



Expanding Computer Science and STEM Education Grants

Request for Application

November 2018



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Introduction

As the commonwealth's economy continues to grow, Pennsylvania's faces significant economic opportunities in the next decade. Pennsylvania has the 14th largest economy in the world and ranks 6th among states in job volume. As Pennsylvania's demographics change, the commonwealth is expected to experience a long-term shortage of workers in its labor force. Given this, Pennsylvania's future depends on the development of a strong workforce and business community able to compete in today's global economy.

To support Pennsylvania's future economic and business growth, and to remain competitive, Pennsylvania must grow its supply of skilled workers. Over the next decade, most good paying jobs in Pennsylvania, and across the country, will require some form of education or training after high school, especially in fast-growing fields of Computer Science (CS) and Science, Technology, Engineering, and Mathematics (STEM). These career pathways look different for different people and sectors, and a one-size-fits-all approach to education and training will not work for all students, workers, and businesses.

By 2025, more than 60 percent of good jobs in the commonwealth will require some postsecondary education, a demand that shaped the statewide attainment goal established by Governor Tom Wolf in 2015.¹ Currently, only 45 percent of Pennsylvanians hold these credentials, and a significant skills gap, especially for "middle skill" occupations requiring some postsecondary education but not a bachelor's degree, continues to persist for the commonwealth's current and emerging workforce.²

Over the past three years, Pennsylvania has established a strong and innovative culture for CS and STEM learning by strengthening STEM experiences for all students, supporting professional development for educators, and forming STEM ecosystems across the commonwealth. Pennsylvania is also expanding Registered Pre-apprenticeships and Apprenticeships to pair classroom instruction with skills training for careers with family-sustaining wages. Finally, Pennsylvania has also embraced the Next Generation Industry Partnership model to align education, workforce, and economic development to collaboratively support the overall competitiveness of an industry.

Governor's Middle Class Task Force

To ensure that Pennsylvania remains competitive in a rapidly changing economy, and to hear directly from students, workers, employers, and communities across the commonwealth, Governor Wolf established the non-partisan Governor's Middle Class Task Force in fall 2017. Co-chaired business, labor, postsecondary education, and workforce development leaders, the Task Force held six regional roundtables to hear directly from Pennsylvanians on barriers they face getting and keeping good jobs, and on the need for businesses to increase their competitiveness.³

¹ This goal was also endorsed by the Pennsylvania's State Board of Education in November 2016.

² [Interactive Data Dashboard: Postsecondary Enrollment, Completion, and Educational Attainment in Pennsylvania](https://public.tableau.com/profile/padepstofed#!/vizhome/College-GoingRatesandEducationalAttainment_0/Main)
https://public.tableau.com/profile/padepstofed#!/vizhome/College-GoingRatesandEducationalAttainment_0/Main

³ <https://www.governor.pa.gov/governor-wolfs-middle-class-task-force-kicks-off-first-regional-roundtable/>

In response to these perspectives, the Task Force identified six critical areas to inform future policy considerations:

1. A skilled and quality workforce can sustain and grow a competitive economy in Pennsylvania.
2. Business hiring practices are impacted by multiple conditions, including liability concerns, global competition, and unknown long-term workforce needs.
3. Education, workforce, and economic development systems are not coordinating their efforts.
4. Many workers and students believe upskilling is risky and costly, and continuing education beyond high school outweighs economic benefit.
5. The “traditional” service delivery model in postsecondary education is not accessible or affordable for first generation, under-represented, and non-traditional students and workers.
6. Best practices and models in education and workforce exist, but are not widely shared, expanded, or invested in.

What is PAsmart?

In response to the Governor’s Middle Class Task Force findings, Governor Wolf proposed the PAsmart initiative, a new strategic approach to education and workforce development. The PAsmart initiative is designed to address the feedback Pennsylvanians shared with the Middle Class Task Force, to better align education, workforce, and economic development initiatives and funding.

By working in a smarter, more coordinated way, PAsmart makes public programs and initiatives more accessible and easier to navigate so Pennsylvanians can develop the skills and abilities they need to obtain quality jobs, and businesses can recruit and retain skilled workers.

PAsmart is based on four goals:

1. Strategically investing resources in initiatives to support economic growth, and education and training opportunities;
2. Achieving successful outcomes for Pennsylvania students, workers, businesses, and communities;
3. Improving coordination and alignment of education and workforce development programs, services, and funding; and
4. Transforming inter-agency, cross-sector collaboration around education, workforce, and economic development at state, regional, and local levels.

