



## 2016-2017 LEAP FabLab Annual Report

Prepared by:  
Carlos Mattei-Ramos, Director of the Fab-Lab  
David Salas De la Cruz, Faculty Director



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## Teaching Team

**Steven Brownstein**, Engineering, STEAM HS

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**Jonathan Delgado**, Industrial Arts, STEAM HS

**Chris McCrum**, Computer Science, STEAM HS

**Darryl Cowan**, Chemistry, STEAM HS

**Maxine Tauber**, Biomedical, STEAM HS

**Brooke Bivona**, History, STEM School

**Alaina Golden**, STEM School

**Silvia Vazquez**, Technology, Upper Elementary

**Kristen Perrine**, Science, Upper Elementary

**Dana Ciecelsky**, Science, Upper Elementary

**Nina Speart**, Art, Upper Elementary

**Lissel Vasilakis**, Spanish, Lower Elementary

**Beth Goodman**, Technology, Lower Elementary

**Stephanie Datiz**, Lower Elementary

**Justine Cuneo**, Lower Elementary

**Heather Phillips**, Lower Elementary

**Melissa Cloherty**, Kindergarten

**Angela Brown**, Kindergarten





Carlos Mattei-Ramos,  
Director of the FabLab

## Director's message

These are exciting times in the FabLab; a special year. The FabLab have experience growth in the areas of teacher engagement and student impact. In our efforts to engage more teachers in FabLab activities, we have hosted three Professional Development sessions on Project Based Learning (PBL), Fabrication Technologies, and a grant funded SciGirls Program. This year our teacher engagement grew from 11 teachers to 18 district-wide, even at the kindergarten level. Moreover, student impact grew from 346 to 581. As always, our teachers

played a crucial role in disseminating PBL and engaging with our students in exciting and innovative ways. Our leadership team has greatly support us with funding, Professional Development, and leadership in expanding the FabLab and PBL learning model.

Moreover, this year was our second participation as a site for the New Jersey Makers Day. It was a fun and exciting day where LEAP families, staff, teachers and the general community were exposed to cutting edge technology and skills directly applicable to their community needs.

A huge milestone this year is the FabLab inclusion in the Global Community of FabLabs.io (<https://www.fablabs.io/labs/leapfablab>). This is a great accomplishment for our team since this put us at the international level and opens possibilities for global collaborations. Again, these are exciting times and I am proud to be part of the FabLab team.



David Salas - De la Cruz,  
Faculty Director

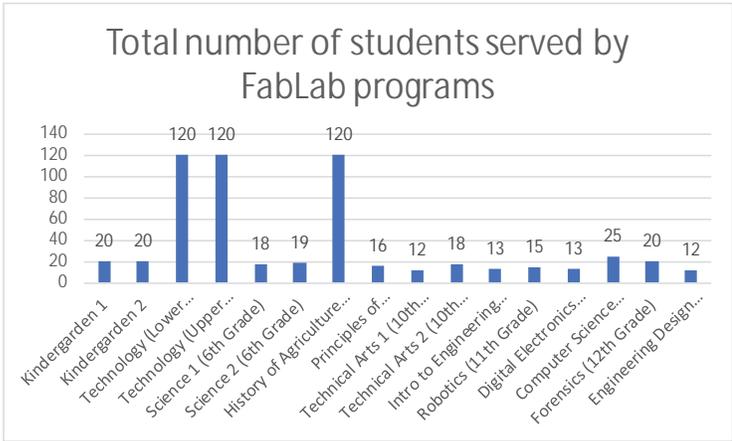
We aim to inject more experiential and project-based learning into the school curriculum and to continue motivate minority students into STEM fields while extending, connecting and integrating university-based research investigations. I remain excited to be involved in STEM at Leap Academy University Charter School. The attention to STEM by the students, parents, teachers and administration are key in the success of our program. We have been able to incorporate project-based learning across the district as a result of an exponential increase in participation from teachers and students.

