

# *The Missing M in STEM*

## **How math proficiency can unlock our future workforce**

Learn more and join an important discussion on how we can meet the growing demand for diverse talent in the tech sector. We will hear from our panel of experts, and provide an opportunity for Q&A.

6:30-7:30 PM Thursday, December 12, 2019

Venture Cafe

# Welcome to our panelists!

Moderator: **Marinell Rousmaniere**, CEO



**Aparna Rayasam**, VP Web Security



**Julie Bott**, Principal



**Justin Reich**, Director and Assistant Professor



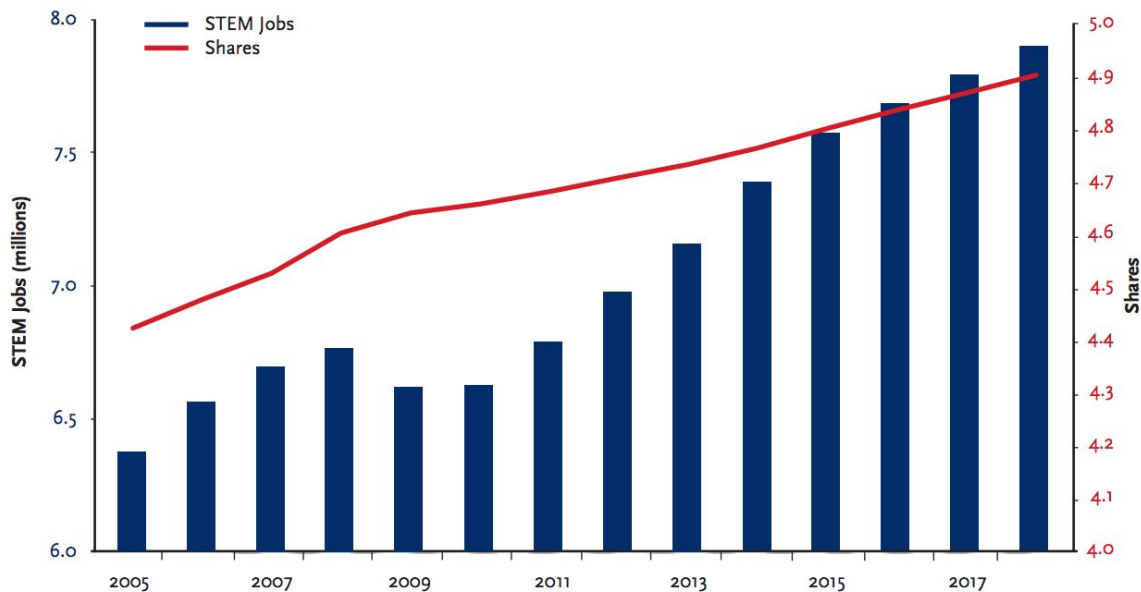
# *The Missing M in STEM*

**How math proficiency can unlock our  
future workforce**

1. **What is alarming about our current state?**
2. What is one of the root causes?
3. What can we do about it?

