Maximizing Grant Funding for Your STEM Initiatives

Whitepaper for Microsoft STEM
Content by Grants Office, LLC

Microsoft

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K-12 STEM Funding Landscape

Microsoft provides technologies that help K-12 education organizations enhance the teaching and learning of Science, Technology, Engineering, and Mathematics (STEM) as well as other related domains. With an integrated set of hardware and software tools, Microsoft can help you transform any classroom into a forum and workshop for STEM learning. This guide examines the current landscape of grant funding in the U.S. for STEM education initiatives and provides a summary of the top STEM education grant opportunities.

This is particularly timely considering that as of 2017, the US Department of Commerce calculated that employment opportunities within STEM occupations would be growing at a rate of 8.9% (compared to 6.4% in other fields). Further, STEM workers tend to out-earn their non-STEM counterparts by nearly 26%. This data shows that now, more than ever, high-quality STEM education is an essential component for the future of a thriving US workforce and economy. Even if students decide not to pursue STEM career pathways, the skills gained within those classrooms are invaluable. Research has shown that STEM education can support the development of critical thinking, creative, and problem-solving skills—qualities that future employers appreciate regardless of sector.

Securing the funding required to implement an innovative, skills-based, and technology-rich STEM education initiative can be a daunting task. Budgets are tight, and existing resources within the school district may already be spread thin. Available funding is often funneled to cover staff trainings, auxiliary services, and/or basic

classroom supplies. As a result, school districts across the US struggle to pay for even basic pilot programs—let alone comprehensive, district-wide technology initiatives.

Fortunately, there is a wide variety of technology-friendly grant programs available to fill these funding gaps and help your district drive your STEM initiatives by acquiring Microsoft Windows devices and technologies. Before diving into the details of specific STEM education supporting grant opportunities, let's review common terminology and best practices used in the world of grant funding.

Grant Sources

Grant funding typically originates from one of three major sources: the US government, individual State governments, and private entities. While each of these revenue sources may figure into your district's annual budget, it's important to understand the characteristics of each of these sources in order to select the appropriate funding tool for your project:

Federal Funding

The federal government issues more than $500 billion in grant awards each year through its 26 grant-making agencies. These grants are the largest across the grantmaking landscape in both award size and scale. While the US Department of Education & National Science Foundation provide the lion's share of STEM education grant funding, many other federal agencies also offer smaller grant programs—often encouraging student engagement with the specific STEM discipline which aligns with their unique mission.

• Education-oriented grants from the US Department of Agriculture support initiatives linked to food, agriculture, or natural science education.

• Education-centered grants from the Department of Energy, meanwhile, have funded student internships and teacher professional development related to developments in clean-energy.

• The Department of Labor and the Department of Defense both offer grant programs tied to workforce development initiatives within STEM fields.

• The education grants from the Environmental Protection Agency focus more on public awareness related to climate or human impact on the environment.

• The National Aeronautics & Space Administration has a rich history of investing in STEM education initiatives related to physics and space exploration.

• Even the Institute for Museum & Library Services has been known to offer a STEM education grant every now and then.

Federal grant programs are diverse, but often share a common goal: funded projects act as test-beds for innovative solutions or strategies. Funding agencies may use data from past, awarded projects as the basis for future STEM education best practices or to influence future STEM education policy. Given that these programs are open to applicant districts from across the US, they tend to be some of the most competitive funding opportunities available. That said, federally-funded grant programs usually have the largest funding pools from which to draw upon and are also able to make the biggest awards compared to other grant sources.

State Funding

State governments distribute additional funding using local tax proceeds or dollars "passed-through" from a specific federal agency. The first place to check for state-level funding is your state education agency. Depending on your state, your state workforce development agency or board may offer additional opportunities as well.

In general, state agencies pose a much lower application preparation burden than federal funders. State agency-sponsored programs are designed to support local priorities and often demand less detailed narratives from

applicants than federally sponsored grants. It is important to note, however, that state awards tend to be smaller than federal grants and may require a local, non-federally sourced funding match from the district.

Foundation/Corporation Giving

Private foundation grants provide an additional $50 billion each year in funding. These grants are great for any small, community-based projects that fall outside the parameters of government grants. Foundation funding can come from a variety of sources: the community, a family or individual, or even a regional business or corporation. A district's ability to adapt its project design to accommodate the specific foundation's preferences will aid in the likelihood of success.

