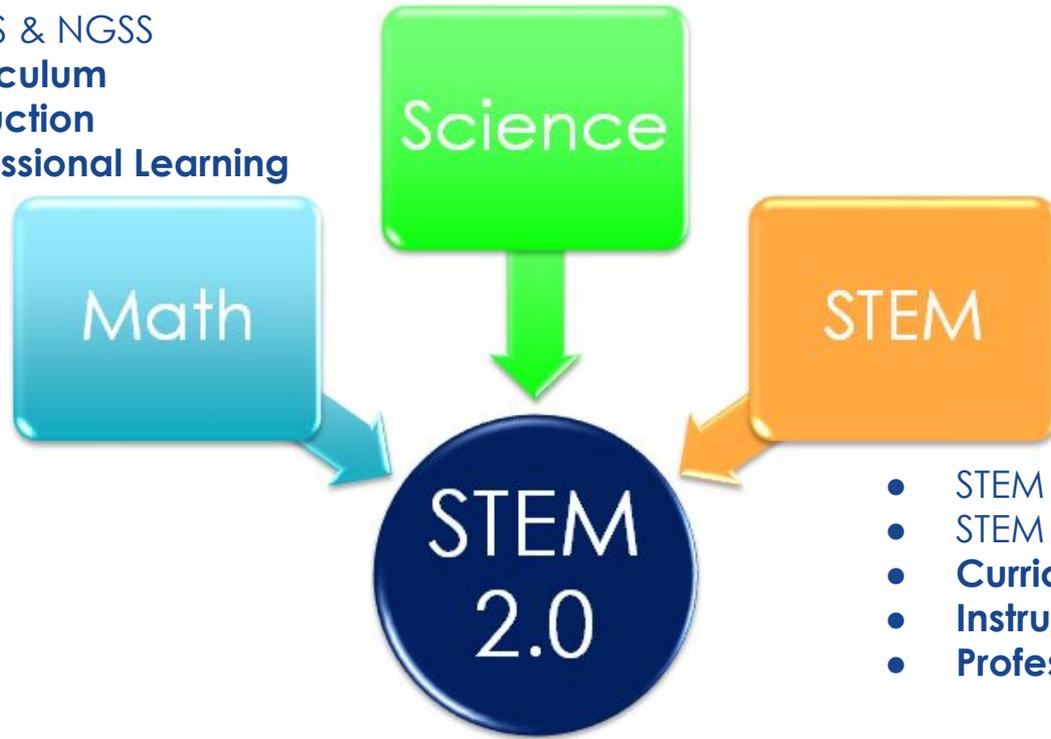


Chicago Public Schools Department of STEM 2017-18 Priorities



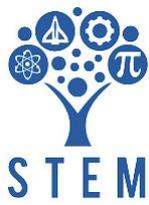
History of STEM in CPS

- District-wide
- CCSS & NGSS
- **Curriculum**
- **Instruction**
- **Professional Learning**



- STEM Schools
- STEM Standards for Success
- **Curriculum**
- **Instruction**
- **Professional Learning**





What do we want to see?

Everyday in every STEM classroom in CPS, all students will:

- Actively make sense of and construct solutions to complex problems
- Productively contribute to the learning community to support a culture of collaboration, risk taking, and innovation
- Regularly reflect on and communicate their understanding of disciplinary ideas

Through these experiences and purposeful opportunities to face transdisciplinary challenges, students will graduate from CPS as knowledgeable, flexible, and resourceful problem solvers prepared to make the world a better place.



The Five Dimensions of Powerful Classrooms

The Content	Cognitive Demand	Equitable Access to Content	Agency, Authority, and Identity	Uses of Assessment
<p><i>The extent to which classroom activity structures provide opportunities for students to become knowledgeable, flexible, and resourceful disciplinary thinkers. Discussions are focused and coherent, providing opportunities to learn disciplinary ideas, techniques, and perspectives, make connections, and develop productive disciplinary habits of mind.</i></p>	<p><i>The extent to which students have opportunities to grapple with and make sense of important disciplinary ideas and their use. Students learn best when they are challenged in ways that provide room and support for growth, with task difficulty ranging from moderate to demanding. The level of challenge should be conducive to what has been called “productive struggle.”</i></p>	<p><i>The extent to which classroom activity structures invite and support the active engagement of all of the students in the classroom with the core disciplinary content being addressed by the class. Classrooms in which a small number of students get most of the “air time” are not equitable, no matter how rich the content: all students need to be involved in meaningful ways.</i></p>	<p><i>The extent to which students are provided opportunities to “walk the walk and talk the talk” – to contribute to conversations about disciplinary ideas, to build on others’ ideas and have others build on theirs – in ways that contribute to their development of agency (the willingness to engage), their ownership over the content, and the development of positive identities as thinkers and learners.</i></p>	<p><i>The extent to which classroom activities elicit student thinking and subsequent interactions respond to those ideas, building on productive beginnings and addressing emerging misunderstandings. Powerful instruction “meets students where they are” and gives them opportunities to deepen their understandings.</i></p>



