

# EvanSTEM

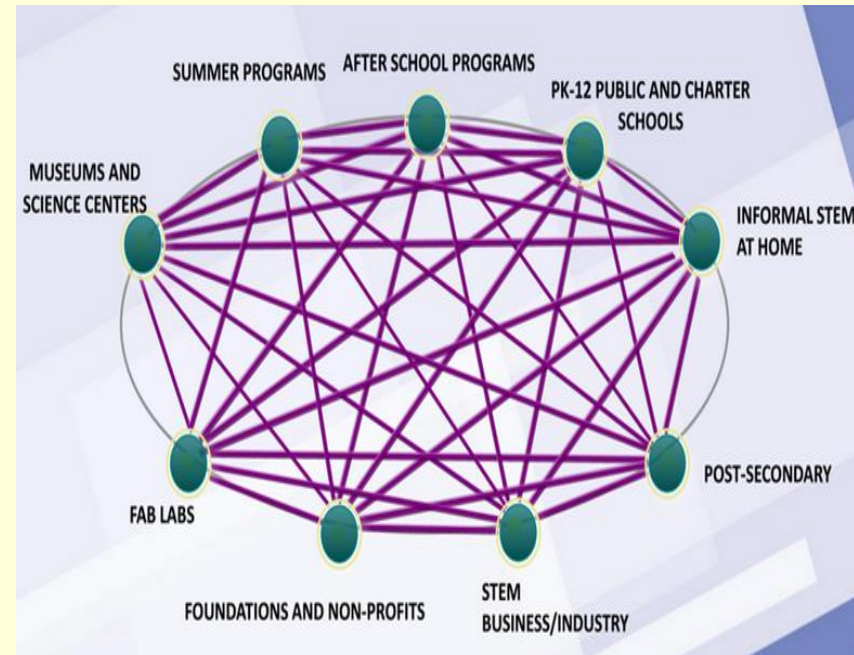
*A collaborative in-school/out-of-school ecosystem of STEM providers in Evanston*



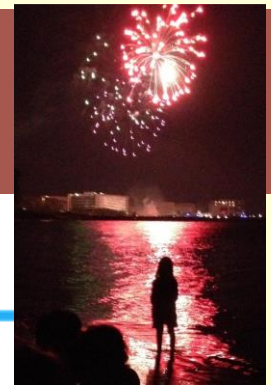
# EvanSTEM Concept

Form a collaborative network of STEM providers in Evanston to:

- SHARE: Learn from each other
- COORDINATE: Align and link program offerings to create STEM learning progressions (pathways)
- GROW: Expand STEM programs to under-performing & under-represented youth
- DEVELOP: Novel, cross-cutting STEM learning experiences
- ENGAGE: Inspire youth and educators towards greater STEM outcomes



# A National Initiative



## STEM Ecosystem Elements

### Key Partners

1. PreK-12 school system receptive to external partnerships
2. High-quality out-of-school time/youth development system and programs
3. STEM-expert museums, science centers, professional associations, and businesses
4. Institutions of higher education
5. Private sector STEM-focused businesses
6. Parent and community-based organizations

### Critical Attributes

1. Anchored by a passionate leader(s) with a collaborative vision and practice
2. Attentive to the enlightened self-interest of all partners
3. Philanthropic and public sector support and in-kind resources

### Focus Areas

1. Building the capacity of educators in all sectors.
2. Equipping educators with tools and structures to enable sustained collaboration.
3. Linking in- and out-of-school STEM learning.
4. Creating learning progressions that connect and deepen STEM experiences over time.
5. Focusing instruction on inquiry, project-based learning and real-world connections to increase relevance.
6. Engaging families and communities.
7. Exposing young people to potential STEM careers.

# EvanSTEM Defined

For this Project:

- STEM Opportunities are those impactful activities, projects, programs, courses, etc., that explore and address real-world problems by learning and using the skills, principles and practices of science, technology, engineering and/or math.
- Art is included in EvanSTEM via the design process that is incorporated within the engineering design process, but ART is NOT the central focus of the STEM opportunity.

