



InTeGrate: Using a Systems Approach to Effect Educational Transformation

Cathryn A. Manduca¹, Deborah Gross¹, Peter Selkin², Ed Geary³
¹Carleton College; ²University of Washington- Tacoma; ³Western Washington University

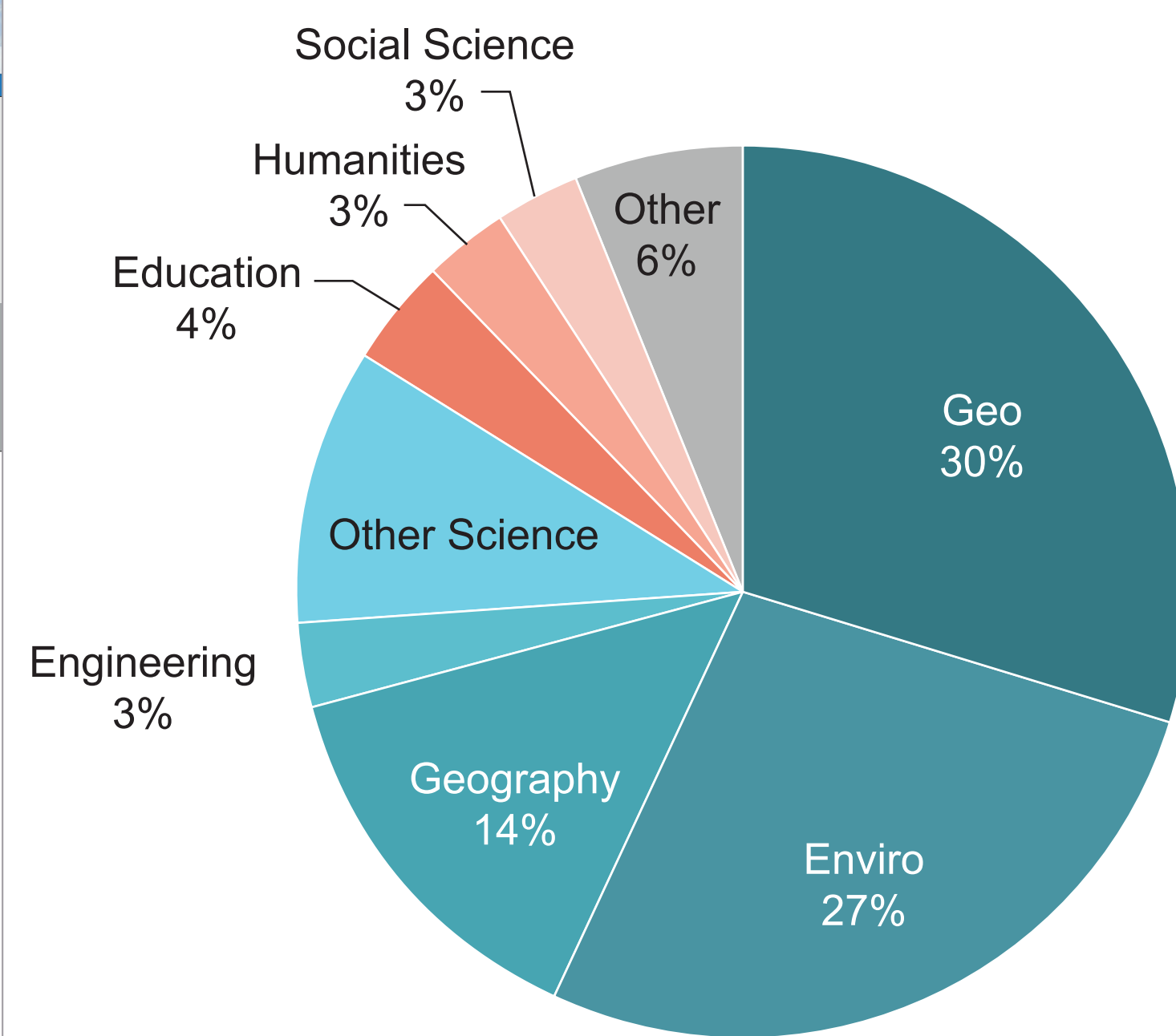
Our nation is faced by increasingly complex decisions that must be made surrounding the use conservation and development of our national resources, and by pressing environmental issues affecting our air, water, soil, and safety. InTeGrate seeks to increase the opportunities for students to study the Earth sciences in the context of current resource and environmental issues. By placing the study of Earth sciences in this context, we can increase the number and diversity of students interested in pursuing these studies, while enabling them to enter the workforce prepared to participate in the scientific investigations, interdisciplinary projects and policy decisions that will need to be made in the coming decades.

