

6-1-2004

## The Union County 4-H Summer Science Program: An Effective Method for Increasing Low-Income Youth's Interest in Science

James Nichnadowicz

*Rutgers Cooperative Extension of Union County*, nichnadowicz@rce.rutgers.edu



This work is licensed under a [Creative Commons Attribution-NonCommercial-Share Alike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

---

### Recommended Citation

Nichnadowicz, J. (2004). The Union County 4-H Summer Science Program: An Effective Method for Increasing Low-Income Youth's Interest in Science. *The Journal of Extension*, 42(3), Article 22. <https://tigerprints.clemson.edu/joe/vol42/iss3/22>

This Ideas at Work is brought to you for free and open access by the Conferences at TigerPrints. It has been accepted for inclusion in The Journal of Extension by an authorized editor of TigerPrints. For more information, please contact [kokeefe@clemson.edu](mailto:kokeefe@clemson.edu).



## The Union County 4-H Summer Science Program: An Effective Method for Increasing Low-Income Youth's Interest in Science

### Abstract

This article describes the creation of a highly effective program for increasing children's interest in the study of science as a career and as a subject. It provides information about the program's operation and cites evaluation results. In addition, the author offers information on and help with replicating the program.

### James Nichnadowicz

Union County 4-H Agent  
Rutgers Cooperative Extension of Union County  
Westfield New Jersey  
[nichnadowicz@rce.rutgers.edu](mailto:nichnadowicz@rce.rutgers.edu)

## Introduction

Each summer in New Jersey's Union County, science activities are being performed in unusual places. While you might expect science experiments to be taking place in the county's large research laboratories, such as Schering-Plough Corporation or Exxon Chemical, you might be surprised to find them happening in some of the county's poor and run-down neighborhoods.

In a dimly lit, crowded room of an old house, Patrick, a talkative and friendly fifth grade student, is listening to Miss Nora. Miss Nora is his 4-H Summer Science Program Instructor, showing Patrick and seven other students how to make a miniature catapult out of pencils and a soda bottle. They are watching half-heartedly until Miss Nora announces that there will be a contest to see whose catapult can fling a marshmallow the farthest. The idea of a contest has caught their attention.

Once the catapults are finished, the contest begins. As the four boys and four girls in the room observe each other's apparatus in action, they learn what makes the marshmallow go farther. These observations eventually lead to marshmallows going twice as far as their first attempts. This is science in action--using observations to improve an idea. Miss Nora has used a medieval weapon to teach the value of experimentation.

## History of the 4-H Summer Science Program

For 7 weeks during the hot and humid New Jersey months of July and August, 4-H in Union County employs two adults: a college senior and a grammar school teacher. Their jobs are to drive to some of the more run-down sections of the county--the kind of places that most people don't intentionally visit--and bring the fun and wonder of science to the first to sixth grade children who are attending day camps in these neighborhoods.

Throughout densely populated Union County there are many summer day camps. 4-H chose to focus on camps in the low-income areas because these areas have the greatest need for science education. Children living in these neighborhoods rarely meet someone who works in the field of science. Most of the adults in their lives do not work in science-related professions. Additionally, the schools they attend are scoring significantly lower in science. 4-H could have never reached into these neighborhoods without the organized day camp facilities in these areas. To get the 4-H Summer Science Program started, we needed the facilities of these day camps and we needed a grant.

In 1992, Rutgers Cooperative Extension 4-H Program of Union County, New Jersey, received a grant

of \$3000. The money was for hiring a science teacher to do science activities with low-income youth. While 4-H had no facilities, buildings, or offices in the low-income parts of Union County, we did have a good reputation. Thus, a summer day camp for children in Elizabeth, New Jersey, the county's seat and poorest city, agreed to host our teacher for the summer.

For 7 hot weeks our teacher worked with the children of the P.R.O.C.E.E.D. summer day camp. In a large room with no air conditioning above a defunct bakery, Miss Dunton taught the children about electricity and the solar system. Unfortunately, the program's first year was nearly its last. The funder could not renew our grant for another year.

Fortunately, in 1993 we found financial support for the 4-H Summer Science Program from the pharmaceutical company Schering-Plough. Schering-Plough has two large facilities in Union County and is very interested in educating children about what science is and what scientists do (Figure 1). The needs of 4-H and Schering-Plough have meshed so well that they have been funding our program for the past 10 years.

**Figure 1.**

Schering-Plough Molecular Biologist Michelle Smith Showing Summer Science Students How to Obtain DNA from Onions



## Program Evaluation

Evaluations of the Union County 4-H Summer Science Program attest to its effectiveness. A pre-test and post-test questionnaire revealed that the program:

- Increased the number of students who would consider a science as a career by 20% and
- Increased the number of students who like science by 8 %.

Additionally, a separate post-program evaluation revealed that:

- 70% of the participants said the program taught them a lot about how to solve a problem,
- 66% said they learned a lot about how to do an experiment, and
- 64% said they learned a lot about how to observe things.

Quotes from the children such as, "I can do an experiment"; "I can be my family's scientist"; and "This is something I could do for my school science program" further attest to the program's usefulness.

## Unique Elements of Program

The program achieves gains in science understanding and interest because we create an ideal situation for learning.

- The attractive salary of \$13 to 15 per hour allows us to hire experienced teachers and/or older college students.
- We provide \$500 in materials so the teachers can make all their activities hands-on.
- Small class size, only 10 to 15 children at a time, allows them to give the children much more attention than in a classroom of 20 to 25 students.
- We make sure that the children get to meet real scientists and science workers.
- Our focus is strictly on teaching science, because local community groups run the day camp programs.

## Replicating the Summer Science Program

No Extension program can begin without a documented need for it. One way to document a need for a Summer Science Program is by reviewing your school districts' scores on state tests. Most state Departments of Education administer a standardized test to each school district. The scores of these tests can be used to provide statistical proof for focusing on certain parts of your county.

Once you have established the need, your next step should be to contact me. I will provide you

with a handbook that gives you complete directions on implementing the program and numerous letters, documents, and a grant proposal that you can use to solicit funds.

## Conclusion

While getting a summer science program started will take 10 to 15 days of work, the other resources needed are widely available. The funds needed to hire teachers are available from local foundations and companies. Children can be recruited through local day camps. The staff can be college students or teachers who are off for the summer.

Getting a summer science program started is easier than you think and well worth your effort.

*Copyright © by Extension Journal, Inc.* ISSN 1077-5315. Articles appearing in the Journal become the property of the Journal. Single copies of articles may be reproduced in electronic or print form for use in educational or training activities. Inclusion of articles in other publications, electronic sources, or systematic large-scale distribution may be done only with prior electronic or written permission of the [Journal Editorial Office, joe-ed@joe.org](mailto:joe-ed@joe.org).

If you have difficulties viewing or printing this page, please contact [JOE Technical Support](#)