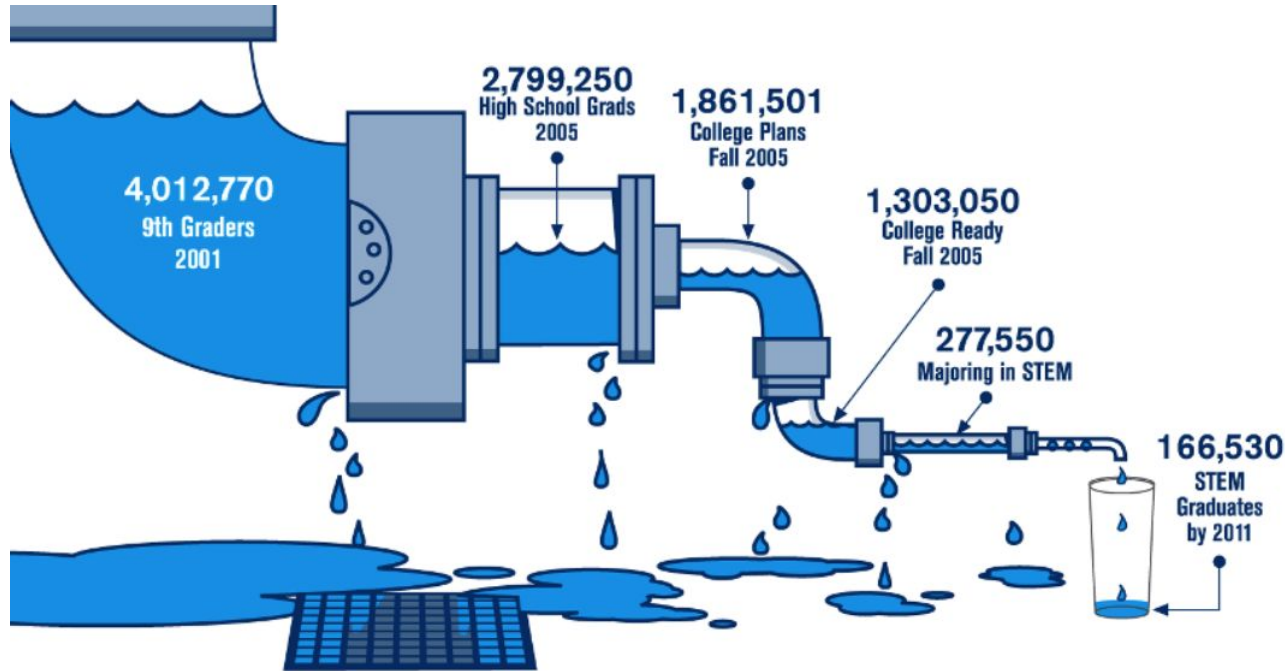
# The Growth in STEM Job Opportunities

Figure 4: STEM Jobs are an increasing share of all jobs in the U.S. economy.



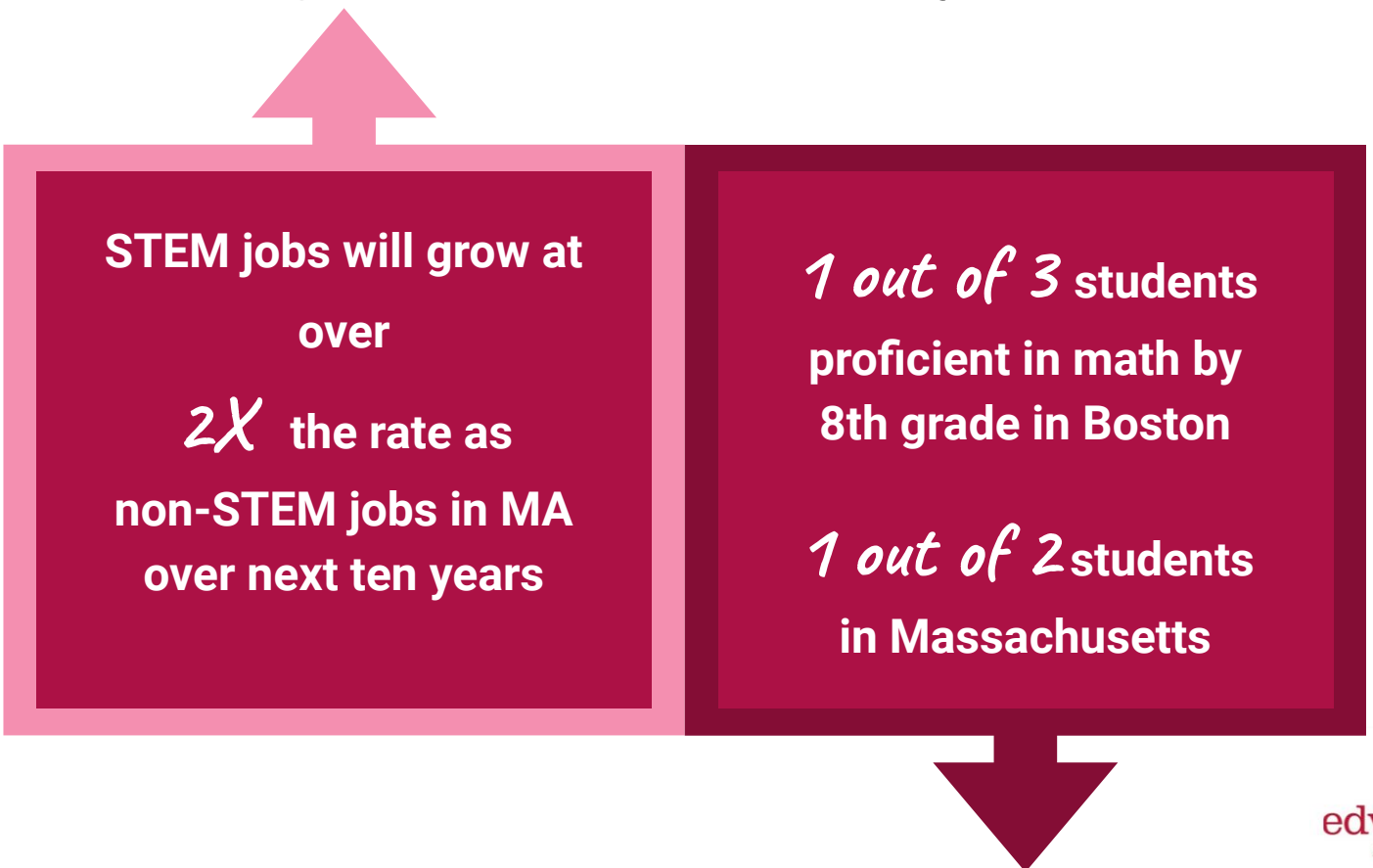
Source: Georgetown University Center on Education and the Workforce forecast of occupational growth, 2018.