A Three-pronged Approach to Transformation

1. At the course scale

InTeGrate is currently engaging over 100 faculty in developing teaching materials rigorously designed and tested to meet InTeGrate's goals and to employ engaged teaching practices demonstrated to improve student learning. Nine introductory and interdisciplinary modules are published and available for use, ten are in post-pilot revision and will be available for use by spring 2016, and an additional 15 are in development and pilot stages. Several of the published modules are being adapted, adopted, and further tested

Teaching Materials Development:
Course Scale



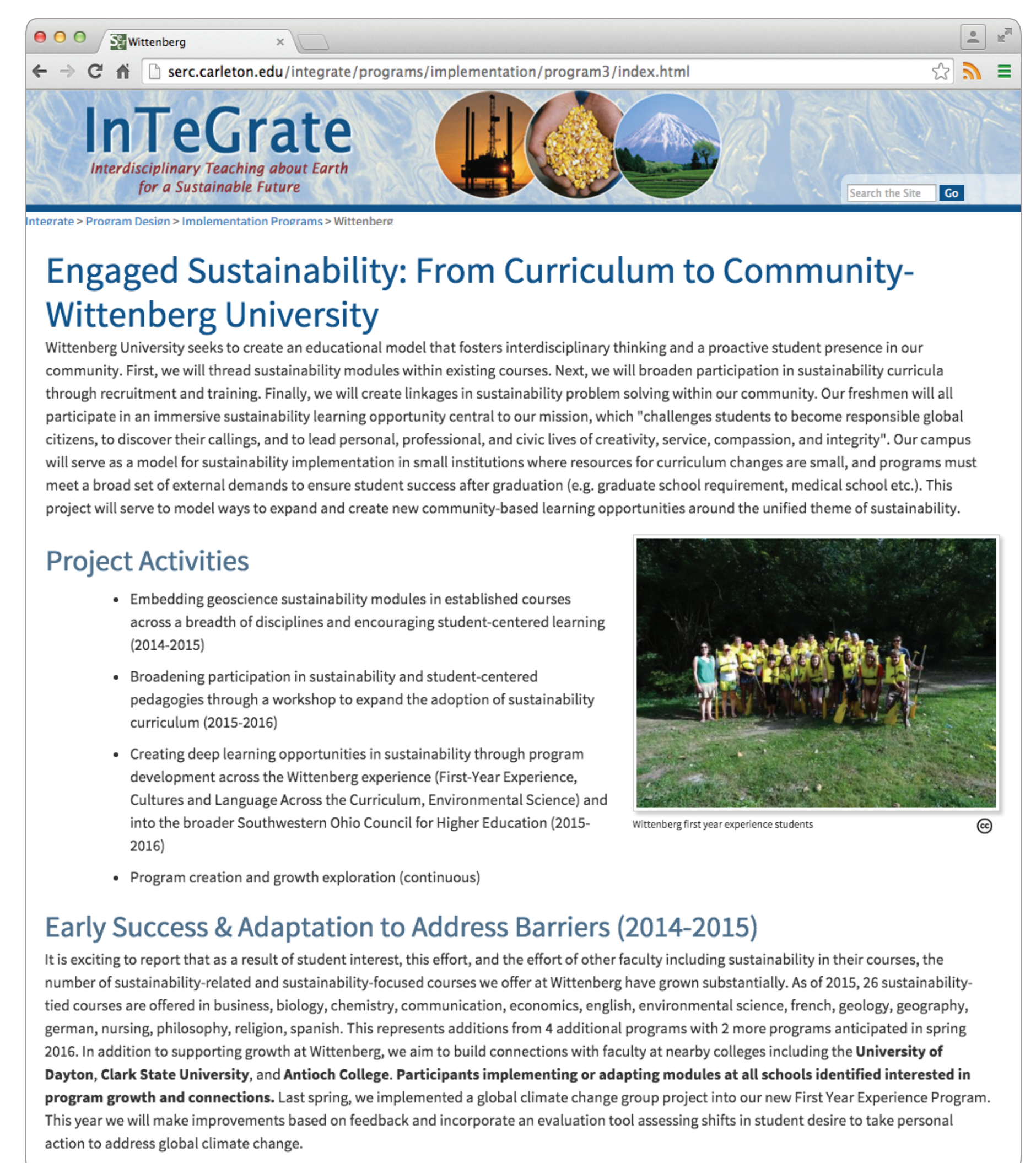
InTeGrate has engaged faculty from across disciplines by design to ensure that the materials are adoptable and adaptable by a broad audience. Each development team has at least one geoscientist. Percents shown include all authors, n=115.

