



The Pennsylvania Earth and Space Science Partnership: Midlife Reflections on Success, Struggles and Change



National Science Foundation
WHERE DISCOVERIES BEGIN

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Why Earth and Space Science Matters

ESS is critical to political decision-making on scientific issues of public concern

ESS prepares students for emerging areas of job growth in resource fields and in green sectors of the economy

The Earth and Space Science Partnership

Our mission is to improve the teaching, learning and status of Earth and Space science. We partner with public school teachers in the middle grades (4-9) to improve their content knowledge and provide pedagogical support, and with university faculty to improve the educational preparation of pre-service teachers in this field.

ESSP partners with urban and rural public school districts in central and eastern Pennsylvania. We focus on Philadelphia, York, Reading, Harrisburg and Steelton-Highspire (large urban districts) and State College, Bald Eagle, Bellefonte, and Penns Valley (small rural districts) in Centre County.

ESSP is Committed to These Fundamental Values

- Developing and empowering teacher leaders with content expertise, pedagogic excellence and commitment to student success
- Educating all citizens to make informed decisions in the areas of energy, climate, resources and natural hazards
- Promoting deep understanding of state and national science standards integrated with language and mathematics proficiency

Earth and Space Science Partnership Project Goals

- Build a diverse, sustainable community of ESS learners and practitioners
- Improve preparation of pre-service teachers in ESS-related content
- Improve the pedagogic and content knowledge of in-service teachers who work with ESS-related content
- Improve the visibility and status of ESS teaching and learning
- Develop learning progressions in *plate tectonics* and *solar system astronomy* across grades 4-16

Pathways to Accomplishing our Goals

- Intensive workshops that integrate content, pedagogy
- Support regional professional learning communities
- Develop and disseminate curricular resources
- Interview students and teachers on understandings
- Videotape partner teachers for modeling pedagogy
- Work with PA Dept Education to revise standards
- Establish PA Earth Science Teachers Assoc (PAESTA)

Successes and Accomplishments

- PAESTA has ~250 members, held first conference
- Partnership with PA Department of Education
- Hypothetical learning progressions debut at NARST
- Nascent learning communities in three regions of PA
- Enhanced teacher content knowledge of ESS

Challenges and Barriers to our Success

- Districts in financial, administrative turmoil
- History of instructional isolation of individual teachers
- Poor commercially-available teaching resources
- Reduced emphasis on science in struggling districts
- Low priority of ESS in state-wide student testing
- Low national visibility of ESS despite jobs, significance

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PAESTA www.paesta.org
ESSP www.essp.psu.edu

