

Developing a Pipeline from Elementary School to Career: Building the STEM workforce of the future

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Our Community

Northern Virginia

- Diverse
- Highly Educated
- NOVA Data Analytics
- Tech Corridor
- Data Centers
- Micron \$3B investment
- Amazon

Northern Virginia Community College (NOVA)

- Largest Public Institution in Virginia with 6 campuses.
- 2nd Largest Community College in the USA with over 73,000+ Students.
- 900 FT Faculty, 2,000 Adjunct
- 160 Degrees & Certificates

Our K-12 Partners

8 School Districts

Alexandria City

Arlington County

Falls Church City

Fairfax County

Loudoun County

Manassas City

Manassas Park City

Prince William County

About 1/3 of the public school students in Virginia are in NOVA's service area.

- 418,872 students
- 303 ES, 68 MS, 64 HS, and more

Top 3 School Divisions in Size

- FCPS – 10th Largest in USA
- PWCS – 6,274 Teachers, 2nd in VA
- LCPS – Fastest Growing, 3rd in VA

NOVA's STEM Outreach Program

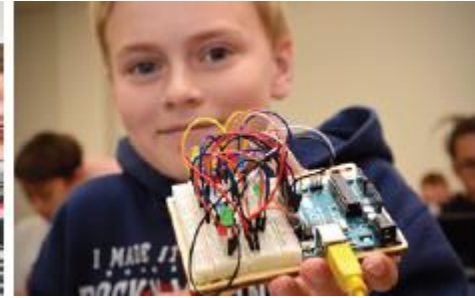
- History & Funding
- Challenges
 - Scope: STEM, STEAM, STEM-H
 - Rate of Change and new IT areas
 - Regional Demand & Size
 - Fitting in with 8 school divisions and community based programs

Where to Start?

Academics are the schools business. Pathways for dual enrollment already existed.

- STEM Camps
- STEM Competitions

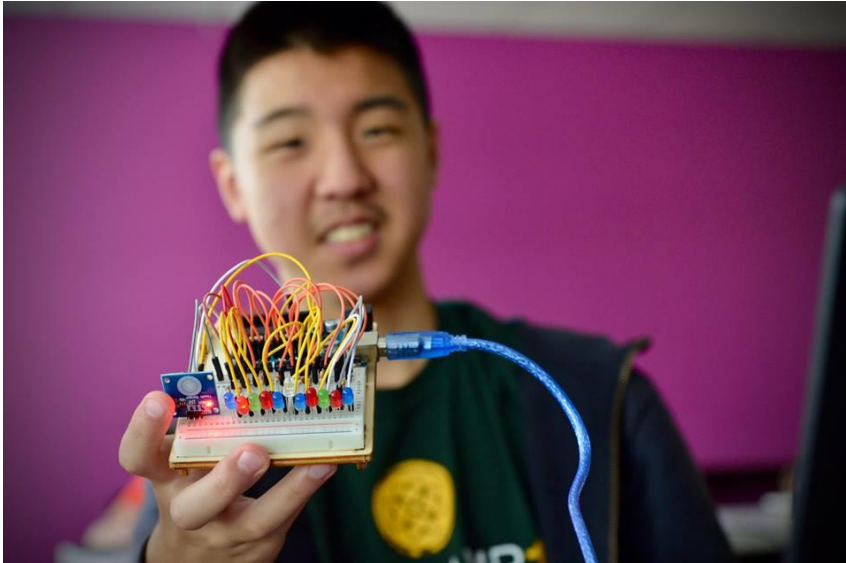
STEM Camps – Defining the Partnership



- Memorandum of Understanding
- Financial Considerations
- Space Utilization
- Responsibilities Identified
- Joint Marketing
- Skills Desired
- Targeted Population
- Define Success in Advance

Developing the Regional Pipeline

Why STEM Camps can be a Win-Win-Win



For Families & Students

- Educational at the cost of daycare.
- Skill development through project-based learning
- Low risk and low cost exploration of STEM, just a 1 week commitment.
- Elementary through high school.

STEM Summer Camps

Why STEM Camps can be a Win-Win-Win

For School Districts

- Additional educational opportunities for students.
- Paid professional development for teachers.
- Bridge to Technical Education.
- Supplement, not taxing.



