

# Building Schools & Future Builders

February 8, 2023

Massachusetts School Building Authority – Contractor’s Round Table



# Introductions



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# What is AGC MA

- Associated General Contractors of Massachusetts, Inc.
  - Non-profit trade association
  - Chartered statewide chapter of the Associated General Contractors of America since 1924
- 100 contractor members and 100 Associate Members
  - Our members put in place more than \$10B in work annually
  - Our members directly employ thousands of construction managers and tradespeople and subcontract work to tens of thousands of tradespeople
- Our mission is to advocate for the industry and to spearhead industry initiatives that are universally affecting our members.
  - Workforce Development, DEI, Worker Wellness, Sustainability, etc.



# Purpose of Presentation

Promote	Promote student engagement and workforce development as a necessary component of any school building project
Inspire	Inspire those developing or enhancing workforce initiatives
Recruit	Recruit members and partners to participate in these efforts

# AGENDA

- Why Engage in Workforce Development
- AGC's Approach and Lessons Learned
- Stakeholder Case Studies

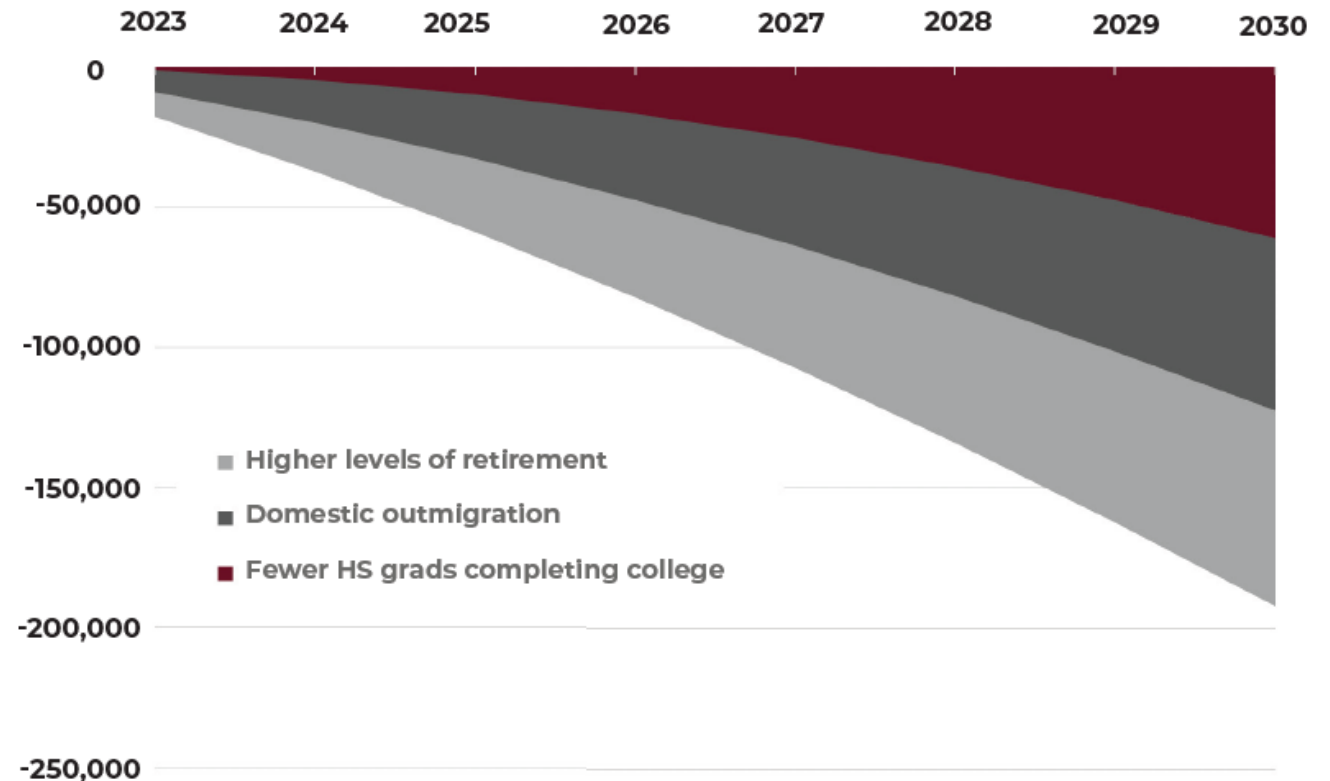
# Why Engage in Workforce Development

*"It feels like we have a structural labor shortage out there"*



Fed Chair Jerome Powell on 12/14/22

Figure 1: Projected Change in Massachusetts' Working-Age, College-Educated Labor Force



Source: MassINC, "Sizing up Massachusetts' Looming Skilled-Worker Shortage" June 2022

