology constraints
- Persistent stereotypes that limit student confidence, interest, and sense of belonging
- Difficulty maintaining engagement beyond one-time or short-term experiences

Enablers / Opportunities

- Connecting STEM learning to student interests and real-world contexts
- Peer leadership, recognition, and opportunities that build STEM identity
- Partnerships with community, cultural, and informal learning organizations

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Group B – STEM and Career-Connected Program Implementation

Focus: How middle and high school students access authentic STEM and career-connected learning, and how education, higher education, nonprofits, and employers align pathways to employment.

Barriers / Challenges

- Weak alignment between K–12, higher education, and industry limits translation from learning to employment
- Limited clarity around hiring pathways and who employs STEM graduates
- Few structured opportunities for early industry exposure, especially at the high school level

Enablers / Opportunities

- Integrated postsecondary models that connect coursework, research, and career preparation
- Employer-led early talent programs, including paid internships
- Nonprofits, alumni networks, and employee engagement channels that bridge education-to-employment pathways

Ideas for Future Exploration

- Strengthen corporate–higher education partnerships earlier in students' academic journeys
- Clarify and engage appropriate industry entry points (e.g., HR, early talent, CSR)
- Expand models that intentionally connect education, experience, and employment

Group C – Creating Bridges to Higher Levels of Education & Opportunity

Focus: How students access advanced coursework, pre-college programs, internships, and postsecondary pathways, with particular attention to awareness, navigation, and equity.

Barriers / Challenges

- Limited awareness and navigation support for advanced learning and postsecondary opportunities
- Cost barriers and inconsistent funding that restrict access
- Uneven access to advanced coursework and career exposure

Enablers / Opportunities

- Low-cost and grant-supported programs, including microgrants
- Project-based learning tied to career exploration and postsecondary readiness
- Earlier and more intentional exposure to postsecondary pathways

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Group D – Rethinking STEM Learning & Creating Small "Moments of Impact"

Focus: How STEM learning can be integrated across the school day and out-of-school time, rather than existing as isolated or add-on experiences.

Barriers / Challenges

- Instructional time pressures and competing priorities limit STEM integration
- Lack of shared clarity around what qualifies as STEM learning
- Limited teacher confidence and access to relevant professional development

Enablers / Opportunities

- Embedding STEM across subjects and daily routines through small, manageable entry points
- Shared definitions and visible strategies that support school-wide STEM identity
- Mindset shifts that emphasize relevance, integration, and coherence

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Group E – Widening Equitable Access to STEM Materials, Programs, and Resources

Focus: Structural and systemic barriers to accessing STEM materials and programs, and opportunities for shared, coordinated approaches that reduce cost and duplication.

Barriers / Challenges

- Limited grant-writing capacity and complex procurement processes restrict access
- Fragmented funding streams create inequitable access to STEM resources
- Organizational and logistical constraints limit coordination across institutions

Enablers / Opportunities

- Shared services and pooled purchasing models that reduce cost and duplication
- Partnerships with foundations, funders, and corporate partners
- Coordinated funding and resource strategies that improve equity and sustainability

Group G – Educator Professional Development & STEM Instructional Capacity

Focus: How educator confidence and instructional capacity in STEM can be strengthened through coordinated professional learning, coaching, and access to relevant resources.

Barriers / Challenges

- Gaps in STEM content knowledge, particularly at the K–8 level
- Limited time, administrative support, and funding for sustained professional learning
- Educator uncertainty related to evolving industry needs and career pathways

Enablers / Opportunities

- Job-embedded coaching and STEM-specific professional learning
- Network-wide coordination of professional development offerings
- Student-centered, project-based learning supported by confident educators

Time-Bound Next Steps (45–60 Days)

- Begin building network-wide STEM professional development coordination
- Identify short-term opportunities for job-embedded coaching and shared learning experiences

You can review each group's work in the Addendum of Group Artifacts

Cross-Group Synthesis: Barriers and Enablers

Across all small-group discussions, participants consistently identified a set of shared structural barriers and enabling conditions that cut across grade levels, learning environments, and sectors. These patterns surfaced regardless of focus area and reflect where coordination challenges and opportunities are most concentrated across the ecosystem.