Students continue to be participants in the Fabrication Laboratory curricular activities and continue to positively supports our projects. We have participated in regional and local activities directed into engaging and communicating to the community the school effort regardingSTEM. This year we opened a new micro-fabrication laboratory located at the lower school serving K-3 students. Students worked from recycling paper to recycling crayons using 3D printed molds. With Rutgers University involvement and the Fellow Program, we hired and worked with seven fabrication laboratory fellows. Three of those

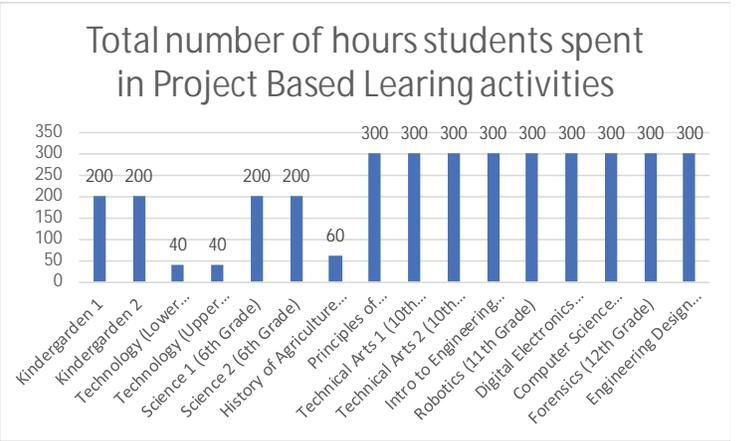
students were alumni students from LEAP to provide support beyond high school. The fellows worked in range of projects from supporting the administration, teachers and students. Also, we worked into submitting grant applications to the Department of Education, NSF, SCI-Girl and Lockheed Martin. It is with great excitement that we continue working with our teachers and students. Our goal is to identify areas of improvement so to deepen the understating of the core ideas as to better engage our students, teachers and parents.



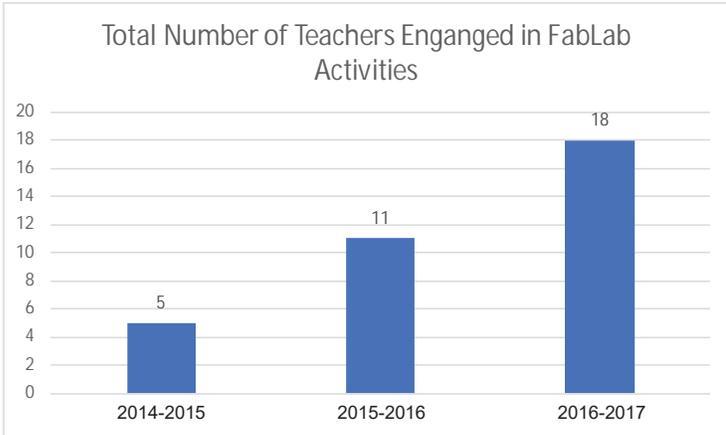
# Fab-Lab Impact



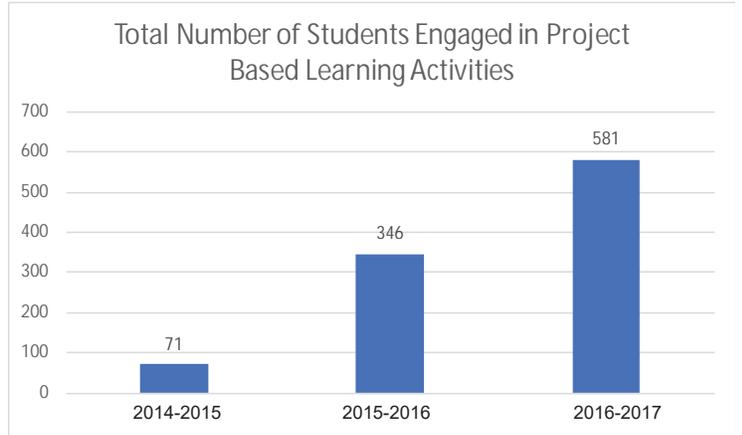
During the 2016-17 Academic year a total of **581 students** districtwide were served by FabLab programs in the classroom (not including extracurricular activities).



During the 2016-17 Academic year students spent a total of **3,640 hours** learning in a Project-Based Learning setting (not including extracurricular activities).



LEAP Teacher engagement in FABLAB programs has experience growth in the last three years. For the 2016-17 academic year a total of 18 teachers were engaged in FabLab activities.