SY17-18 STEM Strategic Priorities

STEM Focus: Academic Progress (District Commitment #1)

STRATEGIC PRIORITY 1: **EXEMPLARY PRACTICES IN STEM SCHOOLS**

Empower and expand the capacity of STEM Specialists, administrators, and teachers to strengthen the instructional core within STEM schools leading to model STEM classrooms and increased student outcomes.

STRATEGIC PRIORITY 2: **CHICAGO STEM COMMUNITY**

Organize and align the various stakeholders of the Chicagoland STEM community to better provide equitable access to all students with high quality STEM opportunities and learning.

STRATEGIC PRIORITY 3: **TARGETED PROFESSIONAL LEARNING**

Engage teachers in collaborative, job-embedded professional learning opportunities focused on building STEM content knowledge and building instructional capacity.



Strategic Priority #1

"School options must serve all children well [...] At the same time, we must also invest in improving instruction in every school and classroom in every neighborhood so that all families have access to desirable options".

"All students must have access to a rigorous curriculum that prepares them for college or technical training."

Future State

CPS STEM Schools serve as citywide and national models of STEM teaching and learning.

All STEM Specialists are empowered and leveraged to strengthen the capacity of teachers and impact student learning aligned to the TRU Dimensions.

STEM Specialists, Administrators, teachers and other stakeholders work collectively ensuring that all STEM Schools have a **certification rating of Excelling** on the STEM Rubric

- Mission Driven Leadership
- School Structures and Culture
- Institutional Capacity
- Instructional Approach
- K-12 Program of Study
- STEM Career Pathways
- Family and Community Engagement

with **all students achieving at grade level or higher.**

Current State

STEM Specialists...

Currently Specialists have a high turnover/low retention rate. Specialists feel frustrated because they are faced with a variety of challenges and as a result have not been able to implement strong instructional coaching practices.

Certification rating of Excelling...

None of the schools have a pilot rating of Excelling. Currently out of the 7 STEM Standards, Instructional Approach received the lowest average rating during the 2017 certification report.

All students at grade level attainment ...

Currently even our level 1 schools have below average student attainment.

CPS STEM Schools

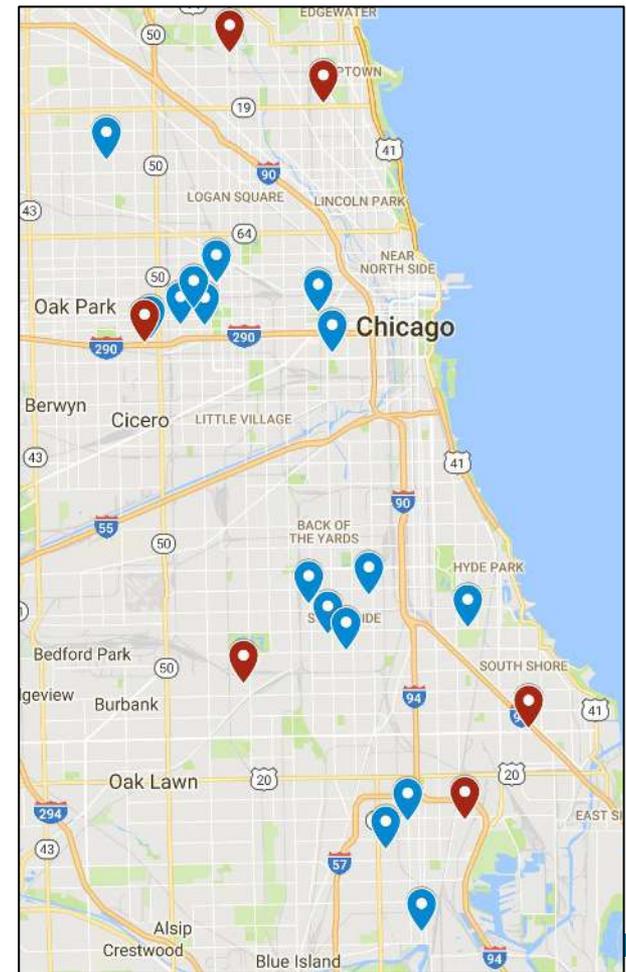
Elementary Schools

- W. Brown
- Camras*
- M. Davis*
- Dunne
- Earle
- Hefferan
- Hughes
- Leland
- Melody
- Nicholson
- Owens
- STEM Magnet*
- Tilton
- Wadsworth
- Ward
- Wentworth

