ED.L.D. CAPSTONE SUMMARY

Expanding Students' Access to Meaningful STEM Learning Opportunities Through Strategic Community Partnerships

Dean Woodring Blase, Ed.L.D.'13

HARVARD
GRADUATE SCHOOL
OF EDUCATION

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Role: Coordinator of Community-School Partnerships, Cambridge Public Schools (Massachusetts)

PROJECT GOAL

In a seventh grade classroom in Cambridge sits a young woman – one of the 44 percent of students who receives free or reduced lunch. She is taking Scratch computer programming, learning for the first time what it means to be a creator in the computer world, not just a consumer. Next week, she will travel to the headquarters of a global technology company to join other girls in a day of immersive technology use. She will join an after school club, run by one of the city's four Community Youth Centers, to learn how to code and create web pages. When she reaches high school, she can enroll in a series of computer science courses co-taught by young computer scientists and a veteran math teacher. By her senior year, her coding skills will be strong enough to earn an internship at a local company. Although she is the first member of her family to attend college, her knowledge and skills will secure her a spot in a top-tier university, where she will earn a computer science degree. When she graduates, she will get a job with a salary that ensures she can afford to live in her hometown, outside of the housing projects where she grew up.

Transforming this story from an aspiration to an aligned and predictable set of learning opportunities was the focus of Dean Woodring Blase's Ed.L.D. project. More specifically, her goal was to expand K–12 students' access to meaningful science, technology, engineering, and math (STEM) learning experiences by developing and implementing a strategic approach to forging partnerships between her school district, Cambridge Public Schools, and STEM-oriented organizations in the local community. The central research questions driving Blase's work were:

- How can we change from a school district that has ad hoc community partnerships to a district that has focused and strategic partnerships?
- How can theories about how organizations work help to build a flexible and sustainable group of organizations that address students' learning needs?
- What are the best ways to organize the assets of various organizations, the developmental needs of students, and curricular opportunities for learning at each grade level?

In the third year of HGSE's Doctor in Education Leadership (Ed.L.D.) Program, candidates complete 10-month, field-based residencies. Each Ed.L.D. student completes a strategic project and produces a capstone that provides a descriptive, analytic, and reflective account of the resident's leadership of and contributions to the strategic project. This capstone summary offers quick insight to the resident's work and offers next steps, resources, and questions to consider for practitioners who might be leading similar work.

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PROJECT DESCRIPTION

In her role as the coordinator of community-school partnerships in Cambridge Public Schools, Blase focused on expanding opportunities for students in this urban school district to engage in high-quality experiential learning opportunities by tapping into the world-class STEM resources available in the surrounding community.

Not long before Blase began her role, Cambridge Public Schools adopted a new Innovation Agenda, the goals of which included expanding out-of-classroom learning opportunities for the district's students, many of whom are economically disadvantaged. As she began to research existing partnerships, she saw that her school district — like many other large districts — was engaged in an extraordinary number of collaborations with local businesses, colleges and universities, nonprofits, and other kinds of organizations. Because these were pursued in an ad hoc way, however, they varied widely in scope, purpose, and impact — and many opportunities for meaningful collaborations were being missed.

Blase proposed to develop a strategic approach to partnerships so that the impact on students could be maximized, and district leaders embraced the idea. She developed strategies for identifying community partners that could make high-quality, sustainable STEM learning opportunities available to district students and matching these opportunities with the specific needs of students and teachers at various grade levels.

HOW DID SHE DO THIS?

First, Blase worked with district colleagues and local thought leaders to cull through the long list of organizations in the community that were involved in the schools to identify 58 "STEM Champions" — that is, organizations that provided a large proportion of local student programs in STEM fields. Next, she developed an asset mapping form that she used to gather information from these organizations about the types of learning resources and experiential opportunities that they were either already providing or could provide to students and teachers in Cambridge Public Schools. See Appendix A for Blase's asset mapping form.

Working with the district's curriculum leaders, Blase identified "hot spots" — specific areas of the math and science curricula at each grade level in which experiential opportunities would be particularly beneficial. Then, she overlaid this information with the map of community resources to make best-fit matches between organizations, curricula, and student needs.

EXAMPLES OF IMPACT

As a result of Blase's work, the district was able not only to expand the STEM learning opportunities available to students, but also to ensure that these experiences were closely aligned with students' developmental needs and with the district curriculum. A few examples of the impact of her work:

- A partnership with a local nonprofit called City Sprouts provided kindergarten students with hands-on opportunities to develop their counting and measuring skills by participating in school-based gardening.

- Through a partnership between the district and the NetPals digital mentoring program, seventh graders exchanged emails and met with scientists to talk about the topics they were studying and learn about science careers.

- Marine biology robotics clubs were established at four middle schools in collaboration with local partners, and a new design-based robotics curriculum was developed.

- A new middle school computer science elective was created in collaboration with local universities, and new courses were developed to meet student demand. In addition, computer scientists from a global technology company began co-teaching with district teachers to develop their capacity to teach

computer science. An AP computer science course was also introduced, with teacher training funded by another global technology company.

