openstax™

2022-2023

Annual
Impact Report

The future is open.
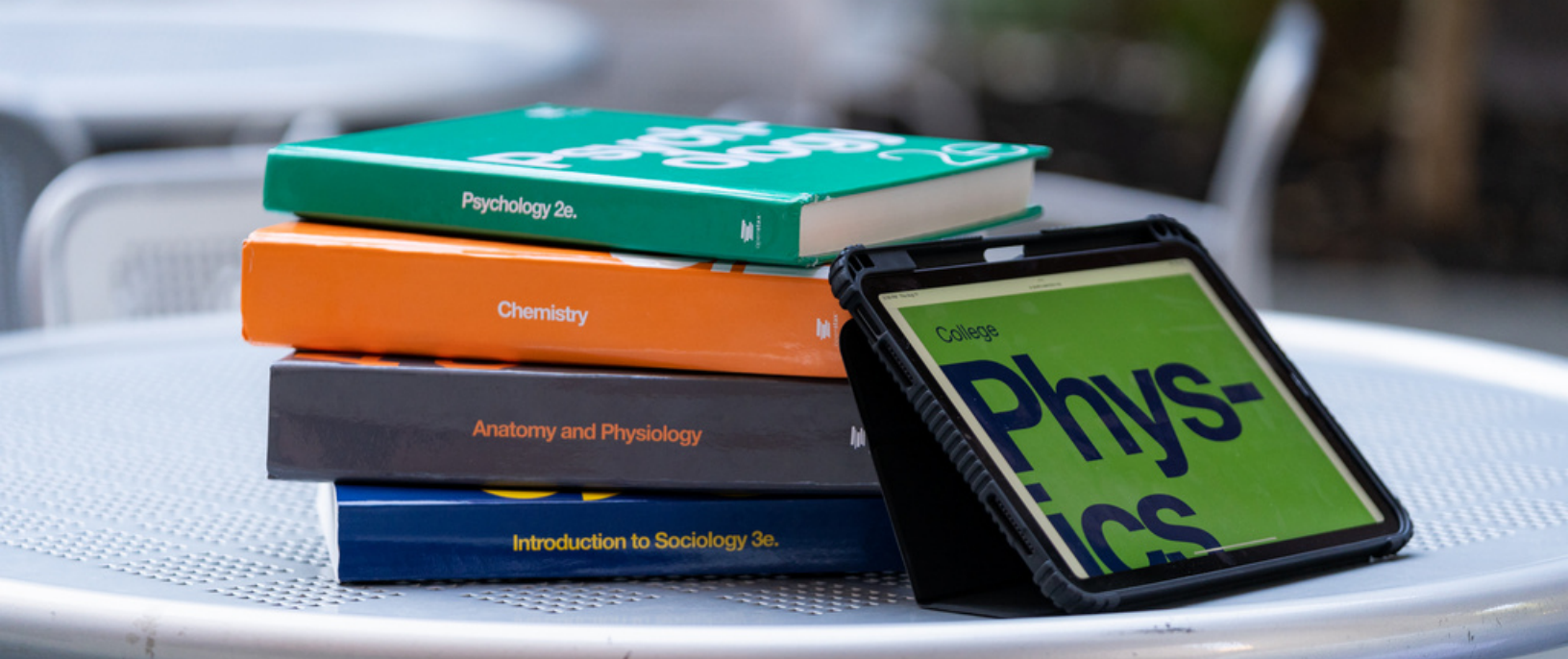
RICE

A note from our founder and director

The face of education is changing, yet at its core it is about sharing—teachers sharing knowledge and students sharing ideas.

In the world of education, traditional textbooks have dominated the landscape, but the rise of open education resources (OER) has transformed the landscape. Open-source digital textbooks and AI-supported learning have become cornerstones of this educational revolution.

At OpenStax, our aim is to support students and educators. With our dedicated community, we've helped more than 36 millions learners, saving them $2.9 billion. We've developed courses in high-demand fields, focusing on K12 education to enhance Algebra I teaching, particularly for marginalized students. We've also launched OpenStax Kinetic, an innovative scientific platform. Through collaboration with DEI experts, we've made our resources culturally inclusive. Our goal is to create a global learning environment that fosters belonging and identity.