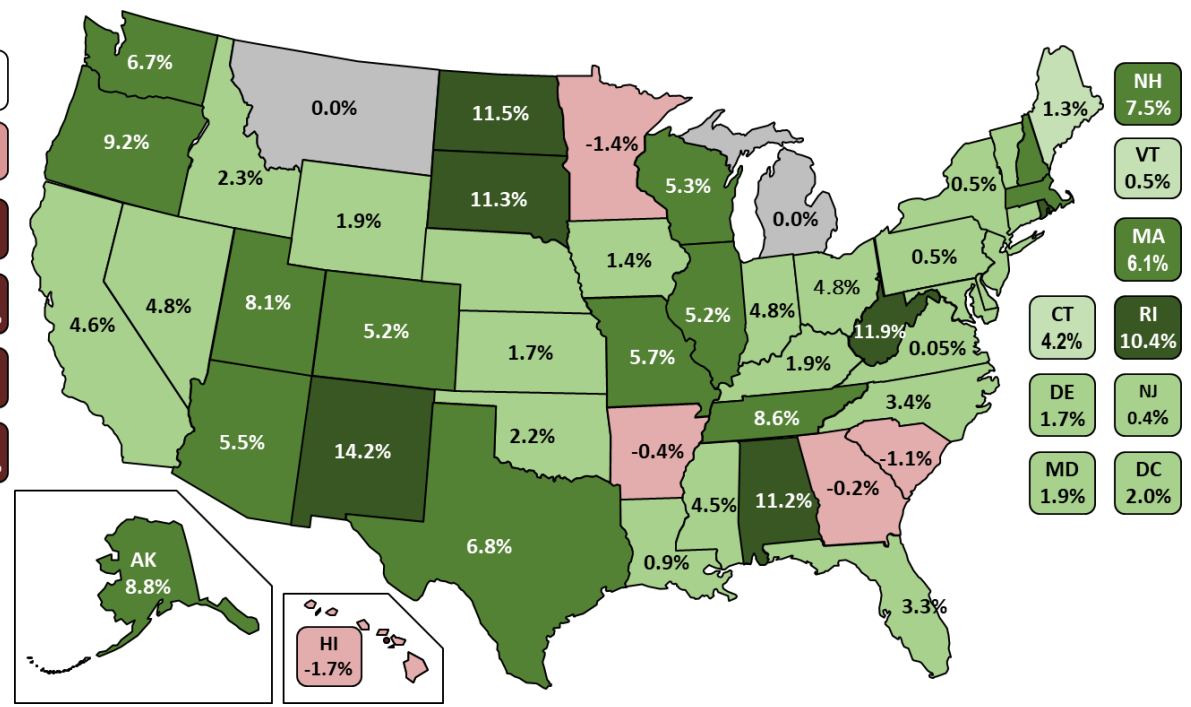
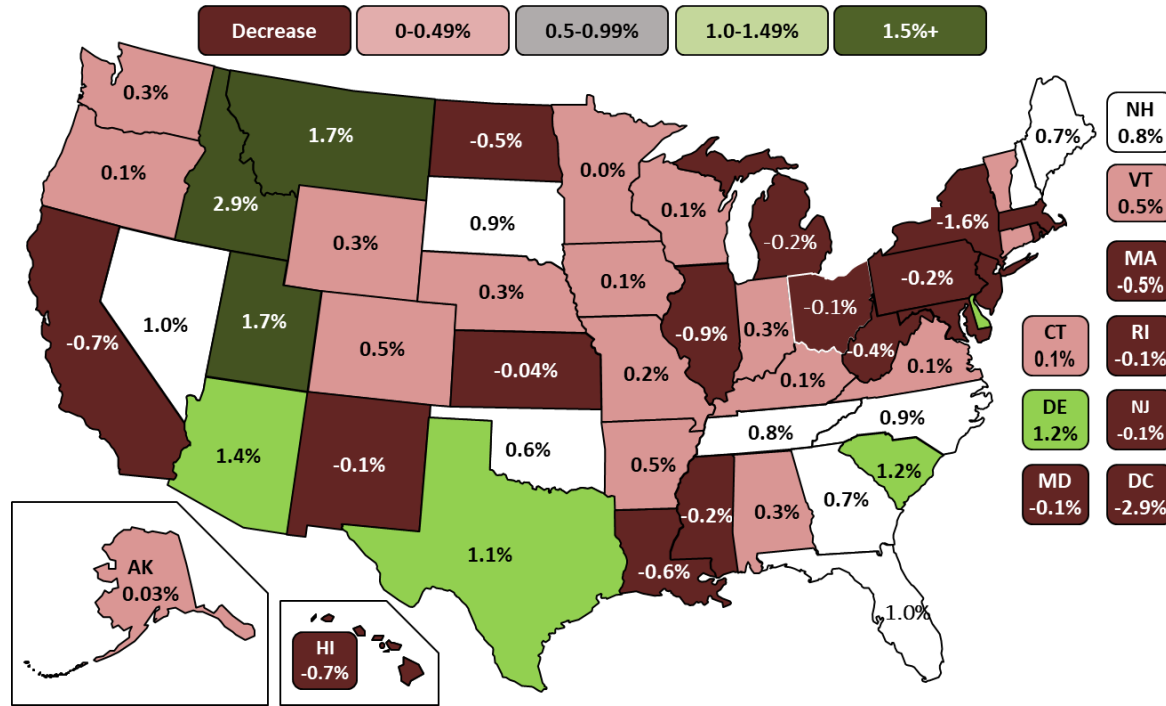


# Population change

## July 2020-July 2021

# Construction employment change

## August 2021-August 2022



# What are the impacts of Labor Shortages



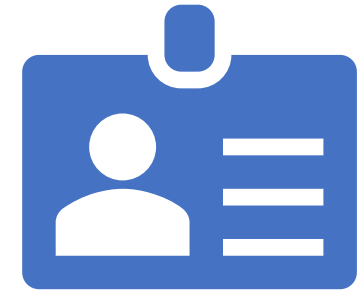
## Owners

- Escalating Costs
- Schedule Delays
- Supply Chain Issues



## Employers

- Lower Productivity
- Training and Reskilling
- Reliance on Innovation
- Union Conflict



## Workers

- Stress and Anxiety
- Lapses in Safety
- Skill Gaps



# AGENDA

- Why Engage in Workforce Development
- AGC's Approach and Lessons Learned
- Stakeholder Case Studies

# AGC MA Workforce Development Approach

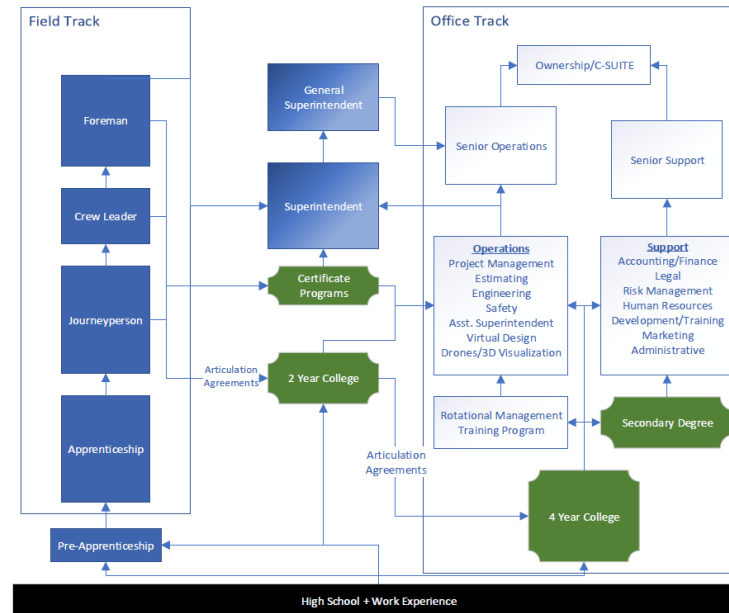
- Mission
  - Increase awareness of the viable lifelong careers in commercial construction by promoting educational pathways to construction management and vocational pathways into the trades
- Desired Outcomes
  - Facilitate entrance into apprenticeship/workforce training and support vocational programs
  - Expand connections between employers and educational pathways to the industry