- ❖ As eighth graders were studying linear equations, scope, and how to describe the motion of an object, mentors from MIT, Harvard, and local STEM Champion organizations were able to help students learn these concepts and develop ideas for science projects.

- ❖ Existing partnerships that were not well aligned with the district's curriculum needs were either scaled back (e.g., to fewer schools or classrooms) or reorganized to be more relevant to the district's goals and to students' learning needs.

Blase hopes that Cambridge Public Schools will sustain the strategic partnering approach and continue to hone the strategy over time so that eventually high-quality experiential learning opportunities will be available to every student in every grade. Ultimately, she believes, the success of the district's partnership strategy will depend not just on what partnerships they decided to enter, but on what they decide to forego. As she observes in the capstone:

> *By far the most crucial component of the STEM Champions strategy is its narrow focus on a few organizations that have both the internal capacity and willingness to collaborate with the district. It is easy to say yes to available programs; they all appear to be great for kids. It is much harder to take the time to assess whether a program fits within the district goals. The value of this strategy lies in its system-wide application and its requirement to sometimes (or often) say no.*

Being selective about which organizations to partner with will enable district leaders, teachers, and other staff to focus intently on the partnerships that matter most — and to get the most out of them.

KEY STEPS FOR DISTRICT LEADERS AND STAFF INTERESTED IN STRATEGIC PARTNERING

1) Think about the "strengths" of your local community — that is the unique resources that it has to offer. Examples might include STEM, oil and gas, banking, agriculture, architecture, music, art, cuisine, etc.

    - *These strengths represent opportunities to provide students with real-world learning opportunities and to cultivate the future workforce that the community will need. Think of the local community as an ecosystem in which collaborations between districts and local businesses and other types of organizations are mutually beneficial.*

2) Identify organizations already working in the schools in the desired field(s). Refine and update existing lists or databases by culling information from local business organizations (such as the Chamber of Commerce or Rotary), local higher education institutions, etc.

    - *If possible, dedicate someone to do this full time or close to full time for a fixed period (2–4 weeks). Don't let this part of the process drag on; define this step as targeted data gathering, then quickly move on to next steps.*

3) Convene a group of thought leaders to articulate the district's purpose for the project and how it relates to the district's mission, vision, and needs.

    - *This group will be most effective when the district's strategic plan is clear and the mission of the project to coordinate partner involvement is focused. In Blase's project, for example, the focus was on STEM partnerships with links to key instructional goals.*

4) With input from this group, create a beginning list of potential "Champions" aligned with the goals of the project.

- *Make sure you have a clear, agreed-upon definition for "Champions." For her project, Blase defined them as "organizations that provided a large proportion of local student programs in STEM fields." Your definition might be different. The purpose is to identify a core group of partners whose projects and offerings directly support district goals.*

5) Use asset mapping to gather information from community outreach coordinators at each Champion site to identify specific offerings, capacity, age range of students, etc. Use this information to develop a "map" or database of resources available from Champions.

   - *It is worth the effort to get this information into a central resource so that district colleagues and school leaders can access and leverage it. You have worked hard to get it, so make sure the information is captured in a way that it can be readily updated and used.*

6) Review district curricula to identify "hot spots" at each grade level where having access to local resources will deepen students' learning, spark career interests, and motivate students to explore careers in these areas.

   - *This is essential for many reasons: it gives focus to the partnerships, ensures the effort invested in partnerships addresses real needs, and allows the district to measure impact over time. It also provides partners with important insights into how they can truly have an impact, which is why they are interested in investing time and resources in the first place. You will keep your partners at the table with this level of focus.*

7) Overlay the assets map with the curricular map to align experiential learning opportunities with student needs.

   - *In doing so, pay close attention to students' developmental readiness so that the right kinds of experiences will be provided to the right age groups.*

8) Be sure to keep notes on all of your contacts with various community organizations and partners, as this information is vital.

   - *Blase found Claude Grunitzsky's networking model and Peter Block's coalition building framework especially useful for keeping track of the contacts and information she needed to make the new partnership strategy successful. (See Appendix B.) She kept an Excel spreadsheet with notes from every meeting or conversation she had. "The process was simple and effective,"she explains. "It didn't feel contrived, and it offered enough structure to be useful in tracking the enormous number of new relationships I needed to initiate to successfully work as a coordinator of community-school partnerships."*

9) Review partnerships over time to ensure alignment between available community resources and district needs, making improvements and adjustments as needed.

   - *Consider adopting a regular schedule for this review to make sure that it actually happens. For example, doing the review in conjunction with (or just after) a school improvement planning period might make sense in order to find alignment between partners and instructional needs.*

QUESTIONS TO CONSIDER

If you are examining your current array of partnerships and hope to make them more targeted and strategic, consider the questions below.

- What can my district do to help more students benefit from community partnerships across curricular areas?
- What kinds of champions exist in my community?