As part of the PAsmart initiative, the FY2018-19 Enacted Budget included \$30 million for strategic, competitive, and cross-sector investments focused on meeting the education and workforce development needs of students, workers, employers, and communities across Pennsylvania, including those disconnected from education and workforce opportunities (e.g. opportunity youth and young adults, long-term unemployed, etc.). PAsmart grants funded by this investment

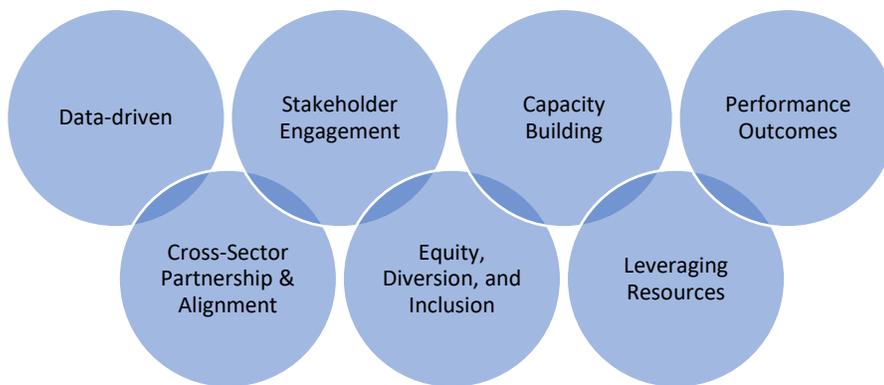
will support cross-sector partnerships to address unique local, regional, and statewide education, workforce, and economic needs. Funding will support a variety of projects, but should be data-driven, align with and leverage existing initiatives and resources, and have a measurable impact.

The Pennsylvania Workforce Development Board (PA WDB) is the Governor’s business-led, industry-driven policy advisor on workforce development aligned with the commonwealth’s education and economic development goals. The PA WDB coordinates workforce development initiatives across the commonwealth and developed the PAsmart framework to guide the PA Departments of Education, Labor & Industry, and additional agency partners in developing the PAsmart grant initiatives aligned with this framework. The PA WDB is interested learning from PAsmart to inform state education and workforce development policy.

PAsmart Framework

PAsmart Principles and Funding Priorities

PAsmart is designed to provide flexible resources to support innovation, and cross-sector alignment and collaboration, to increase equity, remove barriers to access, and build on existing initiatives and fill gaps, to better serve Pennsylvania students, workers, businesses, and communities. PAsmart grants will support the following principles and funding priorities:



For more information on the PAsmart Framework principles and funding priorities for the 2018 PAsmart grant opportunities, refer to: <https://www.governor.pa.gov/PAsmart-Grants>

Expanding K-12 Computer Science and STEM Education and Professional Development

The information below is provided to assist eligible entities with developing proposals for the grant opportunities available through the 2018-19 Governor's PAsmart *Expanding K-12 Computer Science and STEM Education Initiative*. Successful applicants will be selected based on the evaluation process described herein. This document describes the requirements applicants will be expected to meet and the criteria that will be used to determine status as a successful applicant.

Completed applications must be submitted by to by the following deadlines:

- Targeted K-12 Computer Science/STEM Education Grants are due no later than 11:59pm on Friday, December 14, 2018.
- Advancing K-12 Computer Science/STEM Education Grants are due no later than 11:59pm on Friday, December 28, 2018.

PDE will schedule a webinar and post FAQs online in late November. Questions and requests for technical assistance also may be submitted to PAsmart@pa.gov.

Background

Nearly 300,000 jobs in the commonwealth require skills in science, technology, engineering, and mathematics (STEM), and over the next decade, more than 70 percent of new jobs will require these skills.

Currently⁴, offerings for computer science (CS) courses and programs of any kind are thin on the ground in the Commonwealth. Of Pennsylvania's over 3,000 schools, only 324 (23%) offered CS courses of any kind in 2016-2017. Hence, of over 1.7 million students, only 20,435 (2.1%) participated in a CS course of program. When looking at a map of local education agencies (LEAs) reporting students in CS courses, large swaths of the state that do not have any offerings at all.

Even within local education agencies (LEAs) with offerings, access to high-quality computer science and STEM education varies significantly. Too often students of color, low-income students and girls are unable to access the opportunities available to their wealthier, white and male peers⁵. In 2017, of the only 2.1% of Pennsylvania's students who took computer science and related courses, patterns of access by subgroup are even more alarming:

- Fewer than 30% of students who took computer science were low-income.
- Only 1% of students were English Learners.

⁴ All data from this section comes from [this internally created data Tableau](#), unless otherwise stated.

