PhET INTERACTIVE SIMULATIONS

University of Colorado Boulder

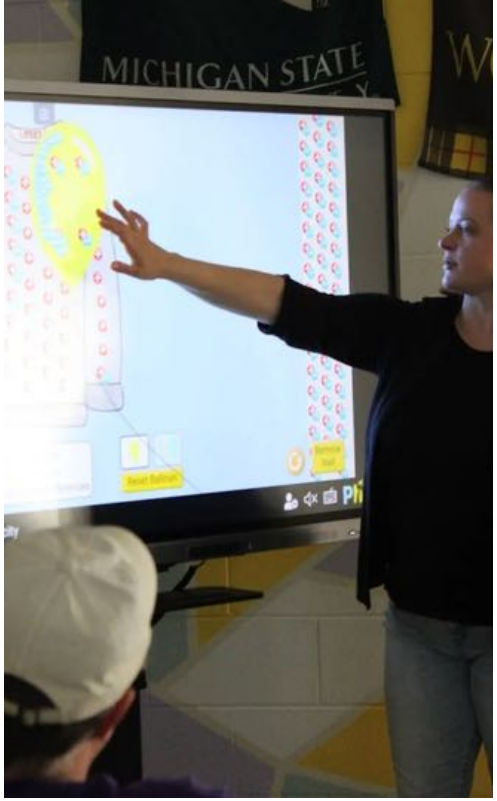
INTERACT DISCOVER LEARN

phet.colorado.edu

2025

IMPACT REPORT

Kit de Construcción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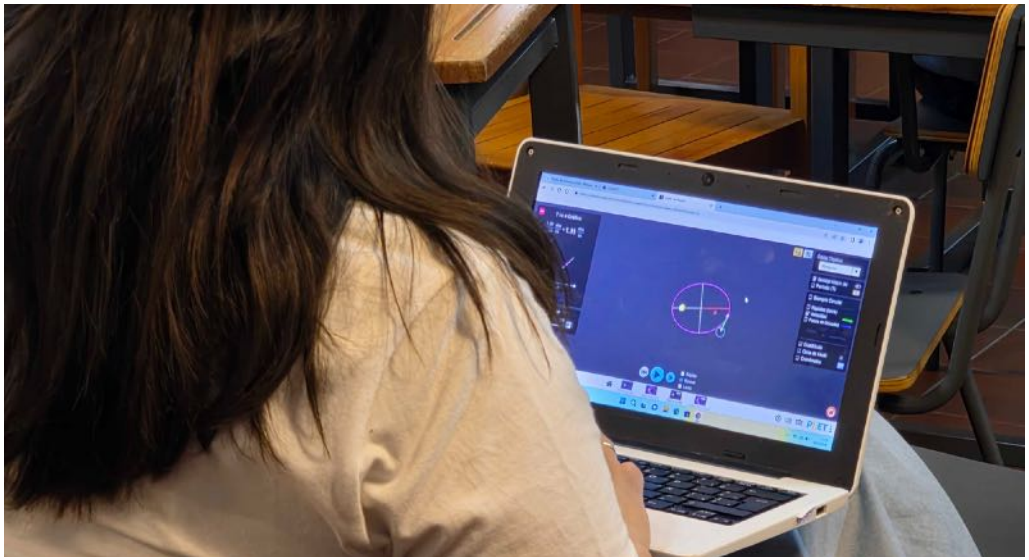

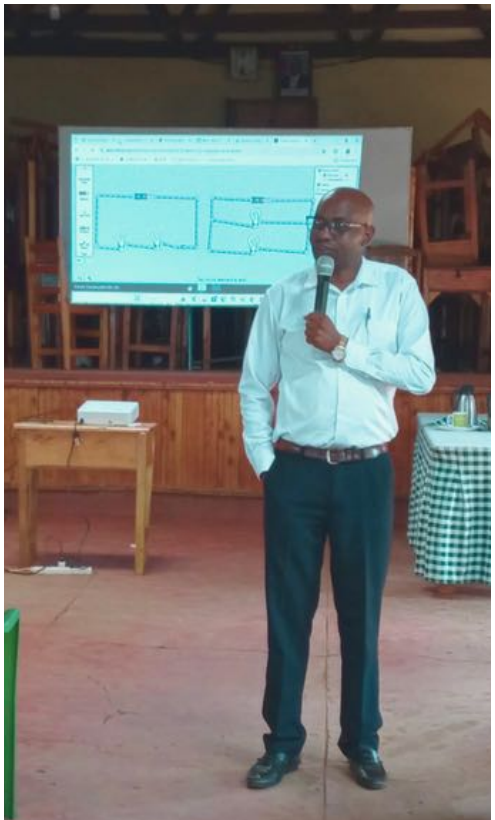

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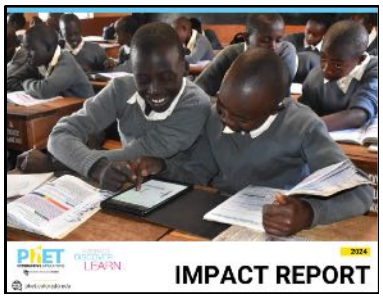
Prior Impact Reports

2023: bit.ly/4uRXY7M

2024: bit.ly/47Yphn1t



2025 Report

A message from Executive Director Dr. Kathy Perkins

In 2025, PhET reached a remarkable milestone: 1.8 billion cumulative online sim runs since our founding in 2002 — spanning nearly every country on the planet. This year, the depth of that impact was independently affirmed: PhET was accepted into the UNICEF Learning Cabinet with an evaluation of "Strong" evidence of impact, recognized on Instructure's EdTech Top 40 list as a leading study tool, and awarded as an MIT Solve semifinalist. At roughly two cents per online sim-based learning session, every dollar invested in PhET supports more than 50 learning experiences around the globe.

This was also a year of significant challenge. In April, the National Science Foundation abruptly terminated our Pathways to Open Source Ecosystems grant — one of over 1,000 grants cut nationwide — leaving $1 million in planned work unfunded and underscoring the fragility of relying on any single funding source.

We have responded with decisive action. PhET engaged the Harvard Business School Alumni Consulting Group to help refine a long-term sustainability strategy centered on diversified funding — combining philanthropic capital with growing earned revenue. Building on those recommendations, in 2026 we plan to hire a Director of Development and a Grants Coordinator to proactively cultivate foundation partnerships in a landscape where roughly 75% of opportunities are invitation-only. We are also transitioning our core simulation collection from a CC BY to a CC BY-NC license — this will further enable PhET to generate revenue from products and services built around our simulations.

Even amid these shifts, our vision remains constant: a world where science and math are inclusive, enjoyable, and empowering. Across 36 countries, 116 PhET teacher leaders are championing active learning in their communities. Our network of over 70 licensing partners grew by nearly 50% this year. And we continued to expand what we offer the world — publishing five new HTML simulations, including contributions in quantum science aligned with the United Nations International Year of Quantum, and launching PhET Studio, our first premium product designed to bring the power of simulation customization to every classroom.

We invite you to explore the full scope of this work in the pages ahead.

