

Be a

WINNER!

A Science Teacher's Guide to Writing *Successful* Grant Proposals



Patty McGinnis  
Kitchka Petrova

**NSTA**press  
National Science Teachers Association

Be a  
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**Patty McGinnis**  
**Kitchka Petrova**

**NSTA**press  
National Science Teachers Association  
Arlington, Virginia



Claire Reinburg, Director  
Wendy Rubin, Managing Editor  
Rachel Ledbetter, Associate Editor  
Amanda O'Brien, Associate Editor  
Donna Yudkin, Book Acquisitions Coordinator

**ART AND DESIGN**  
Will Thomas Jr., Director

**PRINTING AND PRODUCTION**  
Catherine Lorrain, Director

#### **NATIONAL SCIENCE TEACHERS ASSOCIATION**

David L. Evans, Executive Director  
David Beacom, Publisher

1840 Wilson Blvd., Arlington, VA 22201

[www.nsta.org/store](http://www.nsta.org/store)

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#### **Cataloging-in-Publication Data are available from the Library of Congress.**

Names: McGinnis, Patty, 1958- | Petrova, Kitchka, 1958-

Title: Be a winner! : a science teacher's guide to writing successful grant proposals / Patty McGinnis and Kitchka Petrova.

Other titles: Writing successful grant proposals

Description: Arlington, VA : National Science Teachers Association, [2016] |

Includes bibliographical references and index. | Description based on print version record and CIP data provided by publisher; resource not viewed.

Identifiers: LCCN 2016018353 (print) | LCCN 2016008716 (ebook) | ISBN 9781681400020 (epub) | ISBN 9781681400013 (print) | ISBN 9781681400020 (e-book)

Subjects: LCSH: Proposal writing in research. | Science--Research grants.

Classification: LCC Q180.55.P7 (print) | LCC Q180.55.P7 M34 2016 (ebook) | DDC 507.1/2--dc23

LC record available at <https://lccn.loc.gov/2016018353>

The *Next Generation Science Standards* ("NGSS") were developed by twenty-six states, in collaboration with the National Research Council, the National Science Teachers Association, and the American Association for the Advancement of Science in a process managed by Achieve, Inc. The NGSS are copyright © 2013 Achieve, Inc. All rights reserved.

## **Dedication**

*To our students, who were the inspiration for this book.*



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# PREFACE

**T**hese are truly exciting times for science educators. Emerging technologies, the *Common Core State Standards*, and the *Next Generation Science Standards* are affecting the delivery of science instruction in this country and have combined in a perfect storm of opportunity for you and your students. No matter what you aspire to accomplish, whether it is to acquire the funds to conduct innovative investigations in your classroom, enhance your professional skills, or create a new informal learning opportunity for your students, this book is your guide to successful grant proposal writing.

As frequent workshop presenters and authors of a popular short course about writing grant proposals, we realize that many teachers find the process intimidating. Over the last two decades, we have accumulated a great deal of experience writing grant proposals and receiving grants for projects in our classrooms. We are familiar with what a sound K–12 classroom grant proposal looks like, having served on grant review committees over the years and having witnessed firsthand the enthusiasm that new equipment or otherwise financially impossible opportunities can bring to our students. We have brought thousands of dollars into our respective schools, have received funding to travel to foreign countries for the purpose of working on educational and research projects, and have been selected for participation in numerous competitive professional development opportunities that required us to clearly convey our passion for improving student learning. All of these activities are within your reach, and this book will help you achieve them.

Although there are other books related to the topic of grant proposal writing, this book is unique in that it addresses the specifics of acquiring grants for the purpose of incorporating innovative science, technology, engineering, and mathematics (STEM) experiences in K–12 classrooms. We strongly believe classroom science teachers, science coaches, district curriculum developers, and informal science educators will find this book valuable and useful for increasing the educational opportunities of students in the science classroom.