Developing the Regional Pipeline

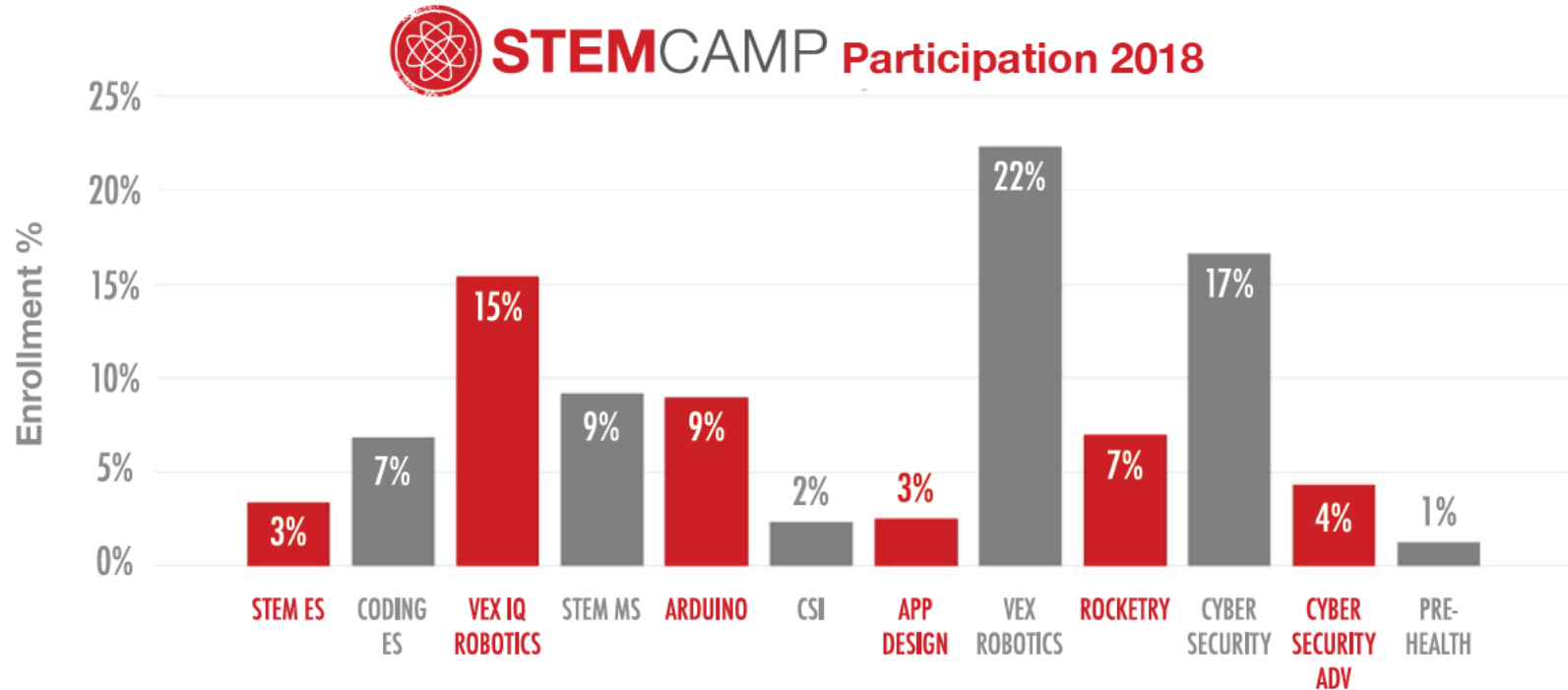
Why STEM Camps can be a Win-Win-Win



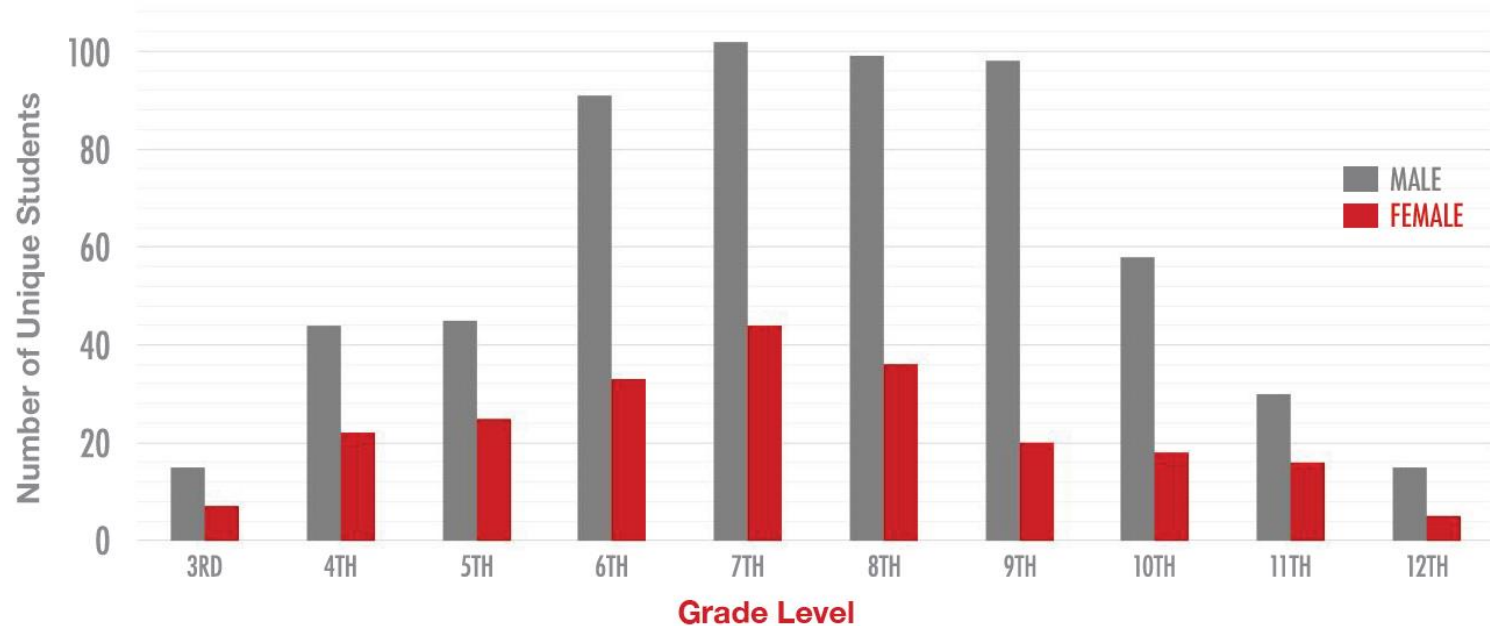
For Community Colleges

- Community Engagement & Marketing
- Can be held on campus or have camp finale on campus.
- Bridge between K-12 students and teachers to campus and faculty.
- Showcase of workforce partnerships.
- College student employment.

Summer Camp by Topic



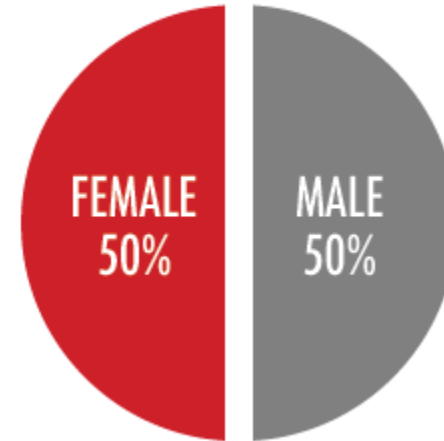
STEM Camp Participation by Gender/Grade Level 2018



