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Online Higher Education Instruction to Foster Critical Thinking When Assessing Environmental Issues – the Brownfield Action Model

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According to the Environmental Protection Agency, there are presently over half a million brownfields in the United States, but this number only includes sites for which an Environmental Site Assessment has been conducted. The actual number of brownfields is certainly into the millions and constitutes one of the major environmental issues confronting all communities today. Taught in part online for more than a decade in environmental science courses at over a dozen colleges, universities, and high schools in the United States, Brownfield Action (BA) is an interactive, web-based simulation that combines scientific expertise, constructivist education philosophy, and multimedia to advance the teaching of environmental science (Bower et al., 2011). In the online simulation and classroom, students form geotechnical consulting companies, conduct environmental site assessment investigations, and work collaboratively to solve a problem in environmental forensics. The BA model contains interdisciplinary scientific and social information that are integrated within a digital learning environment that encourages students to construct their knowledge as they learn by doing. As such, the approach improves the depth and coherence of students understanding of the course material. Like real-world environmental consultants, students are required to develop and apply expertise from a wide range of fields, including environmental science and engineering as well as journalism, medicine, public health, law, civics, economics, and business management. The overall objective is for students to gain an unprecedented appreciation of the complexity, ambiguity, and risk involved in any environmental issue or crisis.