⁵ Google Inc. & Gallup Inc. (2016). Diversity Gaps in Computer Science: Exploring the Underrepresentation of Girls, Blacks and Hispanics. Retrieved from <http://goo.gl/PG34aH>. Additional reports from Google's Computer Science Education Research are available at g.co/cseduceresearch

- Boys are twice as likely to take CS courses than girls in Pennsylvania, and only 28% of girls who do take these courses in middle and high school were girls of color (1,717 out of 6,397).
- Of the 319 Pennsylvania middle and high schools offering CS courses during the 2016-2017 school year, 28 (12.3%) did not have any girls enrolled in those courses.
- While students of color represent a growing share of students taking computer science in Pennsylvania over the past three years, white students still represent most enrollments statewide (74.2% or 15,159 students).

Through the Governor’s PAsmart initiative, eligible entities can apply for funding to provide students with access to high-quality, relevant, and equitable CS and STEM education, and provide current and future educators with high-quality training and professional development to effectively teach CS⁶. Applicants requesting funding to support training and professional development of teachers **must** commit to offering new or expanded CS/STEM courses in their schools as a result of the investments.

Priority will be given to proposed initiatives that leverage partnerships and data to:

- **Expand access** to high-quality computer science courses and programs for Pennsylvania’s K-12 students, with a focus on increasing learning opportunities for students in early grades (K-8);
- **Increase the number of educators** prepared to teach computer science in Pennsylvania’s K-12 schools, including those able to teach courses of rigor, through new and expanded educator preparation, training, and professional development; and
- **Boost participation** in CS/STEM education for women, girls, students of color, students in rural and urban areas, students with disabilities, and other historically underserved and underrepresented populations.

For the purposes of this grant, computer science is defined as “the study of computers and algorithmic processes, including their principles, their hardware and software designs, their applications, and their impact on society.”⁷ CS is often confused with the everyday use of computers and the internet. CS education is not about teaching students computer literacy (such as effective internet searching or creating and collaborating on digital documents), nor is it about the use of education technology (such as using an online system to do homework rather than a worksheet). It is also not to be confused with information technology, which are software applications that professions use in the workforce (such as CAD for architects or Photoshop for designers). CS is not about the *use* of computers, but rather the *creation* of those uses.

⁶ Professional development activities should be sustained (i.e., not stand-alone or one-day), intensive, collaborative, job-embedded, data-driven and classroom-focused. See Every Student Succeeds Act (ESSA), § 8101(42).

⁷ A. Tucker, et al., *A Model Curriculum for K-12 CS: Report of the ACM K-12 Task Force Curriculum Committee (2nd Ed.)*, Association for Computing Machinery, 2006.

Grant Information

The Pennsylvania Department of Education (PDE) is pleased to issue this request for applications to fund programs which address the large gaps in CS/STEM offerings and expand access **and** equity of access by providing more CS and STEM education experiences to students.

Applicants may apply for funds in one of two tiers of grants, each with its own purpose and target audience:

1. **Targeted Grants** –Targeted Grants are structured to meet the needs of LEAs and their schools that have zero, or very few, CS offerings of any kind. The purpose of these grants is to build educator capacity and expand student access. These grants have a low risk entry point for applicants and are to help applicants build the infrastructure to apply for “Advancing” Grants in the future.
2. **Advancing Grants** – Advancing Grants are high-level comprehensive grants meant to support entities that have 50 or more students participating in CS/STEM experiences. The purpose of these grants is to give regions a chance to leverage or expand CS/STEM ecosystems, grow partnerships between LEAs, higher education institutions, businesses, and other CS/STEM-focused organizations, to expand CS/STEM experiences to historically underserved populations, and to expand the pool of CS/STEM educators.

1. Targeted K-12 Computer Science & STEM Education Grants

PAsmart Targeted K-12 CS & STEM Education grants (“Targeted Grants”) are structured to meet the needs of LEAs and their schools with zero, or very few, CS offerings of any kind. Targeted grants will fund two phases of programming:

- **Phase 1:** LEAs will send teams of at least four (4) educators each to PDE-approved professional development to learn CS standards and principles appropriate to their respective grade levels and how to incorporate those standards and principles into their curriculum. Professional development will be aligned to the CSTA standards approved by the State Board of Education.⁸
- **Phase 2:** Following the initial training, LEAs will be able to request additional funding for product offerings to implement CS standards and principles in their classrooms and to expand access to students.

Eligibility

Any local education agency (school district, career and technology center, charter school, intermediate unit) in Pennsylvania is eligible to apply for a Targeted Grant. Only one application

⁸ In January 2018, the State Board of Education approved the Computer Science Teachers Association (CSTA) standards to guide CS work across the Commonwealth.

will be accepted from each LEA. The application may include educators from more than one school within the LEA.

To accomplish the goals set forth in the Governor's PAsmart Framework, K-12 institutions must assess their risk factors and needs and provide statistical data to support their proposal. This data may include, but is not limited to, links/copies of relevant institution policies and programs and other institutional data (enrollment, demographics, etc.).

Funding

LEAs may receive a maximum of \$35,000 of targeted grant funding.