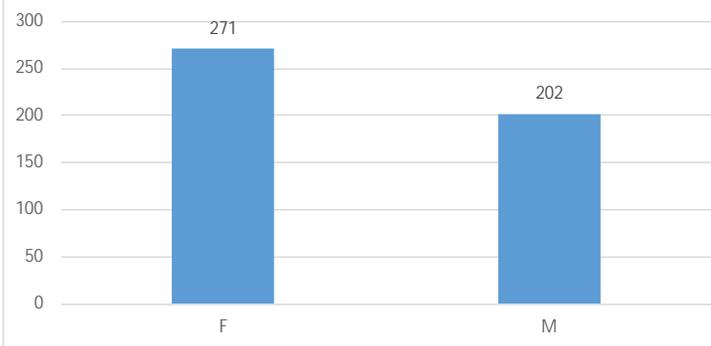


The number of students served by FabLab programs has also experience a significant growth.

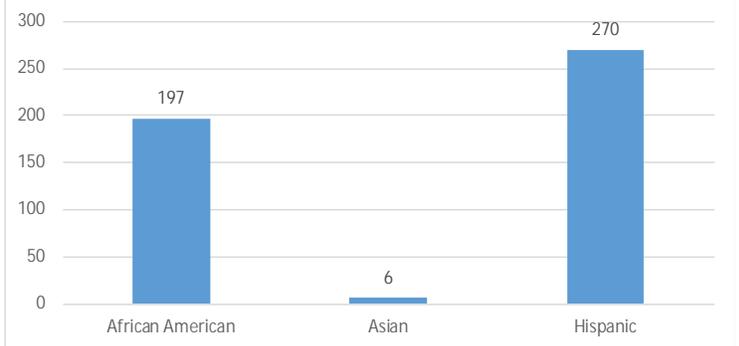




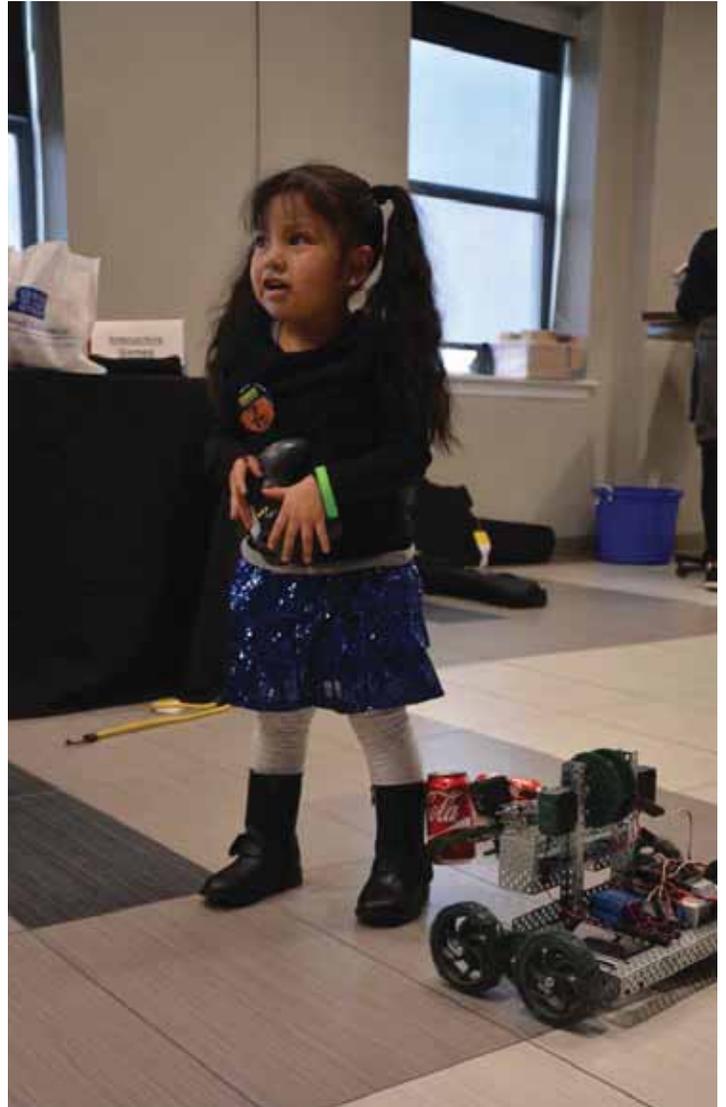
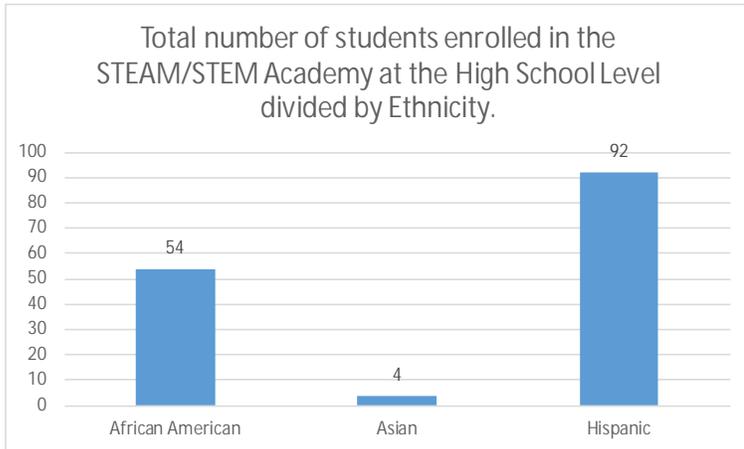
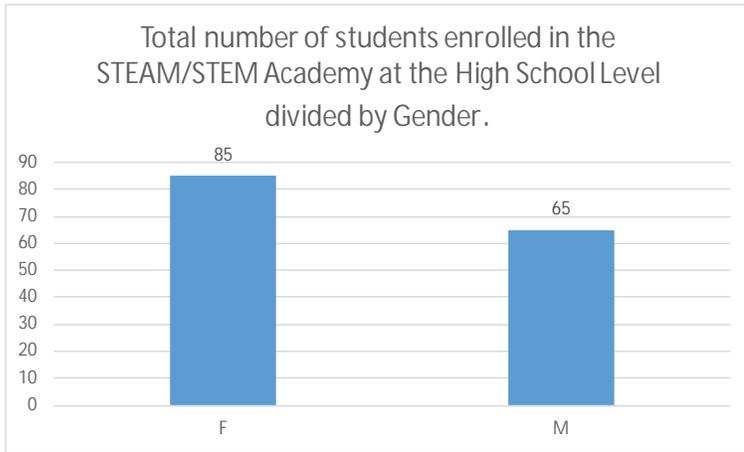
Total number of students enrolled in Academies at the High School Level by Gender.



