

SPS Summer Internship 2006

Erin McCamish
University of
Michigan



AMERICAN INSTITUTE OF PHYSICS

APS PhysicsQuest

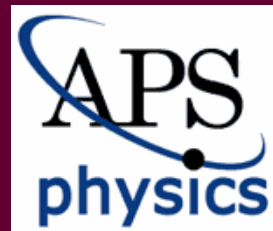
Sparking Middle School
Interest in Physics

Supervisors:

Dr. Jessica Clark

Kendra Rand

Dr. Alan Chodos



PhysicsQuest: An APS Resource for Middle School Classrooms

- Annual physics competition for middle school classrooms
- Free kit
- Four core activities and many extensions
- Mystery-based storyline
- Prizes for correct entries



Why Focus on Middle School Students?

- Age-group can be overlooked
- Time when students tend to lose interest in science
- Teachers often do not concentrate on physics
- There is a lack of science resources appropriate for middle school



How Does PhysicsQuest Address These Issues in Middle School Science?

- Self contained lessons help teachers
- Free kit allows teachers with limited budgets to participate
- Flexible group activities provide roles for all types and levels of learners
- Hands-on experiments with household materials keep students interested and teach the process of *doing* science



Investigating static electricity with Plexiglas, paper, and puffed wheat

PhysicsQuest 2005: The Search for Albert Einstein's Hidden Treasure

- World Year of Physics 2005 project
- Nearly 10,000 participating classes and science clubs
- Externally funded by NSF, DOE, and Cadmus Communications



Teachers and students loved the kit!

PhysicsQuest 2006:

Benjamin Franklin's Secret Message

- Storyline
 - Ben Franklin as main character
 - Espionage and secret messages theme
- Internally funded by APS
- Core activities
 - “Opposites Attract”
 - “Traveling Charges”
 - “Soak up the Sun”
 - “Seeing Clearly”



My Contributions to PhysicsQuest

- Extension Activities
- Test and edit teachers' manual
- Present project to teachers and physics education community
- Develop and write storyline
 - Students will solve a magic square using their experimental results
 - This magic square is used to decode a secret message

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Choosing and Testing Activities for PhysicsQuest



Testing conductivity



Homemade electrophorus

- Surprisingly few activities are already tailored to the middle school audience
- Many classic experiments are difficult to perform in a way that will yield consistent results

Writing Guides for PhysicsQuest Activities

- Writing concise explanations helped cement my knowledge and made me question assumptions
- Accurate information on introductory physics topics written in accessible language is hard to find, and even more difficult to write from scratch



Sand and water under the “sun”



Circuits



Color filters and secret messages

Color Coded Secret Messages



- Students learn about color and light
- Introduction to subtractive color mixing

- Science background and links to more information included for teachers

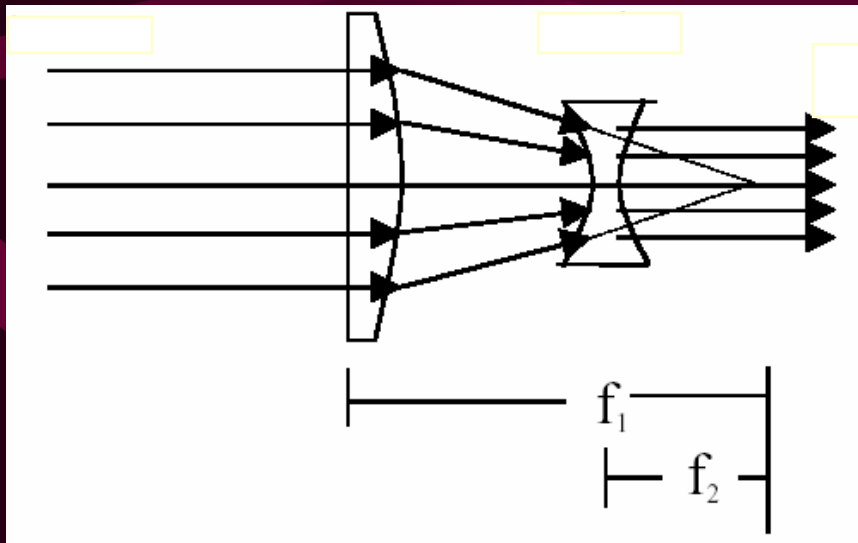
People often have red eyes in pictures because light from the camera's flash reflects off of the blood vessels in the back of the eye.

Homemade Telescopes


- Use two lenses to construct a simple telescope and magnify distant objects



- Accessible materials let students see how the inside of a Galilean telescope works




More Information on PhysicsQuest

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PHYSICSQUEST 2006: BENJAMIN FRANKLIN'S SECRET MESSAGE




We all know Benjamin Franklin as an accomplished inventor, scientist, and statesmen, but did you know he was one of America's first spies? He was a founding member of a secret committee designed to advance the American revolutionary war effort.


This fall, join middle school classes across the country as they travel back to 1777 and perform experiments (on electrostatics, circuits, energy transfer and lenses) that will help them decipher a secret message from Ben. Classes that correctly complete the PhysicsQuest will be entered into a drawing for prizes.

Sign-up for this activity by **September 23, 2006** and your class will receive a **FREE** activity kit, in early November, which includes:

- ◆ Teacher's Guide
- ◆ Student Activity Sheets
- ◆ Experiment Materials

[View Past PhysicsQuest Activities](#)

Sign-up Now! 

brought to you by 

<http://www.physicscentral.org/physicsquest/>

Thank You!

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- And who could forget... My Fellow Interns!



Any Questions?