Common Barriers Identified Across Groups

- Capacity constraints (time, staffing, and STEM expertise)
- Fragmented access to funding, resources, and supports
- Limited visibility and navigation of STEM pathways
- Competing priorities and system-level constraints

Common Enablers Identified Across Groups

- Shared services and coordinated partnerships
- Embedded, practical support for educators
- Authentic, student-centered learning experiences
- Intentional pilots that start small and scale

These cross-cutting patterns informed the five ecosystem themes outlined below.

Five Themes Emerging Across the Ecosystem

1. **STEM Is Not a Single Program, It's a System Experience**
   Groups repeatedly pointed to the need for coherence across the school day, grade levels, out-of-school contexts, and transitions into higher education and careers.

2. **Access ≠ Awareness ≠ Participation**
   Even where strong opportunities exist, lack of awareness, navigation, and structured support prevents equitable participation and persistence.

3. **Educators are the Linchpin, and Need Support, Not Just Expectations**
   Confidence, capacity, time, and access to relevant PD matter as much as materials or funding.

4. **Sustainability Matters More Than Splash**
   There is shared interest about moving beyond isolated events toward durable structures, partnerships, and pathways that support long-term impact.

5. **Industry Connection Is Necessary but Under-Structured**
   There is strong interest in industry engagement, but clearer entry points, defined roles (e.g., HR, early talent, CSR), and alignment with instruction and pathways are needed.

Together, these themes point to system-level challenges that require coordination across organizations and sectors.

Why This Work Matters Now

Across sectors, strong STEM and career-connected programs already exist, but they are often isolated, unevenly accessible, and difficult to navigate, particularly at key transition points along the learning-to-career continuum. Students, families, and educators encounter gaps because pathways between programs, institutions, and employers remain unclear or disconnected.

Many of the tools, supports, and resources needed to strengthen STEM pathways are already in place. However, fragmented coordination, time-intensive navigation, and under-resourced connective capacity limit sustainability, scalability, and equitable access, leaving effective efforts siloed and difficult to extend beyond those already connected.

Pathways and System Alignment

STEM learning and career-connected pathways include multiple entry points and trajectories, spanning early learning, college-preparatory experiences, career and technical education, postsecondary education, and direct transitions into the workforce. These pathways are not linear, and students often move across them in different ways over time.

The ecosystem does not define a single pathway,it strengthens alignment, visibility, and coordination across existing routes—making it easier for students, educators, and families to navigate opportunities and supports as they move through the system.

Building the Post-Convening Action Plan Roadmap

Purpose
Over the coming year, the Greater Newark STEM Ecosystem will prioritize low-lift, high-impact actions that reduce fragmentation, improve access, and strengthen coordination across K–12 education, higher education, industry, and community partners. This work is designed to build momentum, test shared approaches, and support more aligned STEM and career-connected pathways.

60-Day Focus
The ecosystem will launch two pilot working groups to generate early wins and begin testing these two topics:

- STEM Professional Learning Collaboration
- Centralized STEM Info & Pathway Navigation

The ecosystem will launch two pilot working groups over the next 60 days to test these approaches: STEM Professional Learning Collaboration and Centralized STEM Info & Pathway Navigation

What We're Asking of Partners & the Community

Funding

- Invest in shared infrastructure that enables coordination, navigation, outreach, and communication, rather than duplicative programming.
- Invest in pilot efforts that connect and strengthen what already exists.
- Provide support for enabling infrastructure, including technology materials, meeting space
- Enable applied research and outcomes analysis through partner universities and research orgs.

Input

- Share information and insight to help build an accurate, ecosystem-wide picture of STEM programs, services, and pathways in Northern New Jersey.
- Help refine shared definitions, pathway maps, and pilot focus areas.
- Identify where existing efforts are working, and where access, awareness, or navigation breaks.

Collaboration

- Participate actively in short-term working groups or pilot efforts.
- Align existing programs, entry points, and outreach to reduce duplication and increase clarity.
- Commit people and time to move work forward—not just advise from the sidelines.

Support

- Continue engaging in and helping guide the ecosystem's direction.
- Contribute expertise, staff time, mentoring, data, alumni connections, or convening power.
- Help bridge perspectives across K–12 education, IHE, industry, and community organizations.

