

Improving Your Youth Retention Via Early Childhood STEM Programs

Dr. Winnie Black, Carbon, Schuylkill, and Luzerne Counties Ecosystem

717-763-1661 X151, wblack@csc.csiu.org

Mr. Rich VanTol, Great Lakes Bay Regional Alliance

989-662-3280, vantolr@baisd.net

Ms. Susie Grimm, Early Learning Manager - pbssocal.org

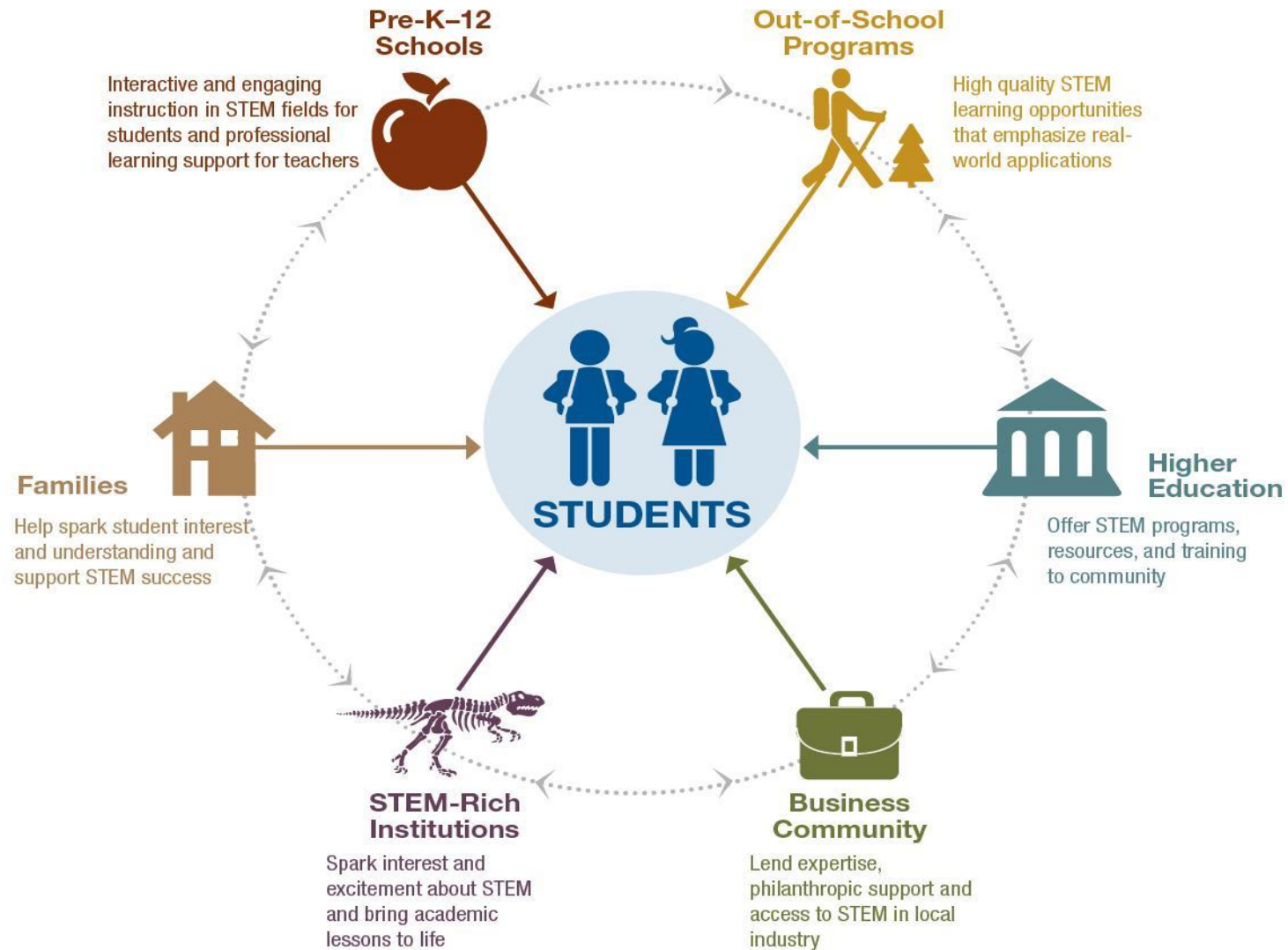
714.241.4185, SGrimm@pbssocal.org



Create a Village that You Would like to Live In as a Young Child using Legos



STEM Learning Ecosystem





SHINE

2018 2019





Figure 1: Bronfenbrenner's ecological systems theory ^{8,10}

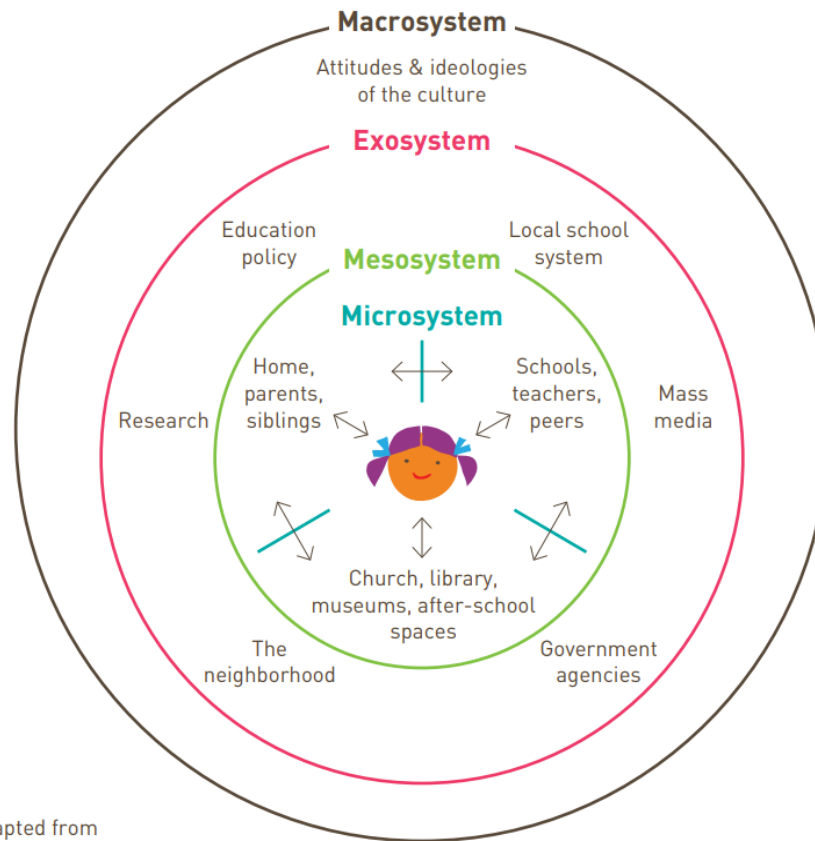
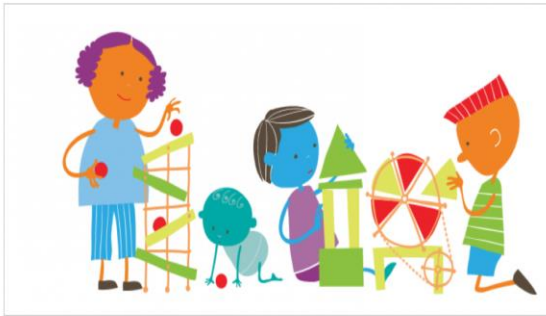


Diagram adapted from
Takeuchi & Levine, 2014

Recommendations from STEM Starts Early

- Both parents and teachers are enthusiastic and capable of supporting early STEM learning; need additional knowledge and support to do so effectively.
- Early childhood Teachers need more robust training and PD to effectively engage young children in developmentally appropriate STEM learning.
- Parents/technology can connect school, home, and other learning environments like libraries and museums to support early STEM learning.
- Connect research, teachers and public policies to ensure the STEM learning quality.
- Create effort to convey an accurate public understanding of early childhood STEM to support meaningful early STEM policy change.