# ACKNOWLEDGMENTS

**T**he completion of this book was made possible through the efforts of several individuals. We would like to thank the anonymous reviewers who provided feedback on our initial book proposal and the completed manuscript. Their comments and suggestions helped us examine our ideas and writing from different perspectives and ultimately contributed to the creation of a book designed to motivate and guide K–12 teachers of science through the grant proposal writing process.

We would also like to express our sincere appreciation to National Science Teachers Association (NSTA) editors Claire Reinburg and Wendy Rubin for answering our questions throughout the writing process and to Amanda O'Brien for carrying out the final editing. We would also like to thank the copyeditor, Teresa Barenfeld. A special thank you to Janeen Marzewski for reading and providing suggestions on our manuscript. Finally, thank you to our families for their support and encouragement throughout the writing process.



# ABOUT THE AUTHORS

**Patty McGinnis** is a National Board Certified Teacher with more than 25 years of teaching experience at the grade 7–12 level. She has received numerous grants and awards that have engaged her students in innovative science investigations. Patty teaches at Arcola Intermediate School in Eagleville, Pennsylvania, and has an EdD in educational technology from Boise State University. Her interests include the use of technology in supporting science practices. Patty is a frequent presenter at science conferences and served as National Science Teachers Association’s division director for middle-level science teaching from 2012 to 2015. She is thankful for the support of her husband, Bob, and of her three incredible children, Kathleen, Matthew, and Marybeth.

**Kitchka Petrova** is a National Board Certified Teacher in early adolescence science. She holds a PhD in microbiology from Moscow University M. V. Lomonosov, Russia, and worked as a research scientist in Bulgaria prior to immigrating to the United States. She was a middle school science teacher in private and public schools in Miami-Dade County, Florida, for 12 years. During that time, she received funding from local, state, and national organizations to support project-based inquiry learning for her students. During the 2008–2009 school year, she served as an Albert Einstein Distinguished Educator Fellow at the National Science Foundation in Arlington, Virginia. Kitchka is currently pursuing a doctoral degree in education policy and evaluation at Florida State University, with a focus on science, technology, engineering, and mathematics (STEM) education policies and initiatives.



# INTRODUCTION

**C**ongratulations! By opening this book you are well on your way to making your professional dreams come true! As a science educator, you are concerned with the state of science education in our K–12 schools, and you understand the importance of facilitating your students’ science learning through the science and engineering practices identified in the *Next Generation Science Standards (NGSS)*. Unfortunately, funds for purchasing materials are not always available in schools, thus requiring you to seek outside funding opportunities. Given the economic situation of many school districts, it is more imperative than ever to master the art of grant proposal writing to secure funds for innovative classroom projects. Although intimidating, obtaining a grant to carry out your dream *is* within your scope. This book is designed to guide you through the process of writing a successful grant proposal and encourage you to apply your newly developed skills to pursue other professional development opportunities.

This book is aimed specifically toward the K–12 science educators who are interested in obtaining classroom grants for the purpose of extending the learning opportunities for their students and themselves. This might be achieved by adding an expensive piece of equipment to the science lab, taking students on a research field trip, obtaining funding to attend a professional development activity or event that will enhance your teaching, or seeking an opportunity available specifically to science educators.

Consider the following points:

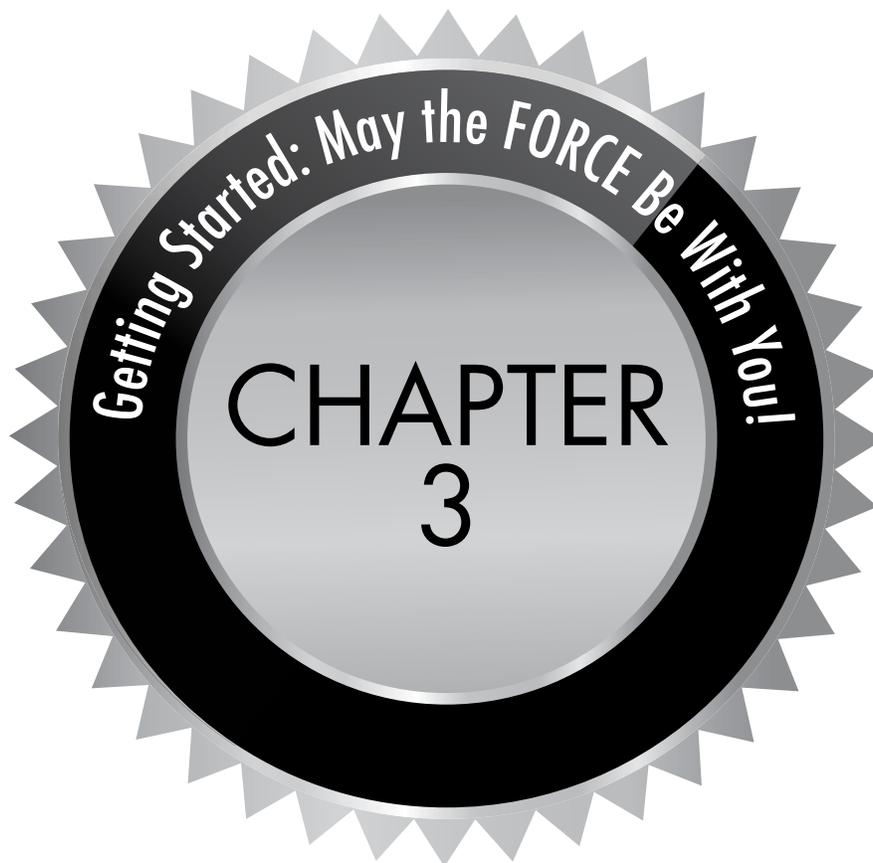
- Many grant programs do not receive enough qualified proposals.
- If you don’t apply, you’ll never win!
- A grant may re-energize your teaching.
- The more you write, the easier it gets.

Our goal in writing this book was to take the mystery out of the grant proposal writing process by helping you learn how to address typical grant proposal components in your writing. You’ll also glean tips regarding how to locate funding opportunities at the local, state, and national level and learn how to tailor your idea to a funding agency’s requirements. Although we can’t guarantee that you’ll enjoy the writing process (writing is hard work!), we are certain you will be proud

## INTRODUCTION

of your end product. We use a workbook approach that explains how to write the components typically required by funders of K–12 classroom grants. Chapter 1 outlines the reasons for writing grant proposals and seeking funding. The outcomes for students and educators are highlighted as a way to motivate and inspire you to pursue funding for your innovative teaching ideas. Chapter 2 describes what is meant by a *grant* and will help you to identify funding organizations and sources of inspiration for potential projects. In Chapter 3, you'll learn why it is important to align your proposal with the funding agency requirements, and Chapter 4 walks you through developing and writing the standard grant components. Chapter 5 addresses supplemental grant components that funding agencies may require, such as lesson plans, letters of support, and project vitae. The use of the NGSS as a template for your grant proposal is addressed in Chapter 6. Chapter 7 provides tips concerning proposal submission along with how to deal with rejection from funding agencies. Chapter 8 contains advice for implementing your funded project; topics such as how to work with your school district to set up a designated account for your grant funds and how to deal with unexpected or unforeseen challenges are addressed. You'll find that the skills required for successful grant proposal writing can be applied to numerous other opportunities for K–12 teachers. A variety of professional opportunities, such as research experiences, fellowships, and National Science Teachers Association (NSTA) recognition awards, are highlighted in Chapter 9. The closing chapter offers some final words of advice regarding how to pursue these opportunities and how to work collaboratively with colleagues, administrators, and parents.

So what's stopping you? There is no better time than now to make your dreams come true!



Ideally, by now you've identified an idea that may rely on funding provided via a classroom grant. If not, we encourage you to do so because having an idea for a project will make reading this book and going through the exercises more meaningful and will result in a rough draft of a completed grant proposal.