# AGC MA Workforce Development Approach

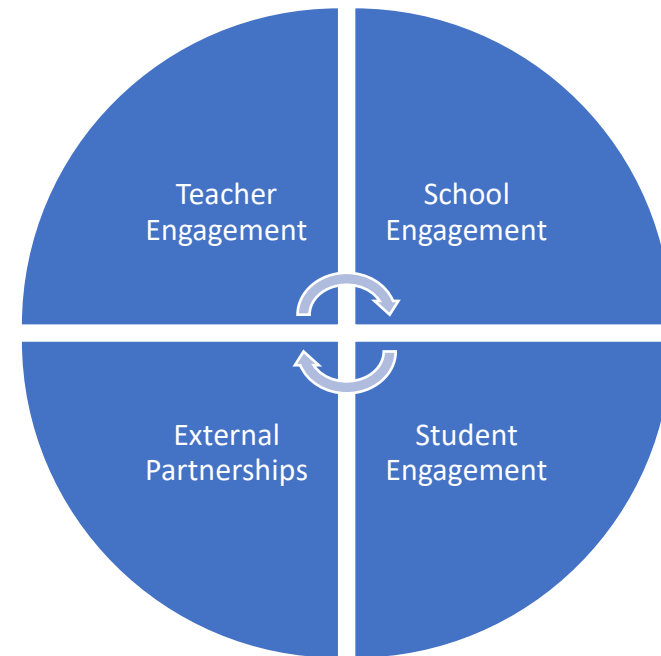
## 1. Facilitate Industry Exploration



## 2. Map Out Career Pathways



## 3. Nurture a Sustainable Ecosystem



# Career Pathway Development - BAE

- Building Advancement Externship (BAE) program
  - Schools/educators self-identify that they want to be engaged
  - Weeklong Career Exploration and Pathway Development Program hosted by AGC MA member firms
    - Teachers, counselors, and administrators invited to apply
      - Selected based on their application responses, professional role and experience, size and diversity of their schools, and ability to maintain engagement.
    - Selected to represent all 7 Workforce Regions of Massachusetts
  - DESE Approved for 40 Professional Development Points (PDP)

# Career Pathway Development - BAE Curriculum

**FONTAINE BROS., INC.**

**LPA|A**

**Commodore Builders**

**Grodsky**  
SINCE 1918

**COLANTONIO**

**CONSIGLI**  
Est. 1905

**WALSH BROTHERS**  
Since 1901

**Turner**  
Building the Future

**BOND**

Building

**COLUMBIA**

We're with you

**ERLAND.**



## Monday

- Business of Construction
- Project Lifecycle
- Careers in Construction
- Educational Pathways to the Industry
- Job Site Visit



## Tuesday

- Non-traditional Career Paths
- Employee Wellness
- Financial Opportunity
- Introduction to Apprenticeships



## Wednesday

- Preconstruction
- Project Management
- Job Site Visit



## Thursday

- Technology
- Diversity & Inclusion
- Recruitment & Retention
- Professional Career Paths