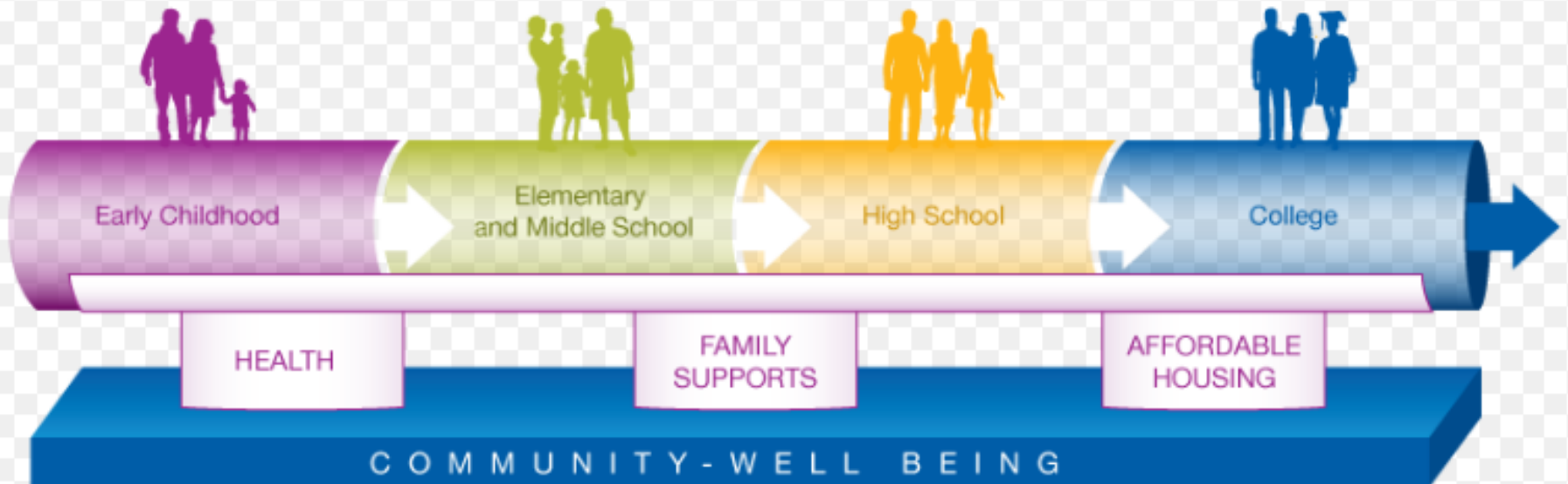
Presenter

Rich VanTol, OST STEM Network Leader

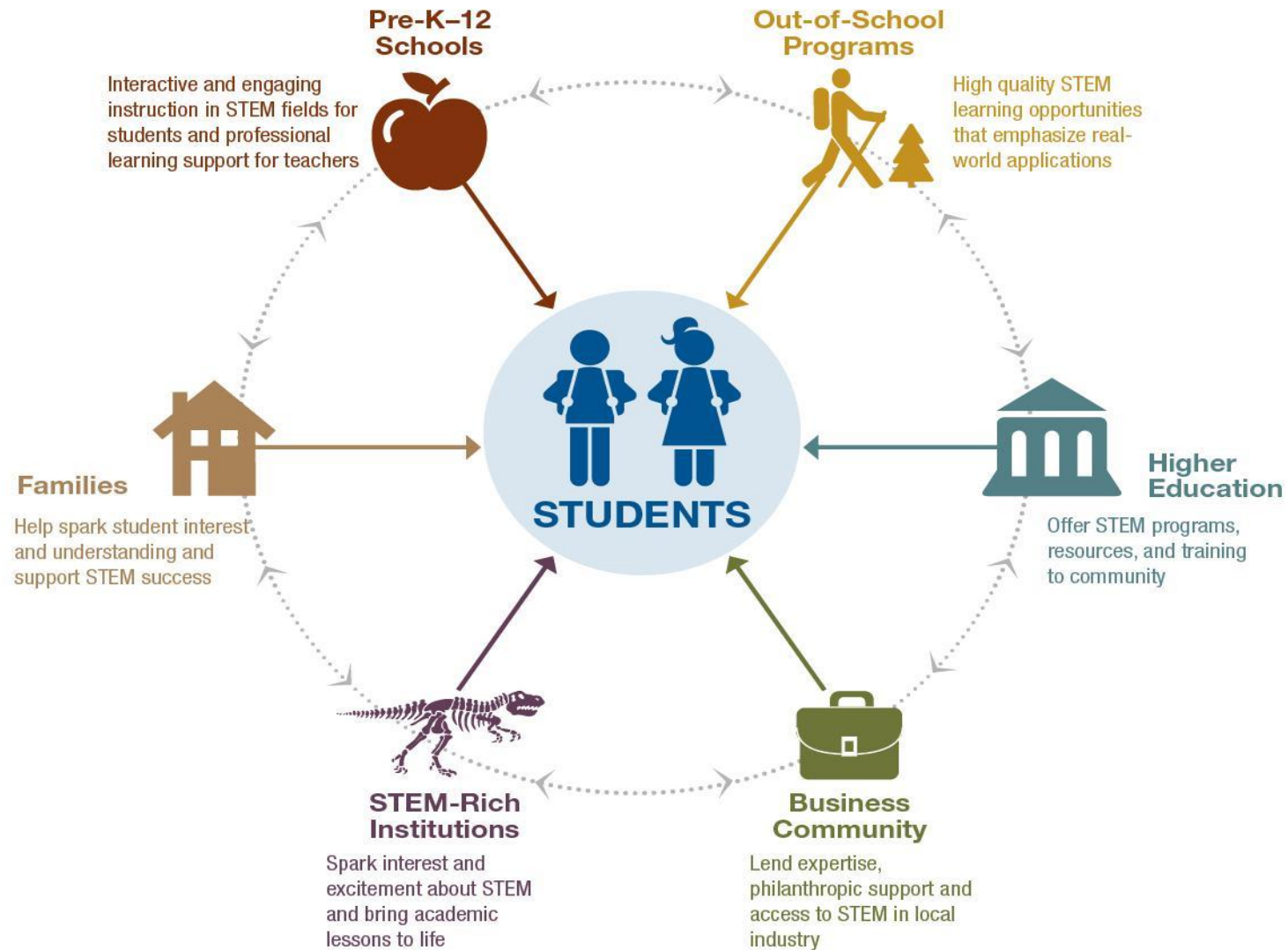


Talent Development Framework Cradle – to - Career!

