

**ARRA/Title II, Part D: Enhancing Education Through Technology  
COMPETITIVE GRANT PROGRAM – 2009-10 SCHOOL YEAR**

**Technology for Science Education**

**1. Program Description (50 Points):**

**Goal: Students will explore their local and regional environment to develop a better understanding of how the non-living components of our environment leave evidence of our planet's history, while at the same time functioning in a constant state of cycling. They will collect data, make observations, and capture and edit video of their ideas and reflections on numerous field experiences, then share their findings with the school community and with an authentic audience of professionals working in the geology field.**

The grant will purchase a number of technological devices that will allow students to record, edit, and share their burgeoning understanding. Using a video camera to capture evidence discovered, student reflections, their ideas, and hypotheses will allow students of all academic abilities to record their findings. Using a document camera in the classroom to display and investigate rock samples and experiments will allow students to share the experience of looking closely at evidence to support their knowledge. And the use of the AVerPen devices will allow students to cooperatively edit video, combine group ideas, and communicate understanding in a manner more dynamic than the similar Smart Board technology. All of these devices will help students to meet the following 5<sup>th</sup>/6<sup>th</sup> grade level expectations:

**1) Universe, Earth and Environment S5-6:46: — Students demonstrate their understanding of Processes and Change over Time within Earth Systems by...Explaining the process of how rocks are formed (the Rock Cycle)... Recognizing and identifying the four basic materials of the earth.... Observing and describing the properties of rocks.**

**2) Universe, Earth and Environment S5-6:47 Students demonstrate their understanding of Processes and Change over Time within Earth Systems by... Identifying examples of geologic changes on the earth's surface, where possible in the local environment (include slow and fast changes).**

The Classroom Teacher and Library Media Specialist will collaborate on a unit that involves students exploring their local environment to develop an understanding of geologic processes. This unit is also the final product of a graduate level course called 21<sup>st</sup> Century Learning Classrooms: Connecting the Dots II South. The unit plan and lessons developed for this class will be implemented this spring in our classrooms, and will be shared online with all teachers in Vermont on the Riverdeep website. It will also be implemented in the three other 5<sup>th</sup>/6<sup>th</sup> classrooms at our school in the coming years.

There will be a major outdoor component, where students explore their local geology, as well as field trips to mines, quarries, and other geologic formations that lend knowledge to the history of the region. Combined with a series of in-class experiments, these lessons should help cement the central ideas of geology by approaching the content from various angles and senses.

This unit emphasizes and models 21<sup>st</sup> Century competencies. Both professionals and students are collaborating in exploring innovative ways to bring science concepts to life. By video taping students in the field, along with the evidence they witness, students will be able to 'go back' to the trip and review their experience both individually and in small groups. Using the concept of project-based learning they will collaborate in small groups to combine and synthesis their ideas into video shorts, then share them with a wide-ranging audience, including people from the geologic profession.

### **Scope of Work**

- Unit will be used over two year period in a total of 4 classrooms of 5<sup>th</sup>/6<sup>th</sup> grade students, approx. 80 students
- Outcomes and Products:
  - Movie produced and edited by small groups using interactive AVerPen devices
  - Culminating event to share student work with the community
  - Original visual art/models reflecting understanding of content
  - Time for students to collaborate with and share their work with an authentic audience outside of the school.

### **Timeline**

- January 2010: purchase equipment and plan for installation.
- February and March 2010: Develop familiarity with hardware. Attend seminars or participate in online professional development related to new hardware. Attend class in video editing.
- April 2010: Begin implementation of unit study.
- May 2010: Culminate unit with viewing of final video products by authentic audience.
- Summer 2010: Evaluation of unit. Update lesson plans for future use by self and others teachers.
- November 2010: Present unit with student work at Vermont Fest Technology Conference

## **2. Capacity for Success (20 Points)**

- The Classroom Teacher and Library Media Specialist have a history of working collaboratively to enhance student's experience of science. Their efforts have helped students develop a comfort level with technology, along with producing several culminating projects for other units.
- The Classroom Teacher has a strong interest and passion for science, and has succeeded in bringing other science topics to the forefront in his classroom. He enjoys taking students out into their environment so that they can develop a better understanding of the world around them.
- The Classroom Teacher and Library Media Specialist are leaders in using technology with students. They are currently finishing work in the 21<sup>st</sup> Century Learning Classrooms: Connecting the Dots program.
- The school environment is comfortable with and supportive of technology usage and the Educational Technology Consultant is in full support of the program.
- The Classroom Teacher and the Library Media Specialist work with fifth and sixth graders on video editing using iMovie. An interactive device like the AVerPen would allow them to have students work more collaboratively than in the past to edit video.