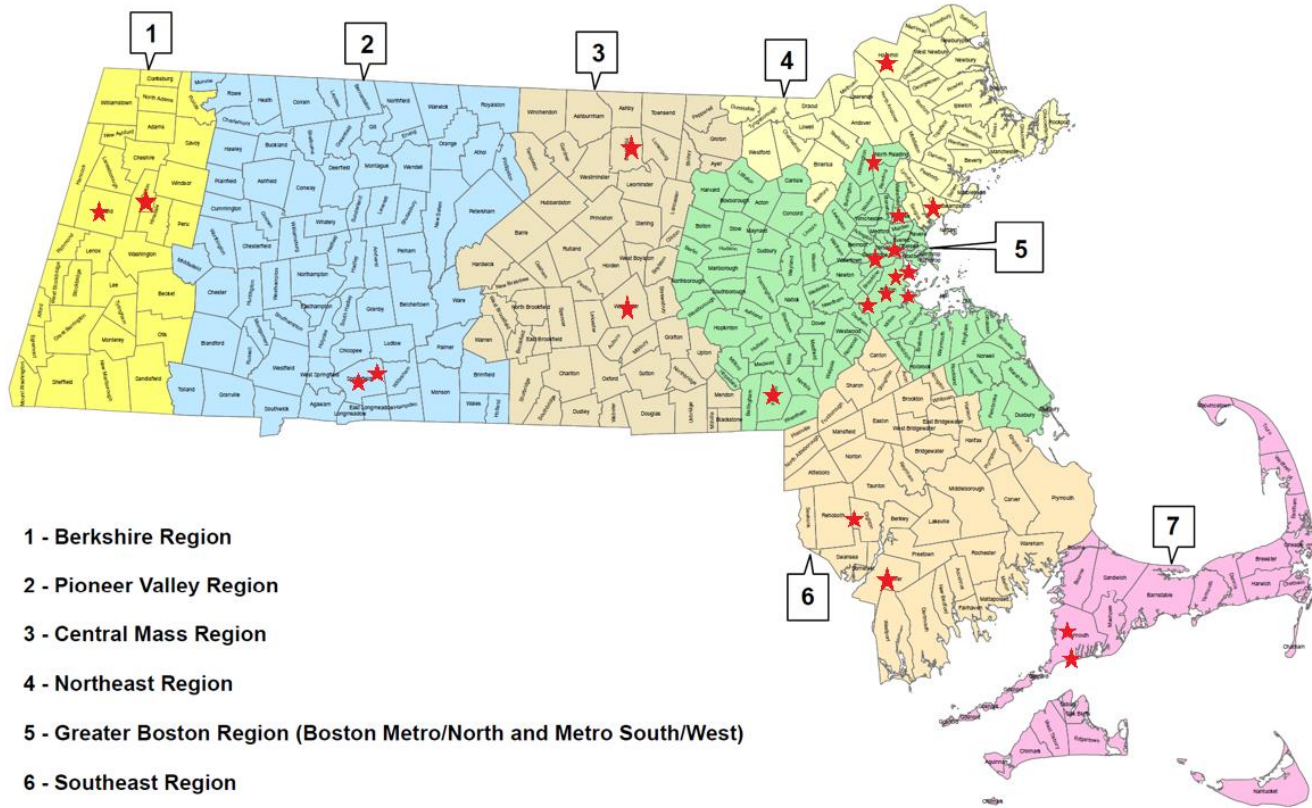
## Friday

- Open Shop Business Model
- Cohort Collaboration
- Job Site Visit



# Career Pathway Development – BAE Schools

Map 4. Seven Regional Labor Market Areas  
Covered by Massachusetts Job Vacancy Survey



- 1 - Berkshire Region
- 2 - Pioneer Valley Region
- 3 - Central Mass Region
- 4 - Northeast Region
- 5 - Greater Boston Region (Boston Metro/North and Metro South/West)
- 6 - Southeast Region
- 7 - Cape & Islands Region





# Applications are now being accepted until May 31 , 2023

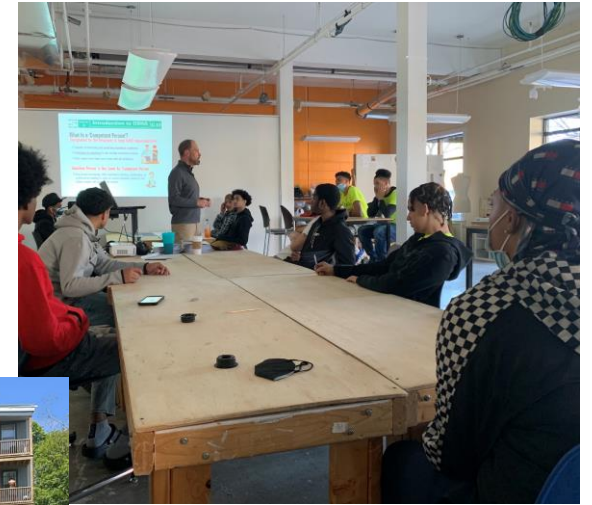
For more information on the BAE application process,  
please scan QR code or

<https://www.constructingma.org/agc-ma-building-advancement-externship/>



# Career Pathway Development

- Pre-Apprenticeship Partners
  - Building Pathways
  - YouthBuild Boston



Sullivan & McLaughlin employees Jessica O'Donnell, Kanitra Porch and Jerrell Adams re graduates of Building Pathways Pre Apprenticeship Program and are current members of IBEW Local 103.

GARY HIGGINS / BOSTON BUSINESS JOURNAL





# Career Pathway Development

- Higher Education Partnerships
  - Wentworth Institute of Technology
  - Benjamin Franklin Institute of Technology
  - Fitchburg State University
  - UMass Amherst



# Career Pathway Development

- Scholarships and Grant Programs
  - Robert L. Petrucelli Grant Program
    - Awards grants of \$500+ for applicants entering the industry
      - Awarded based on need, diversity, and connection to industry
  - AGC MA and MCAP Scholarship Program
    - \$272,500 awarded over the last 7 years



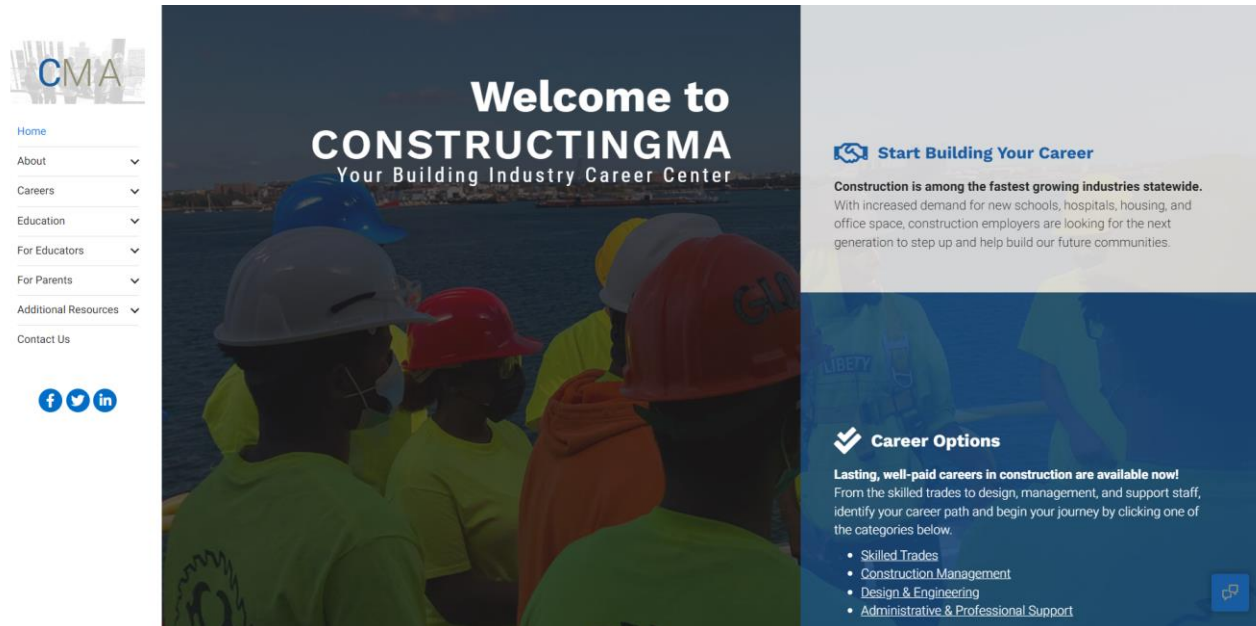
# Lessons Learned – Career Path Development