CRADLE TO CAREER PIPELINE



STEM Learning Ecosystem



Out-of-School Time (OST) Network

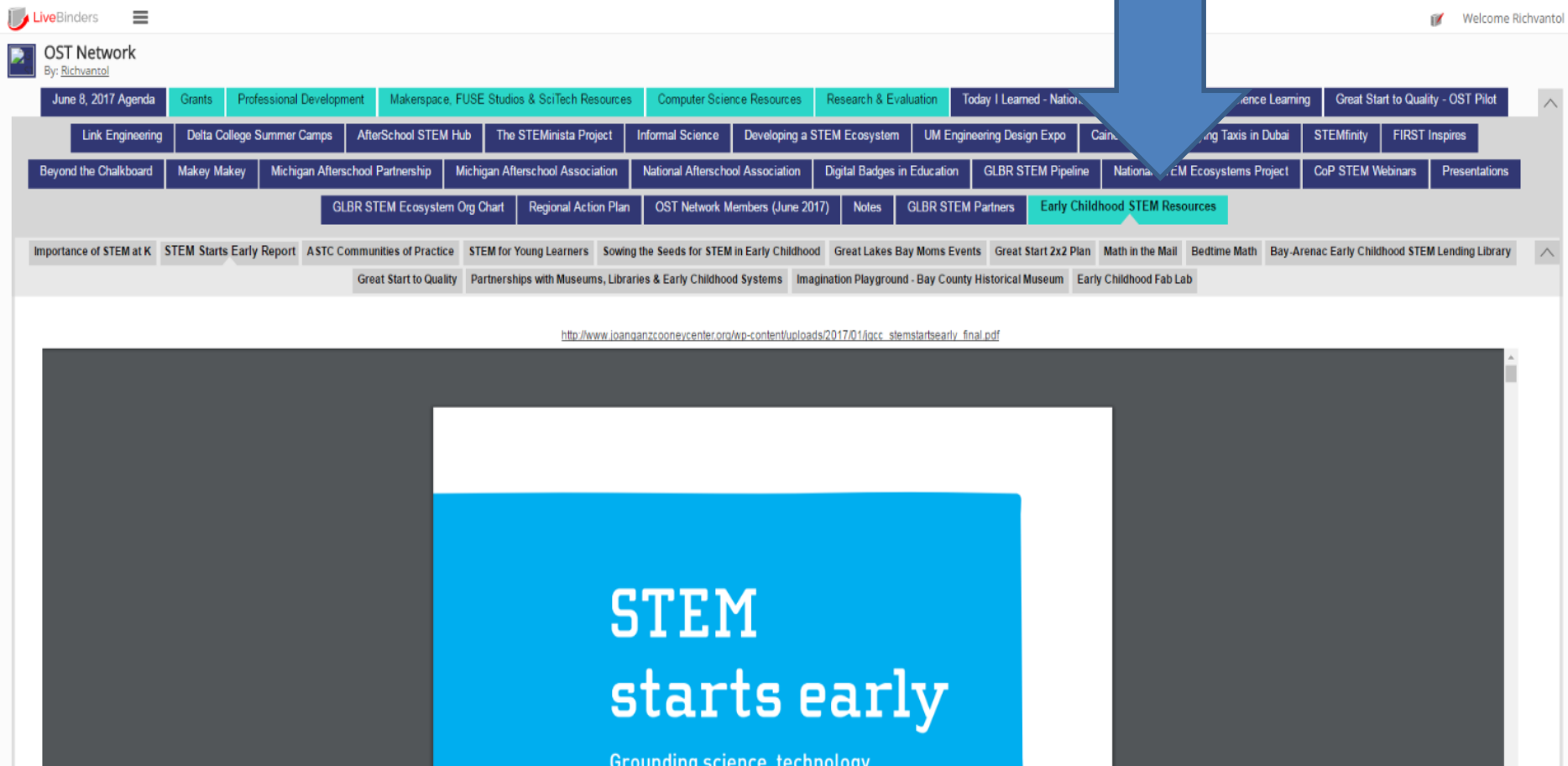
Vision Statement

All students have equal access to high quality OST STEM learning experiences.



LiveBinders page with grants, PD, research, and early childhood STEM resources, etc.

<http://www.livebinders.com/play/play?id=1955867>



LiveBinders

Welcome Richvantol

OST Network
By: Richvantol

June 8, 2017 Agenda | Grants | Professional Development | Makerspace, FUSE Studios & SciTech Resources | Computer Science Resources | Research & Evaluation | Today I Learned - National Science Learning | Great Start to Quality - OST Pilot

Link Engineering | Delta College Summer Camps | AfterSchool STEM Hub | The STEMista Project | Informal Science | Developing a STEM Ecosystem | UM Engineering Design Expo | Caine A Robot | Learning Taxis in Dubai | STEMfinity | FIRST Inspires

Beyond the Chalkboard | Makey Makey | Michigan Afterschool Partnership | Michigan Afterschool Association | National Afterschool Association | Digital Badges in Education | GLBR STEM Pipeline | National STEM Ecosystems Project | CoP STEM Webinars | Presentations

GLBR STEM Ecosystem Org Chart | Regional Action Plan | OST Network Members (June 2017) | Notes | GLBR STEM Partners | **Early Childhood STEM Resources**

Importance of STEM at K | **STEM Starts Early Report** | ASTC Communities of Practice | STEM for Young Learners | Sowing the Seeds for STEM in Early Childhood | Great Lakes Bay Moms Events | Great Start 2x2 Plan | Math in the Mail | Bedtime Math | Bay-Arenac Early Childhood STEM Lending Library

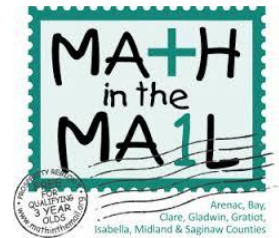
Great Start to Quality | Partnerships with Museums, Libraries & Early Childhood Systems | Imagination Playground - Bay County Historical Museum | Early Childhood Fab Lab

http://www.ioanqanzcooneycenter.org/wp-content/uploads/2017/01/iqcc_stemstartsearly_final.pdf

STEM
starts early
Grounding science, technology,

Out-of-School Time & Early Childhood

- Bedtime Math - 843 families
- Math in the Mail – 902 families



A lot is happening:

