

## **Impacts of the APS Frontiers in Physiology Research Teacher Program**

The APS summer research fellowships program for middle and high school teachers was established in 1990. Since then more than 300 teachers from 45 states, the District of Columbia, the Virgin Islands, and Puerto Rico have participated in the program. Between 1995 and 2004, three separate external evaluations of the program were conducted by an evaluation team from Horizon Research, Inc. This is a brief summary of the findings of those evaluation reports in terms of impacts on teachers and on their classrooms.

### ***Impacts on Teachers***

#### **1) Enthusiasm and confidence**

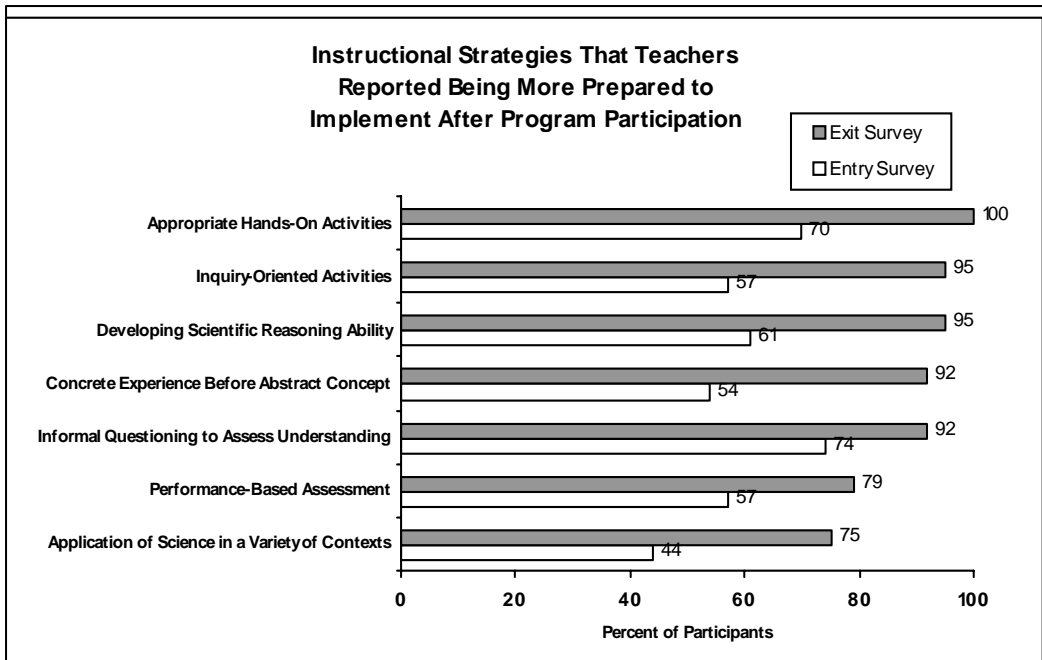
- a) Revived enthusiasm for science and science teaching (Pasley, 98)
- b) Increased confidence and enthusiasm for reform-oriented science teaching (Dotterer & Pasley, 2000)
- c) Realization that modern physiological science is within the grasp of the average science teacher (Dotterer & Pasley, 2000)
- d) Increased skills in reflecting on their own teaching practices (Dotterer & Pasley, 2000)

#### **2) Research/scientific process**

- a) Increased understanding of basic research techniques (Pasley, 98)
- b) Better insight into the research process (Pasley, 98) and increased understanding of science as a research endeavor (Dotterer & Pasley, 2000), including a clearer understanding about the nature of science and how scientific research is done
- c) Increased awareness of the creativity, resourcefulness, diligence, and stress that research involves (Pasley, 98)
- d) Increased confidence in their understanding of what lab research entails, and a greater sense of authority when discussing the research process with their students (Dean & Wood, 2004)

#### **3) Content knowledge**

- a) Increased understanding of physiology concepts (Pasley, 98)
- b) Deeper content knowledge and an avenue through which to enrich their science instruction and gain new insight into both the content they disseminate to their students and their students perceptions of new knowledge (Dotterer & Pasley, 2000)



Dotterer & Pasley, 2000, p. 11.

#### 4) Inquiry

- a) Increased understanding of what inquiry actually entails (Dean & Wood, 2004)
- b) Enhanced perspective on the importance of inquiry based teaching and learning (Pasley, 98)
- c) Increased understanding of the implementation of inquiry in the classroom (See figure above, Dotterer & Pasley, 2000)
- d) Increased preparedness to use inquiry based strategies (Dean & Wood, 2004)
- e) Increased plans to use inquiry based lessons (Dotterer & Pasley, 2000)
- f) Increased skills in using inquiry based activities in the classroom (See figure above, Dotterer & Pasley, 2000)
- g) Increased skills and converting cookbook laboratories to inquiry based laboratories (Dean & Wood, 2004)
- h) Improved questioning skills (Dean & Wood, 2004)

#### 5) Equity

- a) Increased awareness of gender and racial/ethnic issues (Dotterer & Pasley, 2000)
- b) Improved attitudes toward equity in the classroom (Dean & Wood, 2004)
- c) Expanded strategies and skills for promoting gender and racial/ethnic equity in the classroom (Dotterer & Pasley, 2000)
- d) Increased preparedness to use teaching strategies that target equity in the classroom (Dean & Wood, 2004)

## **6) Technology**

- a) Increased awareness of instructional technology that can be used with students (Dean & Wood, 2004)
- b) Marked increase in teacher preparedness to use technology (Dean & Wood, 2004)
- c) Increased preparedness to guide students in using Internet technology during science lessons (Dean & Wood, 2004)
- d) Increased comfort level in using the Internet in their classrooms (Dean & Wood, 2004)

## **7) Other pedagogy/standards**

- a) Increased awareness their understanding of the National Science Education Standards (Pasley, 98; Dean & Wood, 2004)
- b) Increased skills in how to teach problem-solving skills (Dotterer & Pasley, 2000)
- c) Increased skills in using cooperative learning (Dotterer & Pasley, 2000)

## **8) Networking with researcher community**

- a) Gained valuable associations with members of the research community (Pasley, 98). These associations persist even two years after the program ended.

## ***Impacts in the Classroom***

### **1) Use of Inquiry**

- a) Increased use of inquiry based lessons in their classrooms (Pasley, 98), with continuing impacts two years after the program ended.
- b) Steady increase in the actual use of inquiry in the classroom (Dean & Wood, 2004)
- c) Significant increase in the amount of student directed research in RT classrooms (Pasley, 98)

### **2) Use of Technology**

- a) Increased use of Internet technology during science lessons (Dean & Wood, 2004)

### **3) Revised Lessons**

- a) Non-inquiry based lessons evaluated by teacher for possible revision (Pasley, 98)
- b) Teacher alters lessons currently in their curriculum to make them more reform oriented (Dotterer & Pasley, 2000)
- c) Teacher transfers their research knowledge to a classroom lesson (Dotterer & Pasley, 2000)

## **References**

- Dean, L.R. & K.D. Wood. (2004, June). *American Physiological Society Frontiers in Physiology Final Evaluation Report, 2001-2004*. Chapel Hill, NC: Horizon
- Dotterer, R.E. & J.D. Pasley. (2000, October). *New Frontiers in Physiology/Physiology Insights Final Evaluation Report*. Chapel Hill, NC: Horizon Research, Inc.
- Pasley, J.D. (1998, January). *APS Frontiers in Physiology Final Evaluation Report*. Chapel Hill, NC: Horizon Research, Inc.