- Up to \$10,500 can be used to support educators participating in the PDE-approved CS training. Examples may include:
 - Staff time to participate in grant activities;
 - Reimbursement costs incurred for the participation and replacement for educators who are participating in grant activities; and
 - Certification exams, if applicable.
- Up to \$24,500 may be used to purchase eligible hardware, products, and training to implement computer science education in the classroom.

Funding Priorities

For targeted grants, priority consideration will be given to proposals that:

1. Address the goals of the Governor's PAsmart initiative, as mentioned previously;
2. Demonstrate the greatest ability to increase access and equity to CS and STEM education;
3. Present the highest need for CS/STEM programming (for example, schools that are currently with zero offerings in LEAs with zero offerings);
4. Focus on training and professional development for teachers in grades K-8 to support early awareness of CS/STEM; and
5. Include teams of educators from diverse grade levels and/or include at least one administrator from the LEA.

Eligible Programs and Expenses

During Phase 1 of Targeted Grant programming, professional development will be funded as approved by PDE. LEAs may participate in PDE-approved training at no additional cost or may request approval for another professional development opportunity that meets PDE criteria. Professional development criteria are outlined in Appendix A.

In addition to PDE-approved training, the following programs or activities will be considered for funding:

1. Hardware offerings such as programmable robots or objects such as drones, and the associated software that allows students to learn how to code them, such as Raspberry Pi or Swift. Associated sets of laptops, tablets, etc. may also be purchased;
2. Trainings and workshop-based Professional Development to supplement hardware offerings; and.
3. Consultative Professional Development that can provide long-term support to build program capacity for existing CS and STEM education.

Due to the limited amount of funding, only items and activities directly related to eligible programs and activities covered in this request for application will be funded. For more details regarding eligible items, see Appendix A and B. Grant funds may not be used for direct salaries, fringe benefits, or operational rates.

All budgets will be reviewed to evaluate appropriateness and connection to proposed grant activities and goals.

Review Process and Criteria

Applications will be reviewed for:

1. Alignment to the goals of the Governor's PAsmart initiative, as detailed in the above framework approved by the PA WDB;
2. Program and activity narrative for which funding will be used, including details of how the proposed program/activity will improve a school's capacity to offer CS/STEM education, maintain sustainable programming and training, and address barriers of access for high-need and underrepresented students;
3. Detailed budget information that supports the goals and objectives of the proposal;
4. Measurable outcomes; and
5. Accuracy of the information submitted.

Applications that do not include all the required information as stated on the application will not be considered and those that include more than 25 percent of unallowable expenses will not be considered. All qualifying applications will be reviewed and scored.

Proposals will be considered based on the following criteria:

1. Goals and Objectives – Goals and objectives of the program are clearly stated and align to the goals of the Governor's PAsmart initiative.
2. Proposal Narrative – The proposal includes a detailed description of the program(s) to be implemented and activities to be conducted to support the implementation of the program(s).
3. Expected Program Outcomes and Assessment – Outcomes are stated in measurable terms including baseline information and expected improvement, and there is a clear plan for assessing the impact of the program being funded through the grant.

Application Materials

All applicants must use and submit the K-12 Targeted Computer Science and STEM Education grant application materials provided <https://www.governor.pa.gov/PAsmart-Grants>. K-12 Targeted Computer Science and STEM Education grant applications are due no later than 11:59PM on Friday, December 14, 2018.

2. Advancing Computer Science & STEM Education Grants

Advancing Grants are designed to support broad, cross-sector partnerships that are using the ecosystem and networked approaches to establish integrated and/or stand-alone CS/STEM offerings and are meant to accelerate efforts such as, but not limited to:

- Expanding access to CS/STEM education (especially for historically underserved students and communities) through learning experiences such as dual enrollment, industry credentials, work-based learning, internships, and apprenticeships; and
- Expanding the number of CS/STEM educators.

Advancing Grants are meant to operate on a larger scale by funding partnerships that provide quality CS/STEM experiences to K12 students as part of high-level strategic approach to workforce development.

Advancing Grants are expected to fully-align to the Governor's PAsmart Framework:

- **Data-driven Innovation** – Proposals must identify a clear problem, challenge or opportunity supported by relevant data, and include an innovative strategy to increase access and equitable access to CS/STEM opportunities for Pennsylvania students.
- **Cross-sector Partnership** – Proposals must demonstrate strong, high-quality partnerships committed to working collaboratively to implement the proposal. Applicants are encouraged to have multiple partners across sectors.
- **Equity, Diversity and Inclusion** – Proposals must demonstrate a commitment to serve and increase access for students with exceptionalities, high poverty students, and female, African American, Latino and Native American students.
- **Capacity Building** – Proposals must build capacity to offer CS/STEM programming to K-12 students.
- **Leveraging Existing Resources** – Proposals must demonstrate that resources from the grant will leverage and supplement, not supplant, existing resources.
- **Performance Outcomes** – Proposals must include measurable performance outcomes and a strategy to collect, analyze and report those outcomes. Proposals will demonstrate strong goals increasing the percentage of students, course/program offerings and trained educators in CS/STEM.