# The gap between supply and demand



Source: NCES Digest of Education Statistics; Science & Engineering Indicators 2008

# The gap between supply and demand



STEM jobs will grow at  
over  
*2X* the rate as  
non-STEM jobs in MA  
over next ten years

*1 out of 3* students  
proficient in math by  
8th grade in Boston

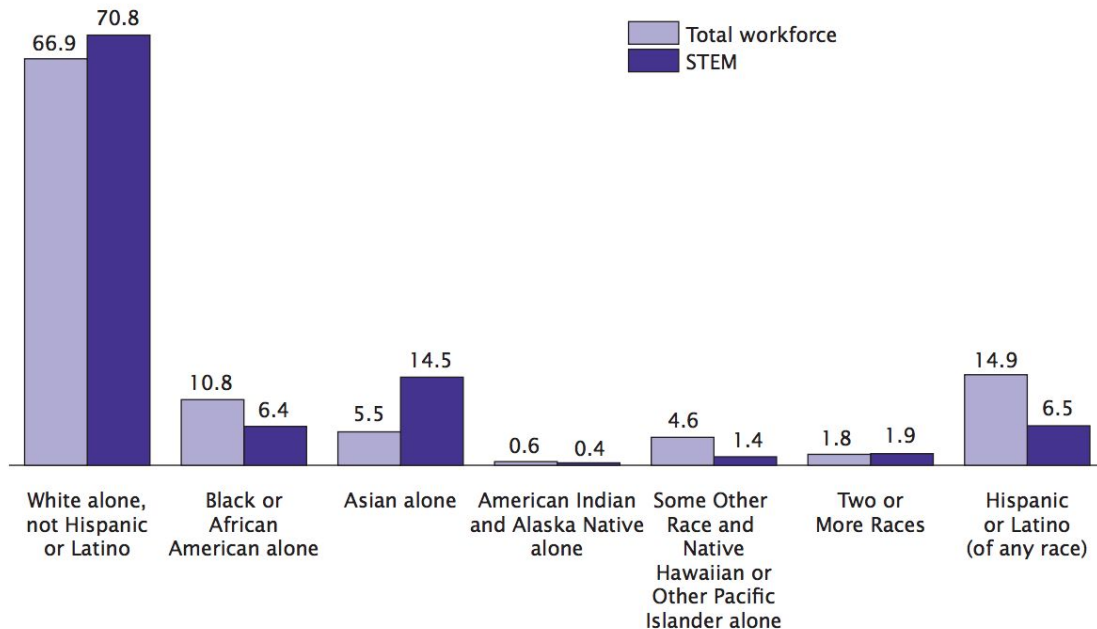
*1 out of 2* students  
in Massachusetts

# Tapping into only a segment of our talent pool: race

Figure 9.

## Racial and Ethnic Representation in the STEM Workforce

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see [www.census.gov/acs/www/](http://www.census.gov/acs/www/))



Note: Native Hawaiian or Other Pacific Islander alone was combined with Some Other Race because of a small number of sample observations.