*Legacy Schools/Not currently part of STEM Initiative

High Schools

- CVS
- M. Clark
- Corliss
- Goode
- Lake View
- Von Steuben*



STEM Rubric & Certification

CHICAGO PUBLIC SCHOOLS
STEM STANDARDS FOR SUCCESS

This rubric articulates each of CPS's seven critical components for STEM education and provides concrete benchmarks for each.

1. Mission Driven Leadership
2. School Structures and Culture
3. Institutional Capacity
4. Instructional Approach
5. K-12 Program of Study
6. STEM Career Pathways
7. External Partnerships

1 | STEM STANDARDS FOR SUCCESS RUBRIC



STEM Certification Standard	Average Rating (1 - 4)
Mission Driven Leadership	2.49
School Structures & Culture	2.43
Institutional Capacity	2.13
Instructional Approach	1.48
K-12 Program of Study	2.11
STEM Career Pathways	2.22
External Partnerships	2.67

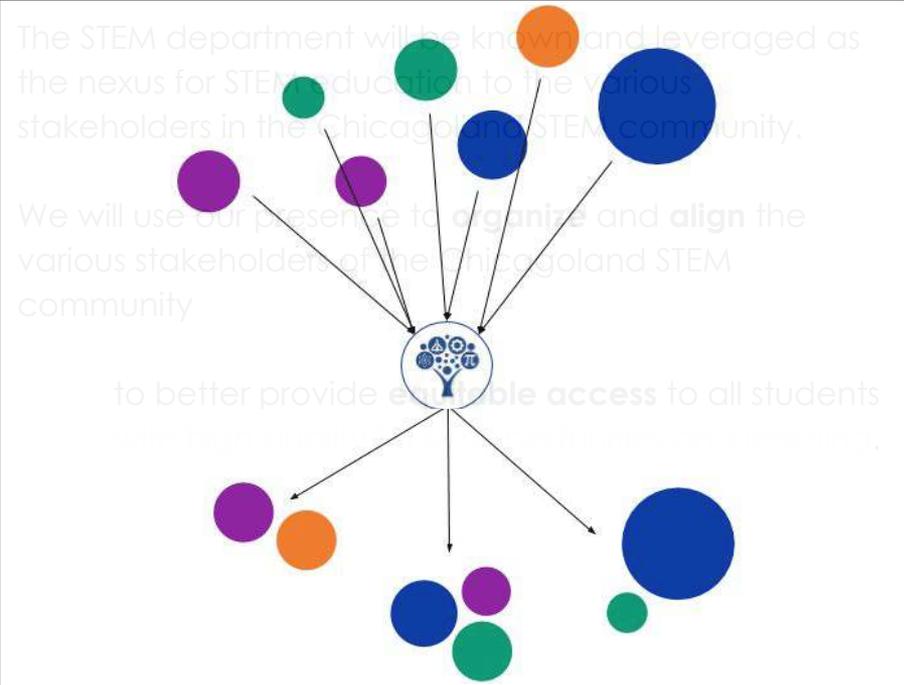


Strategic Priority #2

"Equity is a moral imperative [...] Providing more engaging and challenging classes in math, science and technology - from elementary school through high school - **can open doors to careers for all of our students but particularly in fields in which women and people of color have been historically underrepresented.**"

"By rooting our students in the STEM experience, where they focus on collaborative problem-solving, we are helping develop the skills that will be attractive to their future employers. For this reason, **our goal is to expand our corporate and philanthropic partnerships to include more CPS students in these opportunities districtwide.**"

Future State



Current State

On organization

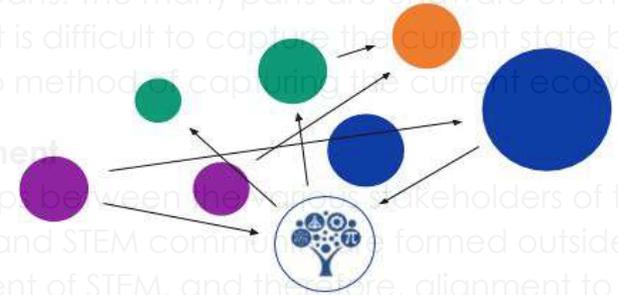
The Chicagoland STEM community is one body, comprised of many parts. The many parts are unaware of one another. It is difficult to capture the current state because there is no method of capturing the current ecosystem.