## **3. Evaluation (10 Points)**

Student achievement will be measured using a rubric developed for their role in creating and presenting the group video. Students will be encouraged to assess their own work and critique the work of others. Seeing other students video work will assist in students evaluating their own work. Pre-assessment data will be used against summative assessment data to measure progress of students in meeting the specific grade expectations, along with formative assessment information that will be collected at various times during the unit study.

#### 4. Budget Narrative (20 Points)

Money will be spent to support the program goal as follows:

**Equipment: \$3,353.88**

- The interactive AVerPen devices will be used at all stages of the program: introducing and gathering pre-assessment data, reflecting on experiments, critiquing their work, and editing and producing a finished film connecting all of their work. There will be enough devices so that groups of two students can share and utilize the device for communication.
- The document camera will be employed to project collected specimens at a high level of magnification, display experimental setups and results, share student models and illustrations, and project color diagrams and graphs.
- The video camera will be used to collect information while outside of the classroom, leveling the playing field for students of varying degrees of literacy. The camera will also be used to take still photographs, video of erosion in action, and capture plays students will create to show the process of the rock cycle for younger students.
- The projection screen will replace small, outdated screen presently in classroom.

**Professional Development: \$1,500**

- Teacher Stipends: \$600 for two teachers (Classroom Teacher and Library Media Specialist) to meet on non-school days to plan the implementation of technology and evaluation of unit (\$150/day, 2 days of planning time for 2 professionals). This non-school time is critical to the success of the program. The teachers need time to work together without interruptions to plan the implementation of technology and unit work.
- Teacher Stipends: \$200 for two teachers (Classroom Teacher and Library Media Specialist) to complete online AVerPen tutorials and to develop files to support the unit. (\$20/hour spent for a total of 10 hours)
- Professional development class: \$700 for Classroom Teacher to attend either local or online class in video editing and production. Specific class TBD.

# Budget Page

## Technology for Mathematics or Science

<b>Budget (*Describe as appropriate)</b>	<b>TOTAL</b>
Professional Development (25% minimum)	\$1,500
Evaluation (10%)	\$540
Hardware 1 Aversion premium document camera @ \$899.95 1 wall mount manual projection screen @ \$170, including shipping and installation 1 Canon VIXIA HF20 Camcorder @\$699.95 1 AVerPen Class Pack, Includes 1 Teacher Pen and 8 Student Pens @ \$1,049.99 1 AVerPen Add on pack with 4 Student Pens @ \$533.99	\$3,353.88
<b>TOTAL</b>	\$5,393.88

**ARRA/Title II, Part D: Enhancing Education Through Technology  
Competitive Grant Program – 2009-10**

**PROPOSAL COVER PAGE**

<b>School District or SU</b>	Windsor Southwest Supervisory Union		
<b>DUNS (Data Universal Numbering System) #</b>	800539905		
<b>Contact Person</b>	Jeremy Kelloway		
<b>Phone</b>	802 875-2108		
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<b>E-mail</b>	jkelloway@wswsu.org		
<b>Grant Program Area</b>	<b>Technology for Mathematics OR Science</b>		
<b>List all schools for which this proposal applies</b>	<u><b>Schools</b></u>  Chester-Andover Elementary School	<u><b>Grade Spans</b></u>  K-6	<u><b>Enrollment</b></u> <small>(To be completed by VT DOE)</small>
<b>Total Funds Requested</b>	<b>\$5,393.88</b>		
<b>Children’s Internet Protection Act (CIPA) Certification</b>	Superintendent has certified CIPA compliance (Check one or more): <input checked="" type="checkbox"/> on school technology plans <input checked="" type="checkbox"/> on last E-Rate application <input checked="" type="checkbox"/> on 2009 Consolidated E-Application		
<b>Superintendent’s Signature</b>			
<b>Date</b>			