

Project Information -- Mini Grants for Equitable Access to STEM Opportunities Administered by The Fund for The School District of Philadelphia

Purpose

The purpose of STEM Mini Grants is to address the Philadelphia STEM Equity Collective's short-term goals:

Supporting Teachers -- Teachers have resources and capacity to be innovators in high-quality STEM programming.

Improving K-12 STEM -- Students will learn about STEM careers and challenges through engaging, skill-building experiences tailored to their local context.

We anticipate that teachers will create projects or have an existing project which assists in equity and inclusion in STEM career pathways for Philadelphia public school students who are Black, Latinx, and/or female. The projects can be focused on any of the science, technology, engineering, and mathematics fields - or, even better, can adopt a collaborative approach combining more than one of these fields. If your teaching field has a curriculum or framework requirements or guidelines, please adhere to them where possible and/or consult with your department head, if necessary.

Our target population is Black, Latinx and/or female students. The same group which is commonly underrepresented in STEM fields. To further ensure equity, teacher applications from neighborhood schools are greatly encouraged. Only one application per school will be accepted. A teacher may request up to \$1,500 for their project. If there are 2 or more teachers at a school interested in the mini grant opportunity, please consider combining or agreeing upon a shared project to request up to \$2,500.

Access to these areas of focus, throughout the K-12 grade span, will help these students to be better prepared to enter a STEM major or career after graduation. We don't expect these mini grants to change systemic curriculum instruction across the District. Instead, we hope that you will consider applying to start or to continue a STEM project which changes how you teach your own students. We expect these grants to impact how your students consider continuing their STEM studies or education, guiding them to a STEM pathway or to choose a STEM career.

As teachers, you are best able to decide which projects may benefit your students and meet their needs. Please consider STEM activities for Black, Latinx and female students who may be English Language Learners, Special Education or who participate in other courses such as athletics, history, nutrition, physical education, etc. We hope that you will propose creative, innovative, fun and engaging projects to support your students' STEM education.

Teachers whose schools include the arts as part of their STEM focus, are also encouraged to submit applications.

Examples of STEM Projects/Ideas/Resources

For those interested in sample projects to get their creative/innovative ideas flowing, please review the Grant Sample Projects document.

Information Sessions and Teacher Workshops optional

In March, the Office of Grant Development (OGD) will hold informational sessions on the GSK STEM Mini Grant opportunity for teachers to ask questions and to determine if the opportunity is a good fit for them. OGD will also provide STEM Mini Grant Workshops to assist teachers with project ideas, application questions and grant submission. Teachers who are unable to attend a workshop, may request an appointment with an OGD grantwriter. Attendance at sessions and workshops are optional but may be helpful to interested teachers.

Google Meet Code for Information Sessions and Teacher Workshops: MINIGRANTS2021

IMPORTANT DATES

Friday, March 5, 2021	Foundation Live application portal opens
Tuesday, March 9	Informational Session, 3:30pm - 4:30pm Informational Session, 4:30pm - 5:30pm
Wednesday, March 10	Informational Session, 8:00am - 9:00am Informational Session, 11:30am - 12:30pm
Friday, March 12	Grant Workshop, 3:30pm - 5:30pm
Monday, March 15	Grant Workshop, 11:30am -1:30pm
Wednesday, March 17	Grant Workshop, 2:30pm - 4:30pm
Friday, March 19	Grant Workshop, 8:00am -10:00am
Monday, March 22	Grant Workshop, 3:30pm - 5:30pm
Tuesday, March 23	Grant Workshop, 2:30pm - 4:30pm
Friday, March 26	Grant Workshop, 1:00pm - 3:00pm
Friday, April 9	Applications due in Foundation GIVE by 5pm EST
April 2021	Review committee convenes to assess eligible applications
Friday, May 7	Awards announced
Monday, May 10, 2021	Grant project period begins
Thursday, June 30, 2022	Grant project period ends

Grant Project Reporting

Awarded teachers will be provided with reporting instructions and format. Reports will be due at the end of the project period.