The first thing you need to do prior to embarking on writing a grant proposal is arrange a meeting with your administrator(s) to explain your ideas and garner their support. Once you receive your administrator's approval to pursue a grant, you will need to begin the grant proposal writing process by considering how your idea is linked to your district and state standards and how it matches the funding agency's mission. Most school districts will require that student projects be aligned to school district, state, or national standards. Some granting organizations may require you to reference a specific set of standards, while others may

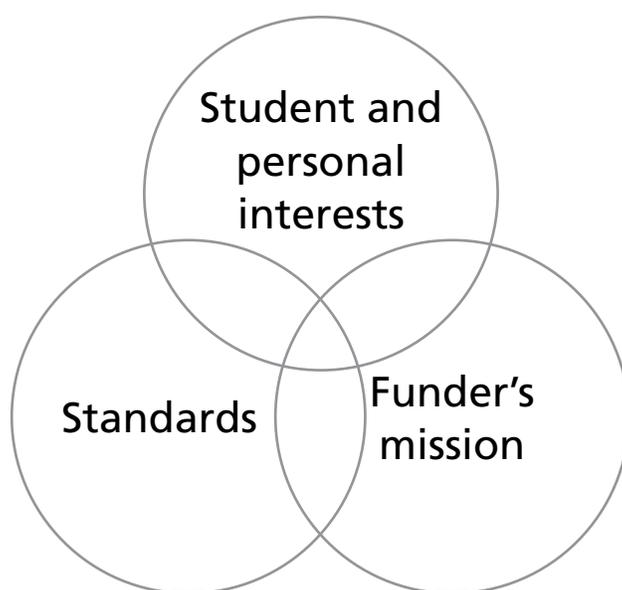
not. Depending on the organization, the exact set of standards you use is probably not as important as linking student learning to your methods.

Figure 3.1 represents the intersection of the three major elements that should be considered: (1) alignment to standards, (2) the funding agency mission, and (3) your personal interests and interests of your students.

**Figure 3.1**

---

**Successful Grants Represent the Intersection of Several Domains.**



As you begin to settle on a specific idea, think about how it can connect to the *Next Generation Science Standards (NGSS)* and the *Common Core State Standards* and to science, technology, engineering, and mathematics (STEM) careers. Although grant reviewers may not be as familiar with educational terms as you are, aiming to meet new national initiatives will mean that your dream will be innovative and will use the latest research-based techniques to meet your students' needs. Grant reviewers will find it helpful if you explain any terminology in ways that a noneducator would understand, since those who read over your proposal may be unfamiliar with terms and acronyms such as *differentiation*, *benchmark*, *heterogeneous grouping*, *individualized education program (IEPs)*, *English language learners (ELLs)*, and so on.

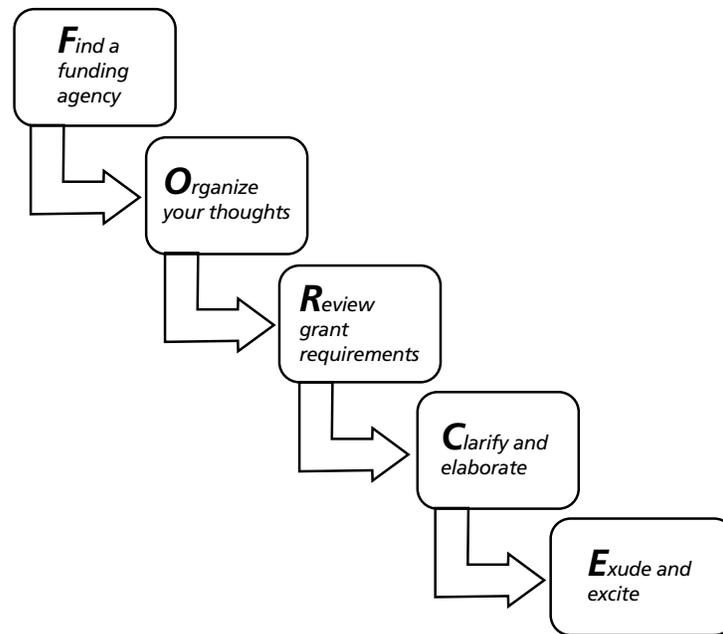
## Getting Started: May the FORCE Be With You!

