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Composite Score: ★★★★★ 1/4

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Abstract

The OpenStax project at Rice University provides high-quality, Open Access textbooks that are freely available on the Internet. The textbooks can be accessed on multiple convenient formats, including view online, PDF, Kindle, and print. The OpenStax web site (<<https://openstax.org/>>) serves as the main gateway for the project. Users can access textbooks here, sign up for instructor access, and get support. Currently there are 40 textbooks available aimed at popular undergraduate general education courses. The main web site is generally well organized and functions as expected; however, there are some confusing interactions with the legacy CNX web presence that hosts OpenStax content. One major limitation is the current lack of coverage (more textbooks are under development). Overall, it is a highly recommended resource.

Pricing Options

Freely available Open Access textbooks. Print editions of OpenStax textbooks can be ordered through Amazon or through college bookstores. As of this review, no print edition costs more than \$65.

Product Overview/Description

OpenStax is a non-profit organization that produces and distributes openly licensed textbooks. Their goal is to provide textbooks for introductory college courses with the highest student enrollment across the country. OpenStax is based at Rice University and is supported by many large philanthropic foundations including the Bill and Melinda Gates Foundation and the Hewlett Foundation. The textbooks are licensed under a Creative Commons Attribution 4.0 License, except for the Calculus series of textbooks, which are licensed under the Creative Commons Attribution-Noncommercial-Share Alike license. As of this review, there are a total of 40 e-books available on the site including 34 titles and 6 previous editions. They are arranged in the following subject areas: Math (11), Science (13), Social Sciences (9), Humanities (1), and AP (6). The intended audience is AP high school and undergraduate college students. Each e-book is available in three formats: View Online (HTML version with added graphics and multimedia); PDF (high- and low-resolution options); Kindle; or print ordered from Amazon.com. Several titles are available on Bookshare, which is an e-book library that allows people with reading barriers to customize their experience and read in ways that work for them.

Ancillary materials, such as presentation slides, sample syllabus language, test banks, and instructor solutions manuals, are available for some texts. Access to these materials are granted through an instructor login. Applicants can request an instructor login via a multistep process, which is manually verified to ensure that the requestor is an

instructor. The verification process for the reviewers' account took two days to complete.

Each OpenStax textbook costs between \$500,000 and \$2,000,000 to produce. The publication process for OpenStax is like that of other textbook publishing companies. OpenStax hires teams of authors to write its textbooks. Authors work with staff editors to create the content. Textbook drafts may go through as many as four peer-review iterations, including both chapter-level and book-level reviews during production.

Many OpenStax author webinar recordings are available on the OpenStax blog at <<https://openstax.org/blog/news/upcoming-openstax-webinars>>. These webinars cover an overview of OpenStax, then delve into the goals, pedagogical styles, format, and creation of the textbooks, as described by the lead authors.

According to Nicole Finkbeiner, Associate Director, Institutional Relations, OpenStax textbooks are currently being used at over 5,000 institutions, and that they have saved students over 332 million dollars. A Babson College survey found that 16% of introductory courses in the United States are using at least one OpenStax textbook, which is similar to the market share of major textbook publishers.

User Interface/Navigation/Searching

The OpenStax home page is located at <<https://openstax.org/>>. The site home page is colorful, dynamic, and engaging (see Figure 1). Upon opening the page, the topmost section includes a ribbon inviting visitors to contribute to OpenStax. Links above the site header lead visitors to sections labelled About Us, Supporters, Blog, Give, Help, and Rice University.

The Help section invites visitors to type a question into a search box and click search, or to browse a list of popular articles. If the user uses the search function, a list of results is presented. There are buttons for Chat and E-mail provided to contact support if the results do not sufficiently answer the requestor's question. The reviewer contacted support through the chat function. The response was immediate, helpful, and friendly in tone. Chat service is available from Monday through Friday from 9:00 a.m. to 5:00 p.m. Central Standard Time. E-mails sent to <support@openstax.org> are guaranteed to be answered within one business day. After the chat session there was an option to save the chat transcript. Chat transcripts are saved as text files.