Total number of students enrolled in Academies at the High School Level by Ethnicity.

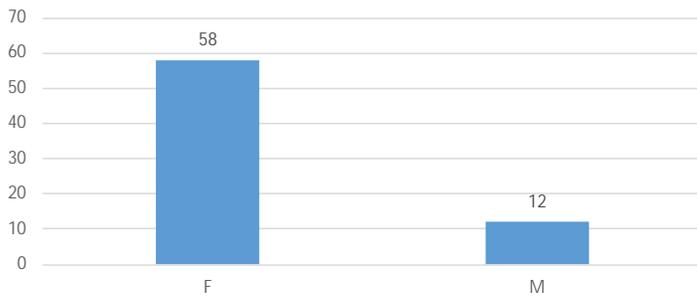


# STEAM/STEM Academy

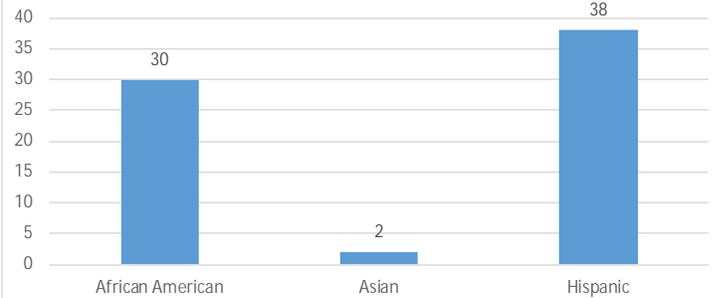


# STEAM/STEM Concentrations

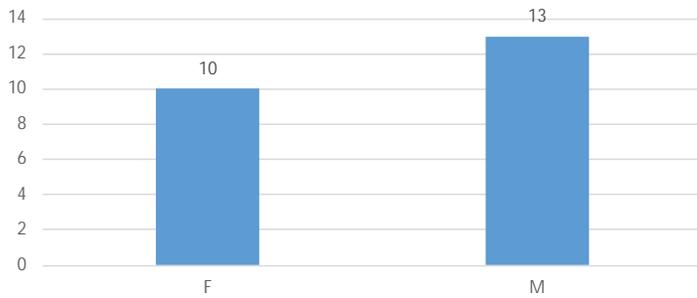
Total number of students enrolled in the Biomedical Concentration at the High School Level divided by Gender.



