ANNUAL REPORT 2021

BSCS
SCIENCE LEARNING

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LETTER FROM THE EXECUTIVE DIRECTOR

Dear friends,

2021 was a year of transition at BSCS, as it was everywhere. We entered the year cautiously optimistic about COVID-19 receding, but we didn't know what to expect. And, having observed how vulnerable public health is to misinformation, we had a stronger sense of purpose than ever. Rather than worrying about getting back to so-called normal, we decided to focus on forging a path forward. That meant investing in our innovators and our innovations.

In last year's report, we shared stories of the professional learning programs we have developed for teachers and educational leaders. In 2021, we continued and grew that work. In this year's report, we focus on the work we are doing to develop instructional materials.

BSCS Biology: Understanding for Life is an example of our instructional materials development. This program has been designed from the ground up to take over as BSCS's flagship high school biology program. We felt so strongly about the need for this program that we entered into an agreement with our long-term publishing partner, Kendall Hunt, to jointly fund its development. We were able to invest in this program because of the many individual donors, large and small, who have contributed to BSCS over the years. We are happy to say that the feedback from field-test sites and early adopters has been very positive. So, as we send the latest ***BSCS Biology*** program out in the world to advance our mission, we are also reassured that we will be recouping our investment and then some.

Of course, we can't innovate without innovators, so we are also investing in our staff. Over the last few years, we have doubled the size of our staff, we have increased the number of people from marginalized groups on our staff, and we have distributed leadership responsibility across a larger and more diverse set of staff members. Recognizing that our old systems and processes would not enable our larger, more diverse organization to reach our ambitious goals, I launched a major organizational restructuring in late 2021. I started this process by establishing the role of Director for People and Culture to make sure that organizational culture and the professional growth and development of staff would be at the forefront of our efforts, and appointed Molly Stuhlsatz, Senior Research Scientist, to serve in that role.

These are ever-changing times, and we continue to operate with caution. Still, I could not be more proud of our people and our work. And I have never been more appreciative of our supporters, who continue to walk alongside us as we pursue a more meaningful science education for all young learners.

Sincerely,

Daniel C. Edelson, PhD

OUR WORK: INSTRUCTIONAL MATERIALS

Science education has long sought to prepare young people to understand and face societal challenges. The past few years have heightened our awareness of just how important science can be. We hear about challenges daily. Health crises. Natural hazards. Prejudice. Climate change. The list goes on and on.

So, what can the science education community do about it today? At BSCS, we believe that high quality instructional materials can play an important role, and we are committed to developing instructional materials that prepare young people for the complex world they will inherit. Here is a snapshot of that work.

"Right now, we are developing programs that help teachers engage students in deep and meaningful science learning experiences that translate to lifelong knowledge and skills. We are developing programs that support student-driven investigation of real-world issues. We are developing programs that immerse students in the complexity of these issues and provide a safe space for reasoning about them. And we are developing programs that equip students with a sense of agency so they are ready to respond to the challenges they will face outside the four walls of the classroom." -Lindsey Mohan, Associate Director for Program Innovation

BSCS Biology: Understanding for Life

What it is: New flagship biology program, designed to prepare all high school students from all backgrounds for life in our complex world.

Why it's needed now: This program directly addresses societal challenges we can no longer ignore, like antibiotic-resistant infections, while allowing students to investigate compelling and relevant phenomena that will keep them from ever asking, "Why do I need to know this?" By "figuring out" rather than "learning about" the phenomena, students will develop a deeper understanding and sense of agency that will prepare them to use science throughout their lives and careers.

When it was released: Spring 2022

Who did this work: Cari Herrmann Abell, Daniel Edelson (PI), Jean Flanagan, April Gardner, Cindy Gay, Becca Greer, Sylvie Kademian, Lindsey Mohan (Co-PI), Kim Parffit, Monica Sircar, Wayne Wright,

How it was funded: Kendall Hunt / BSCS

Climate Education Pathways

What it is: Study that aims to create and research a learning experience for high school students at the intersection of conceptual understanding, identity, and agency – together comprising environmental science agency related to climate change.