2. At the department and institutional scale

InTeGrate implementation programs have resulted in the development of 16 models of ways to bring Earth science to a diverse range of disciplines, institutions, and networks. These programs span the higher education system geographically and institutionally, and will provide the documentation and resources necessary to help other groups implement similar programs.

Implementation Programs:
Department/Institution Scale

- * *CSU Chico* Sustainability Project
- * "CU InTeGrated!" An interdisciplinary course infusion educational framework - *Clafin University*
- * Earth Sciences in Teacher Preparation Courses- *Grand Valley State University*
- * Climate Science across the Curriculum at *Gustavus Adolphus College*
- * Providing Cultural and Regional Relevance to Issues of Global Sustainability- *Mercer University*
- * Using InTeGrate to Enhance Civic Engagement in the Geosciences at *Middle Tennessee State University*
- * Distance Learning Courses- *Penn State University*
- * MSI and 2YC Programs- *Stanford University*
- * Engaging Urban Students Through Geoscience Career Development In The Classroom- *University of Illinois at Chicago*
- * Sustainable Rivers: Integrating Earth Science and Sustainability Across the Curriculum- *University of South Dakota*
- * Broadening Access to the Earth Sciences Across The El Paso Higher Education Community- *University of Texas at El Paso*
- * STEM Teacher Preparation in *Washington State*
- * Engaged Sustainability: From Curriculum to Community- *Wittenberg University*