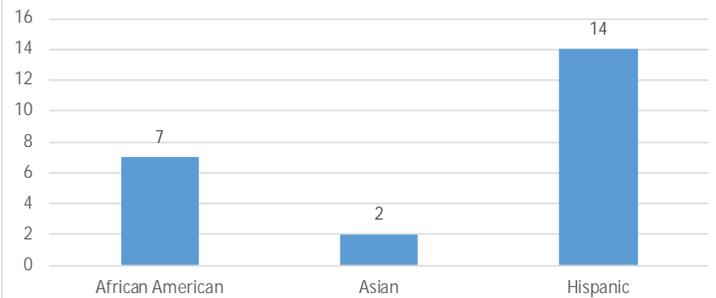
Total number of students enrolled in the Biomedical Concentration at the High School Level divided by Ethnicity.



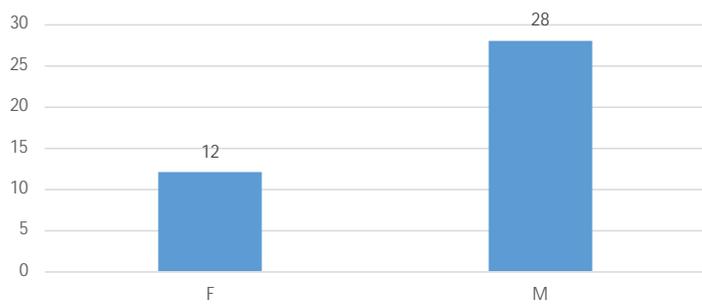
Total number of students enrolled in the Computer Science Concentration at the High School Level divided by Gender.



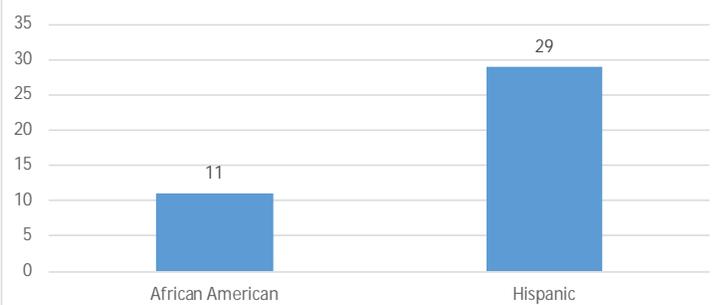
Total number of students enrolled in the Computer Science Concentration at the High School Level divided by Ethnicity.



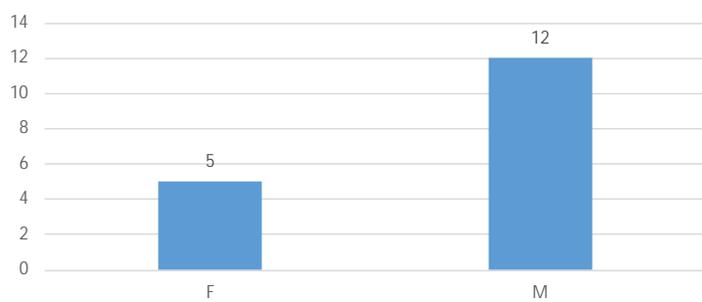
Total number of students enrolled in the Engineering Concentration at the High School Level divided by Gender.



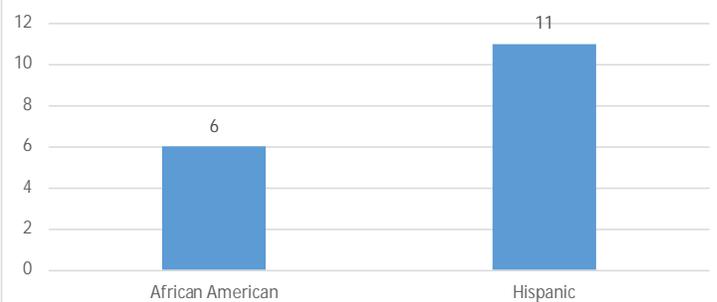
Total number of students enrolled in the Engineering Concentration at the High School Level divided by Ethnicity.