Glossary of Terms

Science, Technology, Engineering, and Mathematics (STEM) education: According to the [Pennsylvania Department of Education](#) “STEM education is an integrated, interdisciplinary, and student-centered approach to learning that encourages curiosity, creativity, artistic expression, collaboration, computational thinking, communication, problem solving, critical thinking, and design thinking.” For the GSK STEM Mini Grants opportunity, we encourage teachers from all fields and grade levels to be creative in developing engaging, thoughtful, fun STEM projects for their students. Teachers may also choose to collaborate with other teachers in developing and implementing their STEM projects.

Neighborhood School: the school which your child is assigned to in your neighborhood, according to the catchment/boundary area associated with your address or residence.

Absolute Priority: for the purposes of the GSK STEM Mini Grants opportunity, applicants must address in their application, the target population of Black, Latinx, and female students by encouraging these students to actively engage in areas of STEM.

Competitive Priority: for the purposes of the GSK STEM Mini Grants opportunity, teachers who work at neighborhood schools will receive an additional 5 points for submitting an application. The aim of this competitive priority is to encourage teachers who may predominantly teach the target population; may have little or no experience with creating STEM projects for their students and; who may have not sought funding for such projects.

Grant Period: This is the time period in which a project may begin and end, including purchasing materials, and implementing activities. The grant period for the GSK STEM Mini Grants is May 10, 2021 to June 30, 2022.

Have Questions or Prefer an Appointment?

Please contact Laura Lau of OGD at llau@philasd.org or Lauren Cawley of The Fund at lcawley@thefundsdp.org

STEM MINI GRANT SAMPLE PROJECTS, IDEAS, RESOURCES 2/27/21

Mini Grants for Equitable Access to STEM Opportunities

Administered by The Fund for the School District of Philadelphia

This document and its content has been contributed by SDP curriculum offices. The sample projects and ideas listed are for illustrative purposes to guide teachers in the development of their own projects for the GSK STEM Mini Grant opportunity. Resources are further provided to help teachers with trusted web sources and to have an understanding of potential project costs. For additional assistance with developing your projects, please consider reaching out to the folks listed below, head of your department, or your school principal.

Resource link	Description	Grade Bands/Link		
		K-5	6-8	9-12
NASA Stem Website	Various ideas and activities to promote STEM	K-4	5-8	9-12
B.E.S.T.	NASA's BEST activities nurture development of 21 st century skills including communication, collaboration and innovation. The activities are flexible in terms of materials, time, students' abilities, and resources. BEST Activity Guides couple NASA engineering content and themes to help teach students the engineering design process, and the guides reflect NASA's role as a leader in space, technology, aeronautics, and science. Materials can be ordered but use common household products and recyclable items.	K-2 3-5	6-8	
NASA Wavelength	NASA Wavelength is a collection of resources that incorporate NASA content and have been subject to peer review. You can search this collection using key words and/or the drop down menus to	K-2 3-5	Can adapt	9-12

	pinpoint resources to use with your audience of learners.			
NASA Summer of Innovation STEM	<p>NASA's education specialists have developed themed units and camps of NASA content to help make your summer programming both exciting and meaningful. The selected units and camps are specific, hands-on, problem-based activities that are appropriate for the summer learning setting. These units and camps are designed to actively engage your students by providing:</p> <ul style="list-style-type: none"> ● Opportunities for students to explore what they know. ● Flexible schedules for the delivery of content. Achievable learning goals. ● Opportunities for educators to become more comfortable delivering NASA content. ● A greater connection to NASA's mission and its educational resources. <p>Various resources to download (educator Guides)</p> <p>E.g.:Life Science—Plants GRADE LEVELS 4–6</p> <p>Cost:</p> <ul style="list-style-type: none"> ● Printing costs for training materials ● microphone for recording (e.g. Snowball USB microphone \$69.99) 	4-5	7-9	