Education should be accessible to all, and OpenStax is committed to that mission. We empower the next generation of leaders through effective learning experiences. Today's learners face immense challenges. In partnership, we can enable them to find purpose, achieve greatness, and overcome educational obstacles. We've made strides, but the journey continues.

Professor Richard G. Baraniuk
C. Sidney Burrus Professor of Electrical and Computer Engineering
Founder and Director, OpenStax
Rice University

Universal education for good

The OpenStax mission is to improve educational access and learning for everyone. Our vision is to help all learners succeed in their educational pursuits. We have radically changed the education landscape and we are consistently learning, leading, and evolving.

We are unique in that we are part of Rice University, a leading research institution known for fostering the unconventional. Rice generates innovative and creative solutions that better our world, and OpenStax supports this vision by improving access to high-quality education for students.

We strongly believe that a student's desire to learn should be all they need to succeed. But far too often, that isn't the case, and students from historically underrepresented and marginalized communities face the biggest obstacles. This is why we must ensure that education is universal – not just made available for some, but designed for any learner to succeed.

Join us to help improve education worldwide. Explore openstax.org to discover how you can contribute to providing accessible education and empowering learners to thrive. Together, let's reshape the landscape of learning for all.

From past to present

Our impact began as a publisher of free and openly licensed textbooks. But, the "open" in OpenStax goes beyond our resources—we are open to everyone, everywhere, at any time.

1999

First open education repository

2011

Launched personalized learning system, which later evolved into OpenStax Tutor

2012

Connexions evolved into OpenStax, publishing openly, free textbooks primarily for higher education

2014

Launched a personalized learning technology integrated with OpenStax content, following pilots

2021

Launched K12 division

2022

Established a research division and implemented innovative research infrastructure to facilitate seamless collaboration between researchers and OpenStax platforms.

Who We Are

Launched in 1999 (then known as Connexions) OpenStax offers free, peer-reviewed, and openly licensed textbooks for high school and college courses. We are based at Rice University in Houston, Texas, one of the top research universities in the world, known for a focus on unconventional wisdom. With the support of Rice and partnerships with other schools around the world, we are able to remain agile and focused on innovative approaches to improving teaching and learning.

Where We've Been

Our journey began with textbooks, but we've evolved beyond, integrating technology to enhance engagement, motivation, and persistence. This expansion extends from college support to encompass comprehensive assistance for students from start to finish. Alongside this growth, we've integrated rigorous research to gain insights into effective strategies, tailoring experiences to meet the diverse needs of all students, ultimately fostering equitable success. Our library has grown, and now encompasses a wide range of high school and college textbooks. Complementing our textbooks, we provide interactive learning experiences driven by technology, ensuring every learner possesses the necessary tools to excel in their educational journey.

Where We're Going

Underpinned by three core strategies, we are committed to fostering growth, providing robust support, and garnering profound insights into learning dynamics to enhance educational experiences. Embracing the evolving landscape of education, we aim to harness the potential of student-facing AI to tailor learning experiences, while also utilizing instructor-facing AI to refine teaching methodologies. These innovations are being honed within a research framework, enabling us to assess and analyze efficacy and ensure the creation of positive and enriching experiences for both students and instructors.

Growing and improving our resources

Enriching Learning with Open Resources

We are focused on growing our open learning resources. With 15 more title scheduled for release at the end of 2024, we are dedicated to seamlessly integrating resources into courses, benefitting diverse student populations. Our commitment extends to addressing resource gaps, especially for students in under-resourced communities, making quality education universally accessible.

Prioritizing Popular Degree Pathways

Our aim is to enhance education by supporting learners in high-demand fields, like nursing, business, and data science. We're at the forefront, emphasizing evidence-based practice, exposure to diverse scenarios, and hands-on learning. Moreover, we aim to eventually provide avenues for continuous growth through microcredentials and certifications, leading to enhanced employment prospects and earning potential. This commitment to adaptability guarantees that students receive the best preparation for their future careers.