While some foundations may want to claim responsibility for funding the entirety of your STEM education project, most foundations will prefer to instead add value to an existing initiative (rather than to grow a new program from scratch). If the latter is the case, consider leveraging that foundation's support to expand upon an existing state or federal grant or use that foundation funding to meet state or federal requirements for a local match on future grants.

Grant Types

Government funding generally follows one of two pathways:

- **Direct Funding:** Dollars are awarded from a grant-making agency directly to local recipients.

- **Pass-through Funding:** : Dollars are transferred from a grant-making agency to an intermediate agency before being made available to local recipients. An excellent example of this is the 21st Century Community Learning Centers Grant Program where federal funds from the Department of Education are passed through to each state education agency (as well as DC and US territories). These state education agencies, in turn, design a re-granting process to make funds available to local education agencies. As a result, while similar on a base-level, each state's 21st Century Community Learning Centers Grant Program has its own unique deadline date, and occasionally additional priority areas.

Further, the funding pathway will often dictate the type of award granted:

- **Competitive Funding:** Proposals are competitively scored based on a set of objective criteria. Applications with the highest score receive funding.

- **Formula Funding:** Allocations are based on a specific formula, such as number of students within the district. An example of this practice is the Title funding that districts receive via the Elementary and Secondary Education Act. Each district's funding level is predetermined by state- and federal education agencies, virtually assuring that each eligible school will receive an award so long as the proper paperwork is submitted.

Considering the multitude of funding pathways available for your STEM education project, it is important to qualify which types of grants are best to pursue. Each of these distinctions will have implications on the value of your program and the potential to raise new funding for your project.

How Grants Fund Technology

Cutting-edge STEM education leverages a wide array of technology solutions, including personal computing devices, education software, and even STEM discipline-specific equipment. To keep pace with trends in STEM education practice, grant funders realize that technology is an essential part of any proposed project. This awareness generally results in two kinds of grants: (1) grants created expressly for the purpose of funding education technology, and (2) grants that are technology-neutral.

1. **Grants created expressly for the purpose of funding technology**
   Grant programs that are developed to fund technology either have specific priorities stating such or disallow any budgetary expenses other than equipment. A prime example of such a grant program is the US Department of Agriculture's Distance Learning and Telemedicine Program. This program awards funds to be used only on the lease or purchase of distance learning or telemedicine enabling equipment, such as: audio, visual, and interactive video equipment; data terminal equipment; computer hardware, network components, and software; and inside wiring or other similar infrastructure.

2. **Grants that are technology-neutral**
   In contrast to the few education grant programs designed to support the acquisition of technology, the vast majority of grant funders offer programs that focus on a topic of interest—such as STEM education—and leave it up to the applicant to determine how they will accomplish the proposed activities related to that topic. In these cases, the funder may be considered "technology neutral," meaning, education technology would only be one of many proposed solutions to help your project get from point A to point B. Other budgetary items or program priorities may include staff professional development, procurement of new curricula, or something else entirely. While the funder isn't opposed to a technology-rich proposal, they'll want to see that acquiring educational technology isn't your project's only solution. As such, a proposal budget that gives equal consideration to equipment purchases as well as the other categories of line items (e.g. personnel, supplies, contractual services, etc.) is ideal. If you ever question how much technology is too much, you can always contact the funder.

What does this mean?
The important thing to keep in mind, is that grant funders will be mostly interested in your project rather than the specific product. Focus your energy on connecting the dots between how the proposed solution will enable specific activities that will, in turn, help your district accomplish specific goals that align with the grant program's priorities.

Finding Grants That Fit Your STEM Project

With the multitude of funding pathways, it's easy to get overwhelmed with choices**. How is it possible to know which grant is the best fit for your district?** We suggest you jot down one or two programs from this document that catch your attention. Additionally, don't forget to also check out your state's education website. As you review the top technology-friendly STEM grant opportunities, be sure to reflect on the following questions:

• **Project Scale:** What is the intended size of this grant program? Can we satisfy all the required project components? Will the award lock our district into too many extra activities that we are unable, or uninterested in taking on?

