InTeGrate-developed Materials

InTeGrate is dedicated to providing robust curricular materials that increase Earth literacy among undergraduate students. The project aims to change the way earth science is taught through a variety of mechanisms, including webinars, workshops, and new teaching materials.

These teaching materials are free, rigorously reviewed and tested, and can be adopted or adapted for use in a variety of courses and range in scale, from 1-4 week modules to entire courses.

Materials Development Teams

The InTeGrate project has developed a highly successful process for integrating community expertise – in content and pedagogy – to create curricular materials that instructors can use across the curriculum to address the Grand Challenges facing society. Keys to this success include:

- Building an interdisciplinary author team that can provide a multi-disciplinary perspective to challenges related to hazards and sustainability.
- Creating teams that embody a mixture of institution types, regions, and disciplines to bolster usability for a variety of users.
- Following a development process with a series of checkpoints to help keep teams on track.
- Facilitating communication among teammates.
- Providing support and a network of experts to provide feedback throughout the process.

In addition to the authors, teams are made up of:

- A team lead (a project PI), who provides guidance on content and pedagogy.
- An assessment team member, who provides pedagogical guidance and ensures materials meet the rubric requirements.
- A web team person who assists with formatting and technical questions.

Materials Design and Refinement Rubric

Developed by the InTeGrate Assessment Team for authors as they developed materials. All materials must pass review against the rubric by two reviewers before piloting. The rubric consists of six sub-areas:

1. **Guiding Principles of InTeGrate teaching materials**: address one or more of the geoscience-related grand challenges facing society; develop student ability to address interdisciplinary problems; improve understanding of nature and methods of geoscience and geoscientific habits of mind; make use of authentic and credible data; incorporate systems thinking.
2. **Learning objectives and goals**: strong, measurable goals that are appropriate for their intended audience and address overarching aim of module.
3. **Assessment and measurement**: assessments measure and are consistent with learning goals.
4. **Resources and materials**: address appropriate content, are credible and current.
5. **Instructional strategies**: engaging methods that support learning goals, develop metacognition, strengthen science communication skills, and scaffold learning.
6. **Alignment**: all materials are aligned with one another.

http://serc.carleton.edu/integrate/teaching_materials/modules_courses.html

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Project Products & Outcomes

Authors report that the development process is a strong professional development opportunity in itself – they learned a great deal from one another, team leads, and the assessment team. To date, 19 modules have been published and 14 courses and modules are undergoing final revision and review in preparation for publication. Materials are widely used at a variety of institutions across the country and have been featured at InTeGrate workshops and webinars, as well as adapted for program-scale use at a number of institutions.