On alignment

Partnership between the various stakeholders of the Chicagoland STEM community is formed outside of the Department of STEM, and therefore, alignment to CPS vision for STEM is not strategic or leveraged.

On equity

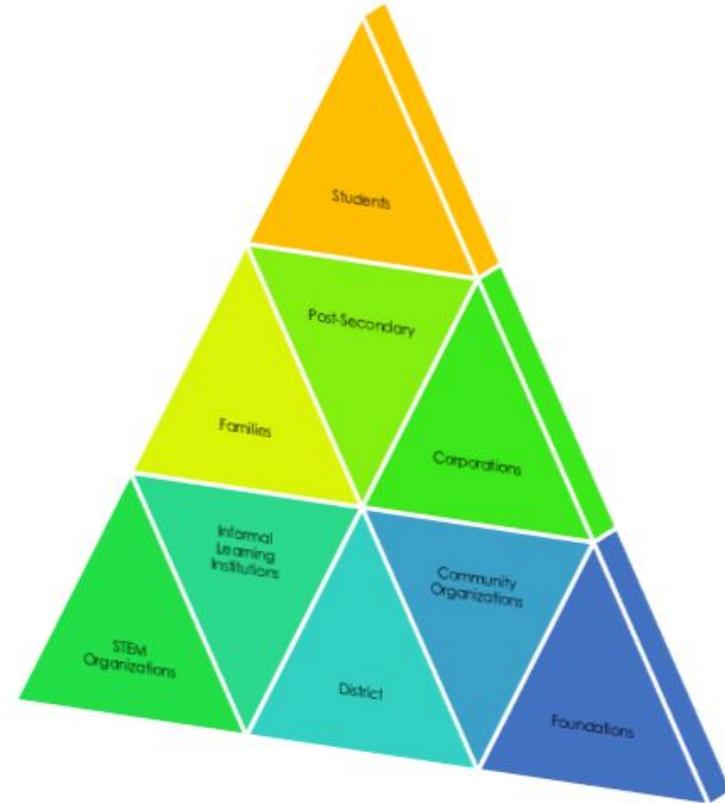
High quality STEM opportunities are distributed disproportionately.



Chicago STEM Stakeholders

Chicago STEM Pathways Cooperative Project findings:

- More than 2,032 STEM OST programs were run by more than 500 organizations in 2011, serving an estimated 88,576 students.
- The greatest number of programs were in middle schools (42%), followed by elementary school age students (34%) and high school students (24%).
- Programs were generally available throughout most, but not all, Chicago neighborhoods. Programs served more girls than boys (56.2% and 43.8%, respectively).
- Latinos were underrepresented in programs compared to their representation in Chicago Public Schools – 28% of participants vs. 44% of CPS population.
- Programs were most likely to target low-income students (91.6%) and students with existing interest in STEM (63.3%).



Strategic Priority #3

"High quality, rigorous instruction is the foundation of a holistic education"

"High quality mathematics instruction is essential in preparing students to succeed in the modern workforce."

"NGSS calls for a new model for science instruction that has students doing the work of scientists rather than simply reading about science and memorizing facts."

Future State

All teachers, administrators, and ISLs will have access to job-embedded professional learning that will lead to increased student achievement.

Professional learning will include and address best practices:

- **Collaboration** within and across schools
- Development of teacher **agency** & leadership
- **Coherent** and **scalable** system of professional learning (including Networks & partners), including stakeholders at all levels (school, network, and district)
- Common foundational learning for all STEM teachers which clearly articulates and supports what all STEM teachers should know and be able to do

Current State

On Collaboration...

Teaching and learning is happening in isolation. Most collaboration is currently limited to team meetings which typically focus on information delivery.

On Agency...

Teachers are not, and do not feel empowered or prepared to lead collaborative and/or reflective teams.

On Coherence and Scale..

The work of individual Networks is often disconnected throughout the district and varies in alignment with best practices for promoting high quality, rigorous instruction.

Questions We're Asking...

What makes a high-quality STEM school different than any school with high-quality math & science instruction?

What is the role of community in promoting a STEM vision?

How can a district-wide STEM vision transform student outcomes?

Have the previous STEM investments led to the impact that was expected?

How should the district invest in STEM moving forward?

How can a district-wide STEM vision transform student outcomes?



Thank you!

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