

21st Century Afterschool Science Project

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Project
Website:

<http://www.lsc.org/educators/studentprograms/afterschool/afterschoolnj/>

Project
Categories:

Programs, Staff/Professional Development, Curriculum Development, Infrastructure, Evaluation and Assessment

How to Reach
Primary
Target:

We provide training and technical assistance to afterschool and out-of-school time (OST) staff on the 21st CASP model for integrating science into afterschool and OST settings, as well as on use of the 21st CASP hands-on science curriculum.

How to Reach
Secondary
Target:

The afterschool and OST staff that we train facilitate hands-on science activities from the 21st CASP curriculum with elementary and middle-school students.

General
Demographics:

4th through 8th grade students are targeted and the program is accessible for non-teaching staff who serve rural, urban and suburban students. The 21st CASP model pays particular focus on underserved students and addresses equity issues as well as multiple learning styles.

Project Dates:

10/1/2005 - 9/30/2008

Evaluation
Strategy:

The project evaluation documented and analyzed the individual components of the model (afterschool science curriculum, use of guided-inquiry, training and capacity-building, and family involvement strategies), implementation of the model, and student engagement with the science activities at the three pilot sites. The evaluation included a formative evaluation of the model and outcome evaluation of capacity and learning goals. Year 1 focused on the formative evaluation of the curriculum and training approach, as well as the design, testing, and initial implementation of outcome measures for assessing student learning and staff capacity. Year 2 continued the formative evaluation in order to refine the model and implement the outcome evaluation. The evaluation includes a review of relevant research in OST learning and the integration of science into OST programs; literacy, especially skills that cross-cut scientific investigation, mathematical thinking, and language arts competencies; staff training, particularly of OST staff with varied backgrounds in science and science education; and the role of science-rich institutions in building capacity for out-of-school science education. The overall project evaluation goals of Year 3 are to analyze the value and benefits of the 21st CASP model, curriculum and trainings on 1) the capacity for OST providers to provide science in afterschool and their interest in implementing the model and curriculum, and 2) student engagement, interest, attitude and knowledge. The evaluation for Year 3 will focus on dissemination strategies, training and capacity

building and student outcomes. Protocols for all surveys, interview instruments and observations will be created by LSC in consultation with NJDOE.

Published
Report:

<http://www.lsc.org/educators/studentprograms/afterschool/afterschoolnj>

Project Descriptions

Summary:

The goal of 21st Century Afterschool Science Project (21st CASP) is to create and implement a replicable model to build the capacity of afterschool programs and bring exciting science to the children and youth of New Jersey. The 21st CASP seeks to enrich student learning and engagement through inquiry-based, informal science education experiences. The project combined direct-service and macro-level approaches to ensure that the unique challenges encountered by today's afterschool programs are addressed by producing a model for science enrichment. The project emphasizes and pursues the connections between the essential components of scientific inquiry and the skills of language and mathematical literacy through a multifaceted model. The focus is on children in grades 4 - 8 and afterschool staff — including professional educators, youth workers and paraprofessionals. The 21st CASP was designed to:

- o Develop rich science experiences and curricular materials appropriate for integration into the OST environment;
- o Create hands-on science activities that would promote Language Arts, Math and Science literacy skills for students;
- o Use a guided-inquiry approach to encourage student problem-solving and engagement;
- o Demonstrate and model how to engage OST program staff and children in experiential science activities;
- o Build the capacity of OST programs to make high quality, hands-on science a regular part of their offerings through training, modeling and coaching;
- o Involve families in hands-on science learning using family science events as a venue to support their children's learning; and to
- o Develop curricular materials and a facilitator guide to support and sustain the integration of science experiences into OST programs.

Specifically, the project model is composed of multiple components: 1) An informal, hands-on science curriculum that infuses language arts and math skills and is appropriate for the OST setting; 2) Use of a guided-inquiry approach to encourage student problem-solving and engagement and effective facilitation of science learning; 3) Training and capacity-building through modeling of effective science learning and delivery, and on-site technical assistance that capitalizes on the strengths of OST staff and environments; and, 4) Strategies for the involvement of families that are integral to students' academic success.

Impact:

The 21st Century Afterschool Science Project is successful at building the capacity of afterschool and OST programs to provide hands-on, engaging science-rich learning for students, specifically by:

- Creating a

replicable model designed for afterschool, OST and extended-day programs to implement science programming; • Increasing afterschool and OST staff capacity to facilitate science learning in afterschool and OST settings; • Increasing student engagement, skill and knowledge related to science; • Providing training and technical assistance that focuses on the unique needs and strengths of afterschool and OST staff and environments; • Offering curricular materials tailored for afterschool and OST settings, which imbed math and language arts components, and which are grounded in the state Core Curriculum Content Standards and inquiry-based learning; • Involving families in hands-on science, math and language arts activities in support of their children's learning.

Lessons:

We learned what is needed for successful integration of science-learning in afterschool and OST environments: Afterschool programs need a model that includes an easy-to-use curriculum, and training and coaching on use of the curriculum, as well as online resources and learning and teaching methodologies appropriate for informal learning environments. Additionally, afterschool programs need resources that eliminate or minimize the following barriers to integrating science programming: difficulty finding appropriate curriculum, district or state focus/priority on math and literacy, lack of comfort in facilitating science by staff, a lack of resources, the need for storage space and funding, a disinterest in science by the students, a lack of time to implement a new program, and other available curricula (previously used) that was too complicated for use. Storage of supplies is an issue for programs that do not have consistent access to the same room or storage rooms. We were surprised to learn that funding is not a significant impediment to implementation of a science curriculum, provided that the materials are simple, common items that can be re-used, and provided that the curriculum is proven to meet the core curriculum standards outlined by the state or the district. Additional lessons included: Afterschool providers need a curriculum that is flexible for use by both non-science and science teachers/staff; staff who are enthusiastic about doing science (which makes training and on-site assistance a key part of the implementation process), and adequate preparation time.

Notes:

The 21st CASP model addresses the issues reported by afterschool staff related to storage, managing time and space, informal learning in the OST environment in the facilitator guide which accompanies the curriculum and student journals. Afterschool sites reported spending an average of 45 - 60 minutes providing science programming, which matches the timeframe recommended for the 21st CASP curriculum activities. Most afterschool sites queried reported offering some sort of science programming, but not on a consistent basis. Afterschool and OST programs clearly want to offer science programming to improve

students' knowledge and skills as well as help with state educational assessments. Science learning in afterschool allows students to learn essential team-building and problem-solving skills, and provides more opportunities for students to participate in hands-on, project-based learning. Afterschool is particularly ideal for the type of informal and experiential learning that children need to balance traditional school education. In afterschool, students are able to learn more than just science content; indeed, they are able to research, discuss, identify and develop their own strategies for the social and environmental issues affecting their communities.