A navigation bar includes drop-down menus for Subjects, which includes All, Math, Science, Social Sciences, Humanities, and AP. Selecting the All menu item leads to tile-sized images of textbook covers for 46 titles. Clicking any of the tiles leads to a landing page for

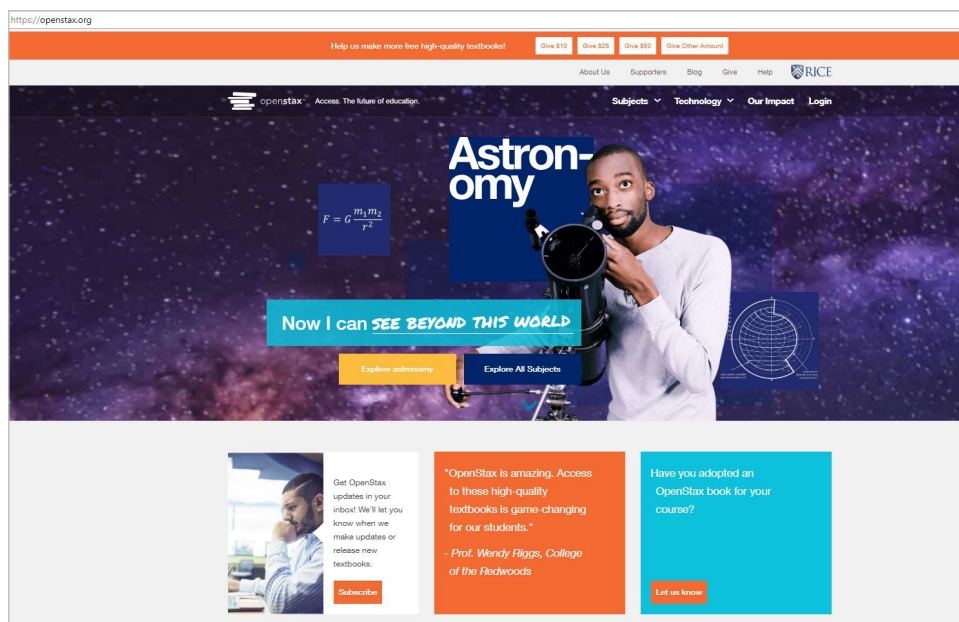


FIGURE 1 OpenStax Home Page

tabs for Instructor resources, many of which are locked if the user is not logged into their instructor account, and Student resources, which may include answer guides, a getting started guide, and perhaps links to instructional videos (see Figure 2).

A Technology drop-down menu lists Technology Options, About OpenStax Tutor, and OpenStax Partners. Under Technology Options, users select their books and are presented with links to View free instructor resources or View technology options. Both of those links lead to the book landing page. Should users scroll to the bottom of the page they will find a paragraph that describes OpenStax Tutor, an online courseware product. It costs \$10, and is available for the College Physics, Biology, and Introduction to Sociology 2e titles.

the book which includes a list of links that can be used to acquire the book in different formats, a summary of the book, list of authors, an errata section, and publication and licensing data. There are also

the page they will find a paragraph that describes OpenStax Tutor, an online courseware product. It costs \$10, and is available for the College Physics, Biology, and Introduction to Sociology 2e titles.