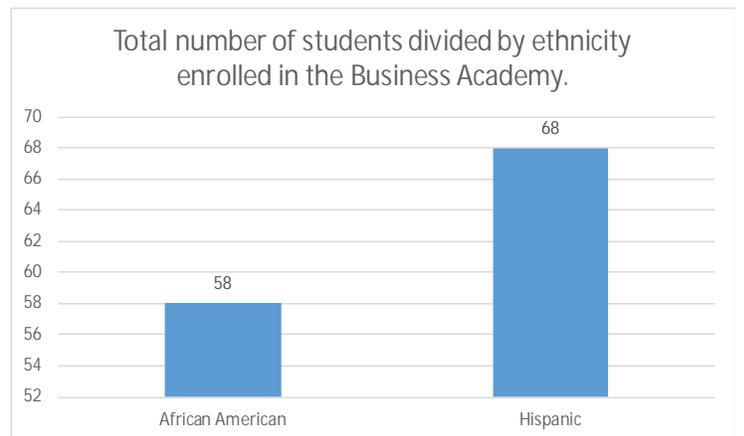
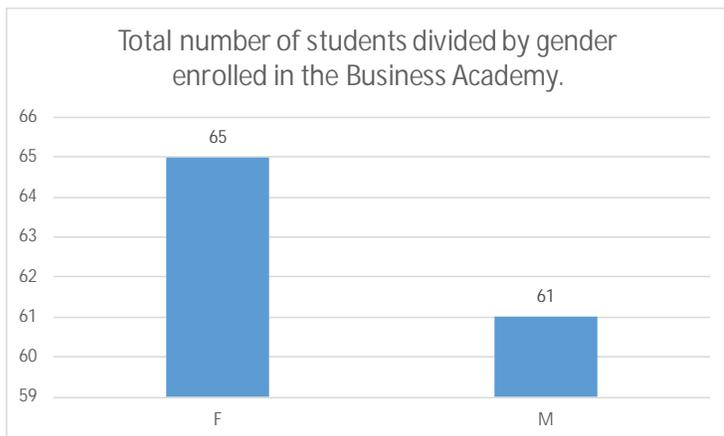
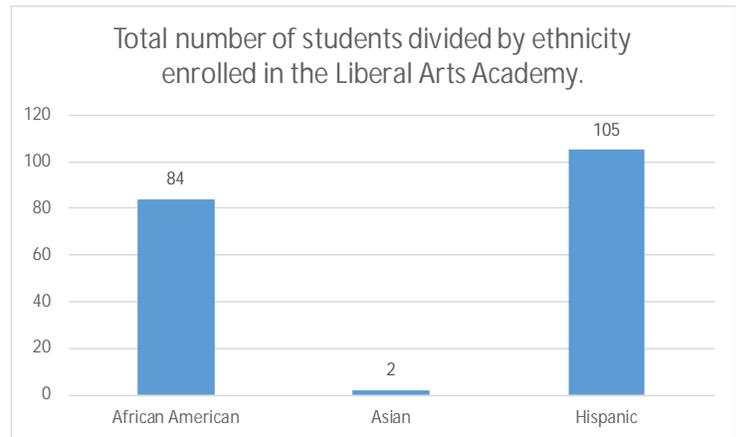
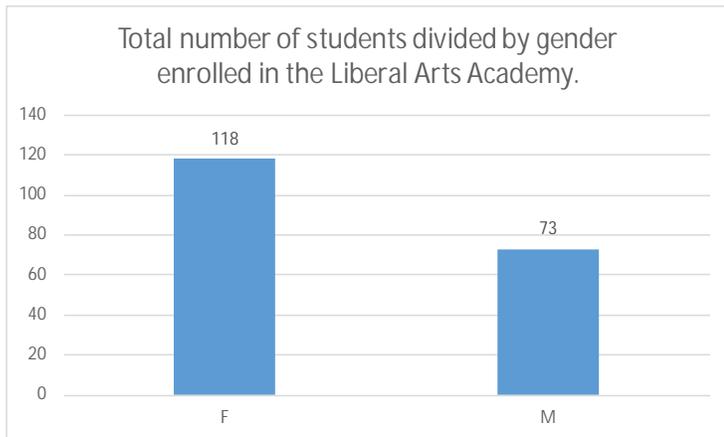
Total number of students enrolled in the Industrial Arts Concentration at the High School Level divided by Gender.

