

# Authentic Science Research in the High School<sup>®</sup> Program

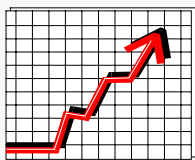
Grades 10-12



*An authentic science research experience is provided to students grades 10-12:*

- *Students carry out a 3-year original research project and work closely with a scientist mentor working in the student's chosen subject area.*
- *The classroom teacher helps direct the student through the process and overcome daily research obstacles.*

## Results



*Students acquire skills in the scientific method, including knowing how to:*

- *Access online bibliographic and scientific databases,*
- *Formulate a research hypothesis,*
- *Pursue a topic of research for a sustained period of time,*
- *Analyze data and interpret results, and*
- *Communicate research findings in written and verbal form.*

## The Program

The *Authentic Science Research in the High School<sup>®</sup>* (ASR) Program offers students of various achievement levels an opportunity to perform authentic science research and participate in the community of scientific research and scholarship. Students identify their topic of research; read scientific literature; create testable hypotheses; perform experimentations; record, analyze, and discuss results; and state clear conclusions. They learn time-management, sophistication in dealing with professionals, and use online bibliographic services. Students write a 20-page scientific paper and enter their research into local, state, and national competitions (e.g., INTEL, formerly Westinghouse). ASR is a three-year program beginning in sophomore year. Students choose a topic from mathematics, physical sciences, life sciences, social sciences, or psychology. Based on their bibliographic research, they contact the authors of these articles (over 90% of whom serve as their scientific mentors) and usually do their original research in the scientist's laboratory or maintain ongoing dialogue with the scientist by telephone and/or e-mail.

The classroom teacher directs the student through the *process* of science. Classes are held every other day; and the teacher meets with each student for one hour every two weeks to discuss the research progress. The teacher analyzes the student's science research portfolio and is a participant in the student's self-assessment. The program features a unique Spiral Curriculum which focuses and fosters the process of research. The ASR Program is the only validated research program in NY State. It offers NYS Regents credit and 12 college credits. This Program is successfully being taught in 170 urban, suburban and rural school districts throughout NY State and the country. In the years 2002- 2004, 38%, 40% and 37% respectively, of NY State's INTEL Science Talent Search Semifinalists were instructed by teachers trained by Dr. Pavlica.

## Professional Development

Fifteen hour training sessions are presented in a variety of segments: after school, on weekends, or as creatively as needed. A Teacher's Manual, Teacher's Manual Addenda, Sophomore Workbook, Junior Workbook, and Senior Workbook serve as guides for the workshop.<sup>1</sup> Follow-up instruction/assistance is on-going by telephone, e-mail or site visitations.

## Costs

The tuition fee is \$2000 for the first teacher of a school district and \$1900 for the second teacher. The tuition is normally paid by the teacher's school district.

## Graduate Credit

Three credits are available in education from Weber University.

## Learning Standards

**Mathematics, Science and Technology:** All seven learning standards are integrally addressed.

## Contact

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