



Integrating Research in Earth System Science Education

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The Global Learning and Observations to Benefit the Environment (GLOBE) Model for Student Scientific Research was used to integrate research in an earth system science course for educators. A component of the scientific research model (observation, asking a research question, designing and conducting an investigation, data collection and analysis, communicating research results, etc) was chosen each day. It was highlighted in presentations, discussions and activities in conjunction with the teaching and learning of earth science content and scientific measurements in an area of investigation such as phenology, hydrology, atmosphere/weather, soils and ice seasonality. A GLOBE Earth System Poster displaying monthly data of solar energy, average temperature, cloud cover, precipitation, soil moisture and vegetation, with the accompanying learning activities served not only as a tool for exploring how the different components of the earth system work together and are interconnected but also provided a means of honing skills on data analysis- studying and interpreting data maps, as well as helping integrate research into the course. The face-to face class was preceded by online science content reading and was followed with classroom visits, email and phone communications, and journal responses regarding implementation in schools. The course consisted of inside and outside class activities including field trips. Best practices in teaching science were also incorporated and included cooperative learning, collaborating with scientists, student driven inquiry at various levels, accommodating different learning styles, allowing time for reflective thinking, integrating science with math, language and art, and using authentic assessments.