Diversity, Equity, and Inclusion (DEI) Focus

OpenStax aspires to lead in Diversity, Equity, and Inclusion (DEI) efforts, embodying these principles in both our organization and products. We actively seek to incorporate diversity into our courses by collaborating with educators and researchers from various backgrounds. It is crucial that our learning materials resonate with underserved learners, and for this reason, it is imperative that our content creators reflect the diversity we aim to serve. Additionally, a significant part of our efforts involves ensuring cultural relevance and responsiveness in our content. We apply a DEI lens to our digital learning environment to foster an inclusive and accessible educational experience for all learners.

▶ **To view our library, visit openstax.org/subjects**

The path to knowledge

Shakari, a native of Columbia, South Carolina, is on a mission to become a high school math or English teacher. Her love for sharing knowledge drove her to this path. As a high-performing student with a 4.9 GPA, she excels in both reading and writing.

Completing her degree while still in high school was no small feat, but resources like OpenStax made it possible. Their free textbooks and educational support smoothed her path through college. "The interactiveness of the textbooks makes learning fun," she said. OpenStax has been a game-changer for Shakari. Its interactive textbooks add an element of fun to learning, and the convenience of online access has been a relief compared to traditional textbooks. The philosophy book from OpenStax holds a special place in her academic pursuits.

Looking ahead, Shakari envisions herself as a teacher, passing on the torch of knowledge to future generations. She highly recommends OpenStax to fellow students, emphasizing its versatility for personal research and its cost-saving benefits.

Shakari's story is one of determination and a deep passion for education. Her journey illuminates the true power of knowledge. She stands ready to inspire curiosity in the hearts of her future students.

"I will always appreciate teachers and I thank them for helping me get to where I am today. OpenStax has been a great teacher in itself."

-Shakari J., OpenStax student

▶ **To read more about Shakari's OpenStax experience, visit openstax.org/impact.**

Supporting learners to and through college

OpenStax excels in utilizing technology to support learners and educators alike. We recognize that textbooks play a valuable role, especially for many of our students who rely on them and find them integral to their academic journeys. To augment this experience, our content seamlessly incorporates technology, elevating the level of support provided to learners and educators. This integration enhances the overall learning experience and ensures that students have access to a well-rounded educational resource.

62%

of high school graduates do not attend college due to the high cost of tuition [1]

40%

of students enter college unprepared and require costly remedial courses [2]

60%

Black/African American students drop out of college in debt [3]

46%

Hispanic/Latina/o/e students drop out of college in debt in contrast to White students (36%) [3]

From Access to Readiness

K-12 education provides the building blocks for postsecondary success and career development. As we think about supporting students through college, we recognize that many students need resources that support their academic growth and prepare them to succeed. We aim to provide secondary students access to rigorous academic content that not only prepares them in their courses but also creates effective learning experiences to bridge educational gaps. We are committed to providing them with rigorous content to lay a foundation for post-secondary success.

Moving Toward Proficiency

At OpenStax, we aim to understand student and educator needs and the structural, environmental, and historical context of their learning. Our goal is to enhance students' overall readiness and proficiency in academic content to maximize our impact.

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[1] National Center for Education Statistics, 2023

[2] Hechinger Report, 2023

[3] National Center for Education Statistics, 2017

Turning passion into a lifelong career

At OpenStax, we believe that quality instruction and content has the potential to resonate with all learners. It can even inspire a student to find their passion for a specific subject and motivate them to achieve even more after high school. Such is the case with Megan Q.

Megan's interest in health sciences was sparked by her father's guidance at a young age and fueled even further by her discovery of biology and other related subjects using free resources from OpenStax. She believes that the help she received from OpenStax made her more adept in this area, better preparing her for life after high school graduation. She would recommend OpenStax because the website provides in-depth, high-quality information for free, "which is good for schools that have many low income students attending," Megan shared. "If you haven't used OpenStax before, I recommend that you try it as you never know whether it might help you better understand the material and possibly succeed in a class."

As for the future, Megan is following in her father's footsteps and expects to get her nursing diploma in five years. She is graduating high school soon and sees herself as a successful nurse working in a hospital.

▶ **To read more about Megan's story, visit openstax.org/impact.**

"If you haven't used OpenStax before, I recommend that you try it as you never know whether it might help you better understand the material and possibly succeed in a class."