Examples of eligible projects aligned to the Framework include, but are not limited to:

- Pairing educators with industry level professionals;
- Focusing on educators K-8 and mid-career educations (those with 3-8 years of service);
- Master Teacher and/or Fellowship Models;
- Learning experiences coherent with labor market priorities;
- Partnership models that have a deep understanding and evidence of the STEM ecosystem;
- Cross-sector alignment with regional initiatives (such as, but not limited to, local K-12 Guidance Plans, WIOA State, Regional and/or Local Plans, Industry cluster analyses, etc.);
- Integrating computer science into existing math, science, humanities, ELA or arts coursework;
- Creation of secondary CS course offerings;
- Creation of career exploration/career pathways; and
- Proposals that address policy and regulatory barriers to expanding CS offerings.

This is by no means an exhaustive list of eligible programs that may be funded. Applicants are encouraged to develop programs that meet their regional needs.

Eligibility

Lead applicants for Advancing Grants may include:

- Local education agencies (LEAs), including school districts, charter schools, career and technical centers (CTCs), and Intermediate Units (IUs);
- Postsecondary institutions;
- Public libraries;
- Community-based organizations;
- Local workforce development boards;
- Businesses and chambers of commerce;
- Labor organizations;
- Trade associations; and
- Economic development entities.

Lead applicants may apply as a consortium.

Fiscal Agent

Only LEAs may serve as the fiscal agent for the grant. The fiscal agent will receive, manage, and disburse grant funds. Fiscal agents may use funds to pay partners in the consortium for their services.

Partnership Requirements

Local support and collaborative efforts from business, industry, education, and the community are essential to the success of PAsmart programs. To be considered for funding, lead applicants must identify partners to assist with expanding access to CS/STEM education and expanding the number of CS/STEM educators.

Eligible partners include:

- LEAs, including school districts, charter schools, CTCs, and IUs;
- Postsecondary institutions;
- Public libraries;
- Community-based organizations;
- Local workforce development boards;
- Businesses and chambers of commerce;
- Labor organizations;
- Trade associations;
- Non-profits; and
- Economic development entities.

Funding

Eligible applicants may request up to \$500,000. Funding is not guaranteed to any applicant.

Funding Priorities

Priority will be given to proposals that address the goals of the Governor's PAsmart Grant Initiative, demonstrate the highest leverage expansion of access and equity of access to CS/STEM programming, and proposals that expand access in areas with the highest need (for example, schools and LEAs with no CS or STEM courses.)

Specific funding priorities include:

- Pairing educators with industry level professionals;
- Focusing on K-8 educators and educators who are mid-career (those with 3-8 years of service);
- Master Teacher and/or Fellowship Models;
- Learning experiences coherent with labor market priorities;
- Partnership models that have a deep understanding and evidence of the STEM ecosystem;
- Cross-sector alignment with regional initiatives (such as, but not limited to, local K-12 Guidance Plans, WIOA State, Regional and/or Local Plans, Industry cluster analyses, etc.);
- Integrating computer science into existing math, science, humanities, English Language Arts or arts coursework;
- Creation of secondary CS/STEM course offerings;
- Creation of career exploration/career pathways; and
- Proposals that address policy and regulatory barriers to expanding CS/STEM offerings.

Due to the limited amount of funding, only items and activities directly related to eligible programs and activities covered in this request for application will be funded by the PAsmart Grant Program.

All budgets will be reviewed to evaluate appropriateness and connection to proposed grant activities and goals.

Matching funds are not required. However; priority will be given to applications with matching contribution from grant partners or other entities.

Review Process and Criteria

Applications will be reviewed by a cross-sector team and reviewed for:

1. Alignment to the goals of the Governor's PAsmart initiative, as detailed in the framework approved by the PA WDB;
2. Program and activity narrative for which funding will be used, including details of how the proposed program/activity will improve a school's capacity to offer regular CS content, maintain sustainable programming and training, and address barriers of access for high need and underrepresented students;
3. Detailed budget information that supports the goals and objectives of the proposal;
4. Measurable outcomes; and
5. Accuracy of the information submitted.

Applications that do not include all the required information as stated on the application will not be considered for funding. Applications that include more than 25 percent of unallowable expenses will not be reviewed or scored. All qualifying applications will be reviewed and scored.