What This Plan Intentionally Does

- Builds shared language and role clarity
- Reduces friction and navigation gaps
- Tests coordination through manageable pilots
- Creates early wins that justify deeper investment

What Success Looks Like in 60 Days

- **Pilot Momentum** - At least one pilot working group actively underway with clear scope, roles, next steps.
- **Progress Toward Shared Infrastructure** - Tangible progress toward improved coordination & navigation
- **Clarity of Roles and Connections** - Better understanding of who is involved, how partners connect, and remaining gaps.
- **Early Evidence of Collaboration** - Stronger cross-sector alignment & readiness for next-phase investment.
- **Capacity and Resource Insights** - Clearer understanding of the capacity and resources required to support longer-term impact and scale.

Working Group: STEM Professional Learning Collaboration

Opportunity Area

Educators shape student STEM identity, persistence, and career awareness, yet professional development is often fragmented, unevenly accessed, or disconnected from real classroom and industry contexts. Across the ecosystem, multiple organizations already provide high-quality STEM professional development, and pre-service programs, but these efforts are not always coordinated or presented in ways that are easy for educators or schools to navigate.

Project Focus: Aligning and strengthening existing educator Professional Learning programs and efforts, not creating new programs.

Long-Term Goal

Build a coordinated, high-quality, and accessible STEM professional learning ecosystem that supports educators across grade levels, subjects, and learning environments.

60-Day Focus

Over the next 60 days, ecosystem partners will:

- Map existing STEM professional development offerings, audiences, and focus areas across participating organizations
- Identify areas of overlap, complementary strengths, and gaps
- Develop shared language and clearer entry points for schools and districts
- Pilot a high-level overview or "menu" of STEM PD opportunities that can easily understand and access

Program Funding

While PD programs already exist, coordination of this work requires cross-organizational alignment, shared framing and active coordination. Investment strengthens the impact of existing programs and improves access for all students and teachers, without duplicating services.

Why Collaboration Is Needed	Why Funding Matters
● No single organization offers comprehensive PD across all STEM needs ● Educators benefit when PD providers coordinate rather than compete ● Schools need clarity, coherence, and relevance—not more disconnected options	● Neutral facilitation, coordination and convening of PD providers ● Synthesis of discussions and creation into viable solution/usable tools for schools ● Communication, iteration, and early pilot testing

What Success Looks Like in 60 Days

- **A shared inventory of STEM PDt offerings**, including audiences, focus areas, and providers.
- **Improved alignment & communication among PD providers**, reducing duplication & school confusion.
- **A clear, network-level "entry point" or overview** that helps schools understand and access available STEM PD opportunities.

Working Group: Centralized STEM Information & Pathway Navigation

Opportunity Area

Across the ecosystem, strong STEM programs, services, and pathways already exist, but they are often difficult to find, understand, or navigate, particularly for educators, families, and students. Lack of awareness and navigation support continues to limit equitable participation, even where opportunities are available.

Project Focus: Building shared visibility and navigation of existing STEM products and services in NJ.

Long-Term Goal

Create a trusted, up-to-date, and widely used hub that helps educators, students, families, and partners navigate STEM programs, services, and pathways across K–12, pre-college, and early career experiences.

60-Day Focus

Over the next 60 days, ecosystem partners will:

- Compile an initial inventory of STEM programs and services across the region
- Build a focused list of **pre-college high school STEM programs**, including key details (grade level, focus area, cost, timing)
- Identify core data fields needed for usability and equity
- Launch a **minimum-viable version** of the resource (shared document, webpage, or simple database)

Program Funding

This effort relies on partners contributing information and helping shape a resource that reflects real user needs. Maintaining a usable, equitable, and current hub requires cross-organizational, and active collaboration. Funding supports the proof of concept, pilot, and scaling of the resource, extending access beyond those already connected.

Why Collaboration Is Needed	Why Funding Matters
● Information is distributed across schools, nonprofits, higher education, and industry ● No single org. has a complete or current view ● Shared ownership increases accuracy, relevance, and trust	● Ongoing data curation and updating ● Outreach and communication to ensure broad use ● Stewardship of the resource so it remains trusted and sustainable