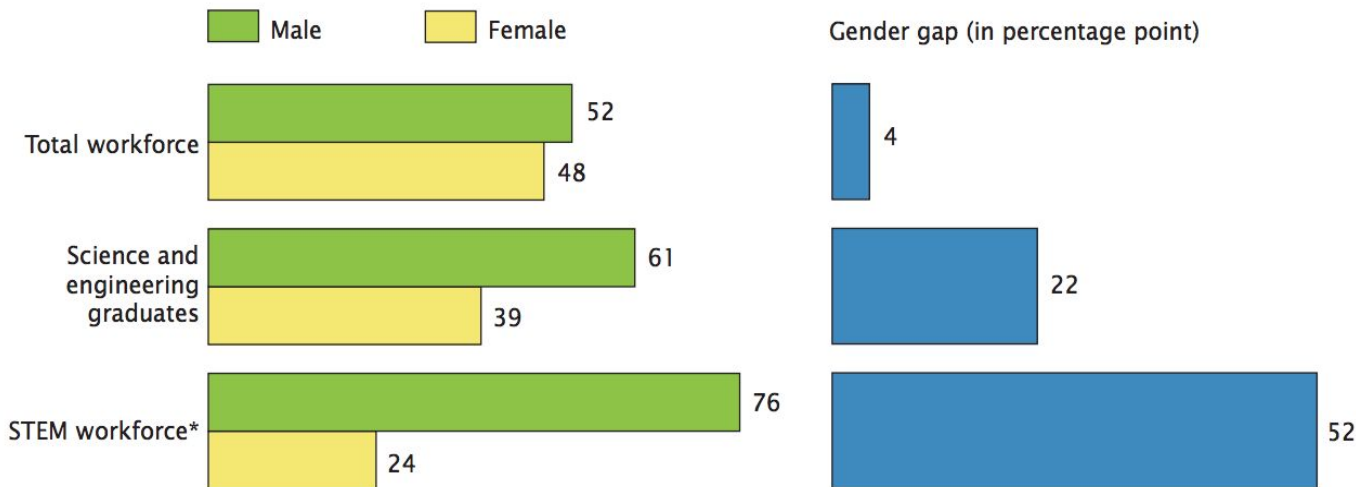
Source: U.S. Census Bureau, 2011 American Community Survey.

# Tapping into only a segment of our talent pool: gender

Figure 14.

## Share of Total Employment, Science and Engineering Degrees, and STEM Employment by Sex

(In percent. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see [www.census.gov/acs/www/](http://www.census.gov/acs/www/))



\*With a science or engineering bachelor's degree.

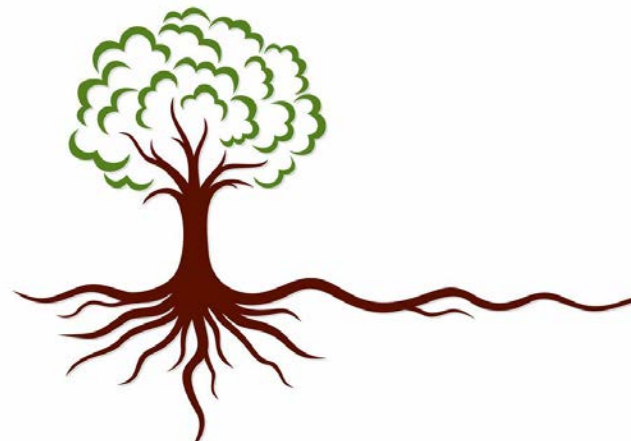
Source: U.S. Census Bureau, 2011 American Community Survey.