### Grant Writing Is a Process

You may find the approach depicted in Figure 3.2 useful as you begin your journey toward a successful grant proposal. May the FORCE be with you!

Figure 3.2

Use the FORCE Acronym When Starting Your Grant Proposal.



### ***Find a Funding Agency***

You can begin the process of locating a funding agency by carrying out a search on the internet. If you are a member of the National Science Teachers Association (NSTA), consider perusing the NSTA e-mail lists and reading the monthly *NSTA Reports* to identify sources of potential funding. Examining the websites of professional organizations, attending professional development workshops, and engaging in discussions with colleagues who have been successful in receiving classroom grants can also help you to locate funding agencies. Additionally, most states have grant programs; if you are interested in pursuing these opportunities, explore your state's department of education website. More information can be found in Appendix 6 (p. 133), which lists the offices of each state's department of

education and U.S. territories. Once you've done your research, select the program whose mission best aligns with your project's objectives.

### **A Word About Obtaining Funding From Local Entities**

When it comes to funding, never underestimate the power of your own community. Many school districts and/or parent-teacher organizations have small classroom grants available that have been established to help teachers obtain equipment or supplies that your budget may otherwise not cover. Parents themselves may have access to grants through their places of employment, and they are usually more than willing to help you obtain resources for your classroom. Businesses within your school district will often support you as well; stores such as Walmart, Lowe's, and Best Buy offer community and corporate grants to classrooms.

You may be surprised at how easy it may be to obtain equipment or materials without having to go through the grant proposal writing process. If you are fortunate enough to have a STEM business or college in your area, you may want to call and introduce yourself as a science teacher and inquire if any lab equipment is available for free. (Prior to accepting any equipment as a gift, make sure that it is safe and age appropriate for your students, and check that you have the permission of the school district to accept the equipment.) Having a specific project in mind that you can use to justify the need will help you promote your idea to the community. We have known teachers who have

- obtained balances from the local police station,
- been given free laptops from a computer store or company, and
- obtained digital microscopes from a hospital that was upgrading their equipment.

### ***Organize Your Thoughts***

There's perhaps nothing more intimidating than looking at a blank computer screen and wondering how to proceed. The methodology you employ to approach your writing is not important; what is important is that you get started and don't let the thought of the end product overwhelm you. You may find it helpful during this process to talk with other educators, parents of students, and your students. Sharing your ideas with others will help you identify what you want to convey to the granting agency. By including varying perspectives, you can broaden your scope and incorporate items you had not previously considered.

## Getting Started: May the FORCE Be With You!

A proven method to start the grant proposal writing process is to simply brainstorm. Jot down everything you hope to accomplish should you be awarded the grant. Alternately, you can also use one of the following approaches when beginning the grant writing proposal process.

### **Create an Outline**

You can create an outline using the grant components listed in Chapter 5 (p. 57) to construct your ideas, or you can use online software to create thought bubbles that can be arranged on your virtual canvas (search for “diagram software” to locate free online software).

### **Make an Elevator Speech**

You may find it helpful to practice delivering an elevator speech by explaining your vision in the time it would take an elevator to climb several floors. Record your speech using your smartphone or other device, and then type it up or use speech-to-text software to transfer your words to paper. Don't worry about getting it perfect the first time, since the point is to get something on paper to start the process.

### **Begin With a Specific Proposal Component**

Another approach is to start organizing your thoughts by beginning with the portion of the grant proposal that you feel is the easiest to complete. You may want to start by listing what you want your students to learn from the activities or investigations that you have planned for them. *Hint:* Since the focus of the majority of classroom grants is to improve student learning, listing NGSS performance expectations will provide you with a powerful place from which you can approach the other grant components.

