



Science
Museum
of Minnesota®



***“Empowering Youth to Change
Our World Through Science.”***

Who we are & What we do



Youth Development
& Leadership

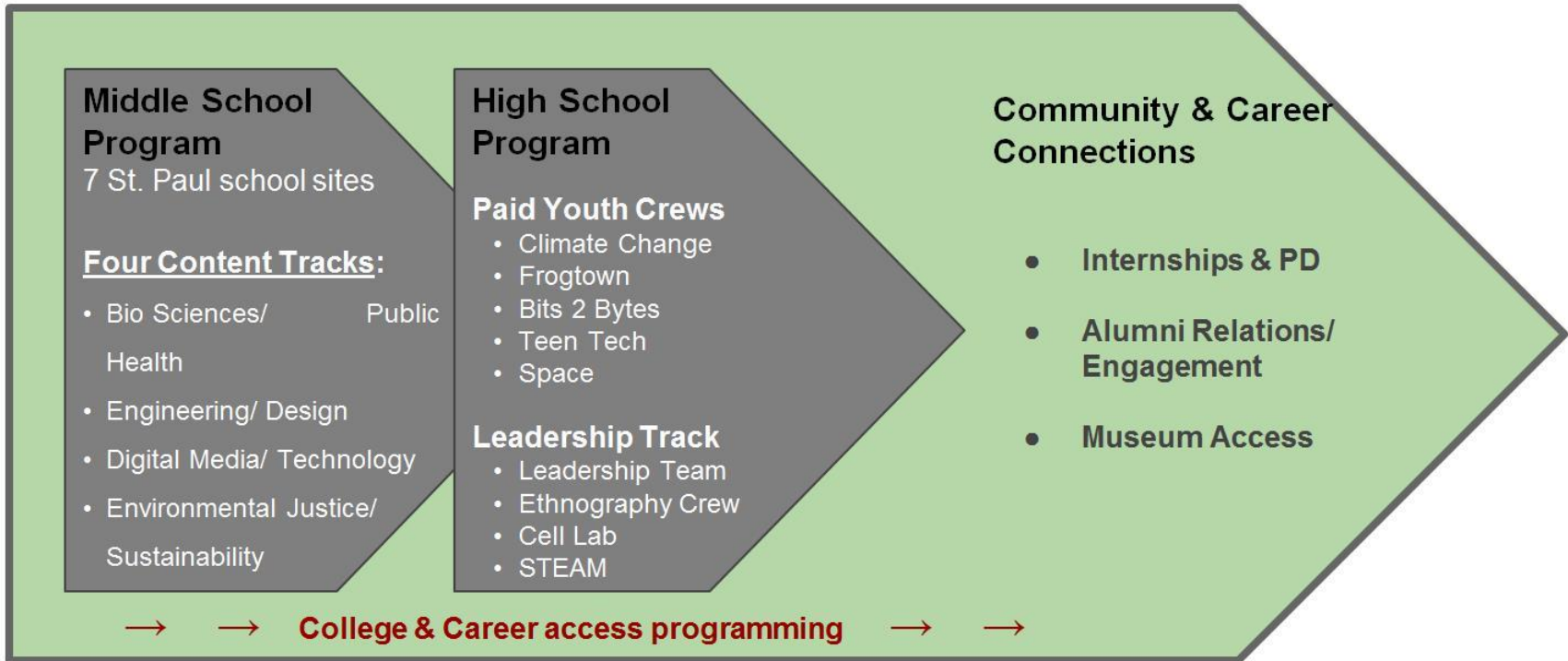
Informal STEAM
Education

Work Skills/
Workforce
Preparedness

KAYSC Youth:

- 105 Middle School
- 62 High School
- 25 Interns/Young Adults

Program Pathway



Program Goals

CONTENT

- STEM terminology
- STEM tools & skills

COMMUNITY

- Unique service learning model
- Learning in the community
- Making change in their communities

CAREERS

- College & Career pathways
- Building professional networks



Bits 2 Bites – A 3-Year ITEST Strategies Project

Youth Applying STEM Content and Computational Thinking to Learn about Nutrition and Advocate for Food Justice

Primary Audience

- Middle School Unit – 105 volunteers, 30-50 hrs/yr
- 2 High School Programs – following the KAYSC's Leadership Approach – 24 youth staff, 400 hrs/yr
- Internships - 4-6 paid internships, 600 hrs/year

Secondary Audience

- Outreach Participants – 400 youth



STEM Content

- **Level 1: Tools designed to help learners build comfort and confidence**
- *Scratch*, *Scratch Sensor Boards* and *LEGO® WeDos* (input/output boards that allow Scratch to connect to sensor and motors in the physical world); the *MIT App Inventor for Android* mobile devices;
- **Level 2: Tools used by both learners and STEM professionals**
- *Arduino microcontrollers* and *Mod Kit* (a graphical programming environment for Arduino);
- **Level 3: Tools used by STEM professionals**
- Text-based programming languages including *Processing* (Java-based), *Wiring*, *openFrameworks* (C++), and the *Android* mobile device software development kit; general media tools for documentation and dissemination, e.g. audio and video editing software;
- Youth will create programs that draw upon existing code and libraries in order to quantify a specific problem (AP Computational Thinking practice 4. Analyzing problems and artifacts). They will also learn how to create interactive tools and data visualizations to communicate their findings. (AP Computational Thinking practice 5. Communicating).

Approach

*Applying
STEM
Content*



Acknowledging Challenges

Targeting communities underrepresented in STEM

- Transportation Limitations
- Lack of STEM Connection/Investment
 - youth - history
 - parents/family
 - support networks
 - community
- Sustained Participation (long-term engagement)
- Cultural diversity & discomfort
- Museum Participation

KAYSC Strategies for Addressing Challenges

Targeting communities underrepresented in STEM

Community Building/ Alignment	Empowerment/ Leadership Development	Intentional Pathway
<ul style="list-style-type: none"> - Team/Community Building: youth retreats - Parent/Family Alignment: parent advisory, orientations, conferences, communication - Celebrating Youth Talent & Achievements: Community Event series, dinners/picnics - Staff Alignment: staff culture reflects program values - Representation: Program leadership (staff/volunteers) reflects racial/cultural diversity of youth - Partner Alignment: diversity 	<ul style="list-style-type: none"> - Youth Voice/Choice: individualized opportunities, leadership focus/framework - Social Justice/ Solutions: service learning framework, - Leadership Framework: earned opps to lead/advance - Support Networks: mentor, college & career - Ongoing PD/trainings: (content & community) 	<p>Opportunities for long term exposure and advancement.</p>