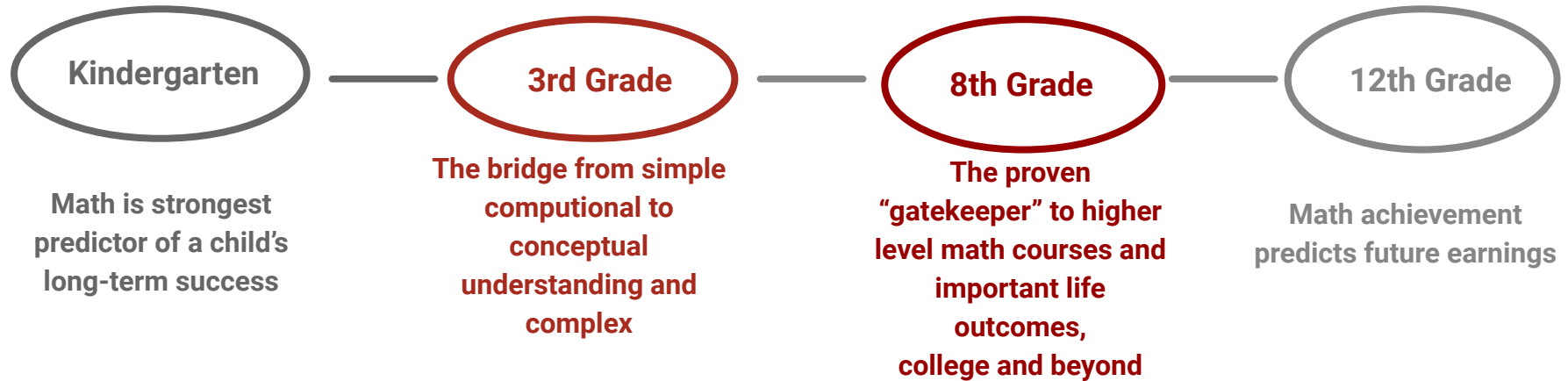
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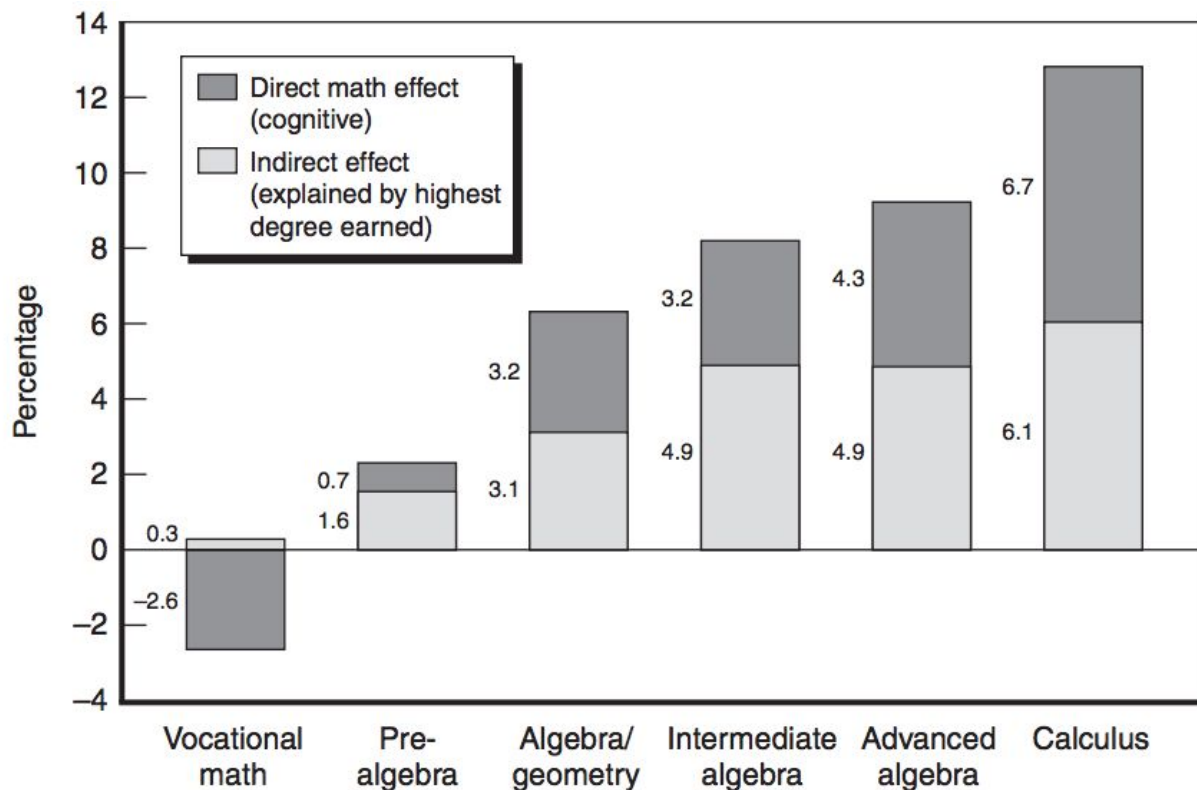
1. What is alarming about our current state?
2. **What is one of the root causes?**
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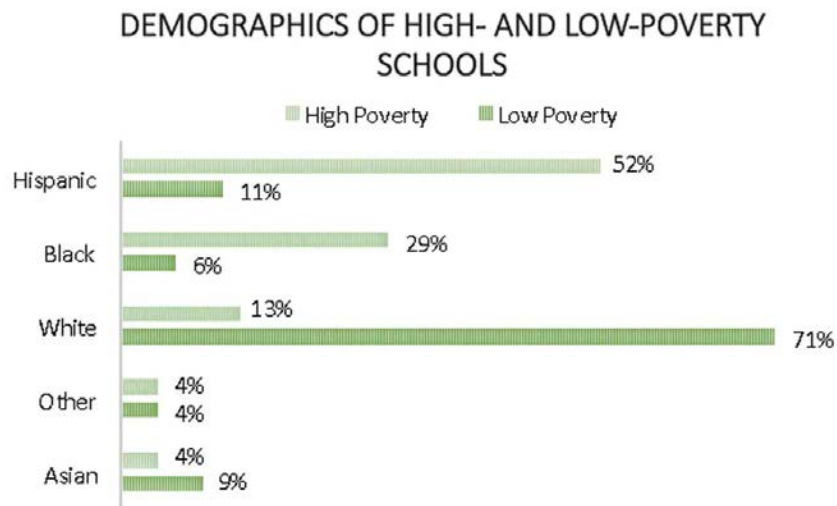
# Elementary and middle school math is the key