PhET's Major Awards & Recognitions

2025: UNICEF Learning Cabinet (evidence of impact: *Strong*)

2025: Instructure EdTech Top 40 (top 10 in "Study Tools")

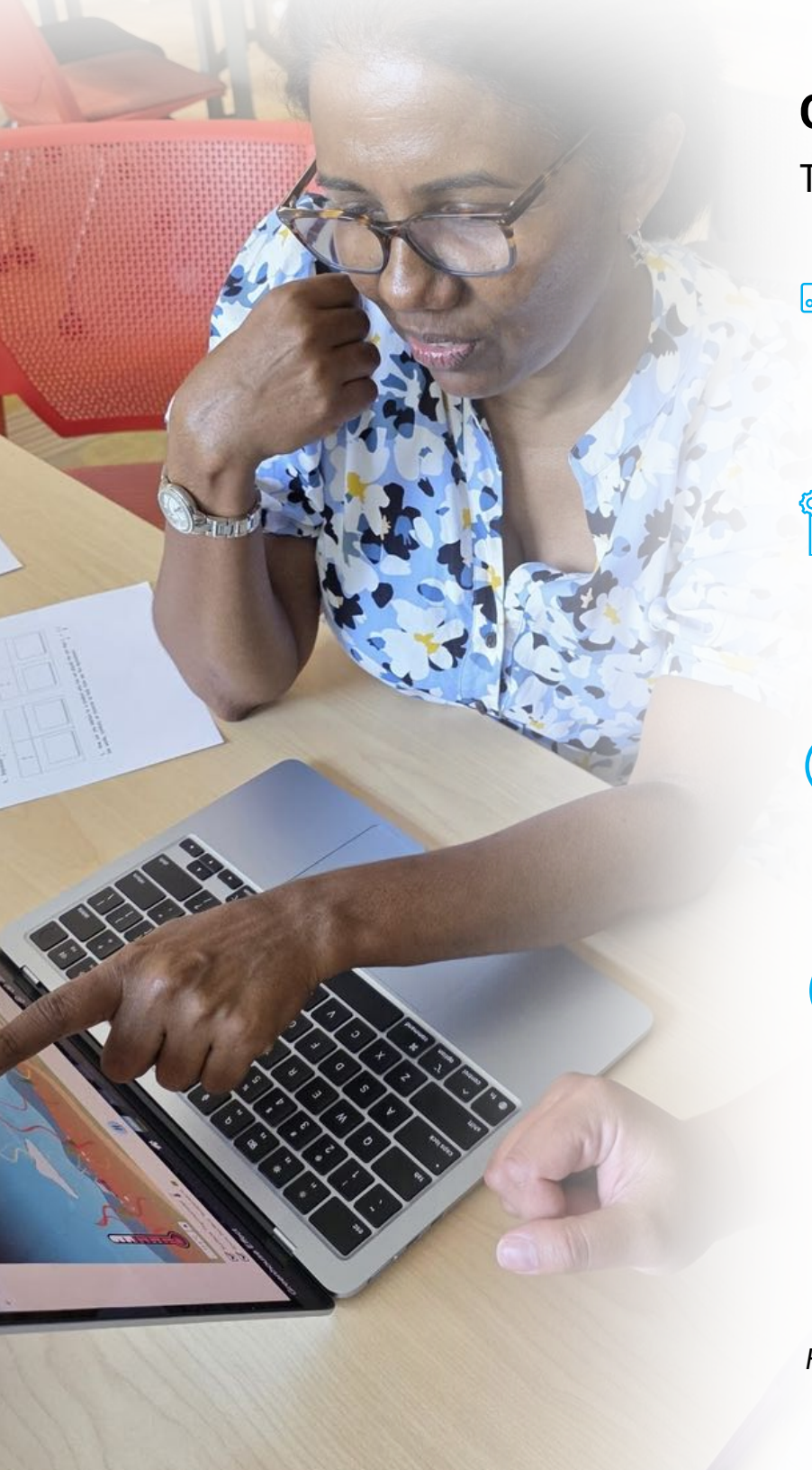
2025: MIT Solve Global Learning Challenge *semifinalist*

2020: Yidan Prize for Education Research (awarded to PhET founder Dr. Carl Wieman)

2019: Open Education Global Award (Open Simulation Award)

2017: WISE Award for Educational Innovation

2011: Tech Award for Technology Benefitting Humanity



Our Impact in a Nutshell

The PhET Interactive Simulations project:

increases access to high-quality STEM learning resources

- **1.8B+** cumulative sim runs since 2002
- **250M+** sim runs delivered to **50M+** learners in 2025

See *Our Reach in Numbers* starting on page 16.

shifts educational policy and practice toward active learning

- **116** teacher leaders from **36** countries prepared and **143K** teachers supported through professional learning since 2021
- **30K** teachers gained skills in active learning in 2025

See *Success Stories* starting on page 41.

improves student learning outcomes in STEM

- **21K+** relevant Google Scholar references
- **Large learning gains** for PhET sim use over traditional instruction

See *Research and Effectiveness* starting on page 44.

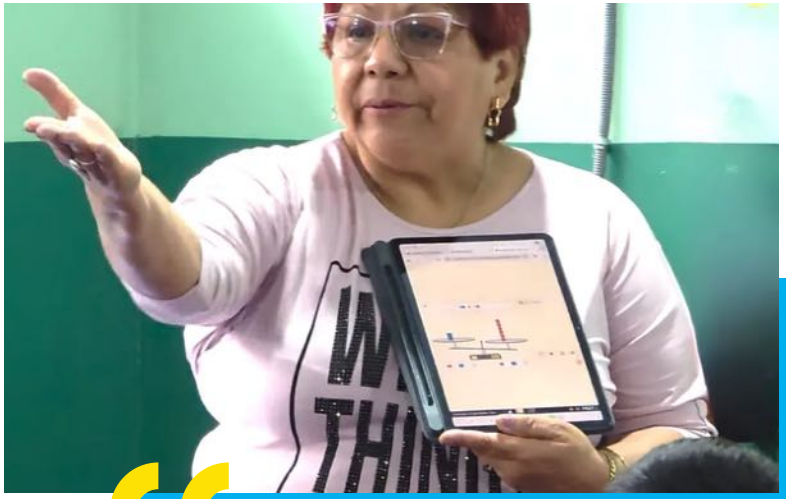
achieves outcomes at a very low cost per learner

- **$0.01-$0.02** cost per sim-based learning session

See *Financials & Sustainability* starting on page 49.

Every $1 invested in PhET supports 50+ sim-based learning sessions.

How does PhET attain this level of impact? Dig into the remainder of this report!



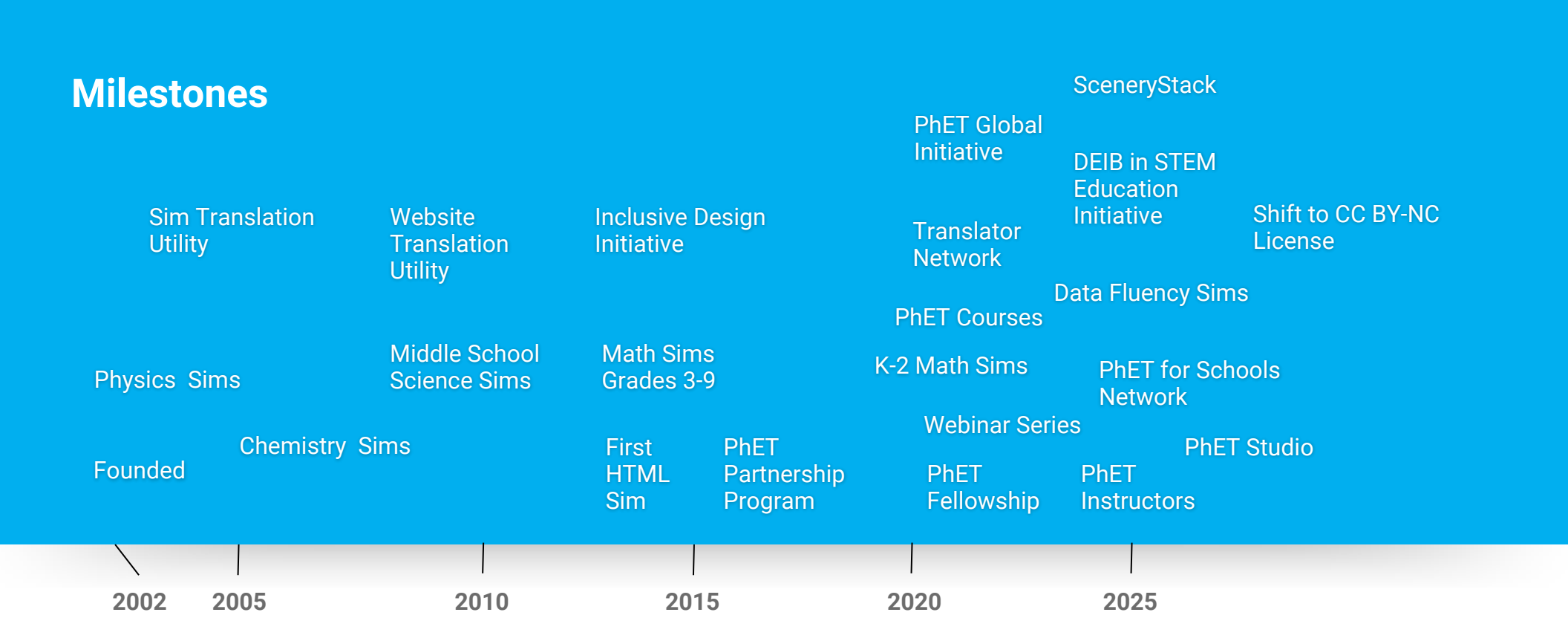
“Although I have other physical manipulatives for mathematics, simulations are just more engaging. Simulations provoke a certain kind of dynamic in the classroom for asking questions.”

