

# STEAM WONDERLAB

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## CUMULATIVE REPORT 2016-2020





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## OUR MISSION

WonderLab educators and students learn to be confident and curious in nature, brave in exploration and experimentation, and thoughtful and compassionate scientific thinkers.

Educators and students develop STEAM knowledge and skills that enable them to access related interests, education, and careers.



# DIRECTOR'S STATEMENT

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WonderLab is an incubator for Lesley students and faculty to develop and field test innovative STEAM education programs. Lesley undergraduate, graduate, and doctoral students bring theory to practice through emergent curricula built on critical exploration, field-based assignments, early field experience, specialized practicum, internships, and research. Currently, six professors from special education, literacy, science, social studies, and arts education use WonderLab with their classes.

WonderLab support includes an afterschool program for grades 1-6 linked to STEAM methods classes; STEAM Beans, an enrichment program for Black girls in grades 1-5 started by Lesley Graduate Sheila Johnson; Math Circle, an afterschool for middle school girls started by Lesley adjunct Kate Hendrix; Saturday Science, a bi-monthly program for gifted and talented children started by doctoral candidate Heny Taraz; Cambridge Environmental Literacy Project Urban Greenspace Early Start field trip programs for low-income preschool and kindergarten children; and Family College, a STEM program for the children of students in the Lesley Adult Learning program.

Through WonderLab, Lesley students and classes observe and practice STEAM teaching and learning, conduct fieldwork and research, collaborate with families, professors, and peers, and take part in professional development opportunities such as conference presentations and university-wide showcase events. To date, we have served more than 3,500 children and Lesley students through high-touch hands-on STEAM programs.

*Susan Rauchwerk*

**SUSAN RAUCHWERK**

WonderLab Director & Founder

# YEAR IN REVIEW



## Outdoor Adventures

Outdoor exploration is critical to the WonderLab experience, and this year was no exception. WonderLab students explored urban green-spaces, worked in the Lesley garden, and made animal-themed storybooks on their experiences.

## Resident Engineers

The WonderLab afterschool conquered a number of engineering feats. From architectural challenges to addressing environmental issues, students honed their teamwork and problem-solving skills.



## Classroom Collaboration

This year, WonderLab was able to work with GSOE classes more frequently and for longer periods of time. Classes spend almost twice the amount of time with WonderLab students, creating closer student-teacher relationships.



## Pilot Program: Family College

WonderLab and LCAL piloted the Family College program, where adult learners could enroll their children in WonderLab while they were in their own classes and fostered community during WonderLab family dinners.



# FINANCIAL OVERVIEW

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Children are recruited to participate in WonderLab programs through Lesley staff and faculty as well as local community and school organizations. WonderLab offers a sliding scale as well as student, staff, and faculty barter options. No participant has ever been turned away from a WonderLab program for financial reasons. Lesley University Graduate School of Education generously provides insurance, a unit release to the Director to administer the program, and the use of offices, classrooms, and labs free of charge. Generated income pays for Lesley student salaries and consumable materials. With one educator for every three children, salaries make up the bulk of expenses.

WonderLab generates twenty to sixty thousand dollars a year through program fees charged to children participating in programs, and small grants. In response to COVID-19, face-to-face meetings stopped in March 2020. Math Circle continued online in the spring and the after school offered self-directed [STEAM at-home activities](#) and a pollinator webinar. We were able to refund families for the remainder of the spring and pay Lesley students for the spring semester weeks they could not work due to COVID-19.

In Fall 2020, we began a free pilot program for a few children to attend Lesley methods classes on-line for about an hour to engage in STEAM activities with the instructor while Lesley students observe. We developed kits of materials that were distributed to participating families. It has been challenging to figure out how to engage students in hands-on STEAM learning while at home, and how to not overburden caretakers with the technical challenges of supporting students on-line. True to the WonderLab lab-school philosophy, we are documenting this pilot program to inform how we might grow this program for the spring semester.