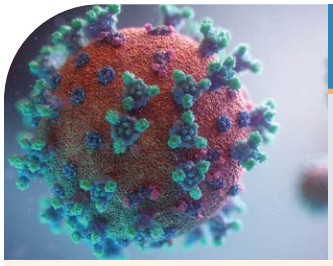
Why it's needed now: A scientifically literate populace needs to understand global climate change. Cultivating a concern for climate change and supporting agency to act requires deep conceptual understanding of the mechanisms causing climate change, how solutions work to mitigate future temperature increase, and how individuals and communities can respond to the changes they face right now. Students experience lessons rooted in changes they and their community are experiencing and locally relevant solutions available to them.

When it will be available: January 2023: Opportunities to participate in field tests and professional learning institutes.
Spring 2025: Public release.

Who did this work: Lisa Carey, Renée DeVaul, Colin Dixon, Candice Guy-Gaytán, Emily Harris (Co-PI), Audrey Mohan, Lindsey Mohan (PI), Jeffrey Snowden, Betty Stennett, Wayne Wright

How it was funded: National Science Foundation

OUR WORK: INSTRUCTIONAL MATERIALS



COVID-19 & Health Equity

What it is: New flagship biology program, designed to prepare all high school students from all backgrounds for life in our complex world.

Why it's needed now: In the midst of the pandemic, teachers and students engage in science inquiry and social and emotional learning to investigate the transmission of the COVID-19 virus and how it disproportionately affects communities of color.

When it was released: Fall 2021

Who did this work: Lisa Carey, Renée DeVaul, Daniel Edelson (PI), Becca Greer, Joseph Hardcastle, Holly Hereau, Cari Herrmann Abell, Lindsey Mohan (Co-PI), Nicole Vick, Wayne Wright

How it was funded: Anonymous family foundation

Engineering in the Garden

What it is: Program that engages 3rd–5th grade students in the design of solutions to real-world challenges that arise in gardens.

Why it's needed now: A growing outdoor learning movement seeks resources to use schoolyards and gardens as sites for meaningful learning. This program offers a model garden-based engineering unit that helps garden educators and classroom teachers to understand the engineering design process and develop confidence to facilitate engineering education in the garden.

When it was released: Summer 2022

Who did this work: Becca Greer, Emily Harris (PI), Jeffrey Snowden

How it was funded: USDA National Institute of Food and Agriculture

Humane Genetics

What it is: Research program that explores the role biology education plays in the development of racist and sexist thinking among middle and high school students. We are creating instructional materials and working with committed middle and high school teachers to bring this more humane genetics education to biology classrooms across the country.

Why it's needed now: Our research has uncovered an approach to genetics instruction that can significantly reduce racist and sexist thinking among adolescents.

When it was released: Ongoing: Opportunities to participate in research studies and professional learning institutes.

Who did this work: Andy Brubaker, Brian Donovan (PI), Jean Flanagan, Dennis Lee, Molly Stuhlsatz, Awais Syed, Monica Weindling

How it was funded: National Science Foundation

Making Evidence-Driven Decisions in a Media-Driven World

What it is: Set of curriculum modules that help middle and high school students develop critical-thinking skills to make sense of information from a variety of media sources.

Why it's needed now: Today's students are overloaded with media and misinformation. As they develop health literacy, science literacy, and media literacy skills through these lessons, they will be better prepared to make decisions about issues that affect their health and daily lives.

When it was released: Spring 2022

Who did this work: Jon Adams, Anne Westbrook (PI)

How it was funded: National Institutes of Health

OUR WORK: INSTRUCTIONAL MATERIALS

OpenSciEd High School Physics Program

What it is: High school physics course, part of a three-course high school sequence being developed by a multi-institution consortium. This program engages students in compelling phenomena and societal challenges to prepare them to use science in meaningful ways throughout their lives and careers.

Why it's needed now: Nearly ten years after the release of the Next Generation Science Standards, there are still no widely available high school science programs that implement them.