-Megan Q., OpenStax learner

Tech-enhanced learning solutions

Our focus lies in creating educational resources and technology. We strive to gain a profound understanding of what proves effective, for whom, and within specific contexts. By harnessing technology, we enhance the learning process in conjunction with Rice University, our ed tech partners, institutions, educational institutions, and school districts. We are now exploring ways to deepen this work through artificial intelligence (AI).
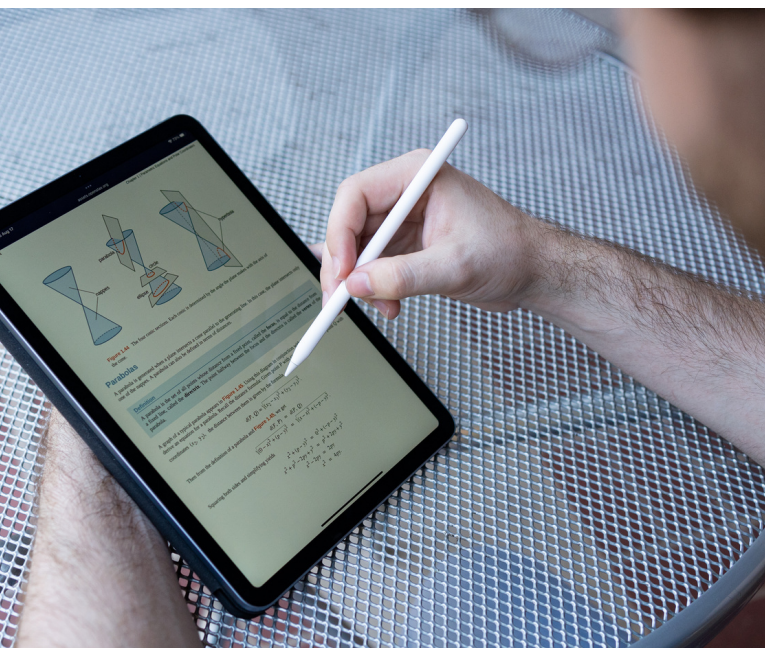
▶ To learn more about our innovative scientific platform, visit openstax.org/kinetic.

The Issue

Understanding how people learn is crucial for effective teaching, personalized education, and inclusivity. Current research methods present limitations in their applicability. One significant challenge lies in the seamless integration of research findings into practical educational settings. The gap between theory and practice hinders the effective implementation of research insights in classrooms. Furthermore, existing methods often fail to capture the dynamic contexts in which students learn. This static approach overlooks the nuanced and varied circumstances that influence the learning process.

Our Approach

OpenStax is dedicated to prioritizing research in order to enhance education. By fostering research-practice partnerships and actively engaging with educators and administrators, we aim to co-create learning agendas that serve as guiding principles for our initiatives. Our approach is characterized by a commitment to understanding the multifaceted student learning experience within diverse contexts. This collaboration with a range of experts enables us to develop comprehensive insights that can be applied effectively to improve educational outcomes.

Keys for Student Success

Researching student motivation is essential for engagement, persistence, instructional design, academic achievement, and well-being. It helps optimize learning experiences and holistic development.

Facilitating Research Studies

OpenStax introduced a platform for interdisciplinary studies on students' digital learning needs and explores how backgrounds influence learning. Findings from these studies will enhance inclusivity and personalize learning for millions of OpenStax users.

Creating more personalized learning through technology

Dr. Andrew Lan, also known as Mr. Lan to his students, is a dedicated researcher in the field of machine learning for personalized education. He has a long-standing collaboration with OpenStax and currently serves as an assistant professor at the University of Massachusetts Amherst, actively contributing to OpenStax's efforts to support math education for students.

Their goal is to identify and address reading comprehension issues in real-time, using techniques like question paraphrasing and translation assistance.

Mr. Lan's connection with OpenStax goes back to his educational journey at Rice University, where Professor Rich Baraniuk served as his supervisor. He conducted pioneering learning research, leveraging OpenStax content for various projects. Mr. Lan and the OpenStax team are supporting both students and teachers by diagnosing and addressing comprehension issues. Instructors receive valuable feedback on common student challenges and suggestions for improving question clarity.

