

**BROOKLINE EDUCATION FOUNDATION**  
Combined Grant Application for 2009-2010 Academic Year  
Cover Page

**APPLICATION MUST BE TYPED**

**Type of Grant** (check one): Teacher Grant Collaborative Grant

**Are you applying for the Charlie Baker Legacy Award?**      yes    no  
(Please see the Call for Proposals for a complete description of this funding opportunity.)

**Project Title** Multimedia Physics: Creating Videos to Enhance Physics Learning

**Project Leader(s)/Organizer(s)**

Is this person responsible for reporting to the BEF?      yes    no

If not, please state who will be the Contact Person:

Name: Stacy Kissel      School: Brookline High School      Grade(s): 9, 12

Home Telephone: 617-501-2195      E-mail address: stacy\_kissel@brookline.k12.ma.us

Position/Department/Teaching Area(s): Teacher, Science Department

Years teaching in Brookline:    11      Years teaching: 13

Name: Tyler Wooley-Brown    School: Brookline High School    Grade(s): 9

Home Telephone: 574-329-1780      E-mail address: tyler\_brown@brookline.k12.ma.us

Position/Department/Teaching Area(s): Teacher, Science Department

Years teaching in Brookline:    1      Years teaching: 1

For additional Participants: attach sheet with name, school, telephone, e-mail address, grade(s), and department. For Collaborative Grants, this would be a group of teachers (e.g. all 7/8 math teachers).

For Teacher Grants Only: Have any of the applicants ever applied for a Brookline Education Foundation grant?  
yes    no

If project was funded, was it individual or group? Individual      Year of project: 2005

**Project Period** July 1, 2009 – August 31, 2009

**Amount Requested** \$3600

**Acknowledgement of Project Leaders:**

Date: 3/13/09

I/We understand that, should the Brookline Education Foundation fund my/our grant application, I/we am/are obligated to submit a written evaluation of my/our project at its completion. Evaluations of projects completed during the summer will be due by December 31, 2009. Evaluations of projects completed during the school year will be due by May 31, 2010. I/We further understand that only educators employed by the Brookline Public Schools at the time the project is undertaken are eligible to receive funds.

For online submissions, please acknowledge that you have read and agreed to the above statement.   Yes

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Project Description Section

**1. Project Summary (1-3 sentences)**

The purpose of the project is to create two types of physics videos to be used in 9<sup>th</sup> grade physics classes. One series of videos will be posted online for students to view at home (or in the library, in Tutorial, or in Learning Center) to reinforce and review concepts taught in class. The second series will consist of physics demonstrations that are difficult or impossible to do in the classroom.

**2. Goal Statement**

The goal of the project is to create 15-20 short videos that will be used by students and physics teachers. We hope to produce high quality review materials and in-class aids that would normally take too much time to plan and execute during the school year in a medium suited for the new generation of learners.

**3. Context**

*a. Is this a new project or does it build upon ongoing work that you or others have undertaken? If it is ongoing, what is new in this proposal?*

Several test videos of review material have been created over the past several months to gauge whether students would make use of the videos outside of class. The response from students and parents has been overwhelmingly positive. The videos can be seen at [www.vimeo.com/mskissel](http://www.vimeo.com/mskissel). The test videos were made with minimal editing, so we plan to improve the production quality when we have more time during the summer.

*b. How have the education, training, and/or classroom experiences of the applicant(s) or participants prompted the interest or need for this project?*

Many students, whether in Physics I or Physics I Honor, do not fully understand concepts presented in class the first time material is presented. We encourage students to spend time reading the textbook and reviewing class notes for reinforcement. This independent review works to some extent, but we find that one-on-one sessions with a teacher are far better. Time and schedule constraints make it impossible to work with individually with every student (80 + per teacher) even once per week. The review videos were conceived as a way to give students extra help outside of the classroom.

Similarly, time and logistical constraints limit the number of in-class demonstrations that can be performed. The preparation and scale of some of the more exciting demonstrations result in fewer exciting real-life examples of physics. Sites such as YouTube have recently provided a useful source of video clips to use in the classroom; however, the poor resolution and sometimes incorrect commentary makes many of these videos less than desirable. Our idea is to provide high quality and accurate visual aids of these exciting large scale or preparation intensive demonstrations that can be used in-class and then made available to students for review at home.