	<ul style="list-style-type: none"> • Seeds, measuring devices (plant growth and watering), fertilizer • *Greenhouse portable - GreenThumb Classroom Greenhouse - \$63.99 <p><i>How Do Plants Know Which Way to Grow? "Tropisms"</i> LESSON THEME This lesson investigates whether plants use the force of gravity to help them know which way to grow. Students gain a better understanding of plant behavior and learn how to apply the scientific method.</p>			
Space Weather	The Cooperative Program for Operational Meteorology, Education, and Training supports, enhances, and stimulates the communication and application of scientific knowledge of the atmospheric and related sciences for the operational and educational communities. COMET's web-based self-paced training materials serve earth science education and training needs by providing interactive experiences for learners at a distance		6-8	9-12
Tracking, analyzing, and interpreting Sunspots	Stanford Solar Center Here you will find a collection of multi-disciplinary, interactive exercises and activities based on the Sun and solar science, most geared to grades 4-12. Most of these have been aligned to science standards and approved by the NASA Product Review process. Curriculum connections: <ul style="list-style-type: none"> • Literacy • Math - analyzing data 	4-5	6-8	9-12

	<ul style="list-style-type: none"> • Science - tracking storms • Technology - creating a newscast weather report for either live presentation or taped 			
https://2016.spaceappschallenge.org/challenges	NASA website cultivating creative thinking and problem solving. Even though this site is from 2016 teachers can find and use resources		8	9-12
	<p>For assistance with Educational Technology Projects, please reach out to Sharon Mora smora@philasd.org</p> <p>Or Ronald Johnson rjohnson@philasd.org</p>			
<p>Coding</p> <p>Engineering</p> <p>Design Thinking, Science, Technology, and Math</p> <p>https://education.lego.com/en-us/</p>	<p>Lego WeDo2</p> <p>Cost for Core kit: \$209.20 from Lego</p> <ul style="list-style-type: none"> • Additional add-ons available <p>Discover robotics and coding with WeDo 2.0 to create models and investigate science, computer science, and STEAM concepts.</p> <p>All projects connect to Literacy, Math, Science, Technology, and can be extended to include Art and Social Studies</p> <p>Contact Paula Don pdon@philasd.org with questions</p>	K-5		

<p>Coding</p> <p>Engineering</p> <p>https://education.lego.com/en-us/</p>	<p>LEGO Spike Prime</p> <p>SPIKE Prime set \$316.16 from LEGO</p> <p>Expansion Set \$97.61</p> <p>Middle Grades robotics kit aligned to College/Career and STEM topics</p> <p>Contact Paula Don pdon@philasd.org with questions</p>		<p>6-8</p>	
<p>Coding</p> <p>Engineering</p> <p>https://education.lego.com/en-us/</p>	<p>LEGO Mindstorms- EV3</p> <p>Cost: Core Set \$432.35 from Lego</p> <ul style="list-style-type: none"> ● Expansion Set \$116.20 ● Additional sensors available <p>Further robotic and coding abilities with EV3 to investigate both block-based and text-based coding while allowing design thinking to drive problem solving.</p> <p>Units follow science, computer science, and engineering pathways.</p> <p>Contact Paula Don pdon@philasd.org with questions</p>		<p>6-8</p>	<p>9-12</p>
<p>Coding</p>	<p>SPHERO - 6 SPHERO's plus 6 iPads (in charging case) have been delivered to schools who roster for Digital Literacy K-8</p>	<p>K-5</p>	<p>6-8</p>	

	<p>Cost:</p> <ul style="list-style-type: none"> • Sphero Sprk \$129.99 each (will need a Chromebook, iPad, phone to connect and code) • Sphero RVR \$249.99 each • Sphero Mini \$49.99 • Sphero Bolt \$149.99 • Downloadable Application contains projects that connect to STEM in all subject areas • Curriculum ideas: https://sphero.com/pages/educators 			
Coding	<p>ADAFRUIT Circuit Playground - teaches circuit board programming through a simulator and board. Delivered to schools who roster for Digital Literacy K-8</p> <p>Cost: Gemma Starter Pack (i kit) PRODUCT ID: 1657 \$27.95 from https://www.adafruit.com/</p> <ul style="list-style-type: none"> • Application contains projects that connect to STEM in all subject areas • Several K-8 schools received a kit of 18 boards and alligator clips who roster for Digital Literacy K-8 	K-5	6-8	9-12
Coding	<p>Ozobots - Kit of 18 delivered to schools who roster for Digital Literacy K-8</p>	K-5	6-8	