When it will be available: Materials will be available starting in winter 2022–2023, with the full courses completed in early 2024.

Who did this work: Zoë Buck Bracey (Co-PI), Renée DeVaul, Daniel Edelson (PI), Joseph Hardcastle, Diego Rojas-Perilla, Whitney Smith, Nicole Vick

How it was funded: Bill & Melinda Gates Foundation, Carnegie Corporation of New York, Charles and Lynn Schusterman Family Foundation, William and Flora Hewlett Foundation

Restoring Ea Unit

What it is: Place-based, three-dimensional, and phenomenon-focused unit that is designed for 7th grade students in Central O'ahu and adaptable for middle school students nationwide.

Why it's needed now: This unit honors and leverages traditional and scientific ways of knowing to create experiences that connect students to the place of Hawai'i. As students investigate the Loko ea fishpond, they discover relevant and compelling lessons about improving ecosystems and food sustainability.

When it was released: Spring 2022

Who did this work: Renée DeVaul, Cindy Gay (PI), Emily Harris, Sean O'Connor (Co-PI)

How it was funded: National Oceanic and Atmospheric Administration

OUR PEOPLE

Every program in this report reflects the insight and creativity of our people. We are who we are today because we have people who are deeply committed to the cause of improving science teaching and learning across the country. We have people who are ready to tackle big societal challenges with brave teachers. We have people who have fostered relationships with leaders in education. We have people who do rigorous research so that we can produce the most effective programs possible. We have people who are so obsessed with science that we can't help but create engaging and meaningful science learning experiences for students. We have people who are always thinking about how to advance our work, and we have people who keep that work on track.

In this section, we feature our newest difference-makers at BSCS. These individuals joined BSCS in 2021.

"We have so much experience, expertise, and passion within BSCS. It is my personal mission to ensure that we all have more opportunities to learn from each other and innovate together."
– Molly Stuhlsatz, Associate Director for People and Culture

ANDY BRUBAKER

BSCS Role: Associate Science Educator
Homebase: Goshen, IN

Life before BSCS: I taught a variety of biology and physical science courses to 7th–12th grade students in Colorado and Indiana. I also mentored teachers as an instructional coach and helped teachers integrate educational technology into their classrooms.

Why BSCS: After using various BSCS-developed materials, I was inspired by the organization's focus on student inquiry, equity and social justice, and research-driven design. As an employee, I appreciate the high degree of collaboration and the integration of research, curriculum design, and professional learning.

Fun Fact: I once mountain biked the Colorado Trail, but these days I'm more into family bike rides to the ice cream shop or to look for owls in the woods with my wife and young child.

SETH VAN DOREN

BSCS Role: Research Project Manager
Homebase: Oakland, CA

Life before BSCS: I was a research assistant at the Concord Consortium. Prior to that I was an internship coordinator at Lawrence Berkeley National Laboratory where I helped facilitate and evaluate their college internship programs.

Why BSCS: I had the opportunity to continue to work with two great mentors of mine, Sherry Hsi and Colin Dixon. Additionally, I felt like BSCS leadership and staff were dedicated to a long-term mission of achieving equity in science education.

Fun Fact: I am an avid cyclist and love to compete in local road and gravel bike races. In April of this year I completed the California edition of the Belgian Waffle Ride, a 135-mile mixed-terrain event with over 11,000 feet of elevation gain in just over 11 hours.

CANDICE GUY-GAYTÁN

BSCS Role: Research Scientist
Homebase: Reno, NV

Life before BSCS: I was an Assistant Professor of Science Education at the University of Nevada, Reno where I taught Elementary Science Methods, Biology for Teachers, and graduate seminars focused on teaching and learning in science. I've also served as a K-8 science specialist at an elementary school in San Francisco and as an Outreach Educator at Purdue University.

Why BSCS: I've always been inspired by the work that BSCS has done and continues to do to transform science education. It's a gift to be able to work and learn alongside colleagues who push me to expand the possibilities of what the science teaching and learning experience can be!