Proposals will be considered based on the following criteria:

1. Goals and Objectives – Goals and objectives of the program are clearly stated and align to the goals of the Governor's PAsmart Program.
2. Proposal Narrative – The proposal includes a detailed description of the program(s) to be implemented and activities to be conducted to support the implementation of the program(s).
3. Budget information – Budget information is accurate and itemized using a per-unit cost and total expenditure. A total of all expenditures is summarized into three categories: Contracted Services, Supplies and Other.
4. Expected Program Outcomes and Assessment – Outcomes are stated in measurable terms including baseline information and expected improvement, and there is a clear plan for assessing the impact of the program being funded through the grant.

To accomplish the goals set forth in the Governor's PAsmart Framework, applicants must assess their risk factors and needs, and provide statistical data to support their proposal. Data may include, but is not limited to, the following:

- Relevant policies and programs;

- School and community data, such as student enrollment, demographics, etc.); and
- Regional labor market information.

Application Materials

All applicants must use and submit the Advancing K-12 Computer Science and STEM Education grant application materials provided <https://www.governor.pa.gov/PASmart-Grants>. Advancing grant applications are due no later than 11:59PM on Friday, December 28, 2018.

Appendix A: K-12 CS/STEM Professional Development Opportunities

Below are professional development opportunities available to educators at no cost and approved by PDE. Educators are strongly encouraged to take advantage of these opportunities, all of which are provided by intermediate units in the commonwealth, qualify for Act 48 professional development credit, and do not require the use of additional grant funding.

PDE Pre-Approved Training:

1. [Apple Everyone Can Code](#) is a comprehensive curricular approach to teaching computer science from the earliest of learners to high school students.
 - a. Apple K-5 builds the early skills of a computer scientists through hands on activities and progress to learning computer science concepts through visual-based apps.
 - b. Apple 6-8 Swift uses fundamental computer science concepts through the use of Apple Swift to begin thinking and creating like an app developer.
 - c. Apple 9-12 Swift applies the tools, techniques and concepts needed to construct an IOS app from scratch.
2. [Code.org](#) Workshops:
 - a. **CS Fundamentals:** Intended for teams of elementary educators, CS Fundamentals includes one full-day of training with four additional one-day sessions during the 2019-20 school year. The one-day trainings will be offered at various times during February, March and May 2019 in locations across the state.
 - b. **CS Discovery:** CS Discovery is designed for teams of middle school educators. Participants attend a one-week course during the summer (June, July or August 2019) at either Allegheny IU or Delaware County IU, and four additional one-day sessions during the 2019-20 school year.
 - c. **CS Principles:** CS principles is the professional development for high school educators and can lead to certification to teach Advanced Placement (AP) Computer Science. Similar to CS Discovery, participants attend a one-week course during the summer (June, July or August 2019) at either Allegheny IU or Delaware County IU, and four additional one-day sessions during the 2019-20 school year.
3. [CSFirst](#) is a professional learning package for middle school educators to provide students ages 9-14 an introduction to computer science and the programming language Scratch. Training is offered at various times throughout the year through Intermediate Units.
4. [Beauty and Joy of Computing](#) is an introduction to high school CS curriculum developed by the University of California Berkeley and prepares educators to offer AP CS Principles and advanced CS courses in their schools. Training is offered at various times throughout the year through Intermediate Units.

All CS trainings above qualify for Act 48 professional development credit through PDE.

Criteria for Alternative CS Workshop Approval

Many nonprofits, postsecondary institutions, and technology companies offer workshops for schools who have teaching staff interested in developing and expanding CS offerings. Such training is often offered as series of intensives throughout the year and are meant to be crash courses to bring teams of educators (with little to no prior CS experience) up to speed on basic CS content and pedagogy.

In addition to meeting the PDE standards for Act 48 professional development, alternative workshops approved for grant funding must meet the following criteria:

Access and Equity of Access

- Must train teachers in content that is age appropriate.
- Must train teachers in content that is accessible to all students, including, but not limited to the following: students with IEPs and exceptionalities, high poverty students, female students, and African American, Latino and Native American students.

Training must give teachers the capacity to:

- Implement programming immediately following the training (if content is delivered at one time) or after the first two sessions (if ongoing).
- Implement programming that can engage at least 20 or more students at a time, for at least a total of 60 students per lesson.
- Implement programming that is accessible to students with exceptionalities and minority, underrepresented or underserved students.
- Implement programming that is aligned to CSTA standards.

Training Capacity

- Training must include at least four staff per LEA who will be implementing the programming to serve 80 students total.
- Training must train educators to offer content through:
 - A standalone class offering for the students, or
 - A series of lessons to be implemented in classes throughout the course of the year, at least one lesson per unit or at least eight lessons per year.

If participants choose not to attend the pre-approved trainings, the LEA will need to apply for approval as part of the grant application process. A request for approval form is attached to the Targeted Grant application and must be submitted along with the application by the deadline.