What Success Looks Like in 60 Days

- **Visible, usable starting-point resource** for STEM programs, services, and pathways across the region.
- **Initial, curated list of Pre-College programs**, with consistent information fields to support usability.
- **Clear ownership of processes to maintain and update resources,** supporting long-term sustainability.
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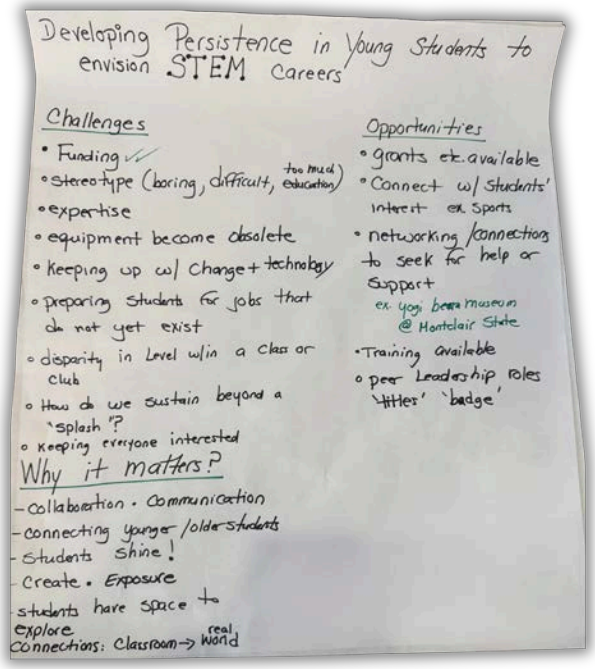
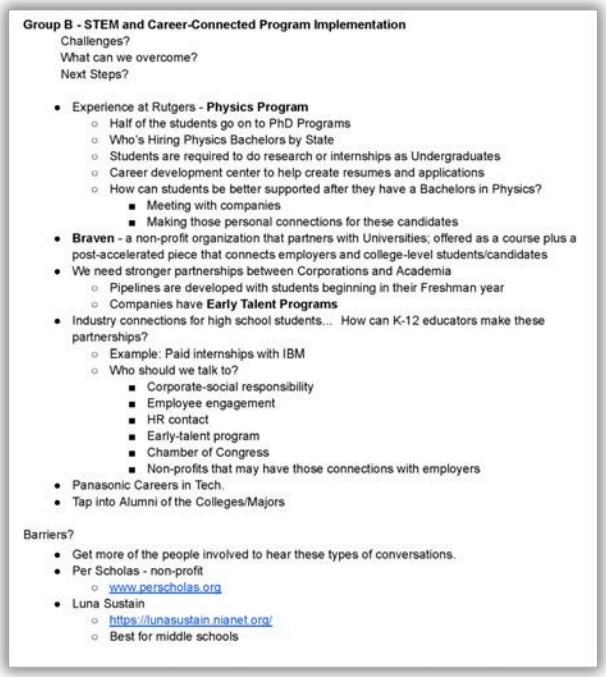
Addendum

GROUP A



GROUP B



Group B - STEM and Career-Connected Program Implementation

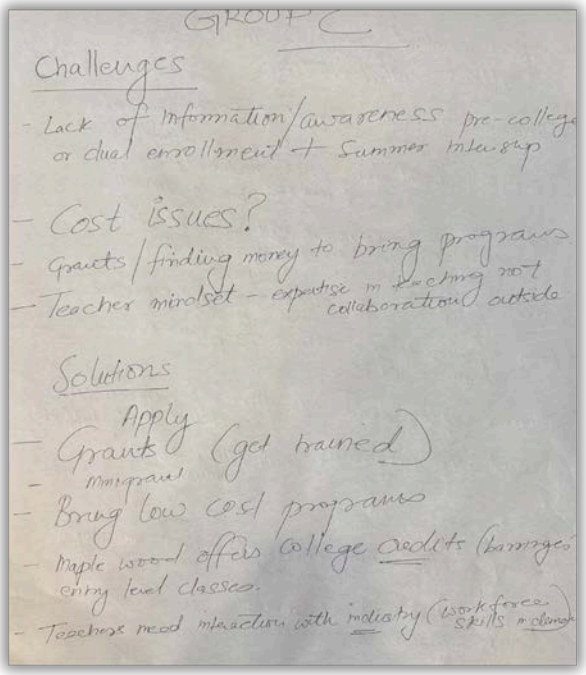
Challenges?
What can we overcome?
Next Steps?