• **Collaboration Requirements:** Are partnerships required or strongly encouraged for this project? What existing relationships is our district able to leverage? Do we have enough lead time to form new, more appropriate relationships for a project under this grant?

• **Total Funding Available:** How competitive is this program (i.e. funding available in relation to anticipated number of awards)? Will this award be enough to fulfill our STEM education project's goals?

• **Local Match:** How much will my district have to contribute? Are we able to include in-kind as well as monetary match? Are other organizations able or willing to assist us with this match?

• **Application Burden:** How many pages are required for the narrative? Who will write it? What other documents must be included as additional attachments? Do we have enough time to fully develop and articulate our STEM project based on the grant's current or anticipated deadline?

Through the process of considering these key grant vetting questions, it's likely that at least one or two programs will begin to shine as ideal funding sources for your STEM project. For those grant programs, note the anticipated timeline for the application process and start making plans to apply.

Top Technology-Friendly Grant Programs for STEM Education

The following will cover five specific STEM education-oriented grant programs and how each could involve Microsoft technologies, as well as offer tips for articulating your project in the grant proposal itself. The goal is to help you submit the most competitive project to the best funding sources.

STEM+ Computing Partnerships Grant Program (STEM+C)
Source: National Science Foundation (NSF)

Summary: The STEM+C program seeks to build evidence to inform development of new pedagogical strategies and pedagogical environments for integrating computing and computational thinking in the teaching and learning of pre-K-12 STEM. Proposed efforts should address interdisciplinary integration of computing and computational thinking in one or more of the STEM disciplines, with a focus on student learning pre-K-12; and/ or professional development of in-service pre-K-12 teachers; and/or pre-service pre-K-12 teacher education, including preparation of teachers to integrate STEM in the applied teaching and learning of computer science in pre-K-12 education.

Eligibility: This program is open to any interested local education agency. This program is a research grant at its core. As such, it is strongly encouraged that districts partner with a higher education institution to act as the project lead.

Award Information: The total project award ranges from $250,000 to $2.5 million per recipient pending the type of project proposed. Between 25 and 35 awards are anticipated. Project duration is up to three years.

Deadline Information: This program typically opens in late December but has been temporarily delayed due to a late passage of a federal FY18 budget. It is expected that the program will open late Spring or early Summer of 2018. The application period typically lasts 90 days once open.

Program Page: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505006

Our Grant Pro Tip: For any of the NSF grant programs, the main priority is contributing to the knowledge base. Most funded projects result in a peer-reviewed journal article. Consider any gaps in the literature that your project can fill. Be sure to read up on previously-funded projects as well as current research studies so you can articulate your project's unique contribution to the field.

Computer Science for All Grant Program (CS for ALL)
Source: National Science Foundation

Summary: This program hopes to provide all U.S. students the opportunity to participate in computer science and computational thinking education in pre-K through high school. Note that this program is not intended to support computational literacy (word processing, video editing or presentation software).

Specifically, Computer Science for All aims to provide:

- high school teachers with the preparation, professional development and ongoing support they need to teach rigorous computer science courses;

- pre-K through 8th grade teachers with the instructional materials and preparation they need to integrate computer science and computational thinking into their teaching; and

- chools and districts the resources needed to define and evaluate multi-grade pathways in computer science and computational thinking

Eligibility: This program is open to any interested local education agency. This program is a research grant at its core. As such, it is strongly encouraged that districts partner with a higher education institution to act as the project lead.

Award Information: The total project award ranges from $300,000 to $2 million per recipient pending the type of project proposed. Twenty-four (24) awards are anticipated. Project duration is up to four years.

Deadline Information: Applications are to be submitted by May 9, 2018 and February 12, 2019. Applications are to be submitted by the second Tuesday in February, annually thereafter.

Program Page: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505359

Our Grant Pro Tip: The NSF is particularly interested in proposals that address participation of underrepresented groups (e.g. women, people with disabilities, African Americans, Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians, Native Pacific Islanders, and people from economically-disadvantaged backgrounds). Give your proposal a competitive edge by explicitly addressing the characteristics or needs of underrepresented groups and proposing a strategy to broaden their participation in computer science education.

