Improving Your Youth Retention Via Early Childhood STEM Programs

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

Pre-K–12 Schools
Interactive and engaging instruction in STEM fields for students and professional learning support for teachers

Out-of-School Programs
High quality STEM learning opportunities that emphasize real-world applications

Families
Help spark student interest and understanding and support STEM success

Students

STEM-Rich Institutions
Spark interest and excitement about STEM and bring academic lessons to life

Business Community
Lend expertise, philanthropic support and access to STEM in local industry

Higher Education
Offer STEM programs, resources, and training to community
Figure 1: Bronfenbrenner’s ecological systems theory

Macro system:
- Attitudes & ideologies of the culture

Exosystem:
- Education policy
- Local school system
- Mass media

Mesosystem:
- Home, parents, siblings
- Schools, teachers, peers
- Church, library, museums, after-school spaces

Microsystem:
- Research
- Government agencies
- The neighborhood

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

Early Childhood → Elementary and Middle School → High School → College

Health
Family Supports
Affordable Housing

Community Well-Being
STEM Learning Ecosystem

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**Families**
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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
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.

The STEM Pipeline begins in early childhood!
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.

The STEM Pipeline begins in early childhood!
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

The STEM Pipeline begins in early childhood!
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?

- Visit [www.mathinthemail.org](http://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!

The STEM Pipeline begins in early childhood!
Bay-Arenac ISD
Great Start STEM Lending Library

- For early childhood educators, including preschools and child care programs
- Dow Corning Foundation Start-Up Funding
Engineering  Imagination
• Early Childhood STEM Passports
• 33,500 children across the region! (Preschool – 3rd Grade)
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/
Thank you!

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

The STEM Pipeline begins in early childhood!
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)
COMMUNITY ENGAGEMENT
Creative Learning Workshops (coding)

How PBS SoCal connects content to the community