### **Review Grant Requirements**

After you have identified a funding agency for your grant proposal, carefully review its funding guidelines. Regardless of where the source of inspiration comes from, it will be critical to develop a proposal that is both matched to the funder's mission and aligned with your school's demographics. You should be aware that some grants may be targeted specifically for urban schools, underperforming schools, or Title I schools, while other grants may be designated for a specific scientific discipline. For example, the Captain Planet Foundation funds environmental projects,

which can be broadly defined. Although many topics could be related to studying the environment, it might be difficult to obtain funding for a project related to exploring the relationship between building materials and the design of cars, which falls within the scope of engineering sciences and technology. Even though cars can affect the environment, if the project does not address this aspect, the project will not be funded. It is therefore critical to review what the funding agency expects from you and to match your needs to their mission.

Most agencies have specific guidelines that accompany their application forms; it is crucial to pay close attention to the stipulated guidelines to ensure that your

**Tip!** You may want to consider sending your grant proposal to more than one funder, provided you carefully follow the requirements specified by each of the funding organizations.

proposal will be considered. You may find a great deal of variability between funding organizations, with some asking for responses to a few questions and others asking for a detailed proposal that contains all the components described in the following chapter.

### ***Clarify and Elaborate***

Although grant applications can vary tremendously between organizations, all funders have one basic requirement: that your idea be clearly and concisely presented in a way that communicates its value and your ability to complete the proposed work. This may require several drafts on your part, as well as the assistance of an editor. Writing concisely can be challenging, but is crucial for clearly and effectively conveying information. There are numerous web pages devoted to tips that will help you write more concisely. Alternately, you could ask an English teacher or someone else with writing expertise in your school for assistance.

Pursuing a monetary gift will involve time and effort on your part to complete the grant application. When writing the grant proposal, it is crucial to convey your passion for the proposal idea and effectively explain how it relates to your students' learning and appreciation of science. One method for approaching your first draft is to allow the fervency for your ideas to come forth in a stream-of-consciousness approach, writing anything that comes into your mind regarding the grant proposal. When composing the first draft, ignore issues related to spelling, grammar, and word flow. Once you have your thoughts down, you can correct the spelling, clean up the grammar, and rearrange sentences and paragraphs

## Getting Started: May the FORCE Be With You!

so that they make sense. Stopping along the way to make those corrections slows the process and can be frustrating and inefficient.

Probably the biggest obstacle you will face in writing the grant proposal is the tendency to procrastinate. Key to staying motivated throughout the process is to remember why you are writing in the first place. As you think about writing the grant proposal, tailor it for your specific setting and learners. For example, you may be interested in providing enrichment experiences for your gifted students, supporting ELLs in your classroom, or promoting learning in students who possess learning disabilities. It is a good idea to start the writing long before the grant proposal submission deadline and to work on it consistently rather than in binges. Although binge writing can result in successful grants and awards, many authors will tell you that is not as effective as setting aside time daily to work. It is always a good idea to plan on submitting your grant proposal a week prior to the due date. That way, if you run behind schedule or have difficulty obtaining documentation, you will have plenty of time to complete the proposal.

Once the proposal is finished, ask a friend or someone who does not teach science to proofread the work prior to submitting it to the funding agency; he or she can evaluate it using the “Grant Proposal Rubric” in Appendix 2 (p. 117). If this person can understand your vision, then you did a great job communicating it!

### ***Exude and Excite***

A prerequisite for receiving funding for your idea is the ability to demonstrate confidence in presenting and carrying out your proposed concept, as granting agencies want to know that their funds are being awarded to an individual who can complete the work described. Provided that your confidence comes across in your writing and that you have developed the grant proposal to align with the funder’s mission and proposal guidelines, your ideas have an excellent chance of being funded. The next chapter will take you step by step through the process of developing the most common proposal components that funding agencies require of K–12 classroom grants.

**Tip!** Remember to include the school administration early on in the writing process. Administrative support is vital to the success of any bold endeavor, given that your “dream” may necessitate altered schedules, field trips, guest speakers, and more.

### **Exercises**

1. Select at least two funding agencies that you can submit your grant proposal idea to.
2. Identify the missions of the agencies and outline their major requirements for the grant proposal application.
3. Think about how your idea will fit with the missions of these funding agencies.
4. How you can connect your dream to your state standards and/or to the *NGSS*?

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ISBN: 978-1-68140-001-3