~ Yrma Sánchez Santiago, Peru

About Us

Our Story, Mission, Vision, and Work

Milestones



About PhET Interactive Simulations

The PhET Interactive Simulations project at the University of Colorado Boulder creates free interactive simulations for science, math, and statistics learning.

PhET simulations are teaching tools that can support conceptual learning and skill development, and they are most effective when used in a teaching context that makes use of evidence-based, student-centered teaching and learning practices.

Founded in **2002**
by **Carl Wieman (Nobel Laureate)**

Vision

PhET envisions a world where science and math are inclusive, enjoyable, and empowering.

Mission

PhET advances science and math fluency by pioneering innovation in inclusive interactive simulations and fostering community research, design, and practices that inspire agency in teaching and learning.

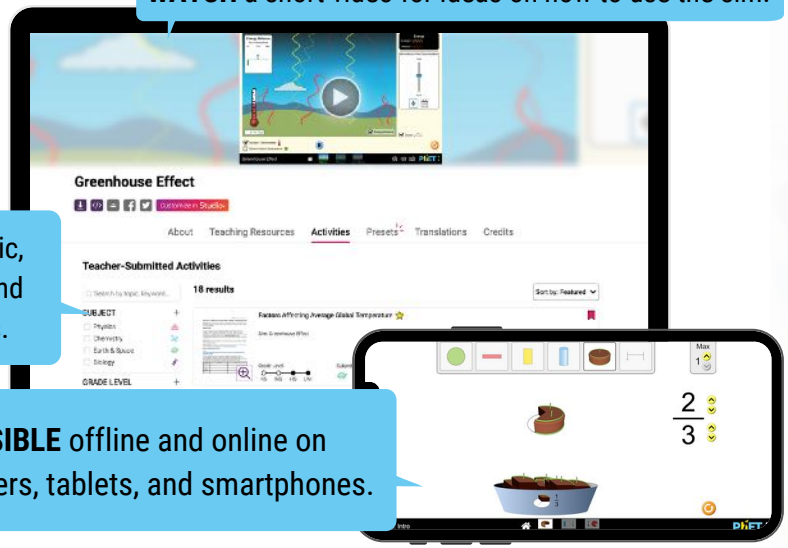
Team

The PhET team is composed of nearly 40 members, each with deep experience in facets of science or math education, including K-12 and university teaching, education research, inclusive design, graphic design, and simulation development. Team members bring global expertise and are located across the United States, Canada, Mexico, Colombia, Nigeria, Kenya, and Austria.

Our team collaborates with hundreds of Trusted Translators, PhET Fellows, PhET Instructors, PhET Partners, and PhET Community Supporters.

PhET Interactive Simulations are flexible and engaging, allowing students to think more like scientists and mathematicians.

FIND sim-specific activities. For selected sims, **WATCH** a short video for ideas on how to use the sim.



BROWSE sims by topic, grade level, device, and accessibility features.

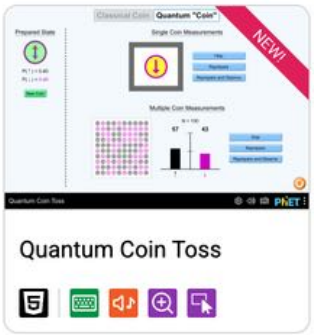
ACCESSIBLE offline and online on computers, tablets, and smartphones.

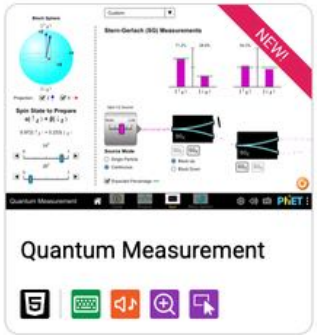
PhET Interactive Simulations are equitable and inclusive for learners of different languages, cultures, learning needs, and technology access.

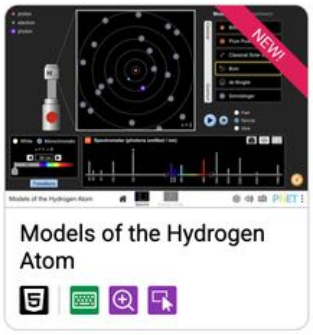
PhET offers simulations and teacher resources in **131 languages** and **regional portrayals** in relevant simulations to represent global cultural diversity.

PhET **expanded its collection by 5 simulations** in 2025 to now include **121 HTML simulations**...

As one of PhET's few life science simulations, **Membrane Transport** resulted in some of the highest usage for a new simulation, with **417,000** runs since its publication in Q4 of 2025. This simulation also exemplifies PhET's inclusive design: its interactive description allows even users with **visual impairments** to comprehend molecular interaction at the celular level.







...published under an **open access license** and which have **offline access** options...

...many of which have **inclusive features** to support learning differences.

Inclusive features position what learners can see, hear, and feel, onto equal footing, resulting in learning tools that can:

- be as effective non-visually as visually.
- empower sensorially diverse learners.
- result in new, less screen-centric, ways to learn with PhET sims.

- Inclusive Features
  - Alternative Input
  - Camera Input
  - Interactive Description
  - Interactive Description on Mobile Devices
  - Sound and Sonification
  - Voicing
  - Pan and Zoom
  - Interactive Highlights

Strategic Lines

PhET works through five strategic lines to advance and sustain its work.

Expanding Simulation STEM Content Coverage

PhET continues to expand coverage across math and science fields. Focus areas in the past years have included **early math**, **statistics, and data fluency**, and updating legacy simulations, including its **quantum** collection.

Advancing PhET's Sustainability

PhET works to advance its financial, technical, and organizational and operational sustainability.

Advancing Equity, Inclusion, and Access in STEM Education

Launched in 2013, the **Inclusive Design** initiative team brought together multiple inclusive design experts who pioneer innovative **inclusive features** that can benefit all students.

Launched in 2022, the **DEIB in STEM Education** initiative continues to provide support to underserved schools through the **PhET for Schools Network**.

Empowering Teachers and Advancing Pedagogy

Launched in 2021, the **PhET Global** initiative provides professional development to teachers worldwide through multiple channels including the **PhET Fellowship** and **PhET Instructors** program. PhET also provides capacity-building through its **pedagogy and content-based** courses offered via Coursera and the Verizon Innovative Learning HQ portal.