- Change the narrative around careers in construction
- Regular communications with schools and external partners is key
  - Future Builders Newsletter, Scholarship/Grant Programs raises awareness
- Promote both vocational and educational pathways
- Tailor messaging for audience
  - Educators – Construction has opportunities for any type of student
  - Students – Construction is full of hardworking sophisticated professionals
  - Parents – Construction offers multiple pathways to meaningful success

# Industry Exploration - Resources

[www.ConstructingMA.org](http://www.ConstructingMA.org)

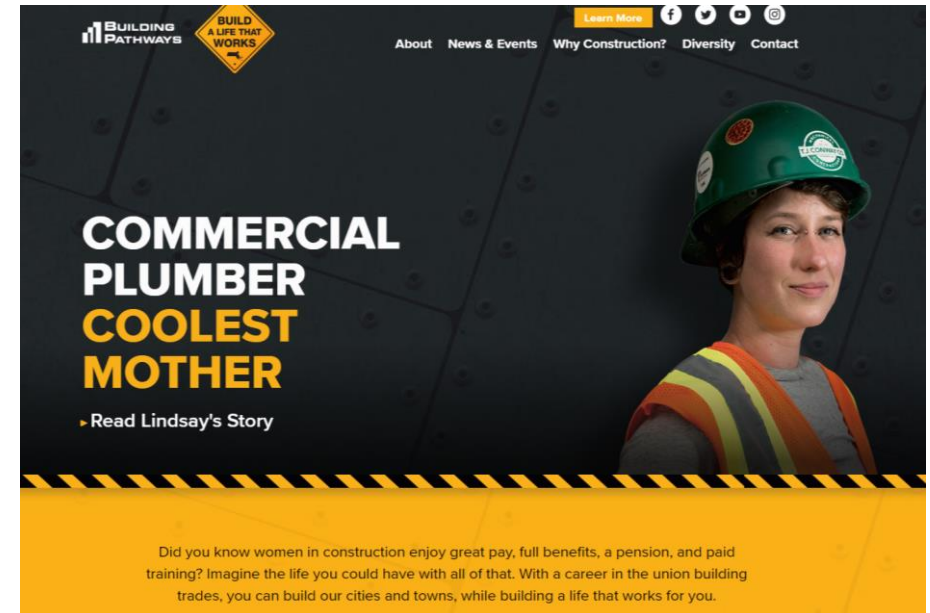
AGC MA



The screenshot shows the homepage of ConstructingMA. On the left is a navigation menu with links for Home, About, Careers, Education, For Educators, For Parents, Additional Resources, and Contact Us, along with social media icons for Facebook, Twitter, and LinkedIn. The main content area features a large image of construction workers in hard hats. The text reads: "Welcome to CONSTRUCTINGMA Your Building Industry Career Center". Below this is a section titled "Start Building Your Career" with a sub-header "Construction is among the fastest growing industries statewide." and a paragraph: "With increased demand for new schools, hospitals, housing, and office space, construction employers are looking for the next generation to step up and help build our future communities." A "Career Options" section follows, stating "Lasting, well-paid careers in construction are available now!" and listing categories: Skilled Trades, Construction Management, Design & Engineering, and Administrative & Professional Support.

[www.BuildALifeMA.org](http://www.BuildALifeMA.org)

Northeast Center for  
Tradeswomen's Equity



The screenshot shows the homepage of BuildALifeMA.org. The top navigation bar includes "Learn More" and social media icons for Facebook, Twitter, YouTube, and Instagram. The main content area features a large image of a woman in a green hard hat and safety vest. The text reads: "COMMERCIAL PLUMBER COOLEST MOTHER" and "Read Lindsay's Story". Below this is a yellow banner with the text: "Did you know women in construction enjoy great pay, full benefits, a pension, and paid training? Imagine the life you could have with all of that. With a career in the union building trades, you can build our cities and towns, while building a life that works for you."



# Industry Exploration

## Early Career Exploration

- Adopt-a-Class – 5<sup>th</sup> graders at Mattahunt Elementary School
- Partnered with Lego to provide kits for STEM-based activity
- Read and discussed ‘Celeste Saves the City’ followed by surprise Q/A with author and Project Manager, Courtney Kelly
- Guided students through project mgmt. activity using Lego kits





# Industry Exploration

- Field Trips
  - Job site visits
  - Corporate Headquarter trips
  - Apprenticeship Training Center Visits







# Industry Exploration

- Career Fairs
- Career Panels
- Career Conferences



# Industry Exploration



- ACE Mentorship Program partnership with Blackstone Valley Tech
- 8-week immersion experience with activities focused on architecture, construction, and engineering
- Instructors – volunteers from member firms
- Ongoing mentorship and student support
- Student scholarship opportunity