Appendix B: Phase 2 Product Offering Criteria and Examples for Targeted Grants

Table 1 details categories of products, services, and trainings eligible for Targeted Grant funding and their criteria for approval. Examples of specific products and services are outlined in Table 2.

Table 1

Product Category & Description	Criteria
<p><u>Hardware</u></p> <p>Hardware offerings include programmable robots or objects such as Bee-Bot or drones, and the associated software that allows students to learn how to code them, such as Raspberry Pi or Swift. Many of them come with content for all grades and can be used in lessons by teachers who have no CS experience. Many IUs are already certified in providing training for them.</p>	<ul style="list-style-type: none"> • Equity and Access: Must be age appropriate. • Must be accessible to all students, including students with IEPs and exceptionalities, high poverty students, and female, African American, Latino and Native American students, as is appropriate for the LEA. <p>Capacity for engagement –</p> <ul style="list-style-type: none"> • Units purchased must be able to engage at least 20 or more students at a time. • Must be able to be used for multiple activities, at least 8 times a school year. • Can be shared among classes to engage a total of at least 80 students per lesson. • <i>This does not mean that 20-75 units must be purchased. Many products, such as the programmable robot Bee-Bot, are capable of engaging small groups of students in programming it. The focus is on meaningful engagement of a class of students at a time, not necessarily on the number of units of any given product.</i> • Only products for which IUs can provide training are eligible.
<p><u>Workshop-based Professional Development</u></p> <p>Many reputable nonprofits, postsecondary institutions and technology companies offer special workshops for schools who have teaching staff interested in building CS and STEM into their curriculum. They are offered as series of intensives throughout the year, are meant</p>	<ul style="list-style-type: none"> • Equity and Access: Must train teachers in content that is age appropriate. • Must train teachers in content that is accessible to all students, including students with IEPs and exceptionalities, high poverty students, and female, African American, Latino and Native American students, as is appropriate for the LEA. <p>Training must give teachers the capacity to:</p>

<p>to be crash courses to bring teams of educators (with little to no prior CS experience) up to speed on basic CS content and pedagogy.</p>	<ul style="list-style-type: none"> • Implement programming immediately following the training (if one time) or after the first two sessions (if ongoing). • Implement programming that can engage at least 20 or more students at a time, for at least a total of 80 students per lesson. • Implement programming that is accessible to special education and minority students. • Implement programming that is aligned to CSTA standards. • Training must include at least three staff per school who will be implementing the programming to serve 60 students at the school. • Training must train educators to offer content through: <ul style="list-style-type: none"> ○ A standalone class offering for the students, or ○ A series of lessons to be implemented in classes throughout the course of the year, at least one lesson per unit or at least 8 lessons per year.
<p><u>Consultative</u> <u>Professional Development</u></p> <p>Many reputable nonprofits, postsecondary institutions and technology companies (such as TEALS or BootUp) offer year-long, consultative services designed to build out a CS/STE education at a school. They provide long-term support to schools who may have one or two regular CS offerings to build out those basic offerings into programs that expand access and rigor in CS education.</p>	<p>Equity and Access:</p> <ul style="list-style-type: none"> • Must train teachers in content that is age appropriate. • Must train teachers in content that is accessible to all students, including students with IEPs and exceptionalities, high poverty students, and female, African American, Latino and Native American students, as is appropriate for the LEA. <p>Training must give teachers the capacity to:</p> <ul style="list-style-type: none"> • Implement programming immediately following the training (if one time) or after the first two consultations (if ongoing). • Expand CS offerings such that at least 80 students are served regularly through: <ul style="list-style-type: none"> ○ A standalone course offering, or ○ A series of lessons to be implemented in classes throughout the course of the year, at least one lesson per unit or at least six lessons per year. • Implement a more rigorous system of at least two CS course offerings (one basic and one advanced) such that at least 20 students (of the total 80) are served regularly throughout the school year.

Examples of Eligible Resources, Technology and Professional Development:

Below is a list of eligible resources, technology, and professional development, broken down by the type of school that PDE suggests would benefit most from that resource. This list is by no way

exhaustive, and the suggestions are not mandated. Grantees are encouraged to select the resources that best meet their local needs.