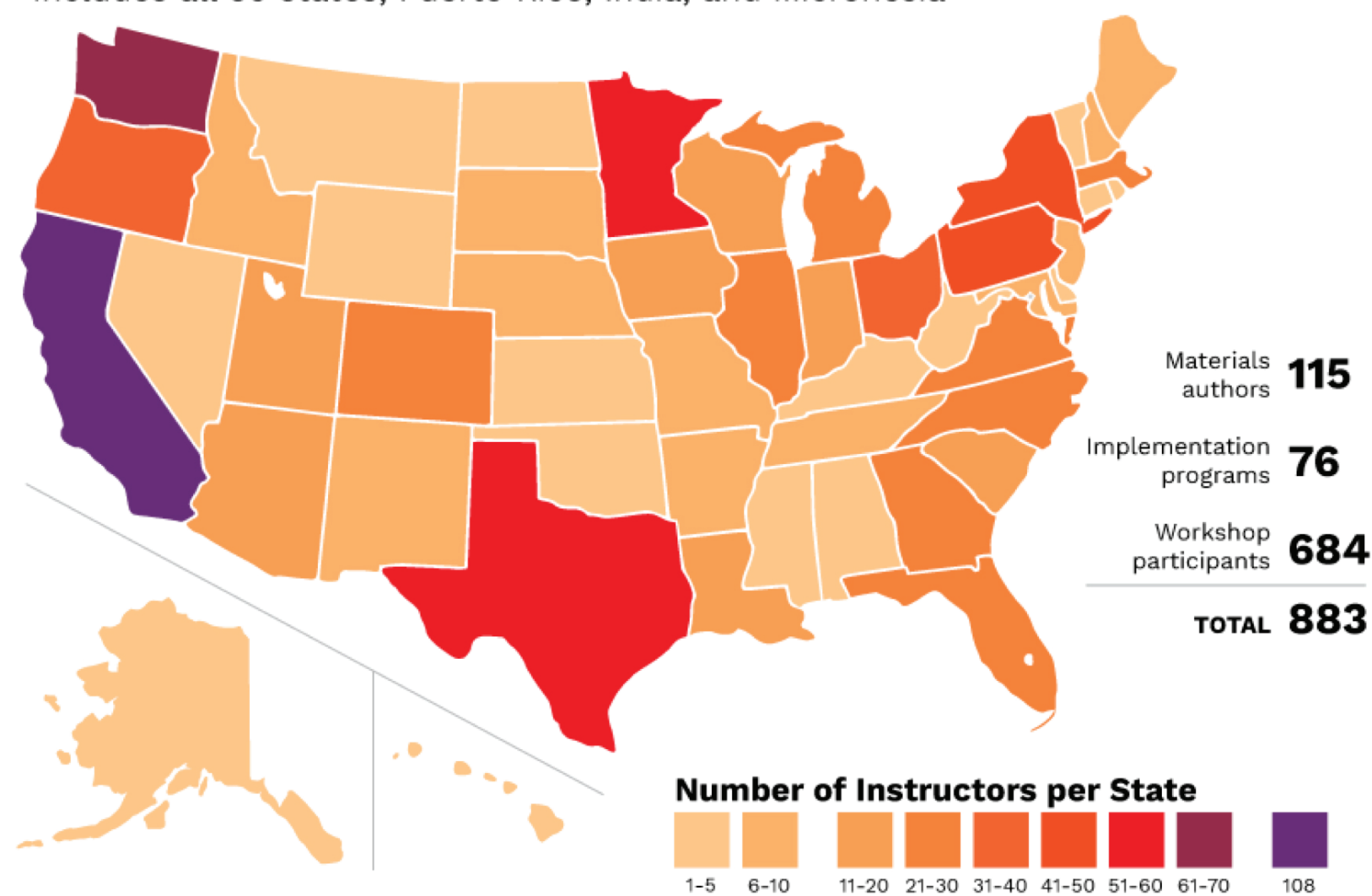


3. At the community scale

Traveling and regional workshops, the Earth Educators' Rendezvous, webinars, and a robust website are expanding the opportunities for educators and administrators to learn about the importance, possibilities and impacts of learning about the Earth in a societal context.

Professional Development Workshops:
Community Scale

Distribution of Module/Course Authors + Implementation Programs + Workshop Participants includes all 50 states, Puerto Rico, India, and Micronesia



EARTH EDUCATORS' RENDEZVOUS

The Earth Educators' Rendezvous brings together researchers and practitioners working in all aspects of undergraduate Earth education. The meeting includes activities that support faculty in improving their courses, departments or programs; in increasing their overall impact of Earth education; and in building a collective capacity to use and conduct education research. The first annual event in 2015 had over 300 participants, 150 poster and oral presentations, 27 Workshops, and 5 plenary talks.