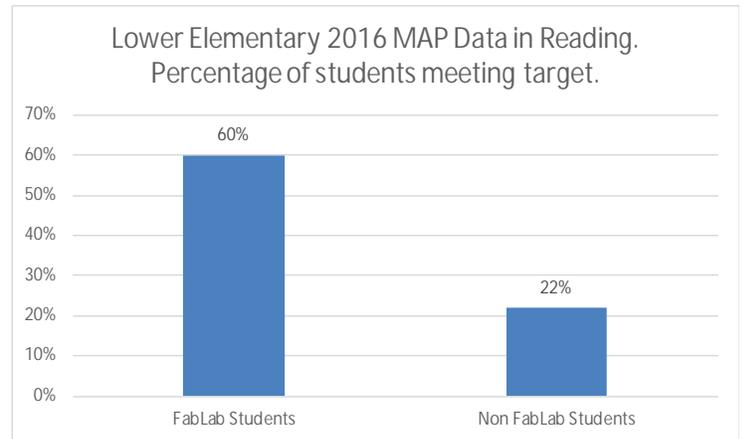
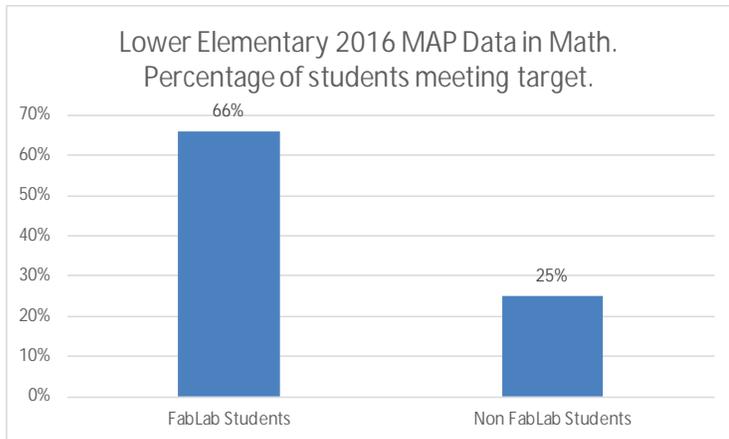


Total number of students enrolled in the Industrial Arts Concentration at the High School Level divided by Ethnicity.



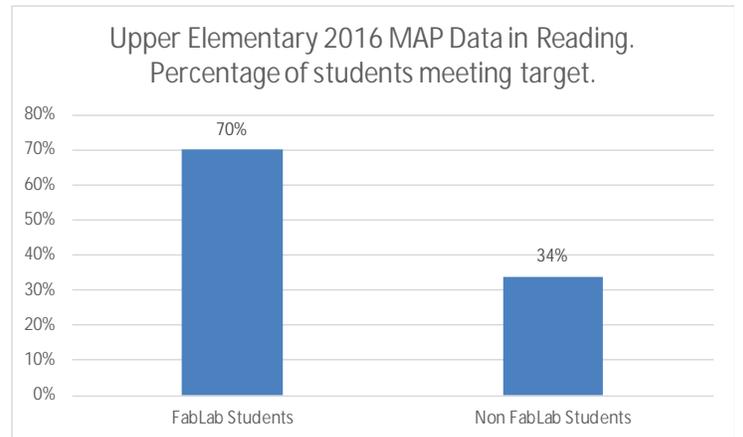
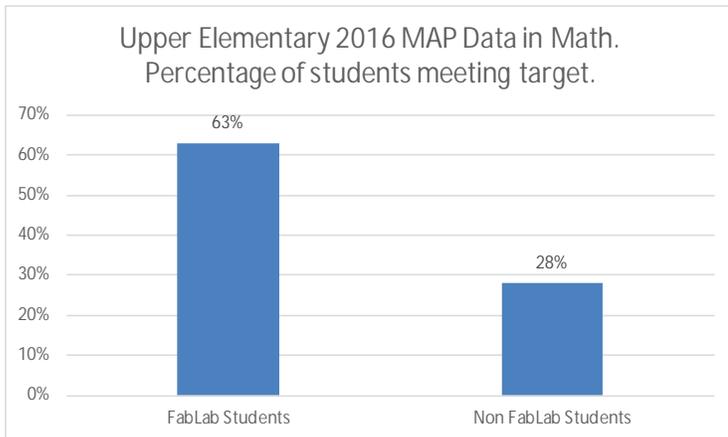
# Liberal Arts and Business Academies





Data shows that students engaged in FabLab activities do better in MAP testing when compared with students not engaged in FabLab activities.





Upper Elementary students tend to do better in standardized testing when compared to students not engaged in FabLab activities.