Defining Success



STEM & Coding Elementary



Summer Camps

Discussion & Questions

STEM Competitions

History with VEX

AFA CyberPatriot

Introduce Video



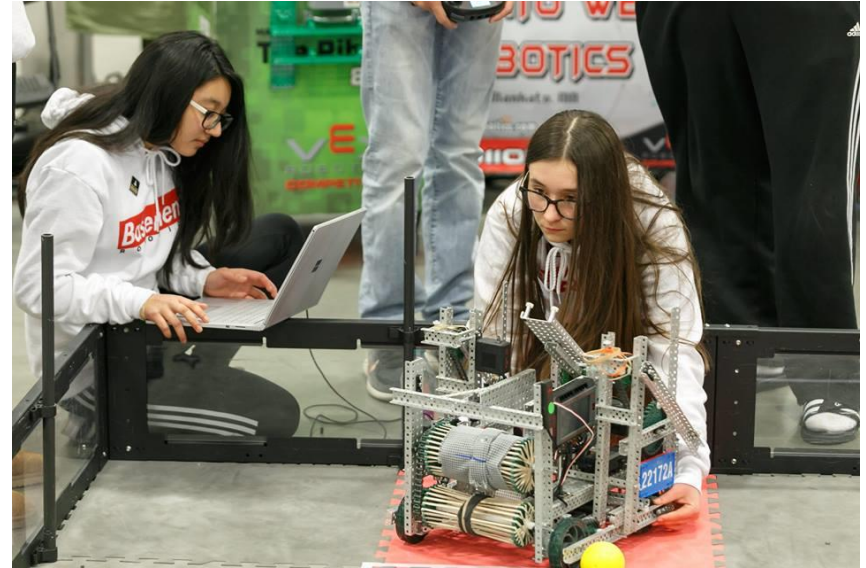
VEX State Championship Overview



Developing the Regional Pipeline

STEM Competitions: Recreating the Sports Infrastructure

- Regional in nature, beyond county & city boundaries.
- Participants vary
 - Subset of schools
 - Community Groups
- Typically, Extra- or Co-curricular

