

Montshire Museum of Science

Annual Progress Report For NCRR Science Education Partnership Award National Institutes of Health

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Introduction

The “Connecting Classrooms and Community with the Health Sciences” SEPA project is a five-year award to provide the development, piloting, and implementation of a series of health curriculum modules and teacher professional development activities aimed at students and teachers in grades 5-8. Specific topics explored in this work are those of high interest in young adolescents and related to current research at Dartmouth Medical School. The programs are targeted at reaching rural youth and their teachers in Vermont and New Hampshire. The project creates a unique collaboration between a science museum, with its rich science education teaching resources and curriculum development expertise with a medical school and its research staff and expertise in adolescent health issues.

A. Specific Aims

The Specific Aims of the project have not been modified from the original proposal and work during the current budget year has been based on meeting those aims.

B. Studies and Results

The first year of this project was designed to begin curriculum research and pilot a health unit in four different middle schools. Our original project timeline began with a July 1, 2009 start date, but our official project period began September 30, 2009. Due to this difference, some activities planned for Year 2, such as the teacher professional development institute were carried out in Year 1. Specific project activities and results are detailed below.

Health Curriculum Development:

We originally proposed to develop a unit on solar radiation and skin health in the first year of the project. However, due the opportunity to work with a one of our research groups during the 2008/2009 school year on diet and nutrition¹, we switched our order of unit development to take

¹ PI DeFrancis and Dartmouth Medical School Researchers Madeline Dalton and Meghan Longacre, named as key personnel in the proposal, received a *Dartmouth Center for Clinical and Translational Science* pilot grant in November, 2008. This small, one-year pilot study allowed the PI and this research team the opportunity to test ideas on how to create a middle school health unit on diet and activity which was then used as the focus for the first year of our SEPA project.



advantage of lessons learned in that project and continue development and implementation of a unit we are calling "Investigations in Diet, Nutrition, and Activity". During the current project year this unit was piloted in the following four schools in Vermont and New Hampshire: Rivendell Middle School, Orford, NH; Tunbridge Central School, VT; St. Monica's School, Barre, VT and St. Michael's Catholic School, Montpelier, VT.

A major focus of this curriculum development effort is the integration of student research experiences in health science classes. Students participating in the first year pilot represented grades 5-8, and as part of their unit worked in research teams to develop their own original research questions which mirrored the research of the Dartmouth Medical School investigators. Examples of novel research questions investigated by the students included: determining how often fried food was featured on their school lunch menu; the amount of calories the average student in their class ate for an afternoon snack; and the amount of sugar consumed by students through sweetened beverages. Each of these research questions investigated by the students raised awareness of eating behaviors and food choices.

Inverness Research Associates, the project's external evaluator, is currently reviewing the student research posters and will be following up in Year 2 with student and teacher interviews to determine if providing opportunities for student research experiences 1) increases their level of understanding of specific health education learning objectives, 2) increase students' awareness of their own food choices and active lifestyle behaviors, and 3) if such an educational program can cause long-term changes in adolescent behaviors leading to healthier living. We do not have this evaluation research completed at the time of writing this report.

Teacher Professional Development:

The project team also led a 3-day residential professional development institute during July, 2010. 16 teachers participated in this institute from 9 different schools through Vermont and New Hampshire. Six of these schools are new to the project. The institute was co-led by the Montshire project team and Dartmouth Medical School researchers investigating adolescent nutrition, food choices, activity levels, and its relationship to family, community, and built environments. The institute provided teachers the content knowledge and teaching methodology needed to implement the "Investigations in Diet, Nutrition, and Activity" unit in their classrooms during the 2010/2011 school year, including emphasizing the integration of student research experiences into the program.

Teachers participating in this institute came in teams of 2-3 teachers from each school, representing their school's science teachers, health teachers, physical education teachers, and/or school nurses. Each school team was responsible for developing a plan for implementation, ensuring the project expands from four pilot schools in Year 1 to 10 pilot schools in Year 2. These teachers will also regroup for follow-up in-service days at the Montshire Museum during the 2010/2011 school year to provide for continuing professional development.

The recruitment of teachers for this institute provided new insights for the need for professional development in the health sciences among teachers and staff in grades 5-8. We originally budgeted for 10 teachers to participate in the summer institute, but were overwhelmed by the response of applicants to the institute. We eventually selected 16 teachers, representing a geographic diversity across Vermont and New Hampshire. Despite this increase in the number of teacher accepted, we still had 14 teachers on the waiting list. Our evaluation data points to the lack of professional development opportunities in the health sciences, specifically activities aimed at teaming health educators and science teachers from the same school, for this overwhelming response.

Inverness Research Associates evaluators were on-site during the entirety of summer teacher institute and will be conducting interviews late summer/early fall 2010 with participating teachers. This interview data, coupled with their on-site observations, will be used for a formative evaluation report regarding the teacher institute. The project team will use this evaluation data to redesign and make improvements for the second teacher institute, to be held in July 2011.

C. Significance

At this time, our evaluation team has not completed their Year 1 formative evaluation results for the curriculum development and teacher institute activities of this project. However, based on preliminary data, major lessons which we believe may prove useful to the school health science education field include:

- The role of student research experiences in building awareness of adolescent health issue.
- The potential for student research experiences to change adolescent health behaviors, promoting healthier decisions.
- The need for more health science professional development for teams of K-12 educators representing the variety of subject teachers involved in health education (science teachers, health educators, school nurses, physical education teachers).

D. Plans for Year 2

In Year 2 the project team will continue piloting the Year 1 curriculum material ("Investigations in Diet, Nutrition, and Activity") and finalize the curriculum for publishing on the web and distribution to regional teachers. In addition, the project team will begin researching and pilot the first iteration of a module on Skin Health and Solar Radiation. The program will expand into six additional schools, all of which sent teachers to the Summer 2010 professional development institute. There will be a continuation of the public speaking program highlighting researchers' finding to the Museum's public, and recruitment, planning, and implementation of the 2nd summer institute for teachers will also take place.

Finally, the project team will develop further table top exhibits for the curriculum unit, and will research the possibility of using these table top exhibits in other, non-school based venues, such as medical clinics, libraries, or at the Museum.