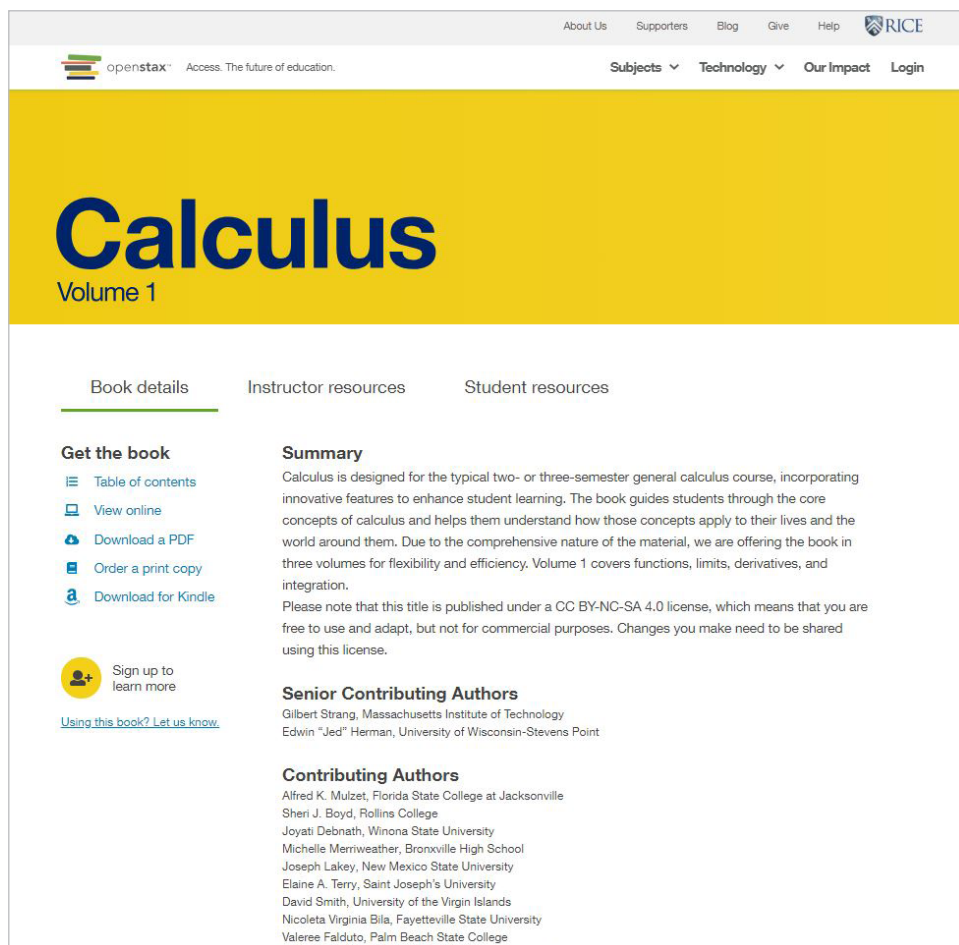


FIGURE 2 OpenStax Textbook Example

There is no search functionality for books. With the current limited title availability, the lack of a title search is not a problem. As the library of items develops it will become increasingly important. In the Help section there is an effective article search function available, as well as an FAQ section. The OpenStax Partners section includes a list of 33 companies who have created optional low-cost technology products that are integrated with OpenStax titles.

OpenStax's goal for accessibility is for the website and web view versions of learning materials to meet the W3C-WAI Web Content Accessibility Guidelines 2.0 at the AA level, and Section 508 of the Rehabilitation Act. OpenStax is continuing to work on these goals, especially in the way they handle parsing, error identification, focus order, use of color, and sensory characteristics. Users are invited to help improve accessibility by e-mailing or calling OpenStax support regarding their experiences using the site or texts.



OpenStax Review Scores Composite: ★★★★★ 1/4

The maximum number of stars in each category is 5.

Content: ★★★★★ 1/2

OpenStax textbooks represent the highest quality OER titles available, but have limited subject coverage.

User Interface/Searchability: ★★★★★

Simple, attractive interface. Persistent donation seeking and transfers to OpenStax CNX website are problematic.

Pricing: N/A

Free online access, low-cost print and enhanced electronic access.

Purchase/Contract Options: N/A

Critical Evaluation

In the opinion of the reviewers, OpenStax provides good alternatives to traditionally published textbooks for the subject areas they cover. The combination of expert, paid authors and editors, a robust peer-review process, and free or low-cost access options provide a compelling value proposition for instructors and students. These textbooks compare favorably with those produced through the traditional publication process as evidenced by the impressive market share achieved by OpenStax, as described in the Babson College survey.

