

A Web-based earth systems science graduate course for middle school teachers

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Abstract: On-line courses consisting of communities of learners are experiencing increasing use and credibility. This paper outlines the design, development and implementation of a middle school teachers' earth systems science graduate course. This 16-week course was developed at the Center for Educational Technologies®, Wheeling Jesuit University, under the sponsorship of the National Aeronautics and Space Administration's Mission to Planet Earth. The themes of earth system science content and collaborative, inquiry-based science education prevailed within an electronic environment where teacher participants took responsibility for their learning within a structure of clear expectations.

The course was delivered through the World Wide Web (WWW) and featured collaborative exercises and threaded discussion. This on-line asynchronous environment was chosen to accommodate teachers in remote locations and those whose schedules did not provide for on-campus attendance. Participants were chosen for the course based on access to the WWW and their stated interest in helping refine the course for future iterations. The course also addressed the US National Research Council's standard for using inquiry-based approaches in science teaching. This was accomplished by modeling a collaborative, student-centered environment in which teachers relied on each other to develop knowledge.

An overriding objective in the development of this on-line course was to create "reasons" for individuals to engage in the material. The population consisted of very busy classroom teachers. Course developers purposely designed the structure to be student-centered so that participants relied on each other for input. As discussed above, this was accomplished through the jigsaw strategies that made participants depend on each other for essential information in creating the earth systems diagrams. There is always room for improvement and fine tuning, but developers have been pleased with the implementation of this course. After minor tuning, it will soon be offered again and will provide a model for development of other on-line courses.

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