

Open Educational Resources

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What are Open Educational Resources (OERs)?

- Open = fully accessible, electronic, free of charge
- Books, videos, activities... any material designed for teaching and learning
- Open Courseware – subset of OER
 - Specific materials produced by instructional designers
 - Massive Open Online Courses (MOOCs)
 - Learning modules
 - Resources linked to a learning management system

OERs for Geoscience

- Great potential, but usage among natural science faculty is less than 30%¹
- Ever-growing collection at Science Education Resource Center (SERC)
- Most online catalogs link to SERC collection
 - OERCommons, MERLOT
- University catalogs and Courseware
 - LibreTexts (Cal State), OpenSUNY
 - MIT Open Courseware, Coursera and Udacity

¹Allen and Seaman, 2015

Pedagogical value of OERs

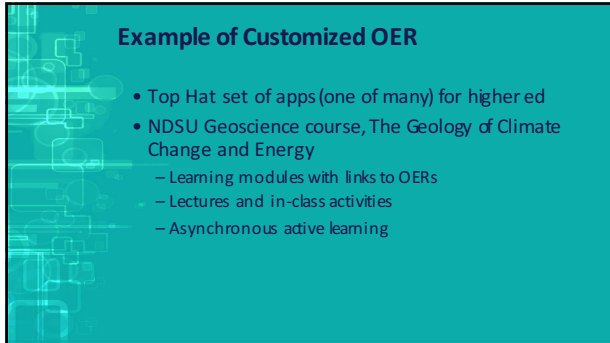
- Flexibility for instructors – facilitates backward design
- Potential for community development
- Resource-based learning (with courseware)
- Variety of delivery formats
- Integrate active learning into asynchronous activities
 - Improve student engagement in and out of class
- Customization and integration with learning management systems

Potential challenges of OERs

- Perceived time burden for instructors
 - Lack of incentive and/or motivation
- Concerns about quality of OERs and availability
- Lack of comprehensive catalog (except for SERC!)
- Awareness among faculty remains low
 - Needs university buy-in, marketing on par with textbook publishers
 - Publishers are developing DERs at a rate that outpaces development of OERs

Examples of OERs for Geoscience

- Integrated with Learning Management Systems
- MOOCs
- Open textbooks
- Vignettes
- Learning modules



Example of Customized OER

- Top Hat set of apps (one of many) for higher ed
- NDSU Geoscience course, The Geology of Climate Change and Energy
 - Learning modules with links to OERs
 - Lectures and in-class activities
 - Asynchronous active learning