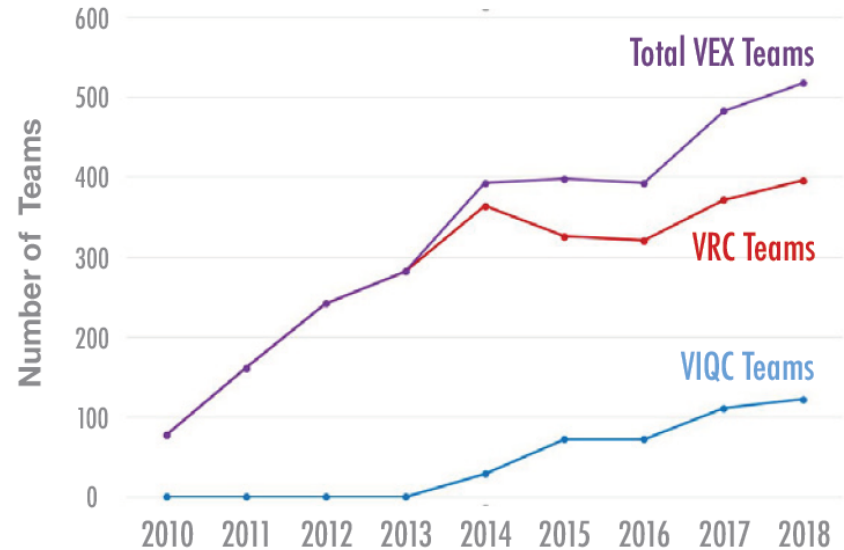


VEX Robotics Program

Community College Support

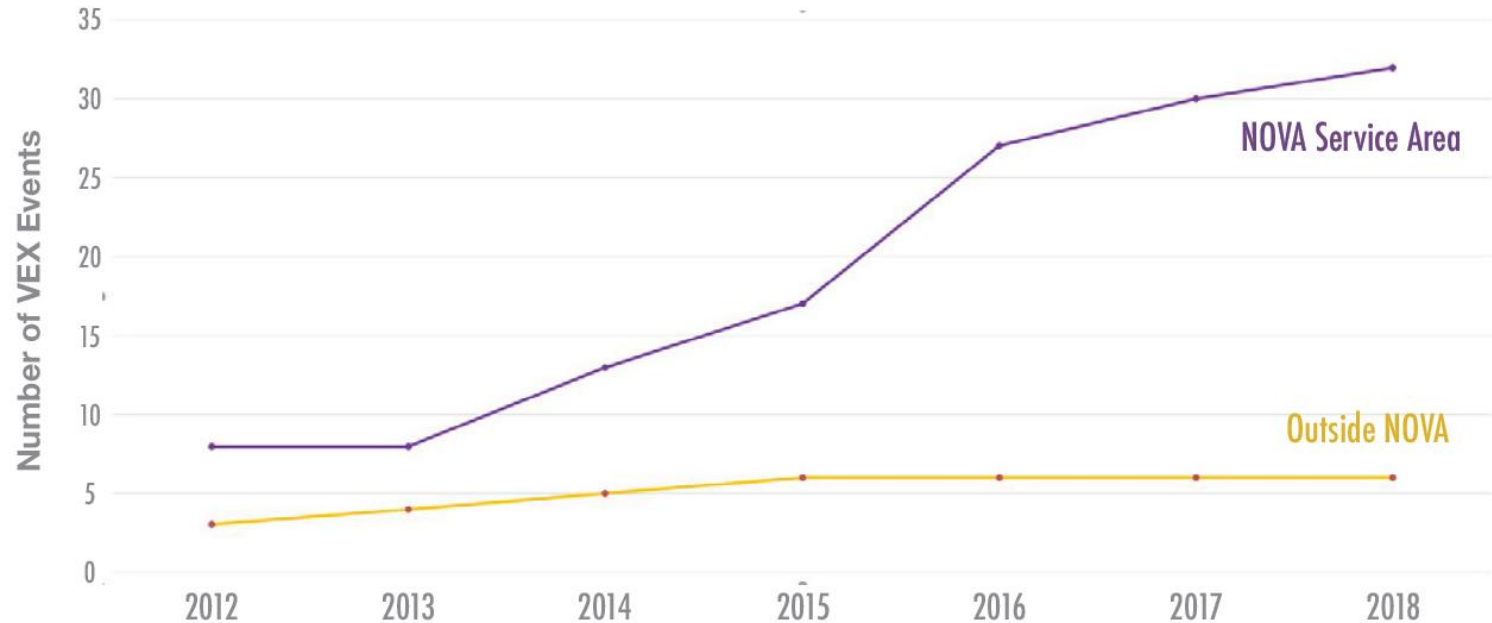
- Mentor Training
- Volunteer Training
- Event Partner Training
 - 2010: 5 Event Partners
 - 2018: 30 Event Partners
- Centralized Equipment

