

## **Collaborative Teaching About Earth Using InTeGrate Materials**

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Short Description: InTeGrate is a 5-year NSF funded program to support the teaching of geoscience in the context of societal issues across the undergraduate curriculum. We have been using teaching materials developed by InTeGrate (that meet rigorous standards for content and pedagogy) in introductory earth science courses at EPCC and UTEP since 2013. In fall 2015 14 instructors used the materials in 21 course sections. There is a high level of instructor and student satisfaction with the materials. Longitudinal studies also show student performance has increased. Many of the materials are suitable for use in other disciplines including business, humanities and social science.

Long Description: InTeGrate is a 5-year NSF funded program to support the teaching of geoscience in the context of societal issues across the undergraduate curriculum. One facet of the InTeGrate program is the development of new teaching materials that focus on grand challenges involving Earth and society. These materials incorporate interdisciplinary problems that use authentic science data to help students' learn scientific methods of inquiry and systems thinking. Materials developed in the program must meet a rigorous rubric that measures both the quality of content and instructional strategies. Starting in fall 2014 a group of 4 faculty at the University Texas at El Paso (UTEP) and El Paso Community College (EPCC) began using a variety of InTeGrate materials in introductory geology and environmental science courses with class sizes varying from 8 to 120 students. Our overall intent of using these materials was to improve the pedagogy and content of our introductory courses to increase student interest in earth and environmental sciences, increase faculty collaboration and communication between institutions and insure students at both institutions receive similar instruction, easing transfer between EPCC and UTEP. Through the use of implementation workshops, one-on-one consultations, and classroom visits our "network" of InTeGrate users expanded to 14 instructors (including teaching assistants) teaching 21 course sections (both face-to-face and on-line) to ~500 students in fall 2015. Instructor satisfaction with the materials is high, with most instructors adding additional material each semester. Most importantly, longitudinal studies show that student performance on exams, quizzes and classroom activities has increased with use of InTeGrate materials. Student reflections show they enjoy the variety of learning activities and their relevance to their everyday lives. Although we have primarily used the materials in environmental science and geology courses, many activities are suitable for use in introductory courses in engineering, business, humanities or social science.