

**FACT SHEET**

April 2014



# STEM Learning Opportunities in Michigan 21st CCLC Programs

Science, technology, engineering, and mathematics (STEM) disciplines promote economic growth through innovation and entrepreneurship. By 2018, careers in STEM fields are projected to grow by 17%, providing some 274,000 jobs in Michigan.<sup>1</sup> The Michigan 21st CCLC program provides STEM enrichment activities to low-income students who do not typically have access to these opportunities. This fact sheet uses data from the 2012-2013 school year to describe participation in STEM activities in Michigan 21st CCLC programs.

## Key Findings

- Almost all 21st CCLC programs offer STEM activities, with most offering substantial amounts of science and math every day.
- Most STEM activities emphasize project-based and hands-on learning.
- In 2012-2013, over 18,000 students in 21st CCLC programs engaged in STEM activities.
- Participants included substantial numbers of women, Hispanics/Latinos, and African Americans, who are underrepresented in STEM professions.
- Programs should offer more hours of programming in technology and engineering, as the majority of STEM jobs in 2018 will be in computing and engineering.<sup>1</sup>

## Conclusion

- Nurturing students' interest in STEM fields is in the state's interest. As informal learning environments, afterschool programs show promise for engaging students in STEM disciplines.

## WHAT ARE MICHIGAN 21ST CCLC PROGRAMS DOING TO PROMOTE STEM LEARNING?

Research suggests that students who express interest in STEM by 8th grade are more likely to pursue degrees in related fields.<sup>2</sup> Michigan 21st CCLC provides many opportunities for students of all grade levels to engage in STEM activities.<sup>3</sup>

- STEM activities are available in almost all programs; 95% to 100% of programs at all grade levels offer STEM.
- STEM activities were offered an average of 3.5 – 5.6 hours per day.
  - High schools offered 3.5 hours
  - Middle schools offered 4.1 hours
  - Elementary schools offered 5.6 hours
- Programs offer more hours of science and math activities than engineering and technology activities.
  - Science and math activities were offered 2-3 hours per day
  - Engineering and technology activities were offered about 1 hour per day



## Number and Percent of Youth Participating in STEM Activities from Each Ethnic Group

(Total Number of Students in 2012-2013 School Year)

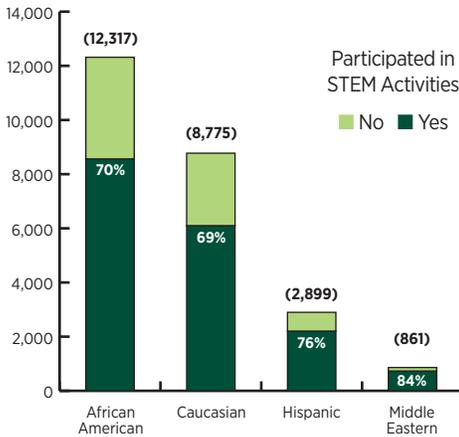


Figure 1



## WHAT DO 21ST CCLC STEM ACTIVITIES LOOK LIKE?

Most STEM activities (71%) take the form of projects or hands-on learning; about 29% are traditional academics, such as lectures, homework help, or tutoring. Examples of 21st CCLC STEM activities include:

- Science: Science museum, gardening club, exploring magnetism
- Technology: Computer animation, film/video club, photoshop
- Engineering: Lego skyrockets, robotics, ballistics
- Mathematics: Math tutoring, cooking with math, math games

## WHO PARTICIPATES IN 21ST CCLC STEM ACTIVITIES?

The current STEM workforce is dominated by White and Asian males, with women and minorities underrepresented in STEM fields. Research has shown that although about 1 in 4 high school students expresses an interest in STEM careers, gender and racial gaps are large and growing.<sup>1</sup>

Because Michigan 21st CCLC programs serve students attending schools that are largely low-performing and have substantial low-income populations, underrepresented students are able to engage in STEM activities that would not be otherwise available. During the 2012-2013 school year, 18,197 students in 21st CCLC programs (70% of total enrollment) participated in STEM activities. Half of them were girls (9,036 students).

As Figure 1 shows, there was substantial participation from each ethnic group:

- 70% of the African American students participated (8,556 students)
- 69% of the non-Hispanic Caucasian students participated (6,091 students)
- 76% of the Hispanic students participated (2,197 students)
- 84% of the Middle Eastern students participated (723 students)

These data suggest that 21st CCLC programs are providing opportunities for STEM learning to a substantial group of low-income youth and groups traditionally underrepresented in STEM fields.

<sup>1</sup>MyCollege Options® & STEMconnector®. (2013). *Where are the STEM students? What are their career interests? Where are the STEM jobs?* Retrieved from [stemconnector.org/sites/default/files/store/STEM-Students-STEM-Jobs-Executive-Summary.pdf](http://stemconnector.org/sites/default/files/store/STEM-Students-STEM-Jobs-Executive-Summary.pdf)

<sup>2</sup>Tai, R.H., Liu, C.Q., Maltese, A.V., & Fan, X. (2006). Planning early for careers in science. *Science*, 312, 1143-1144. Retrieved from [sciencemag.org/content/312/5777/1143.full](http://sciencemag.org/content/312/5777/1143.full)

<sup>3</sup>Activities may be scheduled concurrently.

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