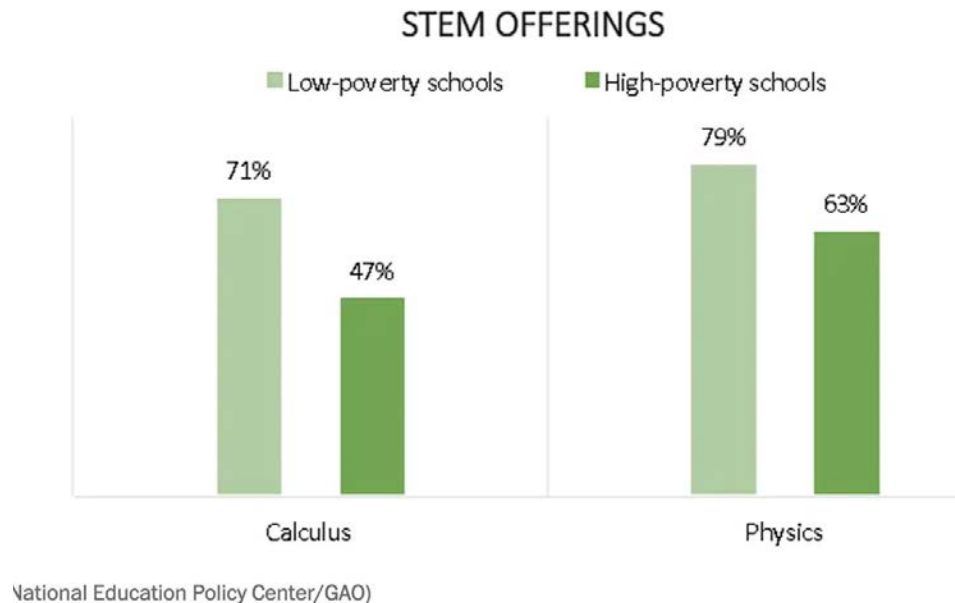
# Math is highest predictor of long-term outcomes



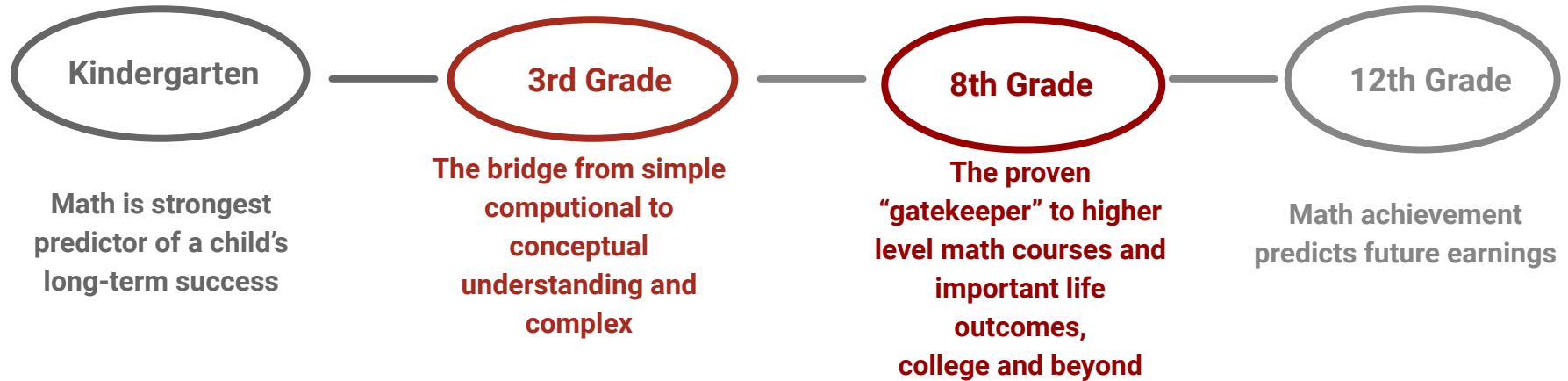
# High-poverty schools have less access to critical determinants like advanced math



GAO) (National Education Policy Center/GAO)