- BAISD Early Childhood STEM Lending Library
- Fall Conference 2018 (Integrated PD for in-school and out-of-school time educators)
- GLBR Early Childhood STEM Passports
<https://drive.google.com/file/d/1TXdroMEUg0m6VXC7up3zV9xyO1-i8p6j/view>
- GLBR Access/Equity Mini Grants
<https://www.stempipeline.com/>

Bedtime Math Partnership

- **Diana Pecina, Bedtime Math, Director of Partnerships**
(dpecina179@comcast.net), www.bedtimemath.org
 - Welcome packet for ALL districts willing to participate in distributing information to parents of pre-K through grade 2 students at either open houses or parent-teacher conferences
 - ✓ A flyer describing the program
 - ✓ A quick research summary on the UC study
 - ✓ Testimonials on the app
 - ✓ An updated Parent Flyer for Great Lakes Bay Region



Bedtime Math Partnership

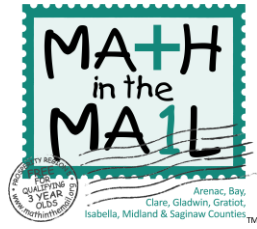


—It's not too late to add your school

**E-mail: parentscount@bedtimemath.org
to enroll your school**



What is Math in the Mail?



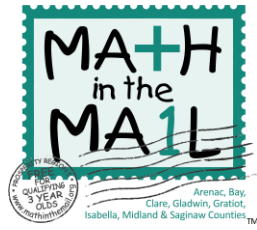
Math in the Mail develops foundational math skills in 3-year-olds by providing the tools needed for parents/caregivers to help their child learn at home through play.

Children receive 6 kits in the mail over the course of the year before they enter 4-year-old preschool.

By building pre-school aged children's mathematical understanding and confidence in the Great Lakes Bay Region, Math in the Mail provides foundational mathematics knowledge essential to children experiencing success in future STEM related content and careers.



Quantifying
"I Spy Numbers"



Who Receives Math in the Mail?

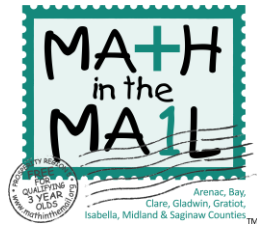
To qualify, families must

- Live in Arenac, Bay, Clare, Gladwin, Gratiot, Isabella, Midland or Saginaw county
- Have a three year old child in the household (Children born 9/1/14 – 9/1/15 can be enrolled this year*).
- Have a household income that is at or below [250% of the federal poverty guidelines](#) (approx. \$60,000 for a household of four)



* This aligns the cohort with the age group eligible to enter Head Start/GSRP in September 2019.