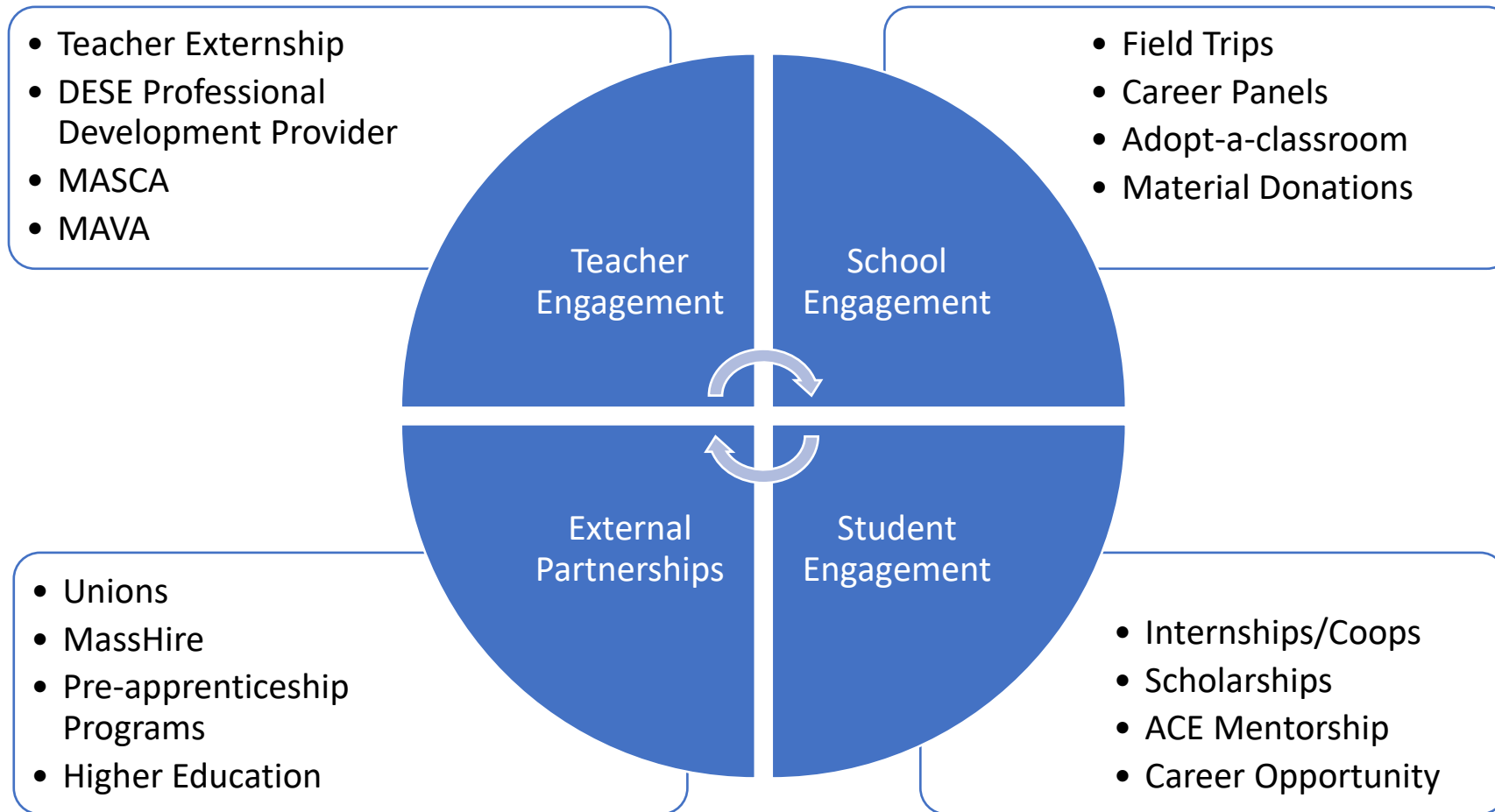




# Lessons Learned – Industry Exploration

- Meet students where they are
  - Understand your audience and find presenters that can connect
  - Don't speak industry jargon and technical terms
- Influence the influencers
  - Include parents and teachers as well as students
- Lower barriers to participation
  - Resource constraints need to be addressed during planning (i.e. travel, food, chaperones, etc.)
  - Work with schools to facilitate permission slips, liability waivers, PPE requirements

# AGC MA Workforce Development Ecosystem



# Lessons Learned – Ecosystem Engagement

- Do the work to get the buy-in
  - Workforce Development requires buy-in from students, parents, and educators
- Don't reinvent the wheel
  - Most successful examples leverage some elements of existing programs and have buy-in from multiple stakeholders
- Have something to offer
  - Internships, Co-ops, afterschool programs, scholarships are all potential outcomes of industry exploration

# AGENDA

- Why Engage in Workforce Development
- AGC's Approach and Lessons Learned
- Stakeholder Case Studies

# Stakeholders

- Students/Parents
- School Districts
- OPMs
- Architect/Designer/Engineer
- Contractors
- Community Partners

# What can Students/Parents do?

- Take time to understand school building process
- Push for involvement beyond community engagement meetings
- Seize opportunity to explore practical application of STEM Curriculum
- Push for high school students to have resume building opportunities with the design/construction team
- Ask about industry scholarships and resources available for students

# Case Study

- BMC Durfee Student Advisory Committee
  - Program started 5 years ago
  - Comprised of over 70 students
- Laborer's Union speak to students about career pathways and supports them through the interview process
  - At least 10 have joined the laborer's union upon completion
- Recipient of a \$500,000 Capital Skills Grant as a result of SAC



# What can a School District Do

- Ask about WFD as part of the design and construction process
  - Ask for internship/coop placements for students
- Identify students who may be interested
  - Chapter 74, Vocational Students, STEAM stars
- Offer jobsite tour opportunities to local and area schools
- Carry collaborations beyond the construction process itself



# Case Study

- Essex Tech Agricultural and Technical high school
  - Participated in recent school construction project with contractors and unions
  - Students worked with North American Atlantic States Carpenters Union
  - Students gained hands on experience in a major building project
  - Superintendent Heidi Riccio and CTE Director Jill Sawyer are both alum of Building Advancement Externship



*Essex Tech students, working alongside professional union tradespeople, have installed roof trusses on the new Catherine Larkin Memorial Cottage (Photo courtesy Essex Tech)*

# What are OPMs doing?



Inform the district of the value of including student engagement as part of the process



Identify stakeholders and students who may benefit from engagement



Ask architects and contractors to offer engagement activities

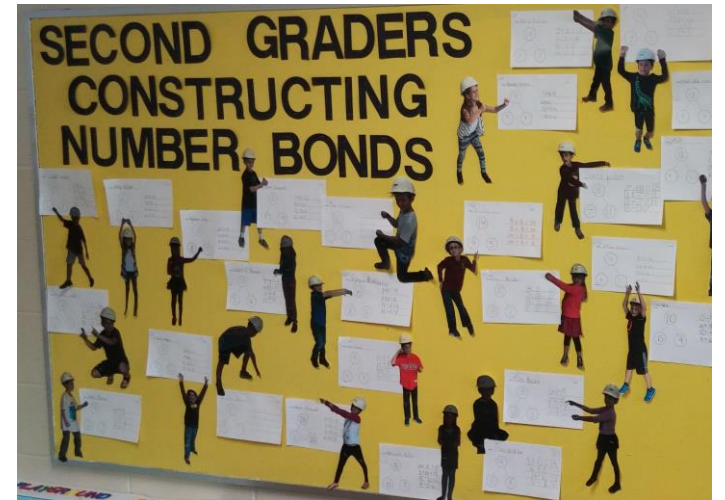


Facilitate programs explaining the business of construction

# Case Study



- Vertex (formerly Compass Project Management) is an integrated AEC firm specializing in engineering, project advisory, and environmental services among others.
- Unique engagement opportunities
  - Invite high school interns to participate in meetings with clients, architects, and contractors to understand the importance of communication, meeting agendas, notetaking, etc.