# Elementary and middle school math is the key



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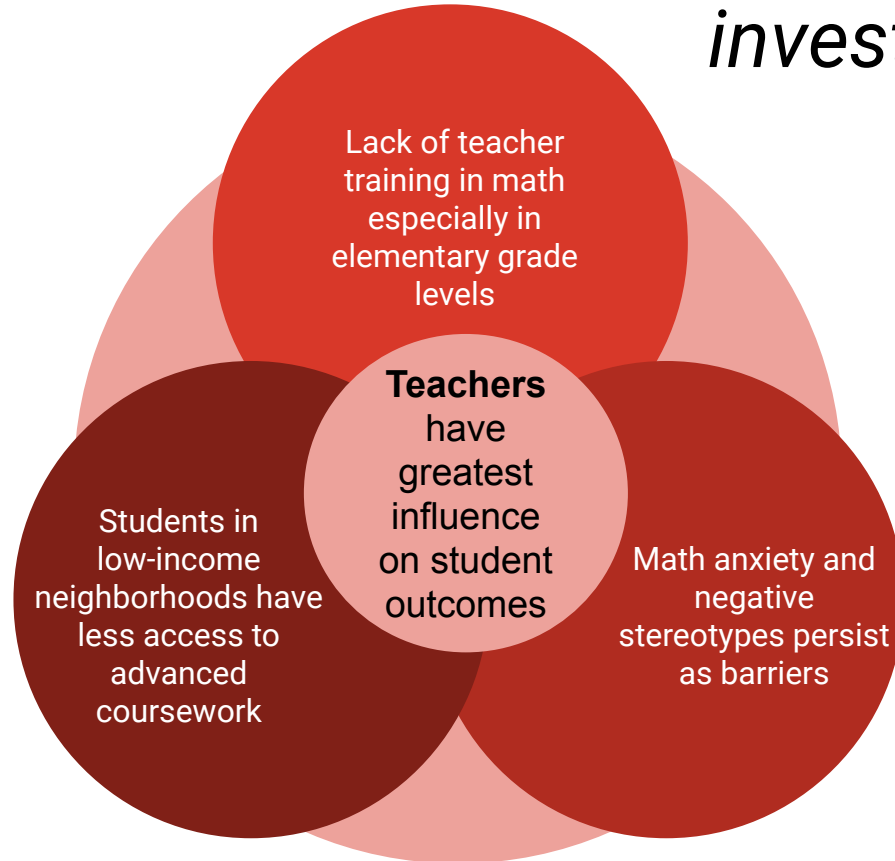
## How math proficiency can unlock our future workforce

1. What is alarming about our current state?
2. What is one of the root causes?
3. **What can we do about it?**



# High-impact human capital solution:

*invest in teachers*



# ZEROING IN ON MATH

## Key Strategies & Activities

2018-2019

Build a citywide community of math advocates

Close student knowledge & skill gaps

Deepen effective math instruction

Zeroing in on Math Advisory Board

Math Fellows  
Charter & District Teachers  
17 Current  
46 Alumni

KICKstart Ma+h  
Engagement opportunities with industry partners and students

Blended Learning Cohort  
**19 schools**  
**3800 total students**  
(Grades 3-8)  
**140 teachers**

Deeper Learning Cohort\*  
7 schools  
1000 students  
(Grades 3-5)  
60 teachers