  Cambridge had a number of STEM "champions" because it was an innovation hub. New Orleans or Nashville might have a number of champions in the food or music sectors, for example, while Midwestern cities might have a number in agriculture or city planning.
- How strategic is my organization in managing its community partnerships?
- What would be the best way to identify "champions" in our community and make arrangements to align these champions' involvement with district needs?
- Who would be best positioned to own this work, and how should this role be situated?

  Early on, Blase decided that because she wanted to make sure that her work had a direct impact on student learning, she would work closely with the district's curriculum coordinators rather than with the grants coordinator.

USEFUL READINGS

Buxton, C. A., & Provenzo, E. F., Jr. (2011). *Place-based science teaching and learning: 40 activities for K-8 classrooms* SAGE Publications (CA).

Cone, N. (2009). A bridge to developing efficacious science teachers of "all" students: Community-based service-learning supplemented with explicit discussions and activities about diversity. *Journal of Science Teacher Education*, 20(4), 365-383.

Howitt, C., Rennie, L., Heard, M., & Yuncken, L. (2009). The scientists in schools project. *Teaching Science*, 55(1), 35-38.

Robertson, W. C. (2001). *Community connections for science education, Volume I: Building successful partnerships*. Arlington, VA: National Science Teachers Association.

Sedlacek, N., Young, J. A., Acharya, C., Botta, D., & Burbacher, T. M. (2005). Linking the classroom to the community. *Science Teacher*, 72(4), 44-45.

Smith, G. A. (2002). Place-based education: Learning to be where we are. *Phi Delta Kappan*, 83(8), 584-94.

Suesse, J., & Ibarra, H. (1997). *"Building Coalitions."* Harvard Business School Case Study 9-497-055.

APPENDIX A: ASSET MAPPING FORM

This tool can be used to interview district coordinators at community partner sites to gather information on specific resources and offerings, capacity, age range of students, etc. This information can then be used to develop a "map" or database of resources available in the community to meet specific student needs.

CATEGORY I: MISSION ALIGNMENT

What are the reasons your organization wants to engage with CPS students and teachers?	
Official Mission (from website):	
Secondary/Unofficial Mission:	

CATEGORY II: OFFERINGS

In what ways are you best suited to provide STEM opportunities for CPS students and teachers?

Volunteerism		**Financial/In-kind Donations**	
Existing Programs:		**Equipment:**	
Capacity:		**Expertise:**	
Location:		**Space:**	
Timing:		**Transportation:**	
Other:		**Other:**	

CATEGORY III: SUSTAINABILITY

What does your organization need from CPS to sustain a flexible, growing, collaborative relationship?

Communication		**Financial/In-kind Donations**	
Publicity:		**Access to student data:**	
Documentation of Support:		**Expertise:**	
Feedback:		**Space:**	
Career Pipeline:		**Other:**	
Other:			

CATEGORY IV: OTHER

List any other assets from partners that do not emerge in the above categories.

APPENDIX B: BLASE ADAPTATION OF GRUNITZKY NETWORKING MODEL (EXCERPTED)

Claude Grunitzky's approach was to record the name of every new person he met who was connected to the project, the date they met, and to assign a number from 1 to 3 (where 1 was someone who was essential to moving the project forward and 3 is someone who is peripheral to the project). As Blase explained, "Grunitsky made sure to contact the 1s monthly, preferably in person, and to touch base with the 3s as often as he could beyond that. He was likely to see the 2s within his already existing social calendar." Blase adapted this model for her project, assigning 1s to people who appeared to be most interested in partnering with the district or who were able to contribute to her knowledge of the Cambridge context, 2s to close colleagues or people with whom she clicked on a personal level, and 3s to everyone else.

Title/Description	**Block Coalition Category** *(defined below)*	**Networking Score** *(defined above)*	**Meeting Date #1**	**Meeting Type**
Coordinator, xxxx	Ally	1	1/20/2012	In Person - at CPS Central
Superintendent, CPS	Ally	1	1/20/2012	In Person - at CPS Central
Former mayor	Ally	1	2/1/2012	In Person - at Home
Community member, Co-Chair of xxx Committee	Ally	1	2/1/2012	In Person - At Person's Home
Principal, xx School	Fence Sitter	2	2/1/2012	In Person - at School
Dean, xx University	Bedfellow	3	2/5/2012	In Person - Brunch
Principal, xx	Ally	3	2/10/2012	In Person - PPAL's Meeting
CEO, xxx Organization	Bedfellow	2	2/24/2012	In Person - HBS
Executive Director, xxx	Fence Sitter	1	3/5/2012	In Person - Celebrate CRLS
President, Chamber of Commerce	Ally	2	1/30/2013	In Person - Cambridge Innovation Center

PETER BLOCK'S CATEGORIES OF COALITION BUILDING

Category	**Description**
Allies	People with whom one shares both "high agreement and high trust with a high degree of reciprocation."
Opponents	People with whom one shares "high trust but low agreement."
Bedfellows	People with a lower degree of trust — those who might seem to share one's objectives, but "who might not give us the whole story."
Fence Sitters	People who are undecided and can "consume a disproportionate amount of influence, time and energy."

Source: As cited in Suesse & Ibarra (1997). "Building Coalitions." Harvard Business School case 9-497-055.