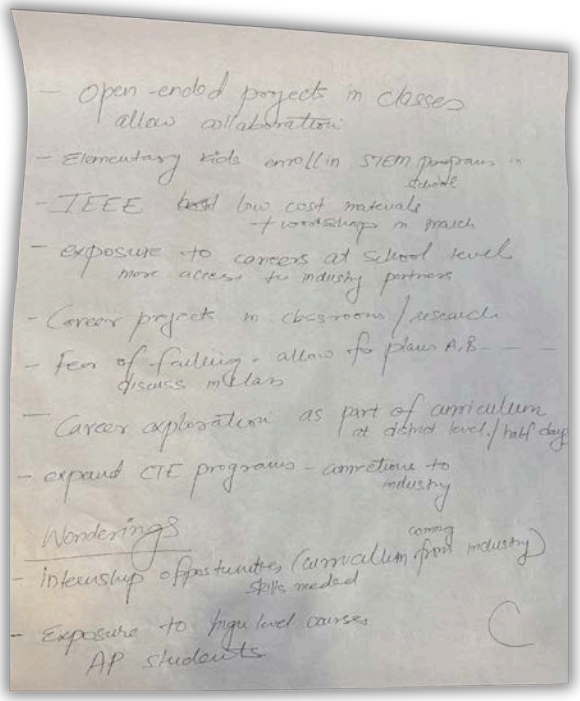
- Experience at Rutgers - **Physics Program**
  - Half of the students go on to PhD Programs
  - Who's Hiring Physics Bachelors by State
  - Students are required to do research or internships as Undergraduates
  - Career development center to help create resumes and applications
  - How can students be better supported after they have a Bachelors in Physics?
    - Meeting with companies
    - Making those personal connections for these candidates
- **Braven** - a non-profit organization that partners with Universities; offered as a course plus a post-accelerated piece that connects employers and college-level students/candidates
- We need stronger partnerships between Corporations and Academia
  - Pipelines are developed with students beginning in their Freshman year
  - Companies have **Early Talent Programs**
- Industry connections for high school students... How can K-12 educators make these partnerships?
  - Example: Paid internships with IBM
  - Who should we talk to?
    - Corporate-social responsibility
    - Employee engagement
    - HR contact
    - Early-talent program
    - Chamber of Congress
    - Non-profits that may have those connections with employers
- Panasonic Careers in Tech.
- Tap into Alumni of the Colleges/Majors

Barriers?

- Get more of the people involved to hear these types of conversations.
- Per Scholas - non-profit
  - www.perscholas.org
- Luna Sustain
  - https://lunasustain.nianet.org/
  - Best for middle schools

GROUP C





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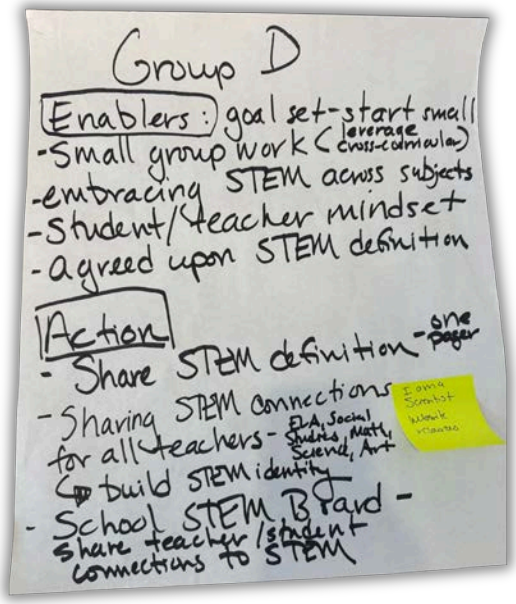