Fun Fact: When we're not hiking or skiing, my husband and I brew beer. We've even won an award for our Kölsch!

DIEGO ROJAS-PERILLA

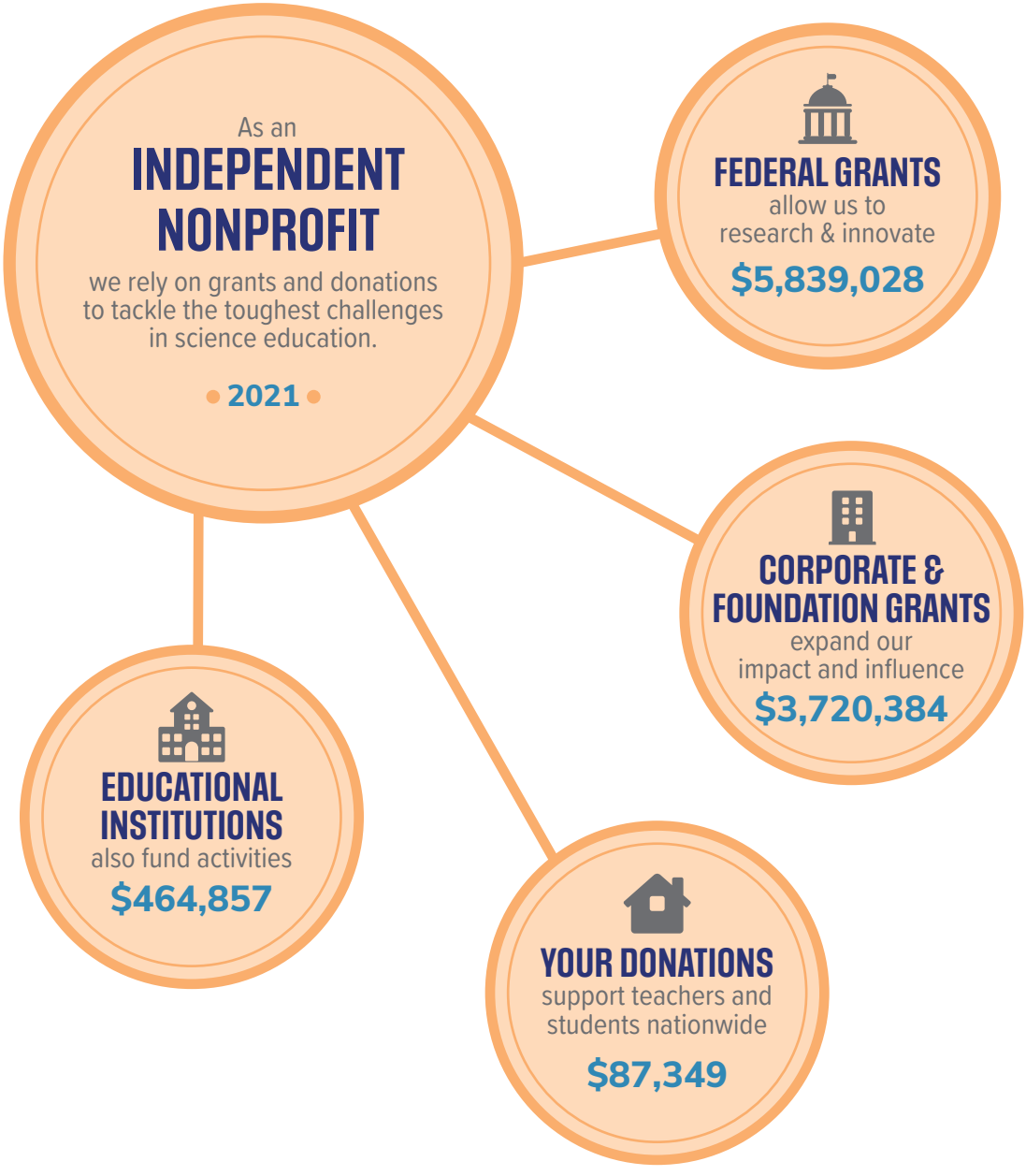
BSCS Role: Science Educator
Homebase: Colorado Springs, CO

Life before BSCS: After finishing my doctoral studies in science education, I wanted to gain experience in the classroom. I decided to go back to Colombia, where I am from, where I taught for three years integrated sciences in 7th grade, and Biology in 8th and 9th grades. I was also part of a professional development program that aimed at preparing in-service science teachers from Bogota to transform their pedagogical practices.