# WHY EvanSTEM

STEM literacy and advancement is one key lever that can alter Evanston's persistent, disparate citywide issues:

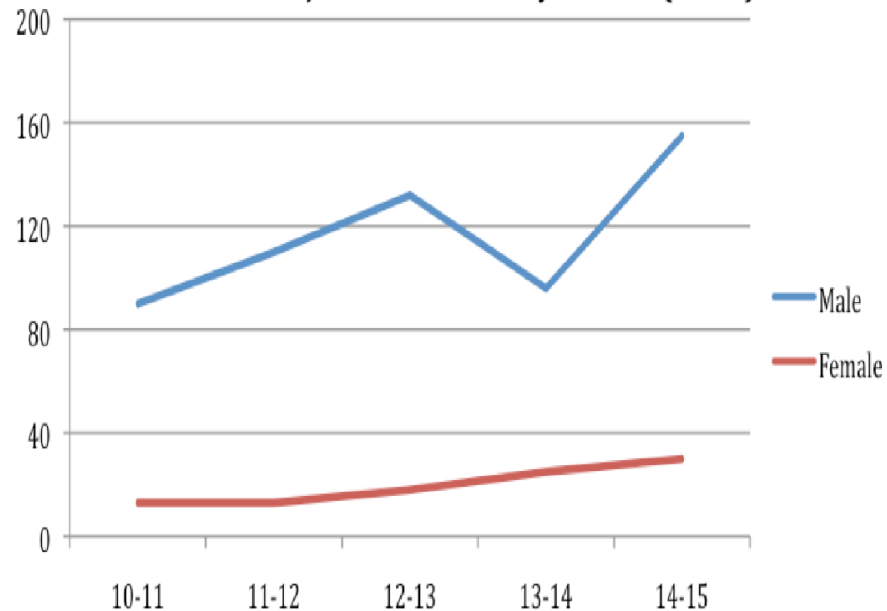
## I. The Math Gap

2013-14 District Summary							
		Low Income		Not Low Income		Gap	
District Name		Reading	Math	Reading	Math	Reading	Math
1	Evanston Twp HSD 202	36.9	31.4	88.9	89.3	-52.0	-57.9
2	Rooks Creek CCSD 425	30.0	30.0	78.3	87.0	-48.3	-57.0
30	CHSD 99	48.1	44.8	80.4	80.4	-32.3	-35.6
31	Evanston CCSD 65	44.3	53.7	87.2	88.9	-42.9	-35.2
32	Mt Vernon Twp HSD 201	34.6	25.5	67.9	60.0	-33.3	-34.5
72	Galesburg CUSD 205	42.4	37.2	69.7	67.4	-27.3	-30.2
73	State	41.1	44.3	73.5	74.4	-32.4	-30.1
74	Potomac CUSD 10	51.4	42.9	75.0	73.0	-23.6	-30.1
84	Monmouth-Roseville CUSD 238	41.5	39.2	68.1	69.0	-26.6	-29.8
85	City of Chicago SD 299	40.2	46.3	75.1	75.8	-34.9	-29.5
86	Farrington CCSD 99	42.9	35.7	73.9	65.2	-31.0	-29.5