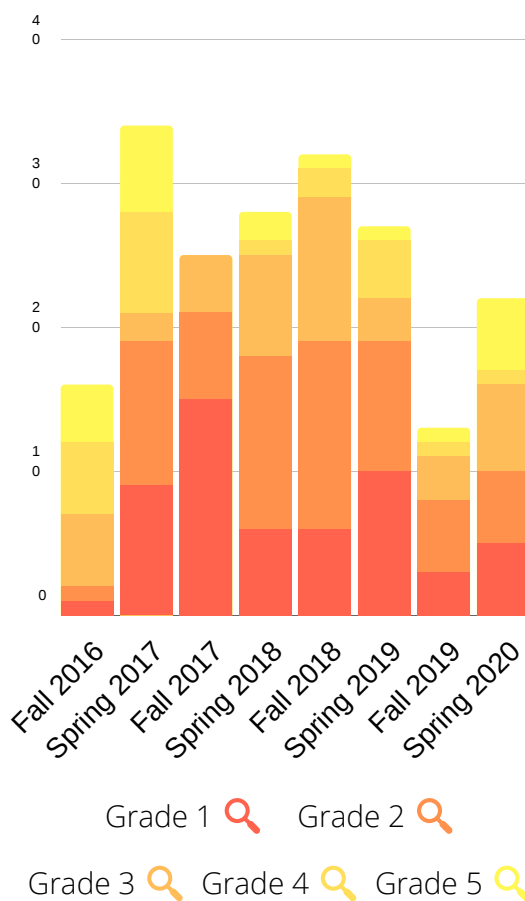


# WONDERLAB AFTER-SCHOOL

The primary WonderLab program is the WonderLab after-school for children in grades 1-5. With an average student-teacher ratio of 2:5, students collaborated with faculty to co-construct authentic, hands-on STEAM activities.

The after-school program has the greatest connections to the Lesley community, acting as a site for class observation, teaching, student fieldwork, research, as well as employment and practicum opportunities. This year, GSOE classes alone taught over 190 hours of STEAM content.

Afterschool Enrollment and Grade Level



## YTD Contact Hours Summary

**Total Hours Taught: 6,587**

**Total People Served: 3,501**

FY20 | 164 People Served

FY19 | 900 People Served

FY18 | 1,370 People Served

FY17 | 1,064 People Served

*The number of people served and contact hours vary per semester/year based on the number of STEAM methods classes being offered, pilot programs being tested, and grant funds.*

Spring 2020 | 6 Teachers | 355 Hours  
 Fall 2019 | 5 Teachers | 315 Hours  
 Spring 2019 | 7 Teachers | 684 Hours  
 VC\* 2019 | 3 Teachers | 1080 Hours  
 Fall 2018 | 8 Teachers | 576 Hours  
 Summer 2018 | 2 Teachers | 360 Hours  
 Spring 2018 | 6 Teachers | 632 Hours  
 VC\* 2018 | 4 Teachers | 108 Hours  
 Fall 2017 | 7 Teachers | 650 Hours  
 Summer 2017 | 1 Teacher | 180 Hours  
 Spring 2017 | 9 Teachers | 612 Hours  
 VC\* 2017 | 3 Teachers | 740 Hours  
 Fall 2016 | 5 Teachers | 295 Hours

\*VC - Vacation Camps, programs run during CPS February and April vacation

# MATH CIRCLE

Math Circle is an afterschool for middle school girls in grades 6-8. Curriculum includes cross-cultural mathematics, female mathematicians, and the relationship of mathematics in art and design. A favorite activity was to learn about permutations and combinations by ringing handbells in patterns of English change ringing and experimenting with Pythagorean intervals in music.

Math Circle received a \$5000 Tensor grant and contributions from the Lesley STEAM learning Lab for technology to make on-line teaching possible. Families who could afford to also paid a small fee which paid for snacks and consumable materials.



74%

of all girls signed up for more than one session

150+

hours taught this year in-person and remotely

10

girls sponsored this year by the Dolcini Grant

10:3

average student-teacher ratio

# Contact Hours FY20

#	WonderLab Activity
1	Program Director for 10 hrs/week for 14 weeks (fall 2019)
1	Program Director for 20 hrs/week for 6 weeks (spring 2020)
6	GSOE classes observing, teaching, or conducting fieldwork with WonderLab students for 0.5-1 hour 1-3 times/semester
3	GSOE classes observing & teaching WL students for 1 hr 4-8 times/semester
3	Visiting professors and educators for 2-3/hr workshops
5	Lesley students conducting field-based assignments with WL (literacy, math, and science) for 0.5 hour 1-3 times/semester
12	Children in grades 1-5 in after-school program for 3 hours/week for 14 weeks (fall 2019 semester)
16	Children in grades 1-5 in after-school program for 3 hrs/week for 6 weeks (spring 2020 semester)
8	Families enrolled in Family college program with children in grades 1-5 for 4/hrs week for 6 weeks
7	Lesley students employed for 5-20 hrs/week in after-school program
23	Girls grades 6-8 in Math Circle for 2 hrs/week for 14 weeks
4	Lesley students employed for 5 hrs/week for 15 weeks for Math Circle

**Contact hours: 3,020**

**People served: 164**

**Hours taught: 355**





# LOOKING AHEAD

Despite the restrictions of the COVID-19 pandemic, our commitment to quality STEAM education, equity, and sustainability are unwavering. Lesley University awarded WonderLab a research grant for the 2021 academic year to study the impact of the program since its inception. The study will examine the development of STEAM identity and how WonderLab STEAM programming has shaped Lesley students' teaching experiences.

In-person or at home, next year will be spent investigating these research questions and experimenting with models that can build a more equitable and sustainable future. Visit the WonderLab website for information about our programs and to share your great idea of a program you would like to pilot through WonderLab.

STEAM WonderLab

[wonderlabsteam.org](http://wonderlabsteam.org)

[lesley.edu/academics/explore](http://lesley.edu/academics/explore)

[/wonderlab](http://wonderlab)

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