	<p>Cost:</p> <ul style="list-style-type: none">● Ozobot: individual \$99.00 each, kit of 12 \$1500.00 but can get school pricing, (1200 from Robotshop)● Markers: Black, green, red, blue (does not need to be purchased from Ozobot)● Paper in a roll (easel paper) \$10.00 <p>Overview:</p> <ul style="list-style-type: none">● introductory robotics lessons while also offering advanced coding options for older or more experienced students.<ul style="list-style-type: none">○ For non-readers, or beginner readers Ozobots can use colored markers to code● Practice math by coding paths between math problems and solutions, creating mazes of specific length, or mazes that take a specific amount of time to complete.● Tie into ELA with sequencing, stories, rhyming words. Place image cards of sequences and code paths to order the sequence correctly. Have students write First, Next, Then, Finally index cards about a story, place the index cards on a table, and then code a path to tell the story in order. Place			
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	<p>word wall cards of rhyming pairs on the table and code a path between them.</p> <ul style="list-style-type: none"> • Use OzoBlockly – using Google’s Blockly with Bit or Evo to code Ozobots (distance, movement, speed, color, etc.) Blockly Compatible with iPhone, iPad, and iPod touch only • Find Ozobot activities to do with Hour of Code 			
Coding - Other	<ul style="list-style-type: none"> • Makey Makey activities (kits start at \$49.99) • Nintendo Labo (\$59.99 for Variety kit) can use with Switch • https://thestemlaboratory.com/stem-activities-for-kids/ • https://www.sciplus.com/107piece-stem-robot-kit-63830-p (\$42.95 Each) • Anki Vector/Cosmo Robot - (\$349.00 to \$539.99 Each) • Designing Musical Instruments: Home materials or purchased <ul style="list-style-type: none"> ○ https://www.instructables.com/10-Musical-STEM-Projects/ • https://www.sony.com/electronics/koov (\$519.99 per kit) 	K-5	6-8	9-12
STEM kits to enrich Science existing curriculum	<ul style="list-style-type: none"> • STEM Challenge Physical Science set (grades 6-12) \$436/kit or Solar car design \$171.60 • Hands on Kits such as the Science of Energy Kit \$300/kit 		6-8	9-12

	<ul style="list-style-type: none"> • durable science lab equipment that can be used to increase engagement in STEM 			
Nutrition/Healthy Eating	For project ideas, please reach out to your Eat Right Philly provider or the SDP Nutrition office	K-5	6-8	9-12
30 Resources for STEM projects	<p>Compiled a list of terrific STEM project-based learning activities that can be tailored to meet your students' needs.</p> <p>STEM, like PBL and <u>inquiry-based learning</u>, activates critical thinking which you can read more about in our <u>Critical Thinking Companion</u>. Our list breaks down the learning activities by subject: Science, Technology, Engineering, and Math. Many of these activities are customizable to be used with all grades PreK-12</p>	K-5	6-8	9-12
School Gardens Resources: Fox Chase Farm	<p>Partner with Fox Chase Farm (FCF), a part of The School District of Philadelphia. The FCF will help design, install and manage over the summer. Gardens may be outdoor or indoor. Garden boxes, hydroponics, areoponics. Please contact Many Fellousiz, mhilbert@philasd.org</p> <p>School Garden Curriculum: USDA https://www.fns.usda.gov/tn/gre</p>	K-5 K3-4	6-8	9-12

	<u>at-garden-detective-adventure-standards-based-gardening-nutrition-curriculum-grades-3-and-4</u>			
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