Advancing Impact through Innovation, Collaboration, and Community

PhET leads design and technology innovation in highly interactive, multimodal, accessible simulations. It continues to sustain its foundation through the creation and maintenance of its foundational code structure, **SceneryStack**, supporting its **open source community**. As of 2025, the release of **PhET Studio** allows teachers and institutions to purchase a premium license to customize simulation presets, diversifying PhET's revenue streams.

Supporters

PhET's work is made possible by a growing community of funders, partners, and licensing organizations who share our commitment to equitable STEM education.

Key Supporters ($1,000,000+)

Gordon and Betty Moore Foundation

Yidan Prize

NSF

verizon

mastercard foundation

William + Flora Hewlett Foundation

Google.org

The O'Donnell Foundation

University of Colorado Boulder

C. Wieman & S. Gilbert

Major Supporters ($100,000+)

EF+MATH supported by aerdf

Bill & Melinda Gates foundation

The Kavli Foundation

King Saud University

newschools venture fund

Q-SEnSE

STROBE Building the Microscopes of Tomorrow

Schmidt Futures

TeachUNITED

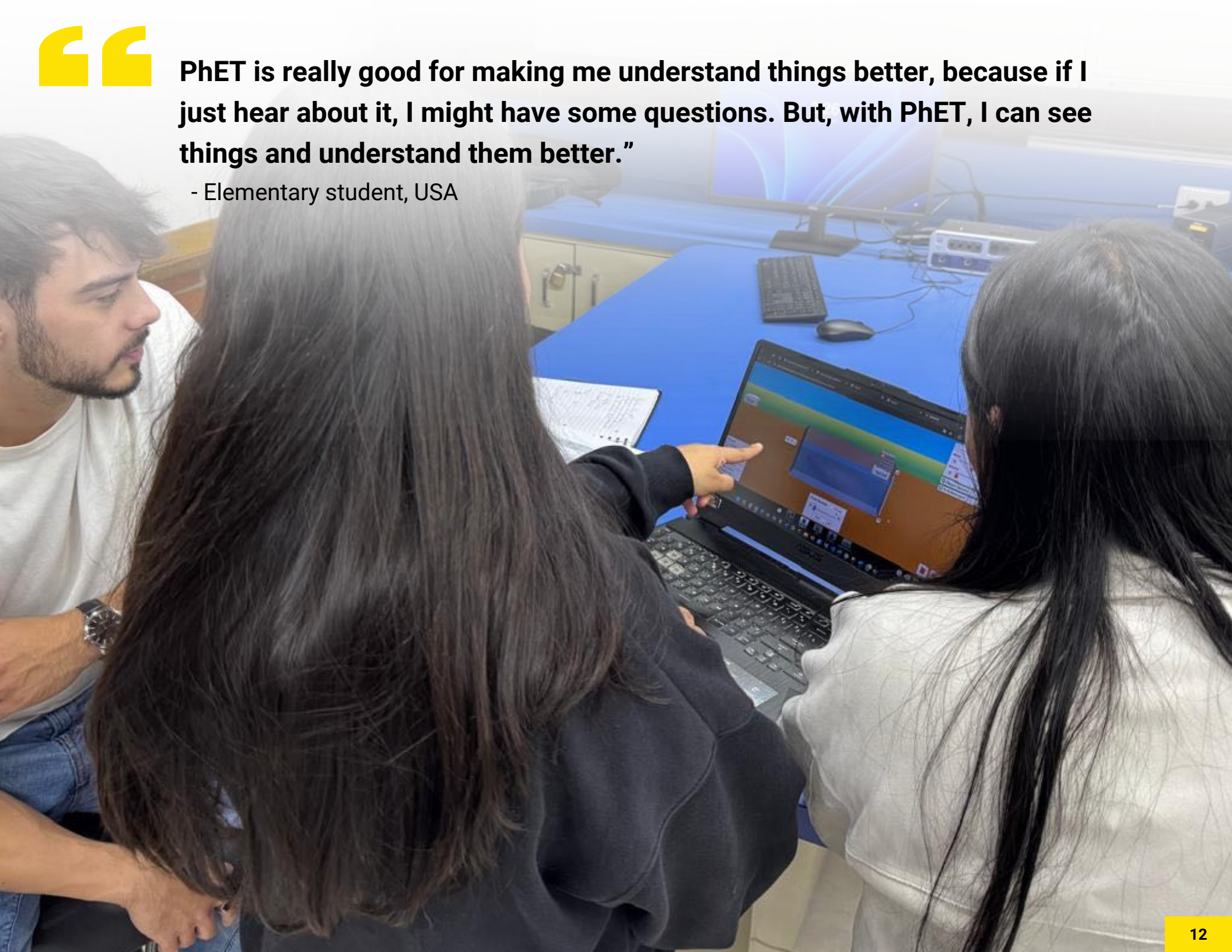
Cisco Foundation

Licensing Partners

Our licensing partner network grew by nearly 50% in 2025, reflecting growing demand for PhET's research-based simulations.

PhET is really good for making me understand things better, because if I just hear about it, I might have some questions. But, with PhET, I can see things and understand them better.”

- Elementary student, USA



Our Reach in Numbers

Our Reach

Sim Runs (Online)

1.8B+

250M+ in 2025

Languages

131

3 new in 2025

HTML Sims

121

89 with an inclusive feature

5 new sims in 2025

Teacher Activities

3,600+

163 new in 2025

Registered Educator Accounts

720K

Active within last 5 years

Teachers Supported through PhET Programs

143K+

30K+ in 2025

PhET Fellows

81

14 new in 2025

PhET Instructors

35

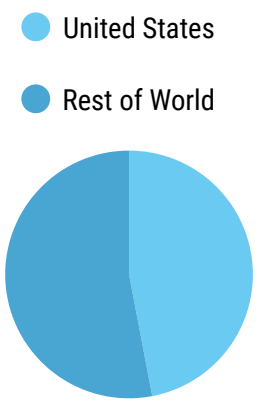
16 new in 2025

Footprint

PhET documents online uses and downloads. Surveys suggest that ~50-75% of usage in some areas may be offline.

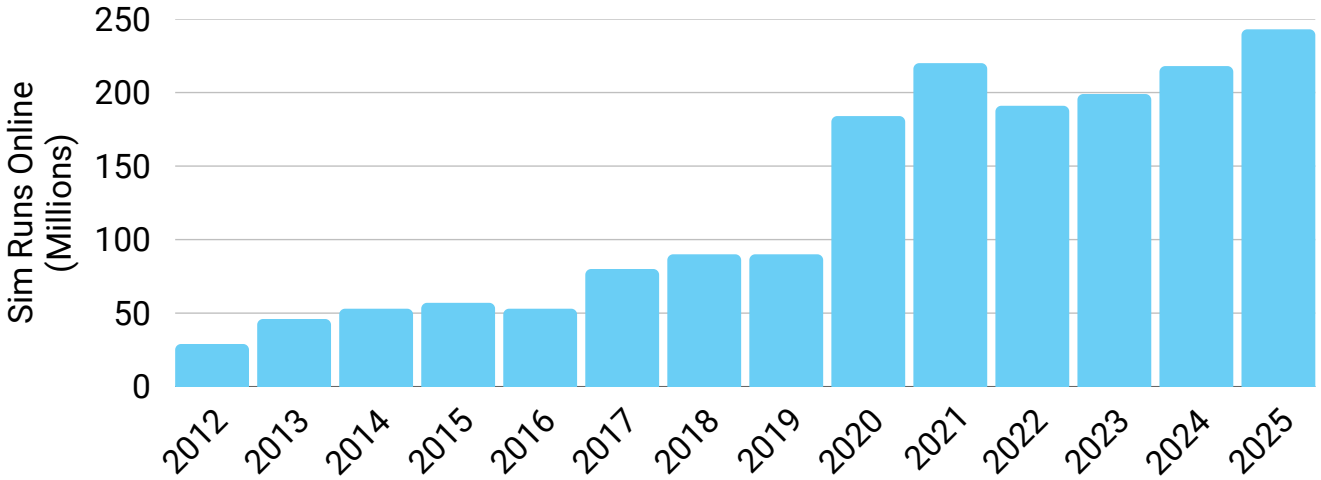
At nearly **250M** online runs per year (plus an estimated additional 25% due to offline use), PhET averages **700K sim-based learning sessions every day.**

More than half of all PhET usage now comes from outside the United States, reflecting PhET's growing role as a global education resource.