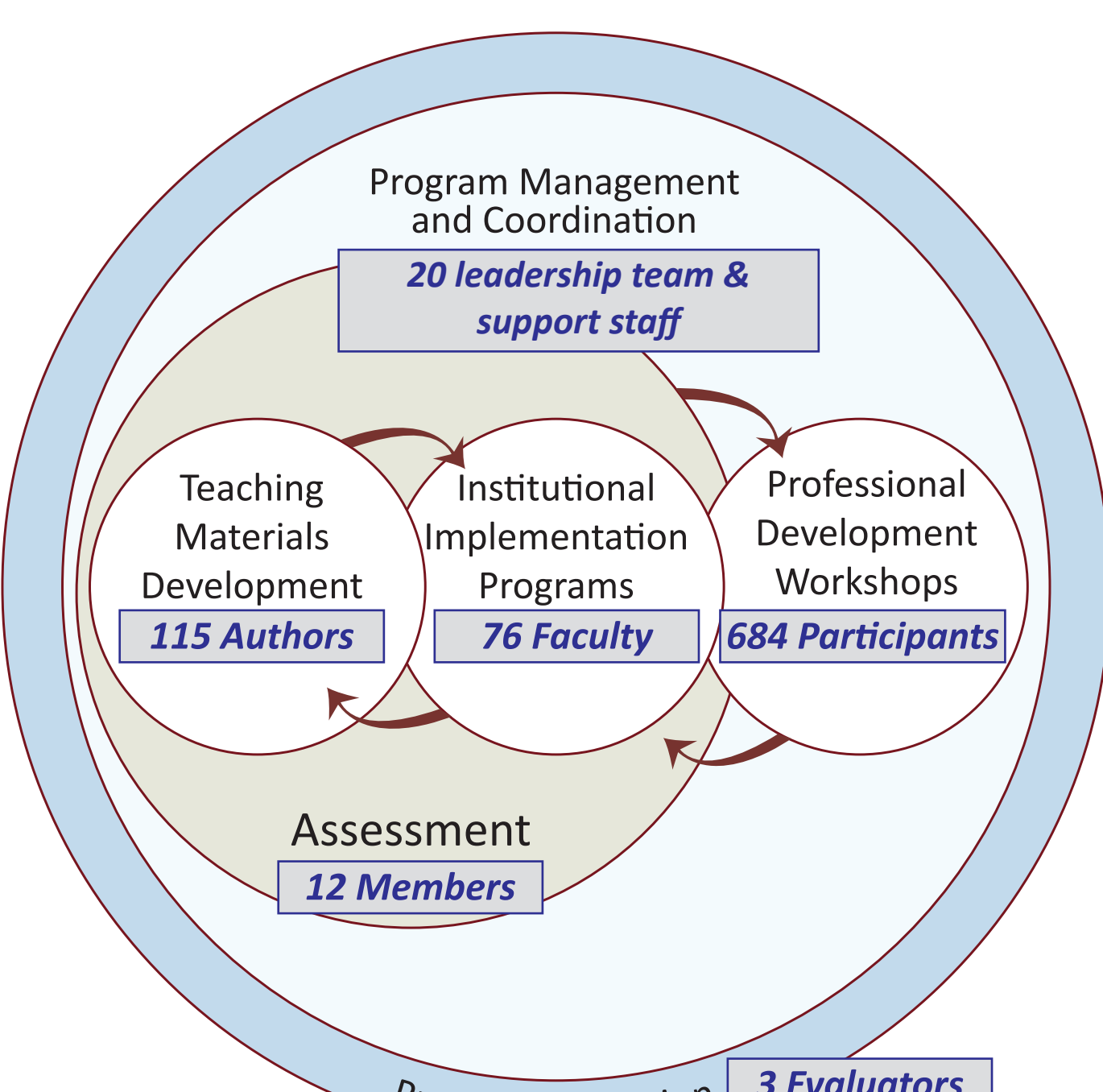


Traveling Workshop Program

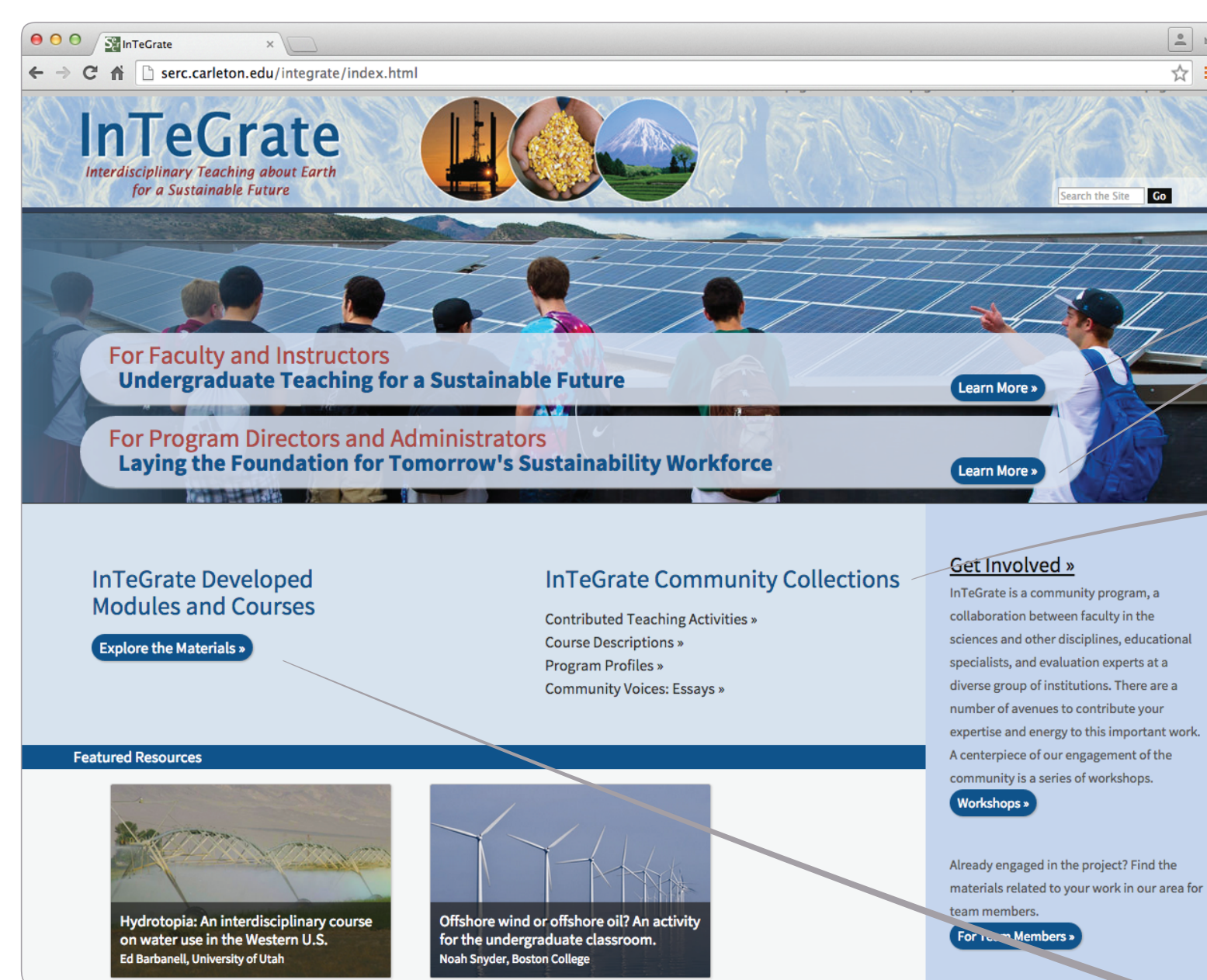
InTeGrate is now partnering with the NAGT's Traveling Workshops Program to bring the excitement of InTeGrate workshops to institutions. Appropriate for geoscience, geography, environmental science, environmental studies, or sustainability departments and programs, these workshops can be customized to help departments address support for diverse students, pathways to the workforce, or integration of science and sustainability.

Expertise from the Whole InTeGrate Community

The material on the InTeGrate website aims to bridge disciplinary boundaries by providing a variety of resources built from community contributions at professional development workshops, by materials development teams, and through implementation programs. The materials incorporate a broad range of interdisciplinary voices, from faculty, to college and university program chairs, and employers. The combined expertise and experience reflected in these web pages creates a set of innovative and effective ideas and strategies to help improve interdisciplinary teaching about Earth-related Grand Challenges.



The InTeGrate Project structure is rooted in community involvement that leads to the robust, interdisciplinary website content. Participation numbers listed from the beginning of the program to now.
<http://serc.carleton.edu/integrate>



Synthetic pages drawing expertise across the InTeGrate community

Activity, course description, and essay contributions from workshop participants

InTeGrate modules and courses from interdisciplinary teams of faculty authors



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