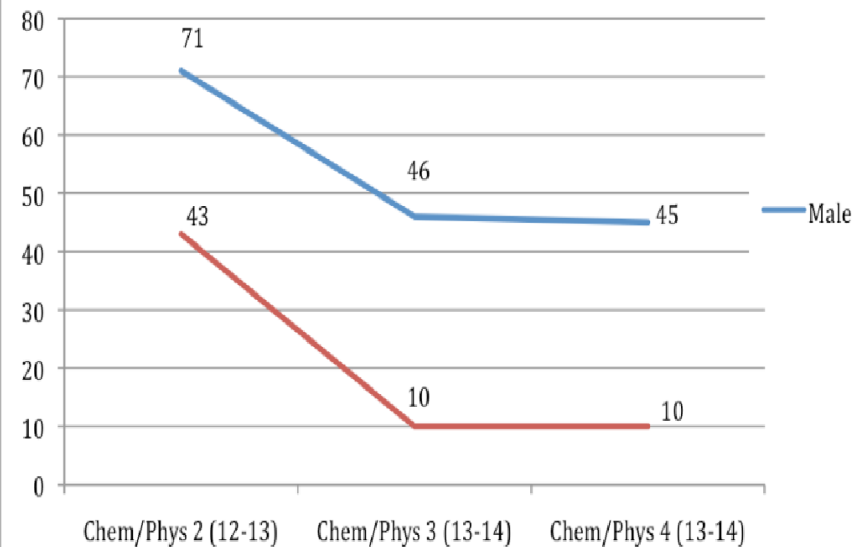
# WHY EvanSTEM

## II. The Gender Gap

**Figure 4.1 Number of Students Enrolled in at Least One Project-Lead-the-Way Course (ETHS)**



**Figure 4.2 Number of Students Enrolled in Chem/Phys Over time - 2 Chem/Phys in 2012-2013**





# WHY EvanSTEM

## III. The Program Access Gap

**Type of STEM Program by Target Population**

Location	Media Arts/Digital Technology	Maker/ Engineering Design	STEM Exploration & Experimentation
<b>School</b>	<ul style="list-style-type: none"> <li>Media Arts Classes: D65 Middle Schools</li> </ul>	<ul style="list-style-type: none"> <li>D65 Library Maker Sessions w/EPL</li> <li>ETHS Project Lead the Way, Geometry in Construction, STEM Senior Seminar Courses</li> </ul>	<ul style="list-style-type: none"> <li>D65 Classroom Math/Science Time</li> <li>D65 Math/Science Classes</li> <li>ETHS Math/Science Classes</li> </ul>
<b>After-School</b>	<ul style="list-style-type: none"> <li>MetaMedia at McGaw YMCA</li> <li>NU FUSE at EPL</li> </ul>	<ul style="list-style-type: none"> <li>NU FUSE at EPL and YMCA MetaMedia</li> <li>ETHS Robotics Club, Math Team, Science Olympiad</li> <li>NU Women Engineers &amp; NU Amer. Women in Science at ETHS</li> </ul>	<ul style="list-style-type: none"> <li>NU SiS Science Club at a D65 School w/ Y.O.U.</li> <li>Mad Science at two D65 Schools</li> <li>Evanston Ecology Center</li> <li>NU Project Excite</li> <li>NU Jugando con Ciencias @ EPL</li> </ul>
<b>Summer</b>	<ul style="list-style-type: none"> <li>MetaMedia at McGaw YMCA</li> <li>NU FUSE at EPL</li> </ul>	<ul style="list-style-type: none"> <li>Engineering with Legos Camp</li> <li>ETHS Engineering Summer Camp</li> <li>NU FUSE at EPL &amp; YMCA MetaMedia</li> </ul>	<ul style="list-style-type: none"> <li>Camps: Evanston Ecology Center</li> <li>NU CTD Courses</li> </ul>

Color Code Key: Target: Under-performing

Target: Under-represented

Located in Under-resourced

# WHY EvanSTEM

## DEVELOP CAREER SKILLS:

- By engaging under-represented students in relevant, engaging and accessible STEM experiences and pathways, they will develop interests and skills necessary for future school and career success.

## CREATE & PROBLEM SOLVE:

- STEM programming can expand children's capabilities to create, persist and problem solve.

## MASTER TECHNICAL & CRITICAL THINKING HABITS OF MIND:

- In the process, their minds are primed to master the technical and critical thinking skills inherent in science and engineering design work.



