Trends in Open Educational Resources in the Earth Sciences: Emerging Roles for the Academic Library
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Abstract

Students have cited the cost of textbooks and other class materials as a barrier to majoring in certain subjects, often in the sciences, where costs are most prohibitive. In an effort to curtail the high cost of textbooks on students, many universities are investigating the promotion and adoption of Open Educational Resources (OERs). These are free or low-cost materials such as textbooks or other resources that can be used as class material. This poster will examine the state of OERs in the Earth Sciences and give suggestions for adoption of OERs. Many institutions have concerns about the quality of materials for educational purposes and also encounter a lack of support for widespread adoption of many open resource materials. However, we will highlight a number of sources for high quality materials, many of which have already been adopted for use. There are also ways to use less expensive resources in your course without sacrificing quality, such as using popular geology books that cover core concepts instead of the typical textbook. This poster will examine current trends in OERs and present case studies demonstrating the use of OERs in the Earth Sciences at institutions who have supported the practice, as well as the possibilities for future use at other institutions with currently available resources. Survey data of librarians involved in OER efforts will be presented, as well as ideas of how your library can help you in adopting OERs in your classroom through licensing, support, and promotion.

Background/affordability

The rising costs of textbooks have led many universities to explore other options for use in their classrooms to decrease the burden on students. As shown by the graph below, the cost of textbooks has risen at a much higher rate than any of the other costs associated with attending a university, including tuition and room and board. Helping students by offering low-cost or free educational resources to use in their classes can improve the rate than any of the other costs associated with attending a university, including tuition and room and board. As shown by the graph below, the cost of textbooks has risen at a much higher rate than any of the other costs associated with attending a university, including tuition and room and board. Helping students by offering low-cost or free educational resources to use in their classes can improve the

Textbooks in the Earth Sciences

These ten textbooks were assigned most frequently in Earth Sciences and Geology courses in the US.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Text</th>
<th>Author</th>
<th>Publisher</th>
<th>Cost</th>
<th>Year</th>
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<tbody>
<tr>
<td>1</td>
<td>Earth Science</td>
<td>Tarbuck</td>
<td>Pearson</td>
<td>$181.80</td>
<td>2015</td>
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<tr>
<td>2</td>
<td>Physical Geology</td>
<td>Plummer</td>
<td>McGraw-Hill</td>
<td>$227.00</td>
<td>2016</td>
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<tr>
<td>3</td>
<td>Earth Science and the Environment</td>
<td>Thompson, G</td>
<td>Cengage</td>
<td>$148.95</td>
<td>2007</td>
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<tr>
<td>4</td>
<td>The Earth Through Time</td>
<td>Lewis</td>
<td>Wiley</td>
<td>$123.95</td>
<td>2017</td>
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<tr>
<td>5</td>
<td>Earth: A Portrait of a Planet</td>
<td>Mendl</td>
<td>Norton</td>
<td>$146.25</td>
<td>2015</td>
</tr>
<tr>
<td>6</td>
<td>The Earth: An Introduction to Physical Geography</td>
<td>Tarbuck</td>
<td>Pearson</td>
<td>$181.20</td>
<td>2015</td>
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<tr>
<td>7</td>
<td>Understanding Earth</td>
<td>Press</td>
<td>Freeman</td>
<td>Out of print</td>
<td>2017</td>
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<tr>
<td>8</td>
<td>Applied Hydrogeology</td>
<td>Matter</td>
<td>Prentice Hall/Peacock</td>
<td>$246.54</td>
<td>2001</td>
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<tr>
<td>9</td>
<td>Understanding Earth</td>
<td>Gruszczynski</td>
<td>Freeman</td>
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<td>10</td>
<td>Earth System History</td>
<td>Stanley</td>
<td>Macmillan</td>
<td>$146.45</td>
<td>2015</td>
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</tbody>
</table>

Source: openefaubs.org

Recommendations

1. Contact your library to learn about using library-licensed ebooks in your course. Your library may have access to relevant titles from publishers such as Geological Society of America, Geological Society of London, Cambridge, Elsevier, Springer Nature, and Wiley.
   - Example: Solid Earth by Fowler (Cambridge)
   - Example: Geochemistry by White (Wiley)

2. Use less expensive, popular geology books to cover core concepts

3. Adopt an Open Educational Resource
   - Openstax.org → Astronomy text includes planetary geology topics
   - Opengeology.org → Free Textbook for College-Level Introductory Geology Courses
   - Open textbook library → Physical Geology

4. Create your own OER
   - Rebus Community → Collaborative model for open textbook publishing
   - Grant funded opportunities to help defray the cost of self-publishing
   - Example: UC Berkeley Affordable Course Content Pilot Program
     https://library.berkeley.edu/scholarly-communicaPon/publishing/affordable/campus-initiaPnes

5. Look for a model at other institutions

Looking Ahead

- Open textbook use in the geosciences is open for innovation and growth.
- Expand your research and teaching impact by creating open, accessible textbooks that can be used widely.
- Consult with the library about the availability of licensing open resources.
- As costs rise, look for more funding opportunities for using and creating open educational resources.

Contact Us!

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