What Do the Kits Include?



- A book
- Materials designed for hands-on play
- 'Tools for Talking', a guide on how to use the materials provided
 - Ideas for interactive activities using the provided materials
 - Suggestions for parents and caregivers to engage their child in mathematics
 - A description of how these activities help children Learn
- Resources from community partners



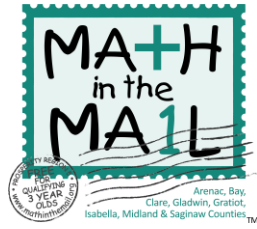
Math in the Mail is a collaboration between these Great Lakes Bay Region leaders in education:



The STEM Pipeline begins in early childhood!

Math in the Mail is funded by
DOW CORNING Dow Corning
Foundation

What if a Family Doesn't Qualify?



Due to a significant number of early enrollments not meeting the income eligibility guidelines (over income), it was decided to begin offering Math in the Mail by [subscription](#) as well.

It is currently being offered:

3 kits = \$50 (over six months)

6 kits = \$90 (over twelve months)

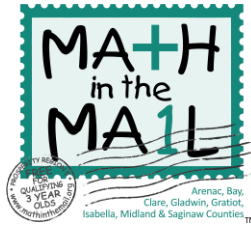
150+ paid subscriptions have been mailed out to date!



The STEM Pipeline begins in early childhood!



How can families enroll?



#Trelovesmath!



[SISD Math in the Mail](#)



[Math in the Mail](#)



[@MathintheMail](#)

- Visit www.mathinthemail.org
- Call 989-399-7415 to enroll over the phone
- Complete and return the form included in the [brochure](#)
- By referral

Community organizations and programs that require proof of income can refer families and verify their income (For example: 211, WIC, Home visiting partners, Head Start, and GSRP Preschool, etc.)

875 children were enrolled in the inaugural year (2016-17) of Math in the Mail!

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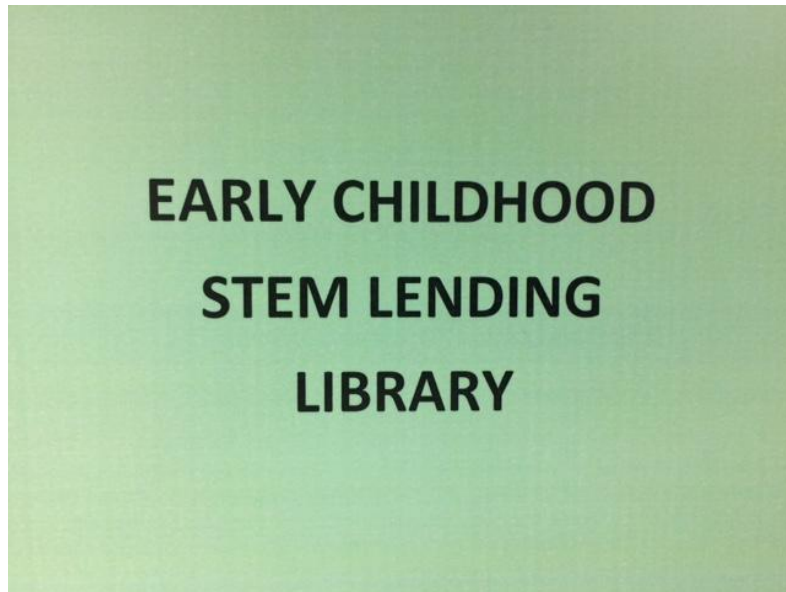
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Bay-Arenac ISD

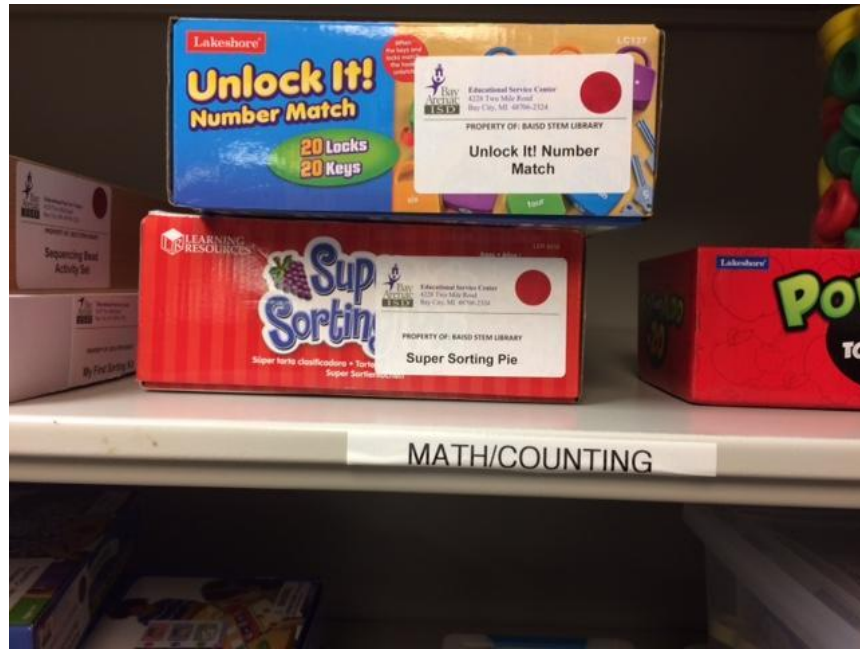
Great Start STEM Lending Library

- For early childhood educators, including preschools and child care programs
- Dow Corning Foundation Start-Up Funding