# WHY EvanSTEM

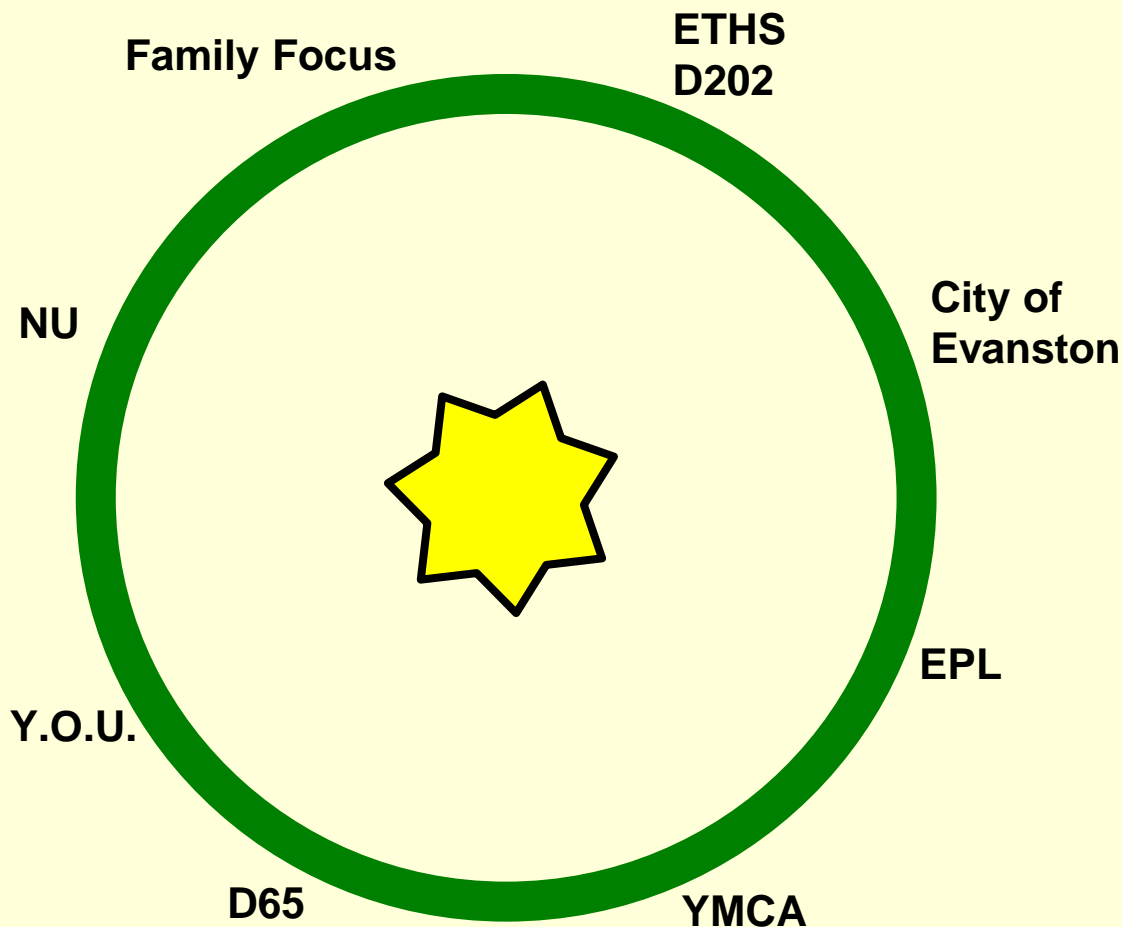
According to the U.S. Department of Commerce:

- STEM occupations are projected to grow by 17.0 percent from 2008 to 2018,
- STEM workers command higher wages, earning 26 percent more than their non-STEM counterparts,
- More than two-thirds of STEM workers have at least a college degree, compared to less than one-third of non-STEM workers.

# Goals of EvanSTEM

- NETWORK: Coordinate and align STEM pathways across schools, out-of-school programs and districts.
- YOUTH: Improve STEM access and engagement for Evanston students who are underperforming or underrepresented in STEM programs.
- EDUCATORS: Impact the professional learning of STEM educators
  - Cross-Cutting Professional Development
  - Development and Piloting of STEM Learning Experiences