Tackling summer learning loss through technology

Exploring approaches to support most struggling students



# Multi-faceted integrated approach: *tech, teachers, teamwork*

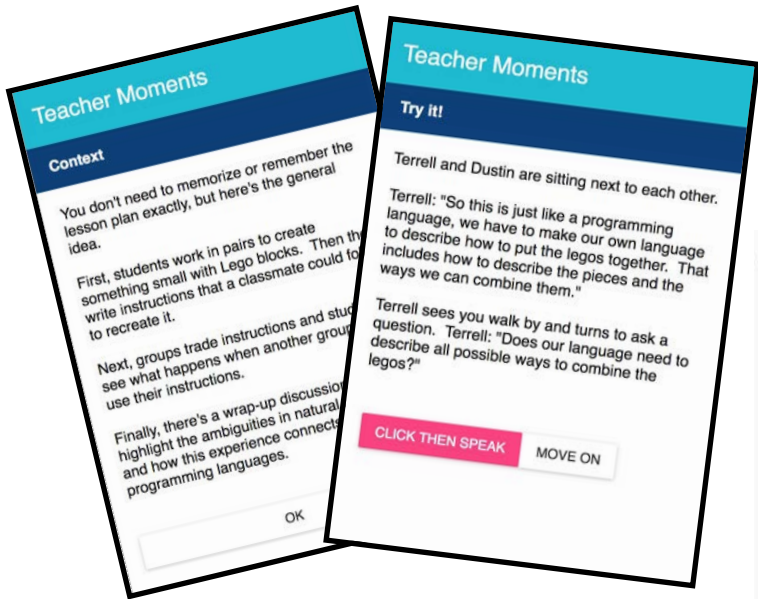


- EdVestors invests in over 200 math teachers and school leaders across 19 Boston public schools
- Changes learning outcomes for almost **4000 students in one year**
- **Cost per outcome = \$170 per student**
- About \$20,000 per student in Boston Public Schools

*Math instruction done right allows kids to better understand, interact with their world and think more deeply about their place in it. It helps students develop and refine their logic and reasoning skills that they will be required to apply to different aspects of their lives and in new situations.*

- Zeroing in on Math Teacher

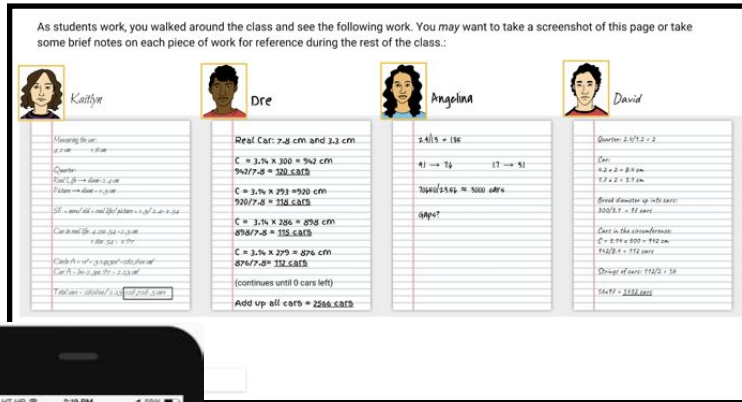
# MIT Teaching Systems Lab: Practice Spaces- Examples



## Teacher Moments



## Swipe Right for CS

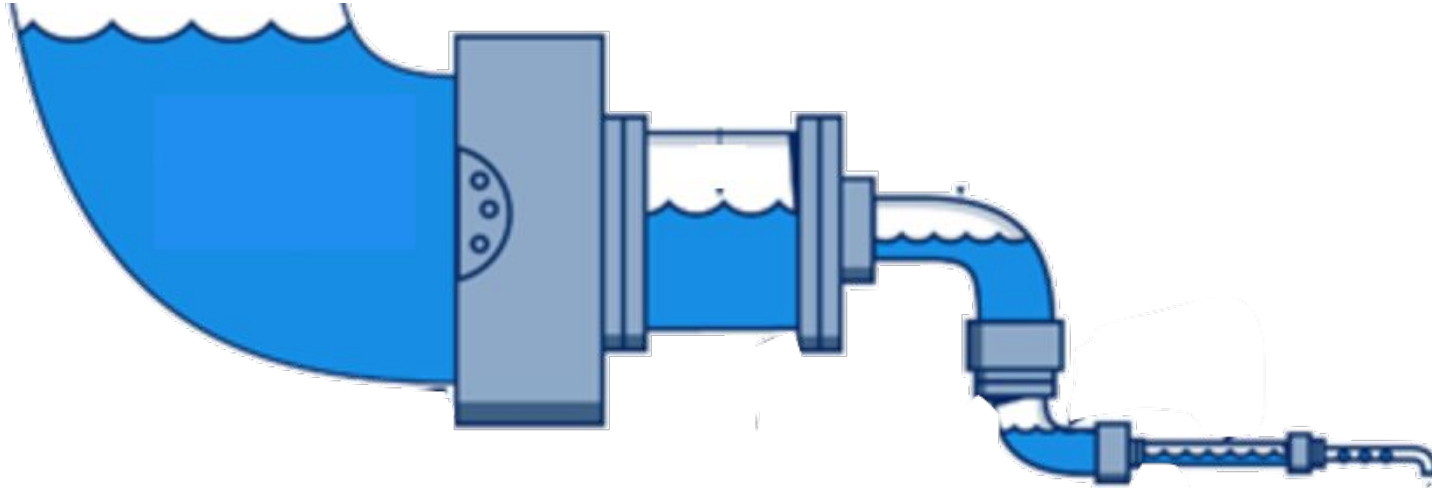


## Managing Whole Class Discussions

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How math proficiency can unlock our future workforce

Invest in teachers  
grades 3-8



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