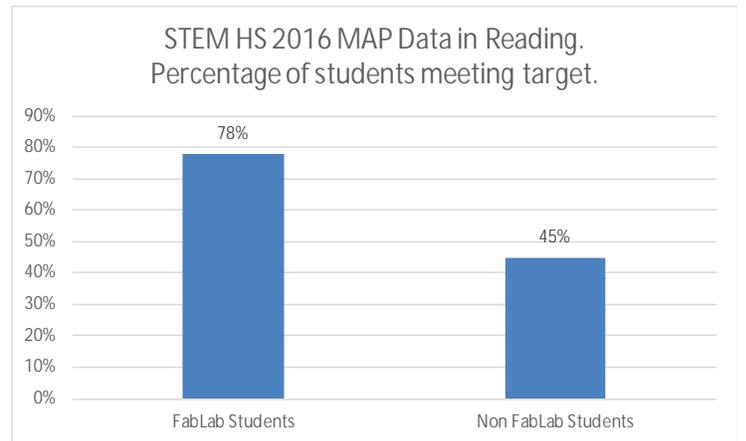
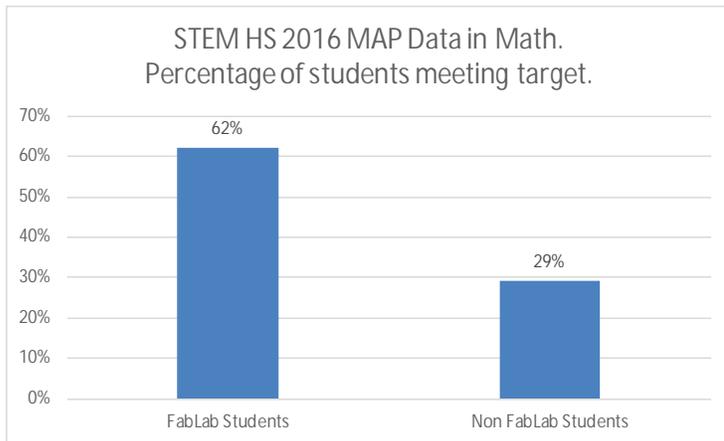


Upper Elementary STEAM activities



# Academics

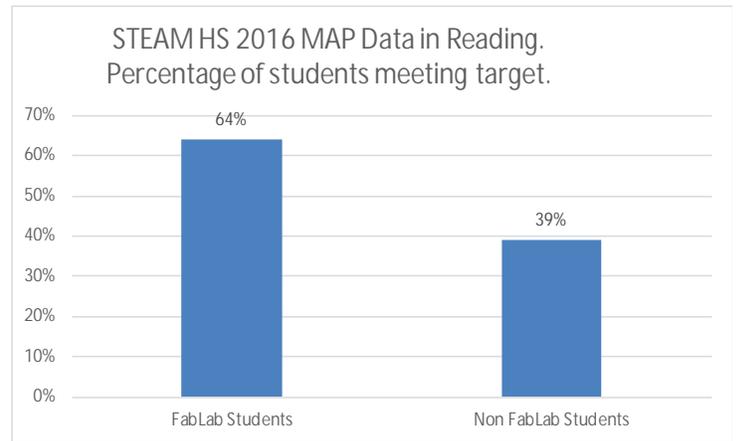
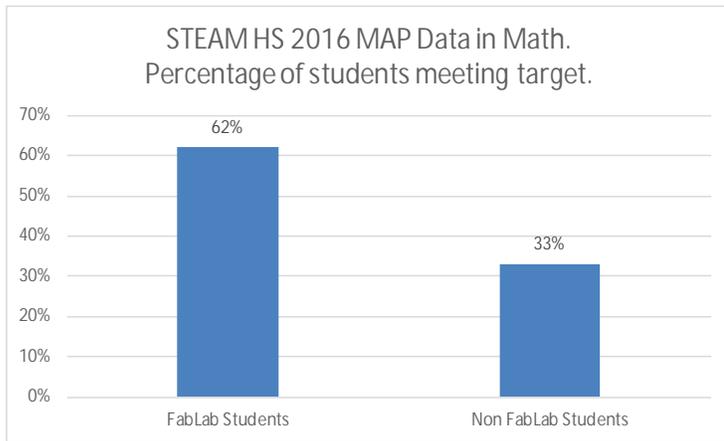
## STEM School Building



STEM students also tend to do better in standardized testing when compared to students not engaged in FabLab activities.



Middle School STEAM activities



High School students also tend to do better in standardized testing when compared to students not engaged in FabLab activities.



High School STEAM activities



**Other STEAM activities**



**Summer Enrichment Program in STEM**



**NJ Makers Day**



FabLab Professional Development



Rutgers Day



SciGirls Professional Development

Toms Rivers Makers Day