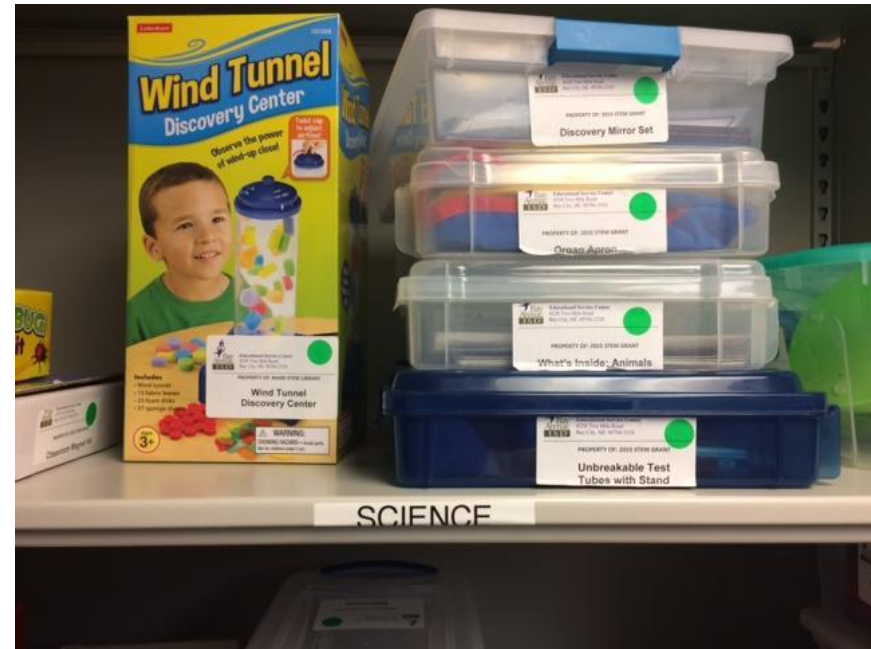


EARLY CHILDHOOD
STEM LENDING
LIBRARY

Math

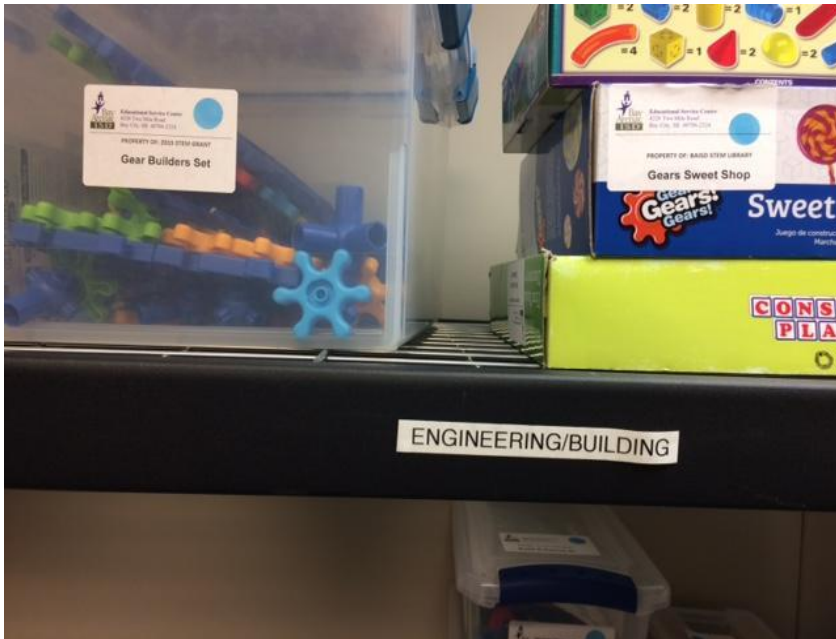


Science

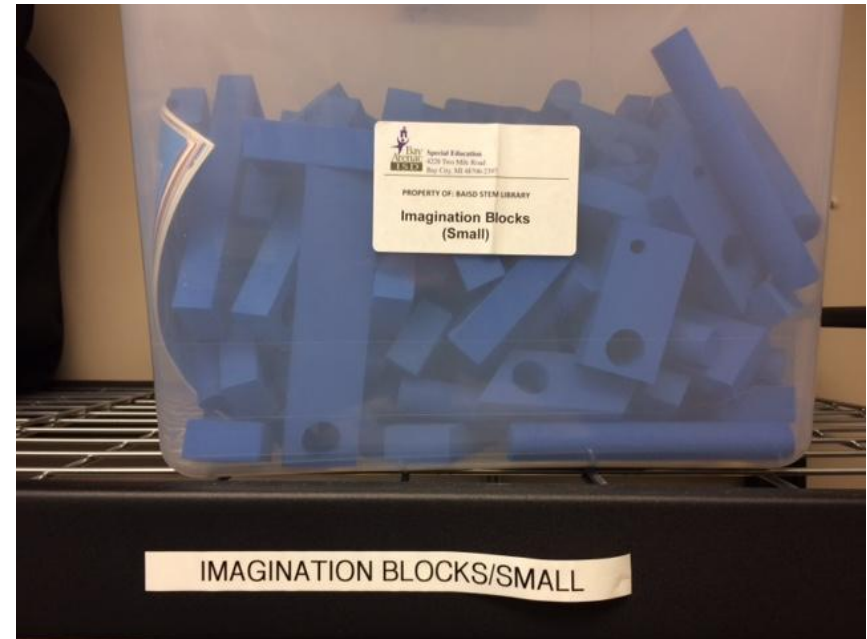


EARLY CHILDHOOD
STEM LENDING
LIBRARY

Engineering

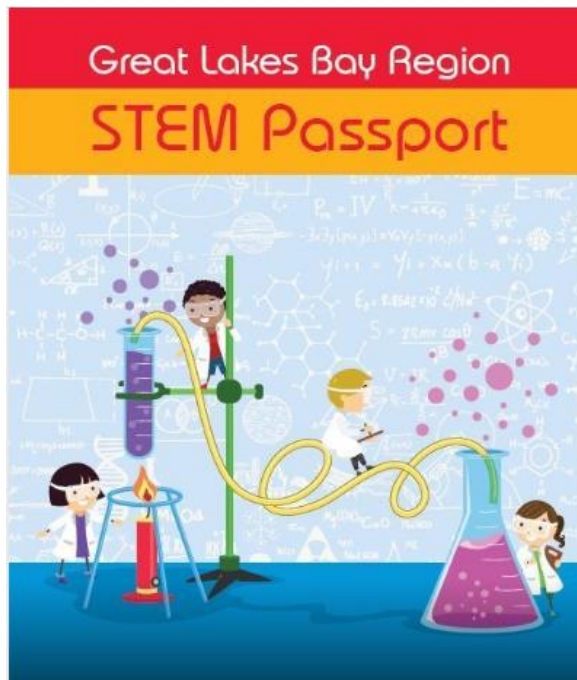


Imagination

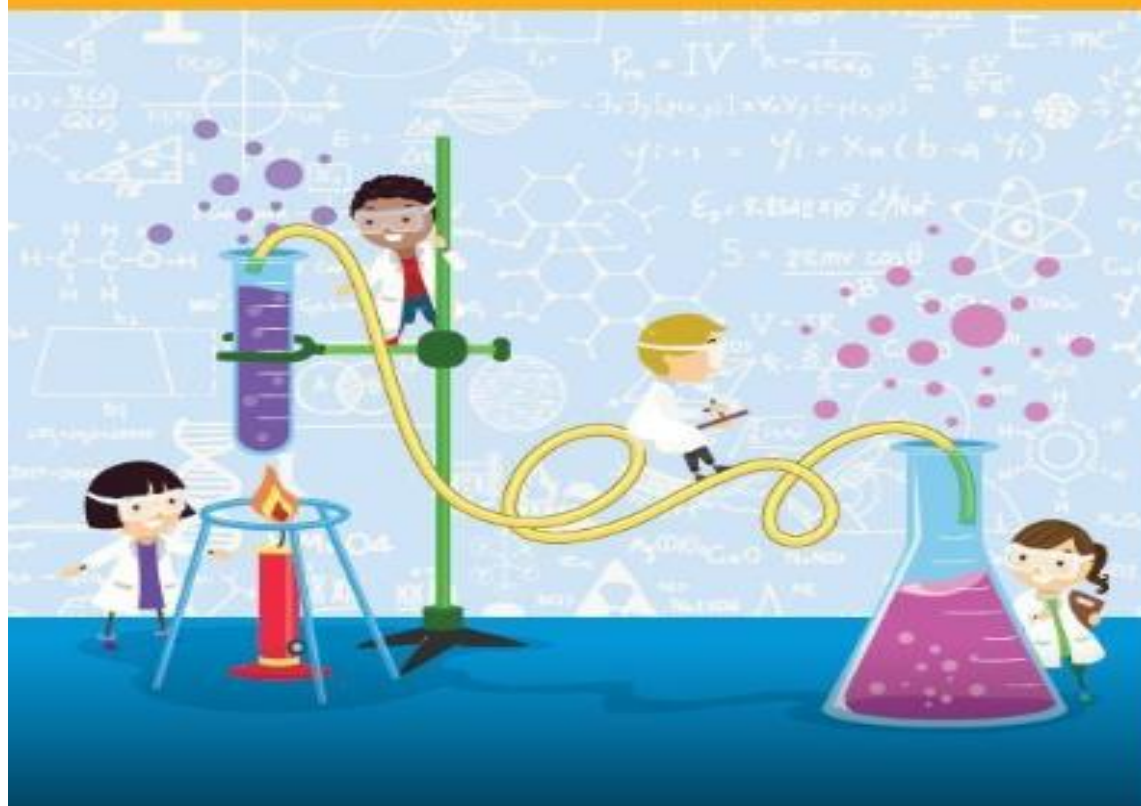




- Early Childhood STEM Passports
- 33,500 children across the region!
(Preschool – 3rd Grade)



Great Lakes Bay Region STEM Passport