Mr. Lan emphasizes the importance of technology in education and its potential to provide personalized support, understand student errors, and foster independent learning. His research, combined with OpenStax's commitment to innovation, is reshaping education, paving the way for a future where students are in control of their learning journey.
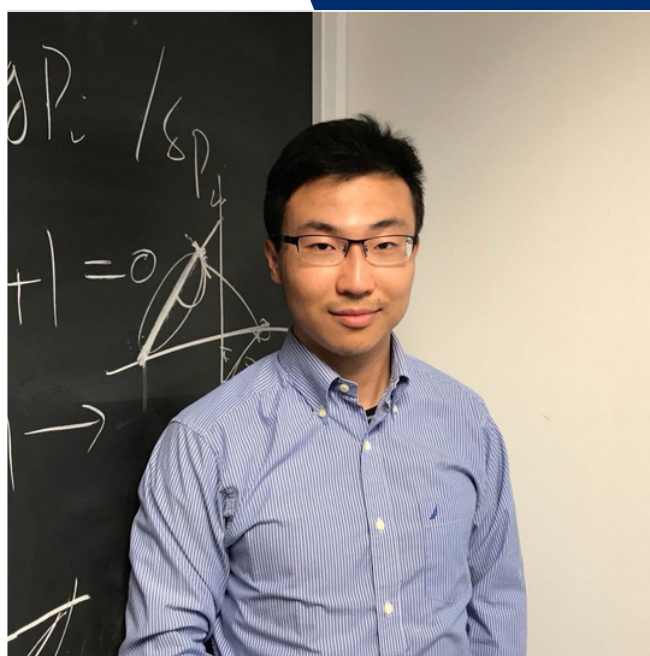
"We accurately diagnose reading comprehension problems and offer real-time support to help students build a strong foundation of knowledge."

- Dr. Andrew Lan

Changing the educational landscape

From open resources to open tech to open science, sharing is in our DNA. Since our inception, we have been intentional about making radical changes to outdated educational systems. With help from the OpenStax community, we have significantly improved how individuals access high-quality information for the better.

In less than a decade, we have significantly changed the education landscape, impacting a diverse array of learners from all backgrounds. With the help of generous individuals, foundations, and corporations we have an extensive reach across the majority of U.S. colleges, many K12 schools and countries worldwide.

7 million students
served in the 2022-2023 school year

70% universities
using OpenStax resources

6,300 K12 schools
using OpenStax resources

150 countries
currently using OpenStax

Educational equity in action

At OpenStax, we are driven by a clear and powerful mission: to improve educational access and learning for everyone. Rooted in the belief that education is a public good, we strive to offer products, innovative research, and services that benefit educators and

"The deflation of the 'textbook bubble' is primarily driven by the creative disruption and competitive edge of free or affordable textbooks, as exemplified by OpenStax."