# How Will EvanSTEM Work?



## Participation

Targeted Evanston K – 12 Youth



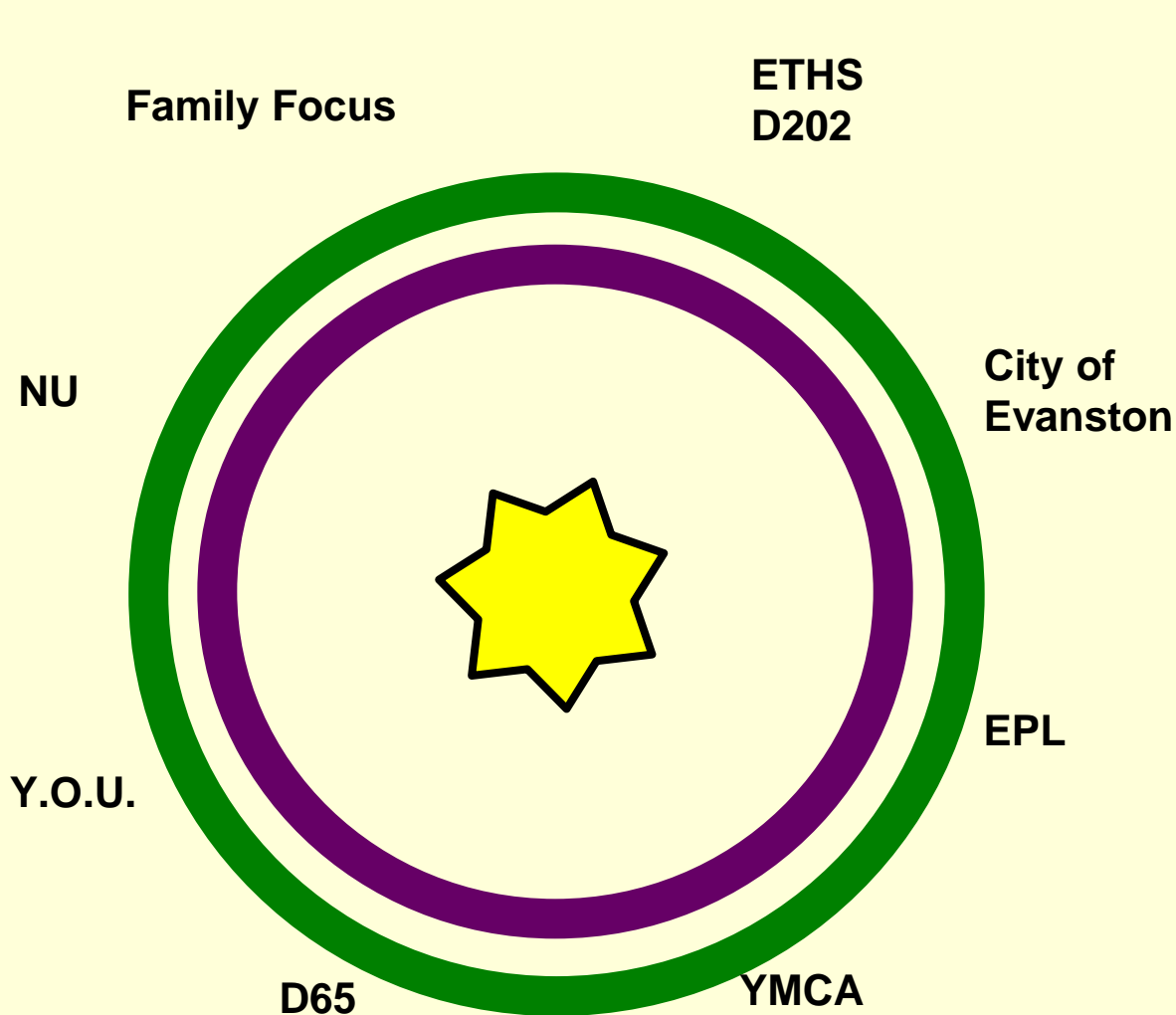
## Direction

Oversight committee for the EvanSTEM project

### Members:

- Seth Green, Y.O.U.
- Monique Parsons, McGaw YMCA
- Patrick Hughes, Inclusion Solutions
- Karen Danczak Lyons, EPL
- Renee Neumeier, EPL
- Colette Allen, Family Focus
- Robert Dornecker, City of Evanston
- Michael Kennedy, NU SiS
- Rebecca Daugherty, NU SiS
- Amy Pratt, NU OSEP
- Paul Goren, School District 65
- Peter Bavis, ETHS District 202
- Chuck Lewis, Lewis-Sebring Fam. Fnd'tn
- Kirby G, Callam, School District 65