Navy & Marine Corps STEM Education & Workforce Development Grant Program (ONR STEM)
Source: Department of Defense, Office of Naval Research

Summary: The ONR STEM program seeks proposals for developing innovative solutions that directly support the development and maintenance of a diverse, world-class STEM workforce. The goal of any proposed effort should be to provide "game changing" solutions to establish and strengthen the pipeline of students in grade 9 or higher interested in civilian or enlisted Navy & Marine Corps related workforce opportunities. The proposed STEM learning, therefore, must relate to domains of naval relevance or strategic value.

Eligibility: This program is open to any interested local education agency as well as all other responsible sources from academia, the nonprofit sector, and industry including university affiliated research centers.

Award Information: The maximum total project award is $750,000 per recipient for a period of up to three years. Twenty-five awards are expected. Allowable items normally are limited to research equipment not already available for the project. General purpose equipment should not be requested unless it is to be used primarily for the proposed project.

Deadline Information: White papers are to be submitted by July 31, 2018. Projects of interest will be invited to submit a full proposal by September 28, 2018.

Program Page: https://www.onr.navy.mil/-/media/Files/Funding-Announcements/BAA/2018/N00014-18-S-F003.ashx

Our Grant Pro Tip: : Given the diversity of STEM careers of interest to the Navy and Marine Corps, this program has supported projects ranging from basic engineering to undersea medicine. To see current education and workforce development priorities, check out the "Naval Science & Technology Strategic Plan" the "Naval Research & Development Framework and Addendum" or the "National Naval Responsibility Initiatives."

21st Century Community Learning Centers Grant Program (21st CCLC)
Source: Department of Education, passed through to each state education agency

Summary: This program supports the creation of community learning centers that provide extended learning time opportunities for children, particularly students who attend high-poverty and low-performing schools. Centers provide a range of high-quality services to support student learning and development, including: tutoring and mentoring, homework help, academic enrichment (such as hands-on science or technology programs), character education, drug and violence prevention, family engagement, community service opportunities, as well as music, arts, sports, and cultural activities. At the same time, centers help working parents by providing a safe environment for students during non-school hours or periods when school is not in session.

Eligibility: This program is open to any interested local education agency as well as community-based organizations. Applicants must propose to serve students who attend high-need schools (typically defined as having a minimum of 40% free- and reduced-lunch-eligible students although the exact threshold may vary by state). Several state education agencies encourage applicants to form partnerships between districts and public or private entities.

Award Information: Each state education agency establishes funding tiers to determine the amount of funding awarded based on the anticipated number of students the project serves.

Deadline Information: Deadlines vary by state; check your state education agency website for specific deadline information. Contact information for each state program is available on the Department of Education website https://www2.ed.gov/programs/21stcclc/contacts.html#state.

Program Page:

Our Grant Pro Tip: Waiting for your state's application window to open? Use the down time to conduct a needs assessment in your community. Identify which services or learning programs are lacking and which are in-demand. Gathering data from your districts' students and their families provides great reference material when trying to establish need or justify program choices within your proposal.

Education Innovation & Research Grant Program
Source: Department of Education

Summary: The Education Innovation & Research Grant Program (EIR) provides funding to create, develop, implement, replicate, or take to scale entrepreneurial, evidence-based, field-initiated innovations to improve student achievement and attainment for high-need students, and rigorously evaluate such innovations. Recent priorities have included: supporting high need students, improving school climate; promoting diversity; increasing post-secondary preparedness; improving the effectiveness of principals; and re-engaging disconnected youth. It is expected that the Department of Education will add a new priority specifically for projects that engage underrepresented student populations in STEM learning. This would be in response to President Trump's September 2017 executive memorandum to Education Secretary DeVos instructing $200 million of existing grant funds to be redirected in support of STEM initiatives.

Eligibility: This program is open to any interested local education agency. Applicants must propose to serve high-need students (defined as students who are at risk for educational failure or otherwise in need of special assistance and support—such as students who are living in poverty, attend high-minority schools, are far below grade level, have left school before receiving a regular high school diploma, are at risk of not graduating with a diploma on time, are homeless, in foster care, have been incarcerated, have disabilities, or who are English learners). Additional partners may be included, such as other districts, nonprofit organizations, higher education institutions, education services agencies, or consortia.