Growth of VEX Teams in VA 2010 to 2018



Regional Growth of Competitions

Growth of VEX Events in Northern VA



STEM Competition Support

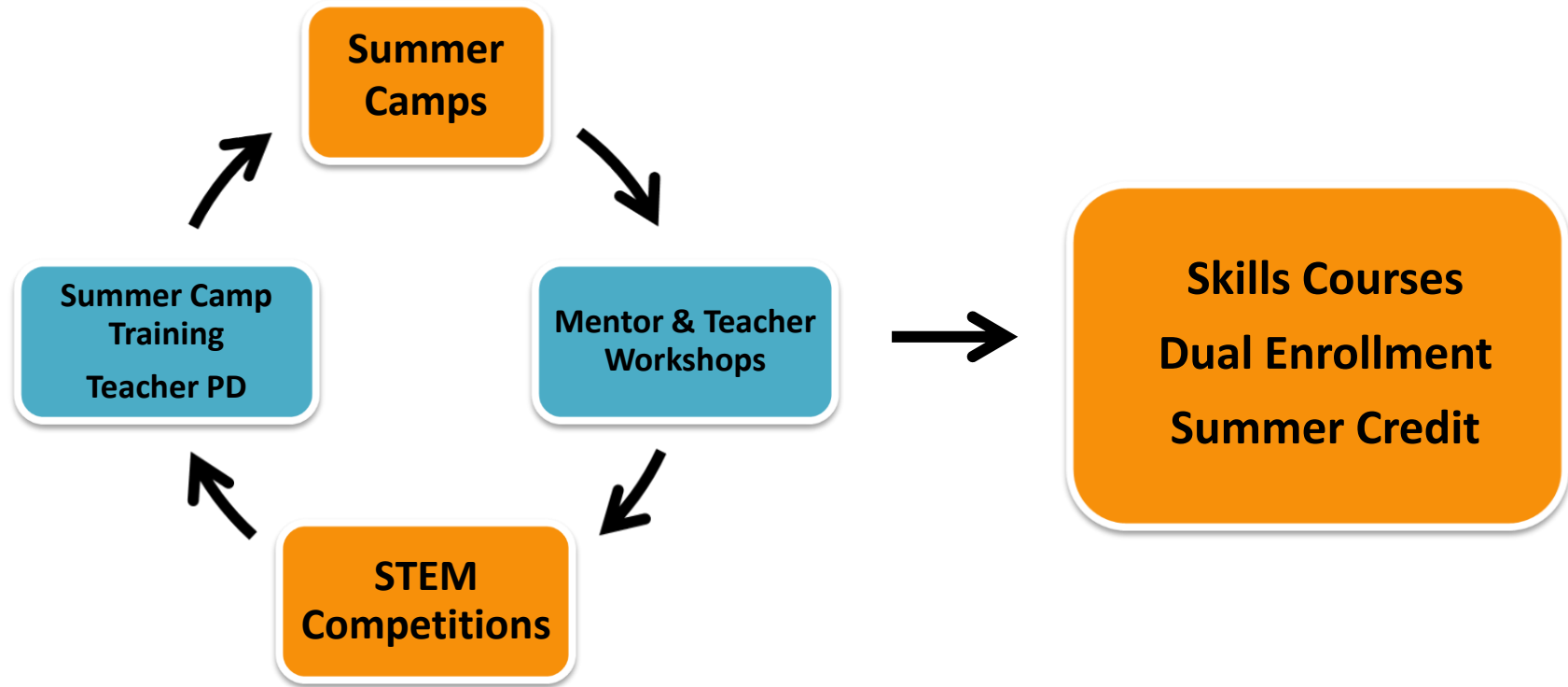
School Division

- Specialized training for teachers and schools.
- Provides support for a typically small subset of students/schools.
- Hosting competitions as a fundraiser for team(s).

Community College

- Mentor & Teacher Training connects College with K12 teachers and students.
- Regional Equipment for competitions allows opportunity for grants/sponsorship.

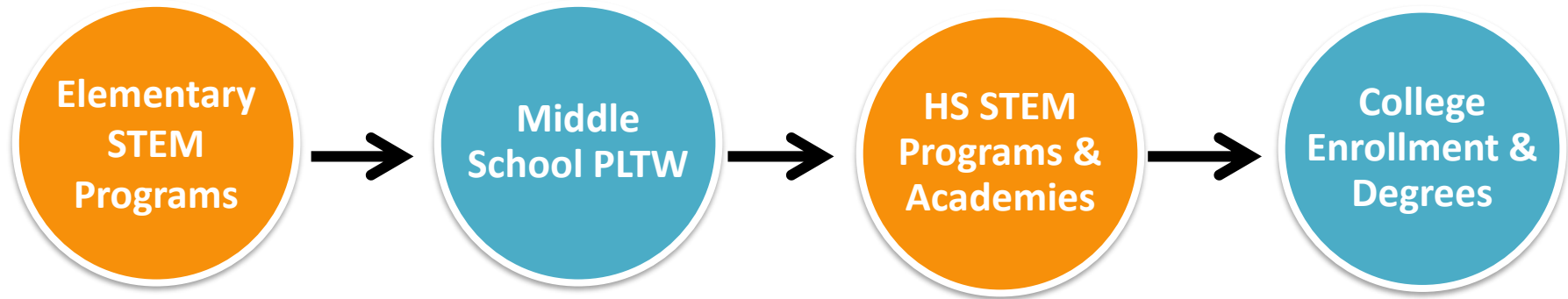
Transition Co-Curricular to Academic



Beyond Camps & Competitions

Co-Curricular to Curricular Inclusion

- 1 PLTW Gateway to Technology (GTT) MS in 2011
- 18 PLTW GTT MS in 2014
- 1700% Increase



Additional Support & Programs

Provide Regional Support

- Education Foundation Boards
- CTE/STEM Advisory Board
- Content Expert
- Chambers of Commerce
- Community Events
- Local Government

Outreach Programs

- STEM Camps
- STEM Competitions
- STEM EXPOs
- STEMinars
- STEM Internships

Discussion & Questions