Elementary		
0 served students options: <i>Hardware + IU training</i> <ul style="list-style-type: none"> • Humming Bird • Tynker • CS Unplugged • DevKit • Microbit • Raspberry Pi • ScratchED • Cubetto • Bee-Bot • Swift 	1-25 served student options: <i>Workshops (with hardware if needed)</i> <ul style="list-style-type: none"> • VidCode • Republic CS • Globaloria • PLTW • Code Monkey • Code.org 	25+ served students options: <i>Consultative PD (with hardware if needed)</i> <ul style="list-style-type: none"> • #Code{RED} • BootUp
Middle School		
0 served students options: <i>Hardware + IU training</i> <ul style="list-style-type: none"> • Humming Bird • Tynker • CS Unplugged • DevKit • Microbit • Raspberry Pi • ScratchED • Aduino • Swift 	1-25 served student options: <i>Workshops (with hardware if needed)</i> <ul style="list-style-type: none"> • VidCode • Republic CS • Globaloria • Project Lead The Way • C-STEM • Code.org 	25+ served students options: <i>Consultative PD (with hardware if needed)</i> <ul style="list-style-type: none"> • #Code{RED}
High School		
0 served students options: <i>Hardware + IU training</i> <ul style="list-style-type: none"> • Humming Bird • Tynker • CS Unplugged • DevKit • Microbit • Raspberry Pi • ScratchED • Aduino • Swift 	1-25 served student options: <i>Workshops (with hardware if needed)</i> <ul style="list-style-type: none"> • VidCode • Republic CS • Globaloria • Project Lead The Way • Beauty and Joy of Coding • Bootstrap • C-STEM • Code.org 	25+ served students options: <i>Consultative PD (with hardware if needed)</i> <ul style="list-style-type: none"> • #Code{RED} • Code HS • TEALS • Edhesive • Exploring CS

PAsmart Grant Information

PAsmart will address local, regional, and statewide workforce, education, and economic needs aligned with state-level priorities through three grant initiatives:

1. Expanding K-12 Computer Science and STEM Education – up to \$20 million
2. Growing Registered Apprenticeships and Pre-Apprenticeships - up to \$7 million
3. Supporting Next Generation Industry Partnerships - up to \$4.6 million

Application Process

All PAsmart funding solicitation materials, including the framework, proposal requirements and forms, FAQs and webinar information are posted: <https://www.governor.pa.gov/PAsmart-Grants>

Proposed Timeline and Grant Period

PAsmart funding is anticipated to be used for grant-related activities between January 1, 2019, and June 30, 2020. All selected grantees will be required to sign the appropriate agreement with either the Pennsylvania Department of Education or the Pennsylvania Department of Labor, unless otherwise noted. The agencies observe the right to seek repayment of funds if it is determined that funds were not utilized for the original stated and approved purpose. Applicant costs incurred outside the grant period outlined in the appropriate agreements are not the responsibility of the commonwealth.

Award Administration

The commonwealth may enter into discussions with a selected applicant for any reason deemed necessary, including but not limited to: (1) the budget is not appropriate or reasonable; (2) only a portion of the application is selected for award; (3) the commonwealth needs additional or clarifying information; and/or (4) special terms and conditions are required. Failure to satisfactorily resolve the issues identified by the commonwealth within a specific period determined by the commonwealth may preclude award to the applicant.

The commonwealth reserves the right, without qualification, to reject any or all applications received in response to this announcement and to select any application, in whole or in part, as a basis for negotiation and/or award. The contracting officer is the only individual who can make awards or commit the commonwealth to the expenditure of public funds. A commitment by other than the contracting officer, either explicit or implied, is invalid.

Program Reporting and Evaluation

Grantees will be required to submit program and fiscal reports during and upon conclusion of the funded project. All required forms will be supplied by the commonwealth and outlined in the award package. All close-out final reports are to be submitted no later than August 1, 2020, or within 60 days of full award expenditure (whichever occurs first). In addition to report submissions, awardees are required to participate in routine calls with commonwealth staff,

unless otherwise determined, to identify grant progression, share best practices and receive technical support. Additional information will be provided upon award selection.

Vendor Registration

All awardees must be registered with the commonwealth as a vendor, unless current agreements are already in place. Applicants that are not current vendors are strongly encouraged to begin this process by registering their company with the Vendor Data Management Unit (VDMU) at <http://www.vendorregistration.state.pa.us> or by calling 717-346-2676 or 1-877-435-7363.

Contact

Due to procurement requirements and effective coordination, commonwealth staff are not able to answer any PAsmart funding opportunity questions that are communicated to them directly. Questions related to the 2018 PAsmart Grant Solicitation must be directed to: PAsmart@pa.gov.

Key Dates

Date/Time	Specifics	Funding Initiative
November 2, 2018	Release of PAsmart Solicitations https://www.governor.pa.gov/PAsmart-Grants	PAsmart - \$30 million
TBD – (information forthcoming on https://www.governor.pa.gov/PAsmart-Grants)	Webinar	Expanding K-12 Computer Science and STEM Education
December 14, 2018 – 11:59pm	Application Deadline for Targeted Grants	Expanding K-12 Computer Science and STEM Education
December 28, 2018 – 11:59pm	Application Deadline for Advancing Grants	Expanding K-12 Computer Science and STEM Education