The JASON Academy: Explorations in Online Science for Middle Level Teachers

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Abstract: The JASON Academy for Science Teaching and Learning is a new initiative of the JASON Foundation for Education. Beginning in September 2001, the Academy will offer online professional development courses for graduate credit and CEUs to middle level (grades 4-9) teachers of science. Twelve science content courses will include modules focusing on energy, marine science, Earth Systems, and pedagogy. The goal of the Academy is to enhance the science content background of teachers and provide them with the tools to help students learn more effectively.

Beginning in September 2001, the JASON Academy for Science Teaching and Learning will provide online science courses for middle level teachers (grades 4-9), supplemented by “Lab Pack” materials for hands-on science activities with students. The goal of the Academy is to improve the science content background of teachers of science to help them become more effective teachers. Taking advantage of multiple delivery systems offered by advanced systems architecture, the online courses will be tailored to meet individual teacher’s learning and teaching styles. Courses will be integrated and thematic in design, but each will emphasize physical science—an area in which both teachers and students need more concept understanding and practice. The Academy’s initial course offerings will include the following.

- A required introductory course, Introduction to Online Middle School Science (five weeks long and one credit unit) which will provide an orientation to navigating online science and using the Lab Pack materials in investigations with students.
- Eleven content courses, offered concurrently, each 5 weeks long and one credit unit.
  - Light and Heat
  - Electricity and Magnetism
  - Forces and Motion
  - Water Quality
  - Ocean Science
  - Aquatic Ecosystems
  - Structure of the Earth
  - Earth’s History
  - Earth in the Solar System
  - Teaching Project-Based Science
  - Assessing Student Learning and Work
- Lab Packs containing light, temperature, and voltage probeware, software, and student activities will serve as the Academy “textbook.” Teachers will use them with their students to reinforce the science concepts they have learned on-line. The kits will insure that teachers and students have experience collecting and analyzing data using hand-held devices and probeware.
- Pedagogy embedded throughout the courses with inquiry being the overarching mode of instruction and learning. Course modules will be tied both to the National Science Education Standards as well as to state science standards.
- Pre- and Post-Assessments and weekly quizzes and surveys to provide continuous feedback on teacher progress and course effectiveness.

The JASON Academy is forming partnerships with crediting institutions and credentialing agencies in several states to provide teachers with options for graduate credit as part of an advanced degree program and continuing education units to be used for certification and recertification requirements. Responses to a survey of state science supervisors provided valuable contact information for state university crediting and state certification requirements.
In November 2000, the JASON Academy conducted a field test of a two-week prototype of a JASON Academy course on Electricity and Magnetism. Findings included the following:

- Based on experience with the JASON prototype, 100% of the field testers would take another online JASON Academy course
- Overall rating of the course on a 5-point scale: 4.6
- Top reason to sign up for an online course: Expand science knowledge, followed by graduate credit and CEUs toward certification.

Field testing teachers appreciated the flexibility of online learning as well as the colleague interaction and ease informal presentation format.