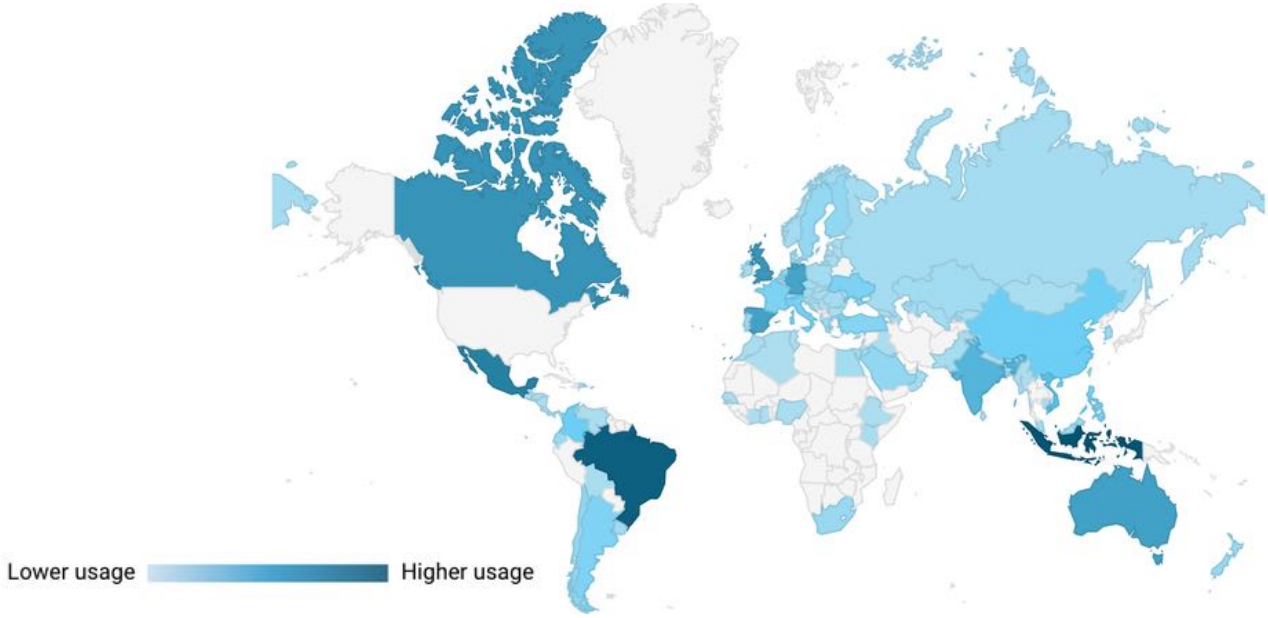
Usage: Sim Runs Online per Year (2012-2025)

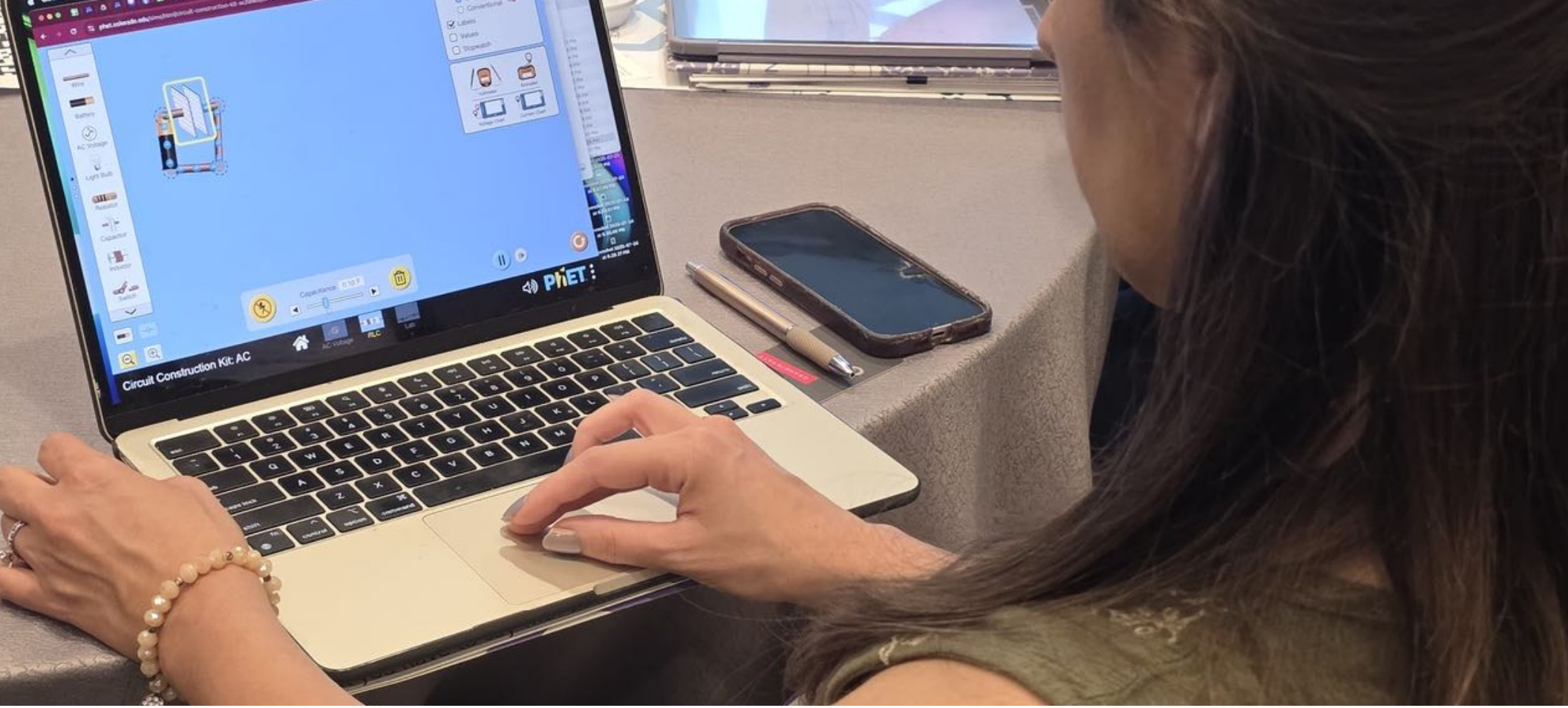
(offline sim usage estimated to add another 25% or greater)



Geographical Distribution of Annual Online Use

(excluding the United States)




Circuit Construction Kit: AC
PhET

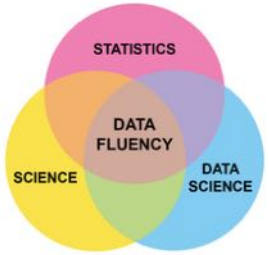
SAMSUNG

PhET
Acid-Base Solutions
About
Teaching Resources
Activities
Projects
Translations
Credits

Strategic Lines & Initiatives

2025 Advancements & Vision for the Future

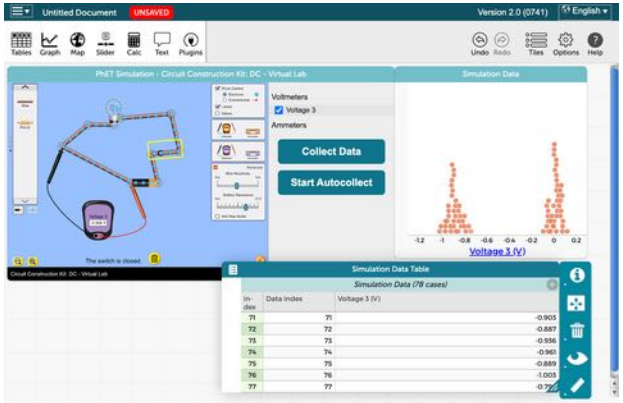
Expanding Simulation STEM Content Coverage



PhET continues to expand coverage across math and science fields. Focus areas include **data fluency** and **quantum** concepts.