Today, the Freeland Learning Center & Elementary School are distributing STEM Passports to all Y5-3rd grade students. This program is designed to offer children in the Great Lakes Bay Region an increased opportunity to access STEM learning.



- RFP for STEM Mini Grants
 - Connect in-school and out-of-school time STEM learning and mitigate access/equity issues for at-risk populations
- <https://www.stempipeline.com/out-of-school-time/>



Q&A

STEM 
In the Great Lakes Bay Region

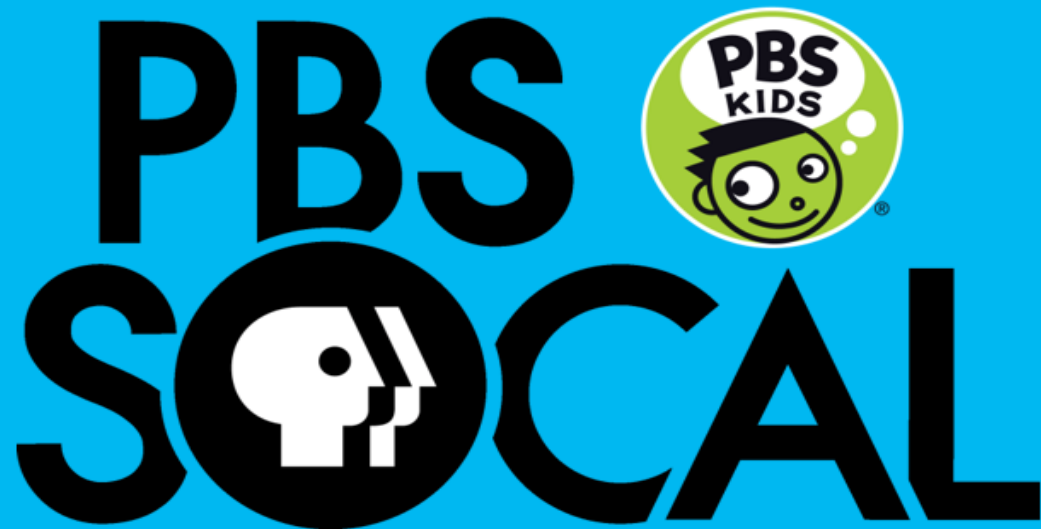
Thank you!