Why BSCS: I heard about BSCS from Brian Donovan during a NARST conference. As a researcher, I was quite impressed by the integration of curriculum design, professional development, and research on learning and teaching. As an educator, I wanted to be part of a community committed to expanding the access to high quality science education, so BSCS was a great fit.

Fun Fact: I have the same name of a criminal searched by the FBI. That makes it really fun to travel internationally.

REVENUE


As an
INDEPENDENT NONPROFIT
we rely on grants and donations to tackle the toughest challenges in science education.
2021
FEDERAL GRANTS
allow us to research & innovate
$5,839,028
CORPORATE & FOUNDATION GRANTS
expand our impact and influence
$3,720,384
EDUCATIONAL INSTITUTIONS
also fund activities
$464,857
YOUR DONATIONS
support teachers and students nationwide
$87,349

FUNDING SOURCES

FEDERAL AGENCIES

National Institutes of Health
National Oceanic and Atmospheric Administration
National Science Foundation
U.S. Department of Agriculture
U.S. Department of Education

FOUNDATIONS/BUSINESSES/NONPROFITS

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George Lucas Educational Foundation
Gordon and Betty Moore Foundation
Kendall Hunt Publishing Company
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Pisces Foundation

SCHOOLS/UNIVERSITIES/STATES

Arizona Science Teachers Association
Arvada West High School, CO
Denver Public Schools, CO
Friends Academy, NY
Jefferson County Board of Education, Louisville, KY
Nebraska Department of Education
New Mexico Northwest Regional Education Cooperative
University of Florida EQuIPD Program

ADDITIONAL FUNDING FROM ROYALTIES/SALES/PARTICIPANT FEES

FINANCIAL ACTIVITY AND ASSETS 2021

	Unrestricted	Donor Restricted	Fiscal Year 2021
Operating Revenues			
Federal and State	5,839,028		5,839,028
Foundation	2,998,736	569,859	3,568,595
Schools/Universities	464,857		464,857
Other Contracts	721,648		721,648
Royalties/Sales/Participant Fees	(118,194)		(118,194)
Total Operating Revenue	9,906,075	569,859	10,475,934
Operating Expenses			
Program Services	9,047,650		9,047,650
General and Administrative	2,254,496		2,254,496
Marketing and Development	193,983		193,983
Total Operating Expenses	11,496,129		11,496,129
Operating Revenue Less Expenses	(1,590,054)		(1,020,195)
Nonoperational Income			
Contributions and Public Support	87,349		87,349
Investment Income - net	219,813	136,145	355,958
Gain on extinguishment of debt	-		
Satisfied Program Restrictions	1,217,138	(1,217,138)	-
Total Nonoperational Income	1,524,300	(1,080,993)	443,307
Net Assets			
Change in Net Assets	(65,754)	(511,134)	(576,888)
Net Assets Beginning of Year	1,711,121	1,886,973	3,598,094
Net Assets End of Year	1,645,367	1,375,839	3,021,206

NOTE ON OPERATING LOSS: In 2021, BSCS had considerable expenses for program activities that were covered by donations, grants, and other income received in prior years. This imbalance between revenue and expenses in the 2021 fiscal year is recorded as an operating loss for that year. 2021 expenses from prior-year donations included $228,964 toward the development of a new high school biology program that was published in April 2022. Sales of this program are projected to yield a considerable stream of royalty revenue beginning in 2023.

GENEROUS SUPPORT

Heroes (15+ years)

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Maxine and M. L. Denniston
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*Anonymous
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** = major donor (gifts of $5,000+)*

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