Data Fluency

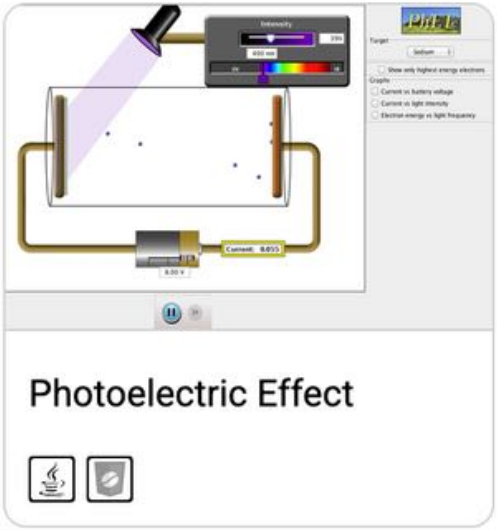
In collaboration with Concord Consortium's open education resource, the Common Online Data Analysis Platform (CODAP), PhET has developed features to permit the study of variation in data for the **Projectile Data Lab**, **Circuit Construction Kit**, and **Gas Properties** sims.



Learn more on the initiative page: https://phet.colorado.edu/en/data-fluency/live-sim-data.

Quantum Concepts

As the international Year of Quantum Science and Technology, PhET received funding to both update PhET's legacy collection and develop new sims related to quantum concepts.



Our future aspirations ...

01 Build a **full suite of early math simulations**, bringing open play, exploration, and discovery to engage young learners and address equity in math literacy.

02 Provide more opportunities for students to develop **data fluency** through explorative **statistics** simulations and by adding **sources of variability** into existing science simulations.

03 Design, develop and publish simulations covering **new STEM content fields**, like quantum concepts, and other gaps identified across international curricula.

04 Regain learning opportunities lost to technology changes by redesigning our remaining **legacy simulations in HTML** (48 Java and 5 Flash simulations).

Example legacy simulations.

Quantum Wave Interference

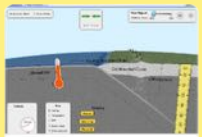
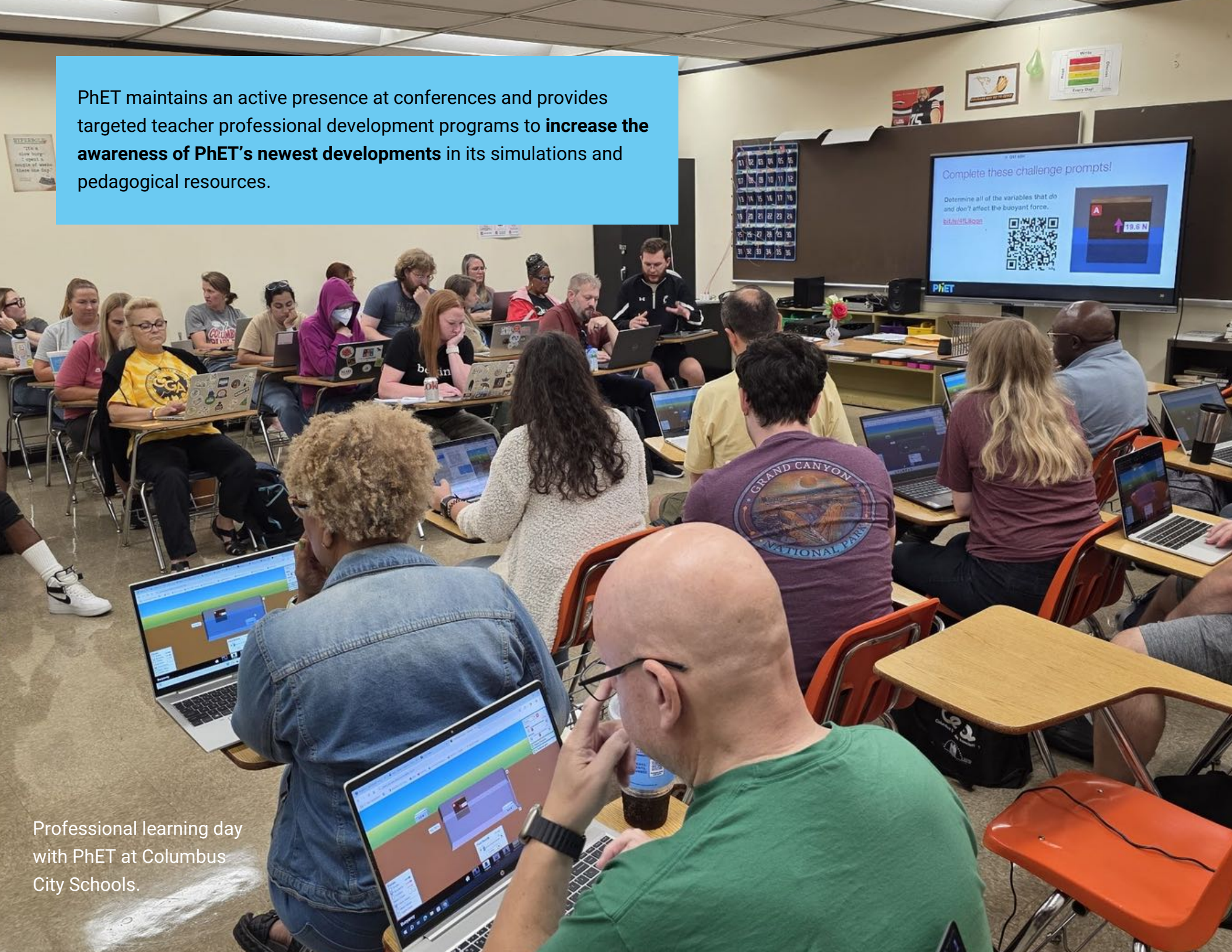