Award Information: The maximum total project award is $4 million per recipient for a period of up to five years. Between 24 and 38 awards are expected. Awardees will be expected to contribute from non-federal sources a minimum of 10% the requested federal amount towards the total project budget.

Deadline Information: This program typically opens in mid-December but has been temporarily delayed due to a late passage of a federal FY18 budget. It is expected that the program will open late Spring or early Summer of 2018. The application window typically lasts 120 days once open.

Program Page:

Our Grant Pro Tip: The EIR program is multi-tiered, linking the amount of funding that an applicant receives to the quality of the evidence supporting the efficacy of the proposed project. Applicants proposing innovative practices that are supported by limited evidence can receive relatively small grants to support the development, iteration, and initial evaluation of the practices. Whereas applicants proposing practices supported by evidence from rigorous evaluations (such as large randomized controlled trials) can receive larger grant awards to support expansion across the country. If your district is new to grant-seeking, start small with an early-phase grant. It is expected that Early-Phase projects will build on their evidence to eventually advance to the mid-phase and expansion tiers.

Getting More Grant Funding

10 Tips for Getting Funded

You've done it! Your district has selected the perfect grant opportunity. Now it's time to put pen to paper on that winning proposal. Consider the following tips on developing a successful proposal.

1. **Get to know the program.** Read (and re-read) the funding announcement to gain a clear understanding of what the grant maker requires for a project proposal. If the grant program isn't currently accepting applications, examine the previous competition's materials instead. Have questions about what you've read? Contact the program coordinator or your state agency.

2. **Refine your STEM project ideas to match the grant funders' priorities.** Consider how your described need, proposed activities, and draft budget match the specific grant solicitation and outlined objectives. Have a clear understanding of why your district needs this STEM initiative and how Microsoft Windows devices and technologies will help you advance the objectives of the grant program. Avoid generic platitudes, and home in on specific details.

3. **Assume grant reviewers are unaware of your organization.** Provide background information on your district and the surrounding community in the proposal. Give reviewers some context as to where and whom their financial support will benefit.

4. **Craft a compelling problem statement.** Convey the need or challenge this STEM project will address within your district. Explain to the grant reviewer how current conditions are challenging for your school community and the broader implications. This is your chance to provide a connection between your proposed project and the guidelines or priorities established within the grant program. Make use of recent district, state, and national statistics to support the problem statement. Local data can serve as a powerful rationale and/or justification to illustrate themes or reinforce national trends.

5. **Drill down to the specifics.** Grant funders love details. What are your SMART (specific, measurable, attainable, relevant, timely) goals for your STEM project? What step-by-step activities will take place to ensure goals are achieved? Who will be responsible for which tasks? What will quantifiable success look like and what actions will you take to know when you've achieved it? What makes your organization uniquely qualified to carry out the project above all others?

6. **Avoid unique acronyms or colloquial language.** This proposal may introduce grant reviewers to your agency for the very first time. Be descriptive. If you must use an acronym, be sure to spell it out at least once on each application page. Assume that grant reviewers are also unaware of common-field specific terminology. If you do use professional vernacular, make sure you explain the meaning.

7. **Don't ignore the application timeline.** This section of your STEM project is very important. The timeline is often the first item grant reviewers examine within a proposal. If the project is awarded, grant funders use that timeline to ensure your district is in compliance upon review of progress/data reports or site visits. As such, be sure to list all project-related activities and identify exact persons responsible for each task. To show how thorough your district is, consider including general grant management and administration activities (i.e. send in quarterly progress report by February 15) in the timeline as well.

8. **Craft a detailed budget and justification.** Budgets tell a story all on their own, so consider what story your budget might tell if a reviewer doesn't read your proposal narrative. Thoroughly explain the need for each expense. Is each line item tied to a specific project goal and objective or activity in some way? Will that connection be clear to the funder? Additionally, be sure to triple-check your math. Budget errors may cause grant reviewers to lose confidence in your district's ability to manage funds effectively.

9. **Follow directions!** If the funder requests a ten-page response with one-inch margins and Times New Roman 12-point font, follow those instructions. If they ask that you do not bind or staple the application when submitting by post, follow those instructions. Failure to follow even the simplest submission instructions is an easy reason for reviewers to deny your project without taking the time to read the narrative you have spent so much time preparing.