## Case Study

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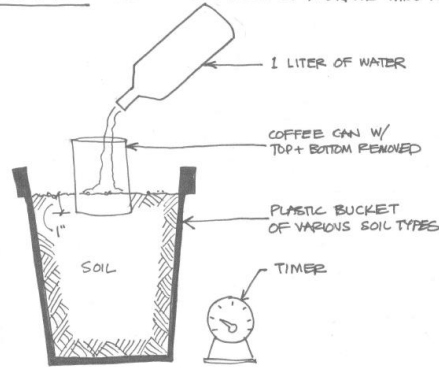
- Design activities that align with STEM curriculum.
  - Hopkinton Marathon School – Brought materials from the jobsite to teach elementary school students what materials are in their building and how they go together
  - Weston Field School – Soil/water percolation experiment exhibiting the impact of different soil types on rate of absorption.





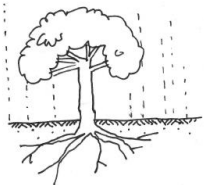
# Soil Percolation Experiment and Lesson Plan

PERCOLATION: THE SLOW PASSAGE OF A LIQUID THRU A FILTERING MEDIUM



PERCOLATION TEST:

- CUT ENDS OUT OF METAL COFFEE CONTAINER (OR PIECE OF PLASTIC PIPE)
- FILL SEVERAL 1 L. BOTTLES WITH WATER
- HAVE TIMER READY THE INSTANT WATER HITS THE SOIL
- REPRESS CAN INTO SOIL APPROX 1"
- POUR WATER INTO COFFEE CAN
- TIME + RECORD MINUTES UNTIL ALL WATER HAS BEEN ABSORBED



EXAMPLES OF PERCOLATION:

RAIN WATER REACHING ROOTS

LEARNING OBJECTIVES

- WHAT AFFECT DOES SOIL TYPES HAVE ON AMOUNT OF RAIN WATER REACHING ROOTS
- WHAT AFFECT DOES FERTILIZER IN THE WATER HAVE
- HOW IS FERTILIZER AFFECTED BY SOIL TYPES
- HOW DOES RUN-OFF AFFECT PLANT GROWTH
- HOW DOES RUN-OFF AFFECT CHEMICALS REACHING STREAMS + RIVERS



WATER DRIPPING THRU COFFEE + FILTER

LEARNING OBJECTIVES

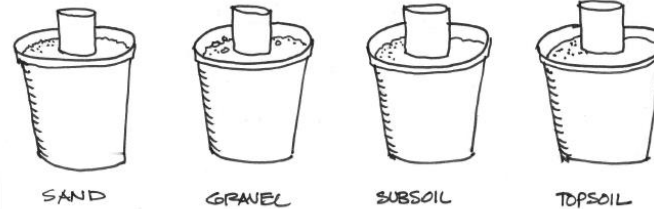
- WHY IT'S CALLED A COFFEE PERCOLATOR
- DOES AMOUNT OF COFFEE AFFECT PERC RATE
- DOES COFFEE TYPE (FINE VS COARSE GRIND) AFFECT PERCOLATION RATES
- WOULD FILTER TYPE OR THICKNESS AFFECT PERCOLATION RATES

TERMS ASSOCIATED WITH PERCOLATION:

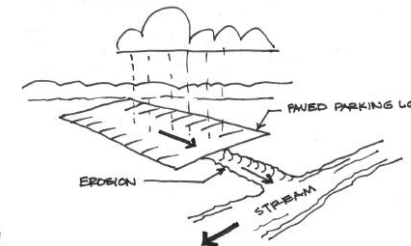
- PERMEABLE
- POROCITY
- SOLVABLE
- SATURATION
- IMPERVIOUS
- LEACHING

PERCOLATION TEST:

- 4 BUCKETS OF VARIOUS SOIL TYPES
- GROUPS OF 4 STUDENTS PERFORM TEST ON A PARTICULAR SOIL (16) TOTAL STUDENTS
- COMPARE RESULTS
- DETERMINE RATE OF PERCOLATION
- DISCUSS OBSERVATIONS + SOIL CHARACTERISTICS
- DISCUSS HOW THIS INFO COULD BE USEFUL ON SCHOOL PROJECT



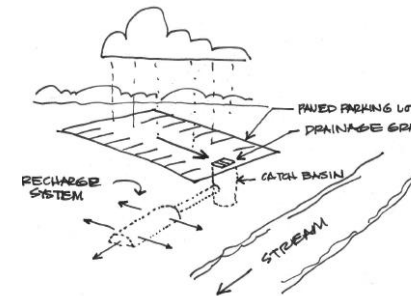
RUN-OFF VS RECHARGE:



COMPARE ADVANTAGES / DISADVANTAGES

RUN-OFF

- RAIN WATER FLOWS OFF PAVING DIRECTLY INTO RIVERS + STREAMS AND ISN'T ABSORBED INTO SOIL
- SAND, SALT + OTHER IMPURITIES NOT FILTERED OUT + GO DIRECTLY INTO STREAMS
- COULD CAUSE EROSION
- COULD MUDDY WATER OF STREAMS
- COULD CAUSE LARGE PUDDLES



RE-CHARGE

SYSTEM DESIGNED TO COLLECT RAIN WATER AND ALLOW IT TO SLOWLY BE ABSORBED (LEACHED) INTO SOIL

- ELIMINATES EROSION
- PARTICLES OF IMPURITIES FILTERED OUT BEFORE WATER REACHES STREAMS
- MORE WATER ABSORBED INTO SOIL FOR PLANT LIFE