One serious limitation for OpenStax is the limited coverage of subjects. They are currently working on six additional titles in the Business subject area, and this will help to alleviate the problem somewhat. The other serious limitation is the lack of or limited nature of any available ancillary support materials. Instructor resources like presentation slides, test banks, and homework support exist for some titles, but those products are not currently at the same level as those that are provided with most traditionally published textbooks. OER Commons provides a hub that instructors can use to share resources they have created to use with OpenStax books and partner companies may provide additional, low-cost resources. These are listed on the Instructor Resources page for each book.

The interplay between the OpenStax CNX and OpenStax web sites can be somewhat confusing. The OpenStax textbook library has two web sites: the main OpenStax.org page (<<https://openstax.org/>>—essentially a flashy promotional page complete with colorful carousels promoting the various OpenStax texts complete with pictures of students actively engaged in research—and the OpenStax CNX home page (<<https://cnx.org/>>). OpenStax CNX is the open source platform used to host the OpenStax textbooks. The CNX repository curates OER materials from all over the world, not just OpenStax textbooks; however, when a user goes to the CNX web site it may appear that the OpenStax textbooks are the only resources available on the site, as they are prominently featured on that home page. To access the other content, a user has to click on the Search option from the toolbar, which then directs the user to the main CNX library of over 2,000 open source e-books.

Another issue is that there is a discrepancy in the list of textbooks featured on the OpenStax and CNX home pages. There is a total of 40 books featured on the OpenStax home page, as compared with 29 on the CNX home page. It is recommended that users start at the

OpenStax home page as opposed to the CNX home page. Also, if a user clicks on the View Online option for any of the textbooks on the OpenStax home page a new window opens at the CNX site. The original tab then reverts to the donate page hence hiding the textbook page where the user initially clicked. Prevalent solicitation can be distracting and irritating to a new user. Donors must fill out a form with fourteen fields, 11 of which are required.

One external reviewer of the AP Physics textbook, in the comments section of the OpenStax blog, expressed concerns regarding the diverse and inclusive representation of the images of people depicted in the book. That reviewer was invited via a comment from a moderator to connect with the OpenStax editorial director to discuss the matter further.

A support page regarding quality control mentions a post-production peer-review system called lenses, which is supposed to allow individuals and organizations to review materials. The link, <<http://cnx.org/lenses>>, leads to a 404 page not found error page.

Competitive Products

There are many repositories of open educational resources. Other sources for OER textbooks include the Open Textbook Library <<https://open.umn.edu/opentextbooks/>> and OER Commons <<https://www.oercommons.org/>>. Many states have OER repositories that may include textbooks for K-12 as well as higher education. These repositories tend to include other educational materials such as lecture notes and presentation slides, as well as textbooks. Two examples of state repositories include California's Merlot <<https://www.merlot.org/merlot/index.htm>> and Florida's Orange Grove <<https://www.floridashines.org/orange-grove/>>.

Contact Information

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Rice University

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Houston, TX 77005

E-mail: <<https://openstax.org/contact>>

Producer URL: <<https://openstax.org/>>

Free Text Keywords: Open Access | Openly licensed textbooks | Textbooks | OER | Open Educational Resources

Primary Category: Multidisciplinary (or interdisciplinary)

Secondary Categories: Business & Economics; History & Area Studies; Science, Technology, Computers, Engineering (including Environment), Mathematics; Sociology, Education, Anthropology, Psychology

Type of product being reviewed: Ebook collection

Target Audience: Undergraduate (including community colleges)

Access: Open Access (OA)

Searching and finding appropriate OER textbooks across all the available repositories is difficult and time consuming. The reviewers recommend that faculty interested in adopting OER textbooks for their courses check the OpenStax titles first, and look in other repositories if they do not find a title that meets their needs there.

Purchase & Contract Provisions

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Authentication

N/A. Freely available Open Access textbooks.

Author's References

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About the Authors

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