10. **Be sure to save time for review.** Ask a person outside the project to read your responses, even better if this person is somewhat unfamiliar with your district and STEM education. This extra set of eyes can check for spelling errors, confusing phrases or jargon, and unclear information. He or she can also give an overall impression of the project.

Last, but certainly not least, avoid getting in over your head. **Know your limits and when to rely on others for their support or expertise.** It's possible you may have to look outside of your organization for assistance—whether it's for creating an effective program assessment or for drafting a grant proposal narrative. Asking for outside help from professionals dedicated to those specific tasks will ensure a level of quality that you may not be able to provide. Even if you are confident in your ability to design and carry out all aspects of the project, hiring a grant writer to help put your ideas on to the page can be a huge time saver and stress reliever.

Partners and Putting Together Your A-Team

In planning your district's next STEM initiative, be sure to stop and brainstorm if local partnerships could enhance your project. Collaboration with other entities, such as other nearby school districts, higher education institutions, nonprofit organizations, local businesses or industries, and workforce development or apprenticeship groups can boost your proposed initiative.

Collaboration also widens the number of possible grants available to your district. Funding for K-12 STEM initiatives is diverse. For example, some grants value innovation and testing of new methods or pedagogies, while others might emphasize hands-on skills building with the aim of strengthening student readiness to enter the STEM workforce. In instances such as these, it may behoove your district to develop a partnership with higher education faculty researchers in order to strengthen your project's design and evaluation methods, or with workforce development agencies to aid in the coordination of student internship experiences. Regardless of the motivation behind the partnership, these outside organizations may have access to different pools of funding which the district might otherwise be ineligible to pursue on its own.

Remember, any partnership will bring more decision-makers to the table. This may lead to more meetings and potentially greater time commitments for the team. Get your grant team organized by making the following decisions early in the planning process:

• **Commit to regular stakeholder meetings:** A collaborative project sees success only if each party contributes their time and resources to reach the group's shared goal. Consider pledging to a consistent meeting schedule—both during the application process and after the award has been granted—to solidify these commitments to one another. Once your meeting cadence is established, add these dates directly into your proposed project's timeline of activities; it is an opportune chance to illustrate just how committed your team is to collaboration.

• **Decide upon a primary awardee:** When multiple organizations apply to a grant program as a collaborative unit or a consortium, only one proposal should be submitted unless otherwise stated by the funder. Your grants planning team should decide who will assume the role of lead applicant. This agency must be eligible for the grant program on its own, and able to show that they have the capacity to carry out all activities associated with award administration. Partnering organizations should then be identified as sub-recipients within the grant proposal.

• **Formalize the relationship with an MOU:** A memorandum of understanding (MOU) is a formal agreement between two or more parties to collaborate. The document outlines the terms of the partnership and is formally signed by both groups. Check the guidance to see if the funder has specific requirements for an MOU, such as formatting, phrasing or mandatory information. If not, use a basic template that clearly states each agency's purpose in the relationship, their anticipated contributions and (if applicable) how their portion of the local match will be met.

• If a formal MOU isn't required by the grant funder, consider including a **Letter of Commitment (LOC)** for each partnering entity. LOCs are less formal than MOUs, but still detail the organization's support for the project and specific contributions. Unless specifically requested by the funder, avoid using a **Letter of Support (LOS)**. These letters are the least informative type of document, and only convey an individual's or organization's enthusiasm for the project. The LOS writer will have no hand in the proposed activities but can qualitatively reinforce your community's desire for the project (e.g. the city's mayor, the district's superintendent, etc.).

Additional Resources

Federal Grants Clearinghouse
www.grants.gov

Department of Education Grants Forecast
https://www2.ed.gov/fund/grant/find/edlite-forecast.html

Department of Education Grants
https://www2.ed.gov/programs/find/title/index.html?src=ln

National Science Foundation Directorate for Education & Human Resources Grants
https://www.nsf.gov/funding/programs.jsp?org=EHR

National Science Foundation Proposal & Awards Policies & Procedures Guide
https://www.nsf.gov/pubs/policydocs/pappg18_1/nsf18_1.pdf

Department of Defense, Office of Naval Research Grants
https://www.onr.navy.mil/contracts-grants/funding-opportunities/broad-agency-announcements.aspx