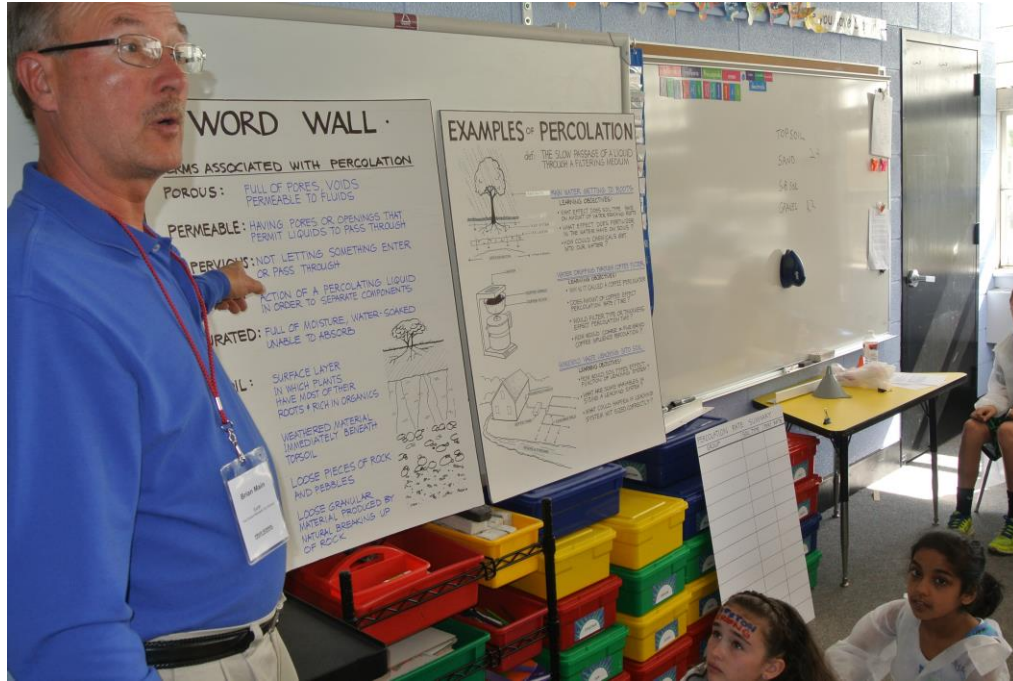
**WEIRTEX®**



Massachusetts School Building Authority

Funding Affordable, Sustainable, and Efficient Schools in Partnership with Local Communities

# Soil Percolation Experiment - Weston Field School



# VERTEX®





## What are Designers doing?

- Work early with school district/OPM to exhibit opportunities for student engagement as part of the process
- Utilize Educational Programming process to identify students engaged with visioning and construction
- Connect with construction team to coordinate workforce efforts
- Volunteer/give back to programs like ACE Mentorship

# Case Study



# SMMA

- SMMA is an integrated designer/OPM firm
  - Student engagement and workforce development are part of both roles
- Early Career Exploration
  - SMMA equates Architecture and Design to art
    - Middle school art studio overlooked the new school site so SMMA asked students to draw the project at various stages from foundations to structural steel to building envelope, etc.



# Case Study

## Career Pathway Development

- SMMA Fund is a dedicated scholarship program
  - Seniors from schools designed by SMMA are eligible
  - Architecture, Engineering, or Interior Design
  - Launched in 2011 and has awarded 55 scholarships totaling over \$60,000

# SMMA



### Eligibility

The applicant must be a senior at one of the following high schools in Massachusetts:

Ayer-Shirley  
Bedford  
Bridgewater-Raynham  
Chelsea  
Dennis-Yarmouth  
Douglas  
Grafton  
Hudson  
Lynn Classical  
Marblehead  
Mashpee  
North Middlesex  
Quincy  
Sharon  
Swampscott  
Tewksbury Memorial  
Turners Falls  
Wellesley  
West Springfield  
Winchester

# Case Study

# SMMA

## Career Pathway Development

- SMMA offers an Integrated Internship Program
  - Selects 10-12 college students from various courses of study
  - Each intern is assigned a mentor from SMMA's group of emerging leaders
  - Interns participate in weekly meetings, shadow firm leaders, go on site visits, plan staff events, and have a final collaboration project that includes a firmwide presentation



# What can Contractors do?

- Understand the educational programming at a school and plan to engage with relevant stakeholders
- Expect student engagement as part of the school's building project
- Inform the district of the value of including WFD as part of the process
- Offer jobsite tour opportunities to local and area schools



# Case Study

- Consigli Construction Co., Inc. is one of the largest employee-owned construction managers in the Northeast.
- Active in the MSBA market
  - Putnam Academy in Springfield
  - Attleboro High School



CONSIGLI  
*Est. 1905*



# Case Study

- Consigli Foundation created over 20 years ago
  - Facilitates community outreach
- Active in career exploration programs
  - Girls Inc. of Worcester
  - Mentoring at local schools and community centers





# Case Study



## Educational Programing

- ✓ Custom Courses for students
- ✓ Practical training with different departments such as Safety, Quality Control, M/E/P, etc.



## Internships

- ✓ Work along side construction team
- ✓ Student tours
- ✓ Hands-on experience



## Mentoring

- ✓ Connect students to job opportunities
- ✓ Career guidance
- ✓ Provide resources and support

## Partnerships & Affiliations

- > **ACE Mentoring of Greater Boston** – providing internships, mentorships and career-building events to engage and excite high school students to pursue architecture, construction and engineering career
- > **AGC MA** – inspiring construction companies to create a culture of sustainable business practices that promote a workforce of diverse backgrounds, perspectives and inclusivity through quarterly trainings/speaking forums
- > **Benjamin Franklin Institute of Technology (BFIT)** – assisting BFIT to establish an Industry Advisory Board to further enhance and develop their Construction Management program through job site visits, in-class trainings and financial support
- > **Building Pathways** – supporting the selection, training and job placement of low-income area residents seeking careers in construction
- > **Wellesley College** – participating in a committee that evaluates “best practices” and works to set MBE/WBE and workforce goals on all capital projects
- > **Worcester Polytechnic Institute (WPI)** – working collaboratively with WPI to establish their first set of workforce utilization goals on a campus construction project, including the tracking of Worcester residents, people of color and women trade workers



# QUESTIONS??



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# Discussion

- Are you feeling the workforce crunch? How is it affecting your company?
- Do you think of student engagement as project specific?
- How do you undertake Industry Exploration or Career Pathway Development?
  - Where have you found success?