- Economist Mark Perry, AEI

Source: Bureau of Statistics
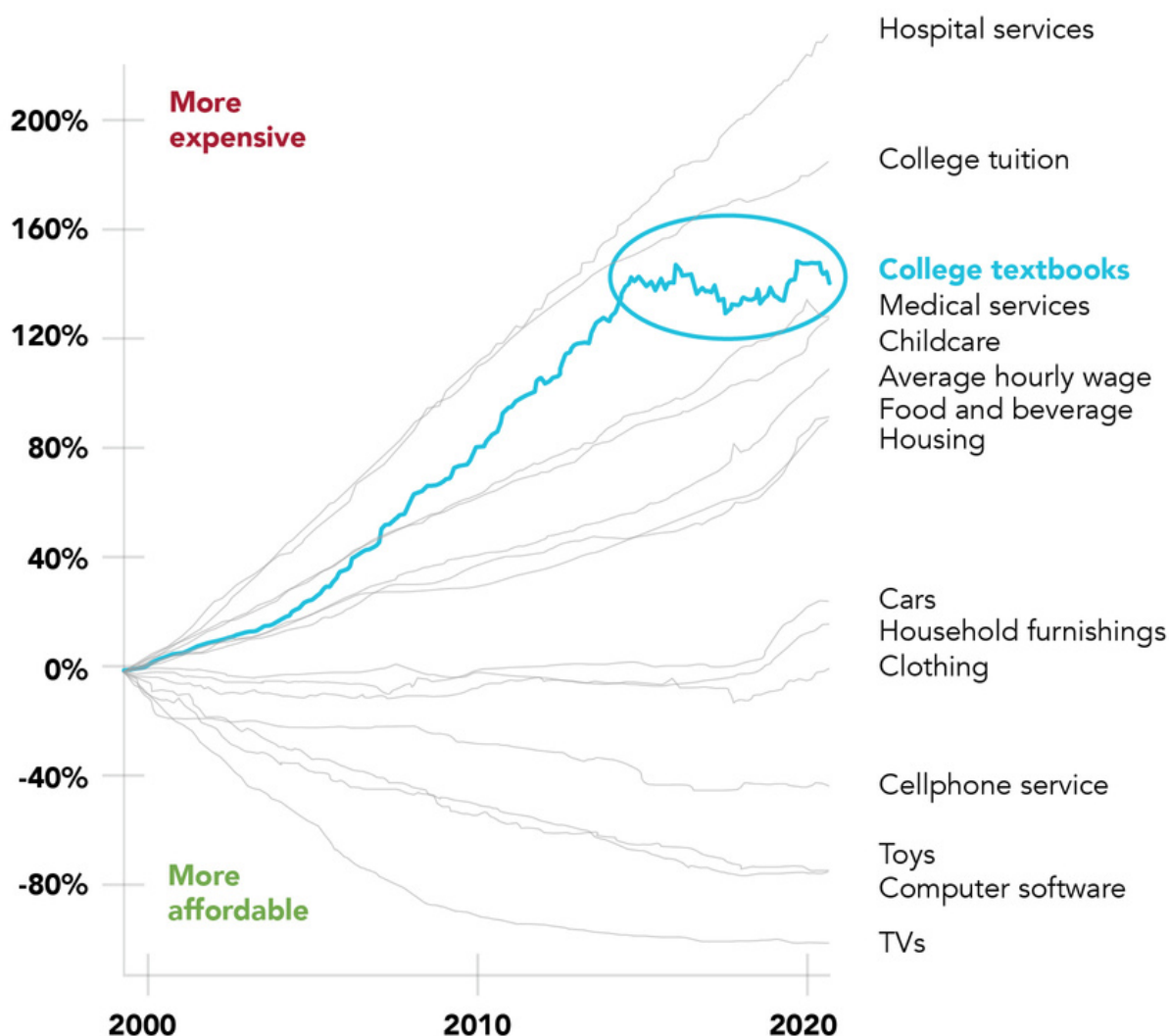
There's no such thing as a free textbook

While OER itself comes at no cost, sustaining and expanding the OpenStax library requires financial support. OpenStax depends on philanthropic contributions and government grants, as well as revenue generated from textbook print sales and publishing partner royalties. Key supporters like the ones below have played a pivotal role in OpenStax's achievements, investing over $117 million since 2001.

Thank you to Rice University, our generous supporters, and strategic advisors.

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For a full list of supporters, visit openstax.org/foundation

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Join us in the open education movement

▶ **For more information**

If you are eager to explore how you can contribute and further this vision, kindly reach out to us via email at give@openstax.org or by phone at 713-348-4600. Your involvement can make a profound difference in shaping a brighter future through education.

OpenStax continues to expand to new subject areas, grade levels, and languages to reach more students. Yet, OpenStax is more than free textbooks. With a team of researchers, educators, and learning engineers at Rice University, OpenStax is creating research-based learning tools to help teachers and learners better personalize the education experience. OpenStax needs your partnership to continue its impact.

Ann Doerr
OpenStax Advisor
Rice University Board Trustee and Alum

"I believe the education system in the United States is badly broken, so my major philanthropic focus has been trying to help fix that over time. With sufficient investment, focus, and patience, OpenStax can continue to be a key factor in the transformation of the educational system"

Bob Maxfield
OpenStax Advisor