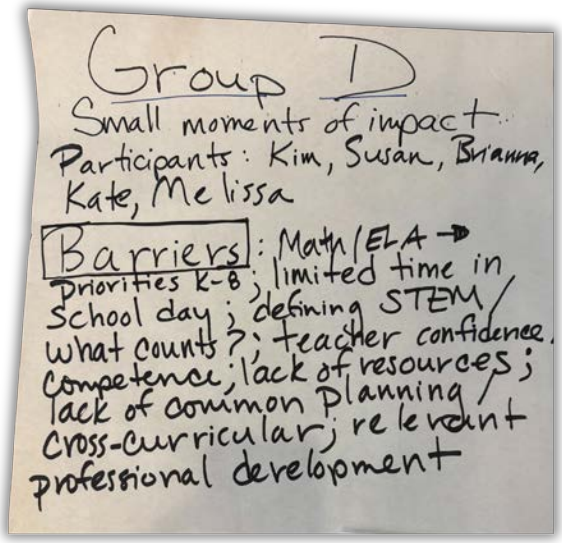

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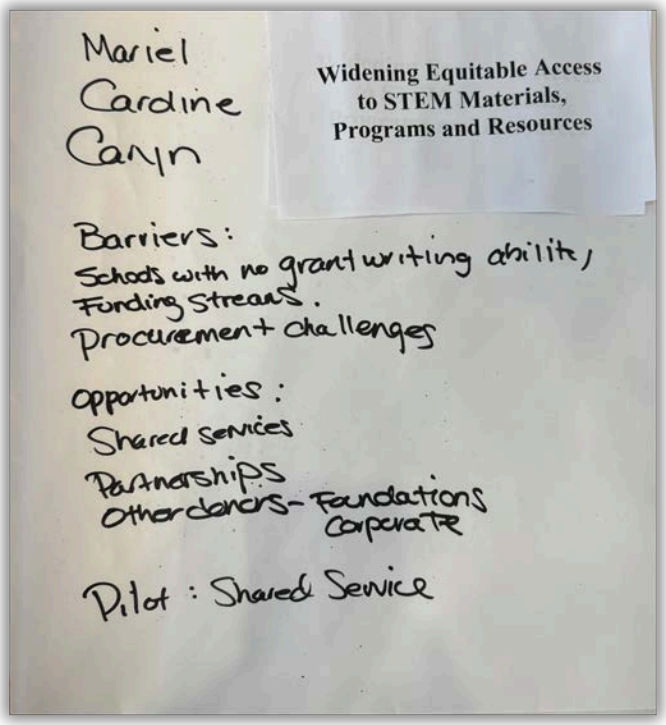
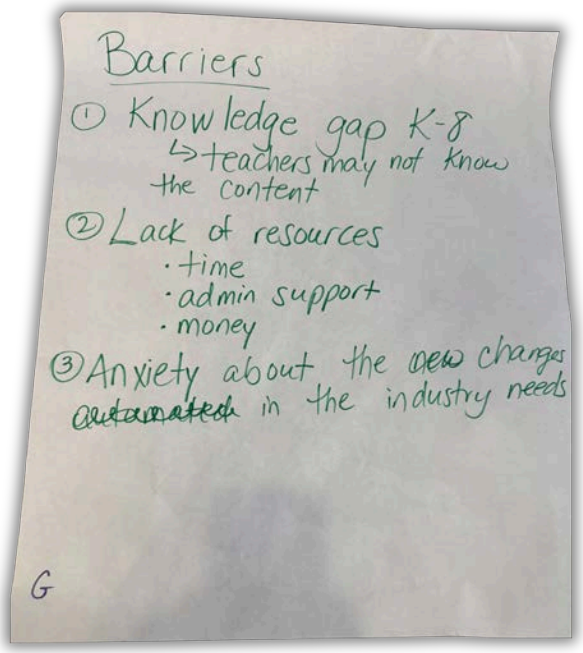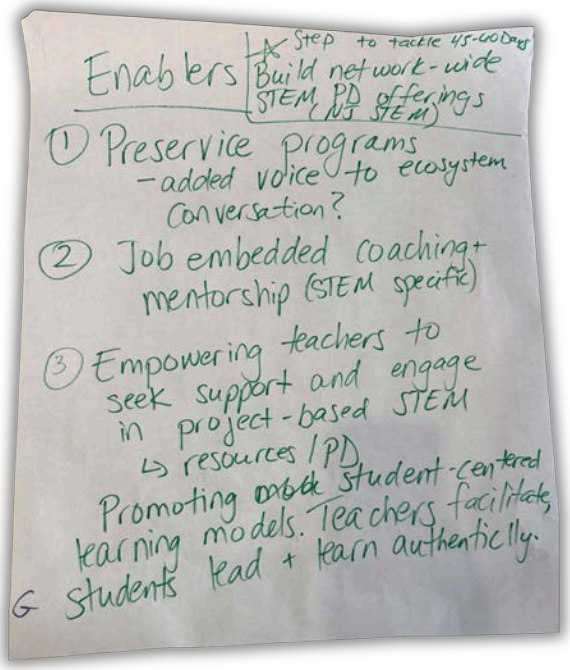
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