- Rich VanTol, 989-662-3280, vantolr@baisd.net



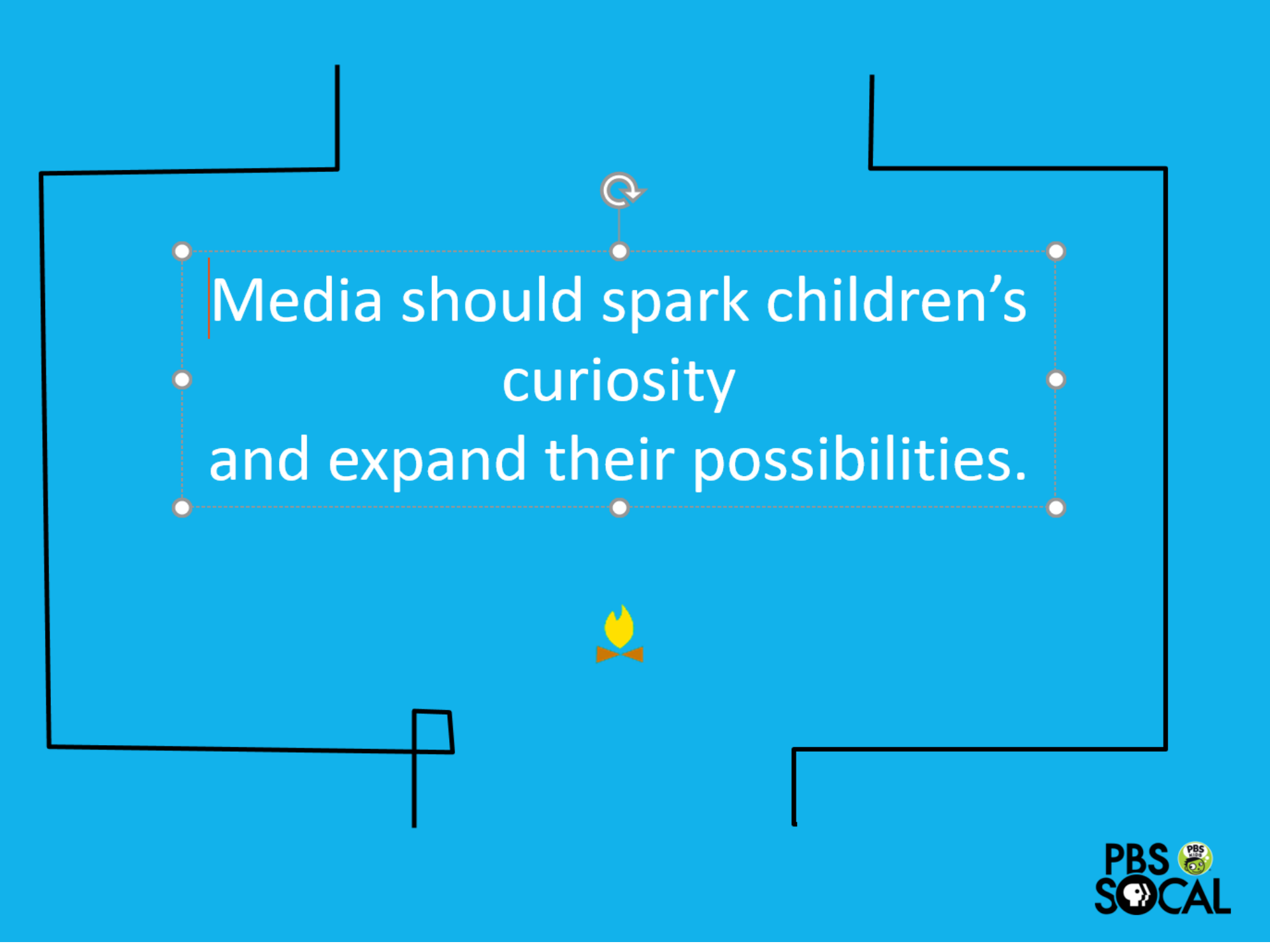
The STEM Pipeline begins in early childhood!

EARLY CHILDHOOD EDUCATION SERVICES



EARLY LEARNING CRISIS IN SOCAL

- **One in five of the 1 million** children under the age of five living in Southern California **lives in poverty**
- In Southern California more than **40 percent** of children ages 3-5 are **not enrolled in preschool** and will start to fall behind
- Children who are not prepared for kindergarten are likely to **struggle with reading by 3rd grade**, an indicator that a child might drop out of school.
- While high school is the “point of departure,” the process of **dropping out begins in middle school** – and sometimes elementary school.



Media should spark children's
curiosity
and expand their possibilities.

COMMUNITY ENGAGEMENT

How PBS SoCal connects content to the community



- We reach children 2-8 and the adults in their lives - parents, caregivers, & teachers
- Connect content to a curriculum for home and school
 - Teacher professional development,
 - Parent training
 - Five week academies
- Other ways we connect in the community:
 - After School and Summer Camps
 - Community Collaborative and Mobile Labs
 - Mobile App Distribution
 - STEM Backpacks
 - Family Creative Learning Workshops (coding)