**4. Project Description**

*Please describe the activities of the project in sufficient detail for the reviewer to understand what will be done, by whom, when (include timeline, if appropriate), how, where, etc. You may include copies of supporting material (e.g., conference brochure, tour itinerary).*

We will begin by experimenting with different ways to produce the review videos. Possible methods include

the use of video capture software on a tablet computer, video software on a computer with a separate graphics tablet, and a video camera to film a teacher using a chalkboard or whiteboard. The curriculum will then be reviewed, and we will brainstorm a list of topics that we believe are the most difficult for students. The list will be narrowed down to 8-10 topics for which we will create scripts and then film and edit the videos. Emphasis will be placed not only on reviewing material from class, but providing extra practice through pause/response interaction in which students are presented with a question and are told to pause the video. When ready, they resume playing the video to hear the answer.

When determining which demonstrations to perform, we plan to consult with the department to determine which demonstrations other teachers would like to have filmed. Some of the ideas we have brainstormed so far are as follows:

- What happens to passengers in a car when the car goes around a sharp curve, stops quickly, or accelerates away from a red light quickly?
- What happens to the pitch of an ambulance siren or car horn as it drives past you?
- If you launch a banana at a monkey in a tree and the monkey lets go of the branch the instant you let go, will he catch the banana midair? (This is the classic monkey-hunter demo.)
- How can an echo be used to determine the speed of sound?

We plan to focus on demonstrations that illustrate topics in a more exciting manner than those that can be conducted in the classroom. By taking advantage of extra setup time, two pairs of hands, fewer safety concerns, several attempts to get the best results, and the convenience of video editing, we hope to minimize many of the inaccurate conclusions reached by the students during in-class, on-the-spot demonstrations. As the saying goes, “If it dies it’s biology, if it explodes it’s chemistry, and if it doesn’t work it’s physics.” This project will give us the opportunity to remedy things when the results don’t come out as they should.

**For Teacher Grant Applicants only. Applicants for Collaborative Grants should skip the following questions and proceed to the Collaborative Grants Supplement.**

## **5. Outcomes**

*Describe the anticipated outcomes of this project. What will be the benefits to you, other participants, and/or students? How do you anticipate this project will transform your teaching and thinking? To what extent does this project offer you renewal as a learner?*

This project will benefit all physics teachers and all ninth grade students. Demonstration is a key component of physics instruction, and the videos will provide an opportunity for teachers to show demonstrations that they might not otherwise be able to perform. The review videos will benefit all students as they prepare for quizzes/tests, the Physics MCAS, and the midyear and final exams.

While deciding on the content of the review videos, we plan to choose the topics that we believe are the most difficult for students. We will have the chance to reflect on the past year as a whole, something that is beneficial for both a new teacher and for one who has taught the course for many years but is adjusting to the new schedule and reduced time for science classes.

Teachers in the Science Department share ideas in an informal basis every day, but we do not have enough formal opportunities to work with colleagues to share and discuss creative ways to engage students. During the project we will both benefit from the opportunity to collaborate without the normal time constraints that are present during the school year.

## **6. Evaluation and Dissemination**

*Describe how you plan to share the results of your project with colleagues and community groups. This*

*might include: sharing materials you create, creating a web page, presenting at a professional meeting, writing an article for the school newsletter or the TAB, displaying student work, photos, or videos at your school.*

A copy of all of the demonstration videos will be given to all of the physics teachers so they may use them in their classes. The review videos will all be posted online, and all freshmen will be given information about where to find them. The website will also be shared with teachers who work with freshmen in Tutorial, Learning Center, Steps to Success, METCO, African American Scholars, and other programs.

**BROOKLINE EDUCATION FOUNDATION**  
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 Budget and Finances Section  
 To Be Completed by All Applicants

**Budget** *Please provide a detailed budget. Be as specific as possible.*

<b>Expense</b>	<b>Purpose</b>	<b>Cost</b>
A. Stipends (BPS rate)	[120 hours @ \$30/hour]	\$ 3600
B. Consultant (include name and rate)		\$
C. Materials and Supplies		\$
D. Travel		\$
E. Conference Fee		\$
F. Other		\$
G. Substitutes (please indicate days/hours needed; might be part of total cost)		\$
<b>TOTAL</b>		<b>\$ 3600</b>

**Finances**

a. *Will there be additional funding from other sources? Please describe.*

No.

b. *Are resources needed to continue the work of the project after the Foundation funding ends? If yes, please describe how these resources will be obtained. If no, please describe how the work of the project will be funded or continued after completion of funding by the Brookline Education Foundation.*

No.

c. *Do you foresee any potential challenges /obstacles and, if so, what is your strategy for dealing with them should they occur?*

No.

d. *Will you be able to complete the project if only partial funding is available?   X   Yes    No  
 If only partial funding is available, would you be able to redesign the project?   X   Yes    No*

*Please explain:*

We can reduce the number of videos produced.

e. *If you are applying for the **Charlie Baker Legacy Award**, please indicate how the additional \$1,000 would extend and/or enrich your project.*