Plate Tectonics

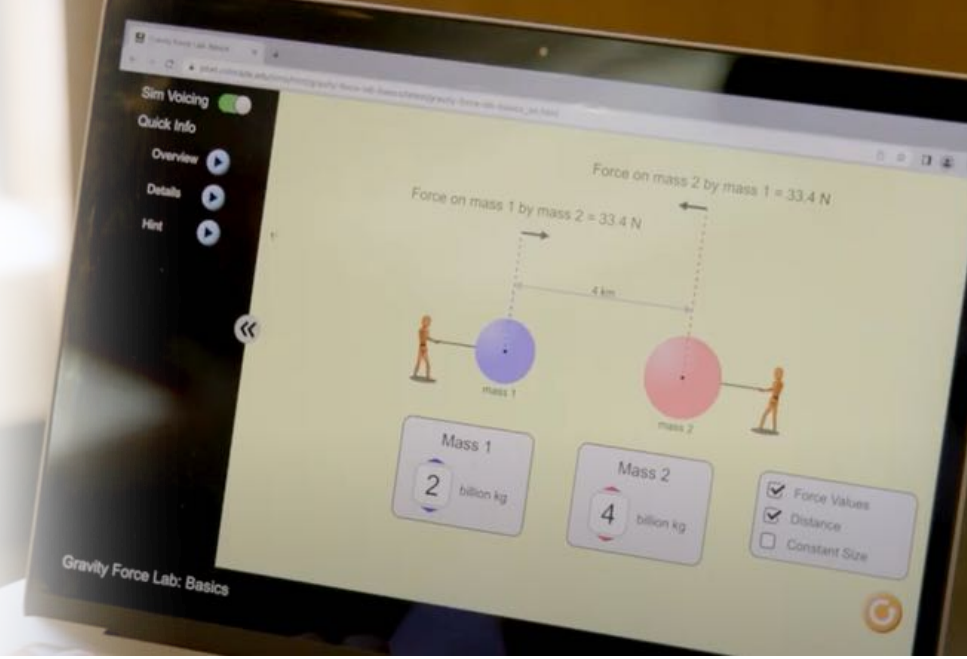
Fluid Pressure and Flow

PhET maintains an active presence at conferences and provides targeted teacher professional development programs to **increase the awareness of PhET's newest developments** in its simulations and pedagogical resources.



Professional learning day with PhET at Columbus City Schools.

Advancing Equity, Inclusion, and Access in STEM



Inclusive Design Initiative

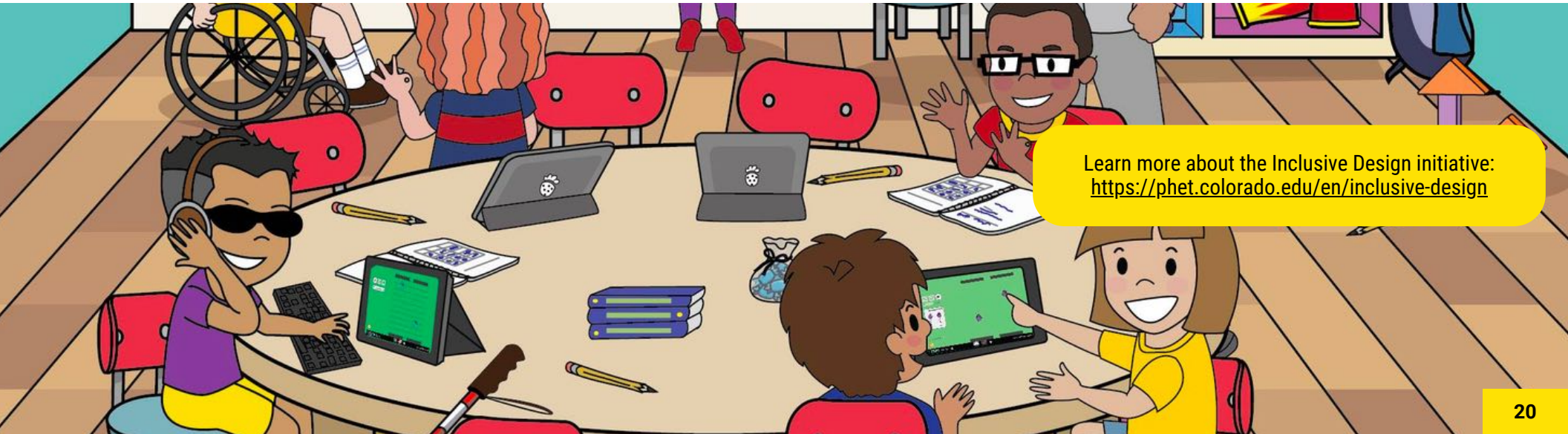
Launched in 2013, the **Inclusive Design** initiative team engages in research on and expands the implementation of fully inclusive simulations, and is working toward compliance with the **Web Content Accessibility Guidelines.**

Inclusive features position how learners experience simulations to:

- be as effective non-visually as visually.
- empower sensorially diverse learners.
- result in new, less screen-centric, ways to learn with PhET sims.

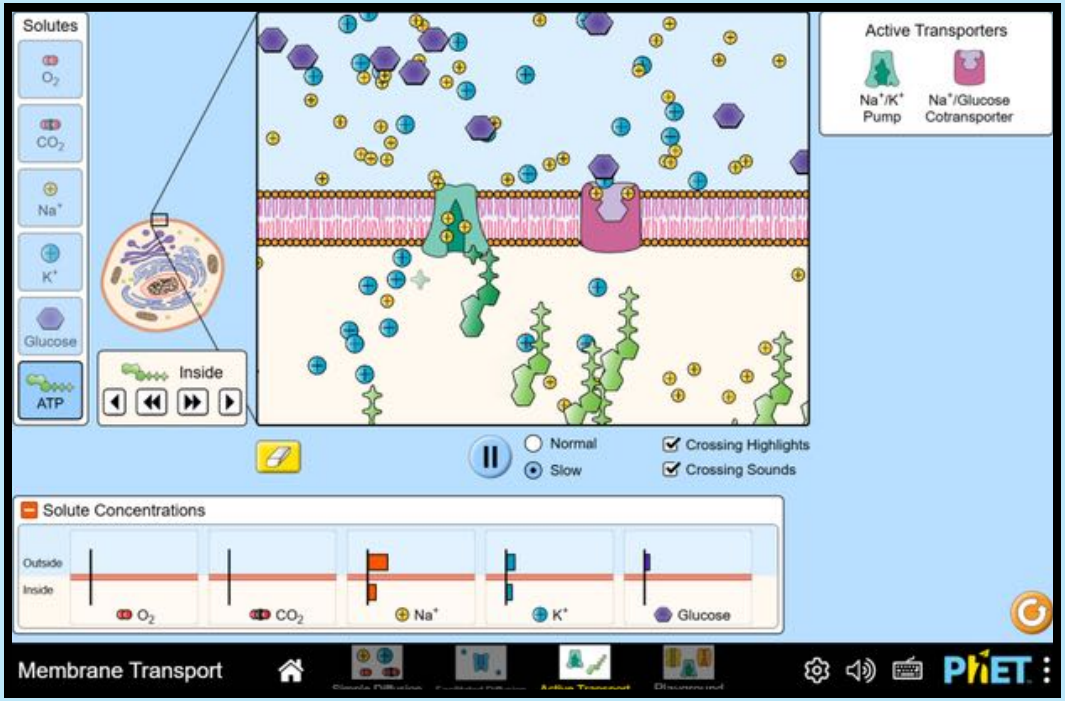
PhET's inclusive design is rooted in academic research. See some of our team's most recent publications:

- Lambert et al. (2025)
- Fiedler et al. (2024)
- Hill et al. (2023)

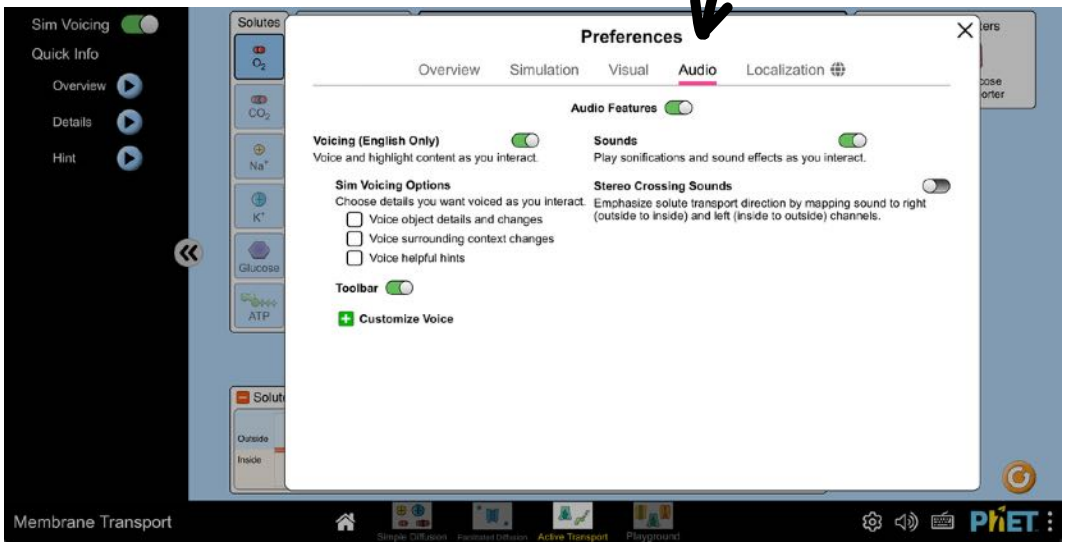


Learn more about the Inclusive Design initiative: https://phet.colorado.edu/en/inclusive-design

Membrane Transport is one of PhET's newest, fully-accessible simulations that includes multiple features.