# How Will EvanSTEM Work?



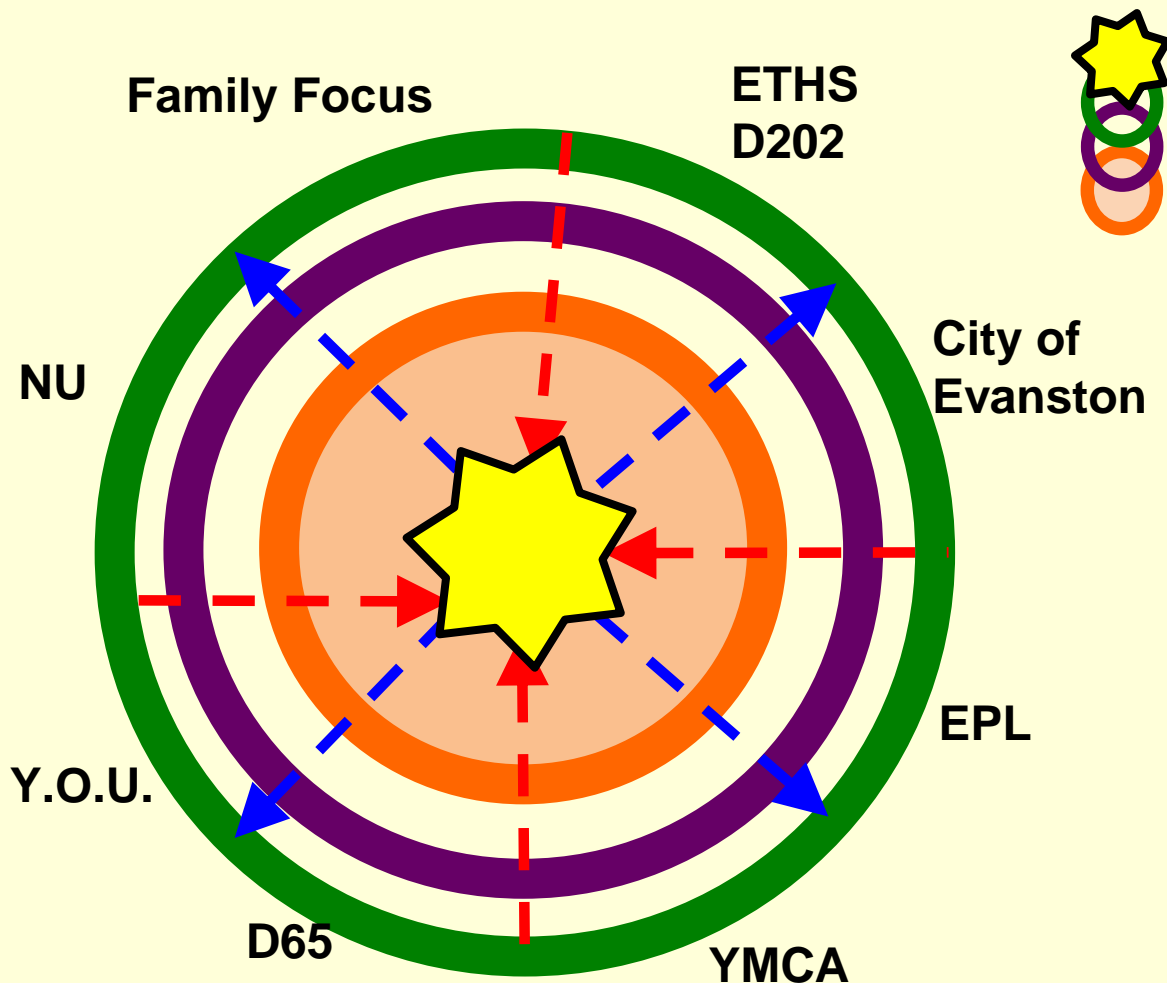
## Participation Direction Coordination

Admin Work Group to enact evaluation and professional development plans, develop STEM pathways and new project selection guidelines

### Members:

- Kirby G. Callam, District 65
- Rebecca Daugherty, NU Science in Society
- Claire Hiller, District 65
- Dale Liebforth, ETHS
- Donna Kent, City of Evanston
- Andrea Mainelli, Parent
- Renee Neumeier, Evanston Pub Library
- Kristen Perkins, NU OSEP
- Kelly Rooney, District 65
- Sarita Smith, MetaMedia - YMCA
- Terri Sowa-Imbo, ETHS
- Casey Varela, Y.O.U.

# How Will EvanSTEM Work?



**Participation**  
**Direction**  
**Coordination**  
**Action**

Educator Work Group to craft engaging STEM learning experiences that are integrated across disciplines, providers and schools.

Members:

- K-12 Teachers, curriculum specialists, university STEM experts, STEM professionals, etc.

P.D. Bullpen:

- Museum of Science & Industry
- Northwestern University
- Loyola University
- DePaul University

Data & Interests



Guidance & Resources



# EvanSTEM Outcomes

A living ecosystem of STEM providers in Evanston creating new STEM programs, experiences, curricula and PD modules, resulting in:

- Increased participation and dosage rates of targeted youth
- Increased use of math, science and engineering practices to problem solve across settings
- Evidence of sequential, cross-setting pathways navigated by youth
- Increased teacher/educator effectiveness within and across settings
- Improved educators attitudes re: integrated, cross-setting STEM approaches
- Increased family involvement, support and understanding of STEM progression & career opportunities.
- Plans to disseminate lessons & scale and sustain the EvanSTEM model



# Tinker Town meets

EM ...



*... to infinity and beyond!*



***EVERY CHILD. EVERY DAY. WHATEVER IT TAKES. TOGETHER***