Users can enable audio preferences that provide a verbal description of what is ocurring in the sim.



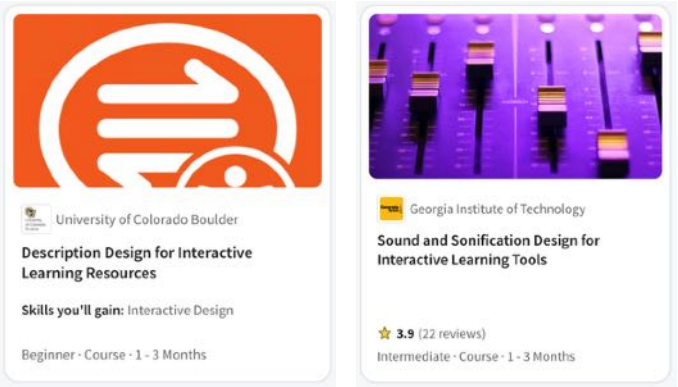
10 types of inclusive features integrated into published and prototype simulations

89 simulations with one or more inclusive features

1 tool published to explore vibratory haptics (Haptics Playground Android app)

The team has pioneered a **description design framework** (Smith & Moore, 2020) for the design of **dynamic interactive** described experiences, making interactive media and sim experiences accessible via screen-reader software and web-based text-to-speech.

To share the team's learnings about auditory display design (description and sound & sonification), PhET continues to maintain two courses that are publicly available from *Coursera*.



Diversity, Equity, Inclusion, and Belonging (DEIB) in STEM Education Initiative

Launched in 2022, the **DEIB in STEM Education** initiative has made substantial advancements to the strategic plan co-developed with the DEIB Advisory Board.

Recommendations for PhET Simulations

addressed in 2025:

1. Multi-Platform Access
2. Multi-Content Area Access
3. Integrated Content Area Access
4. Multiple Grade Level Access
5. Diversified Character Sets
6. Inclusive Features
7. Translation Features
8. Past and Present Contributions
9. Career Connections
10. Real-World Applications

5 **new HTML simulations published**:

- Elementary through university
- Life science, math, quantum
- 1 legacy sim

74 PhET simulations now include **dynamic locale** for in-sim language switching and/or regional portrayals (8 added in 2025).

3 new **TCHIP Master Teacher Fellows** were identified as part of an Advanced Technologies Education grant from the National Science Foundation with Northern Virginia Community College to make **career connections between PhET resources and chip manufacturing and data center industries**.

Brian Bennett

Jordan Kivitz

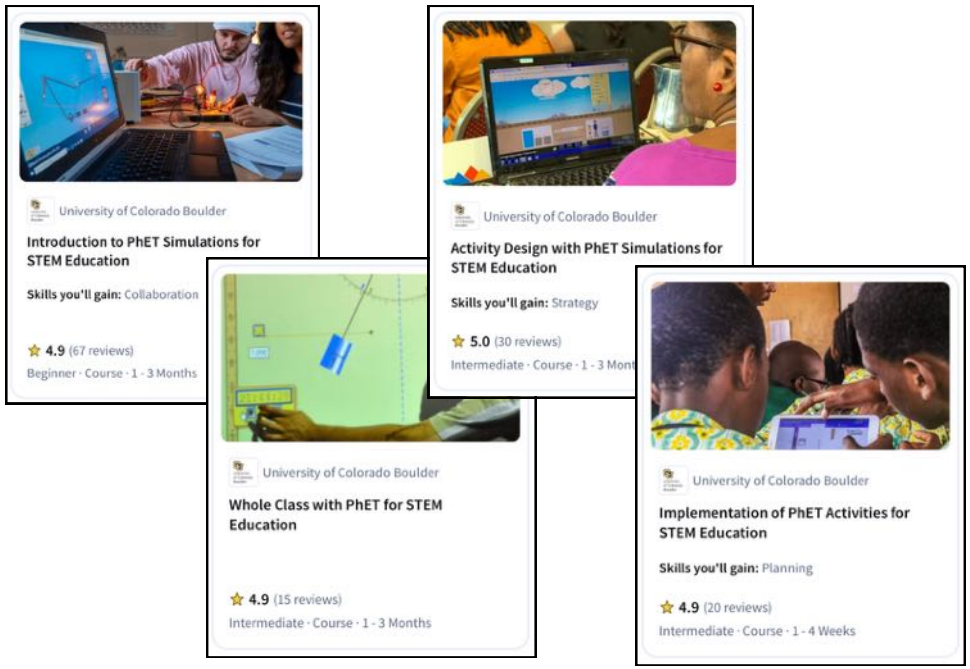
Lisbeth Valladares Hernández

Recommendations for PhET Teacher Professional Development

addressed in 2025:

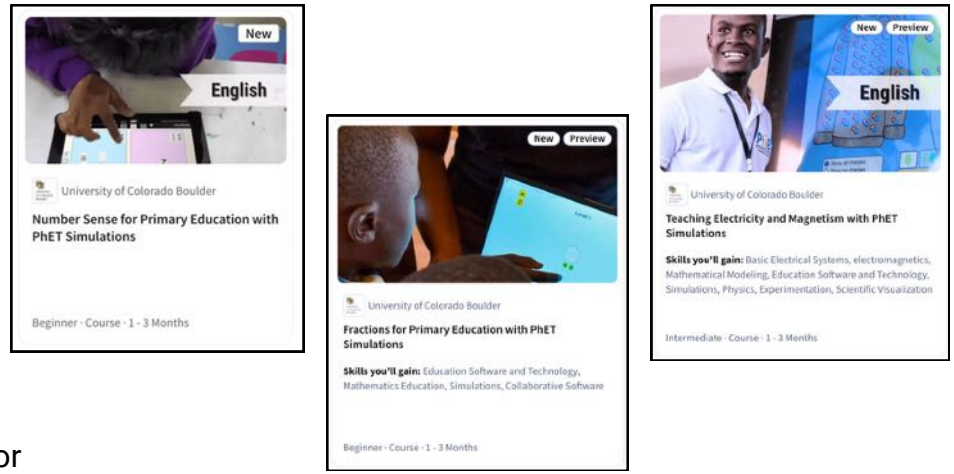
4 courses available on Coursera through the specialization, ***Active Learning in PhET with STEM Interactive Simulations***

- Revised and expanded to include alignment with the **PhET Equity Framework** for STEM education
- Used as a foundation for **equity standards** in PhET's Activities peer review process.
- Available in English, Spanish, and Portuguese



3 courses available on Coursera to support pedagogical content knowledge.

- Courses focusing on **Number Sense**, **Fractions**, and **Electricity & Magnetism**
- Available in English and Spanish.

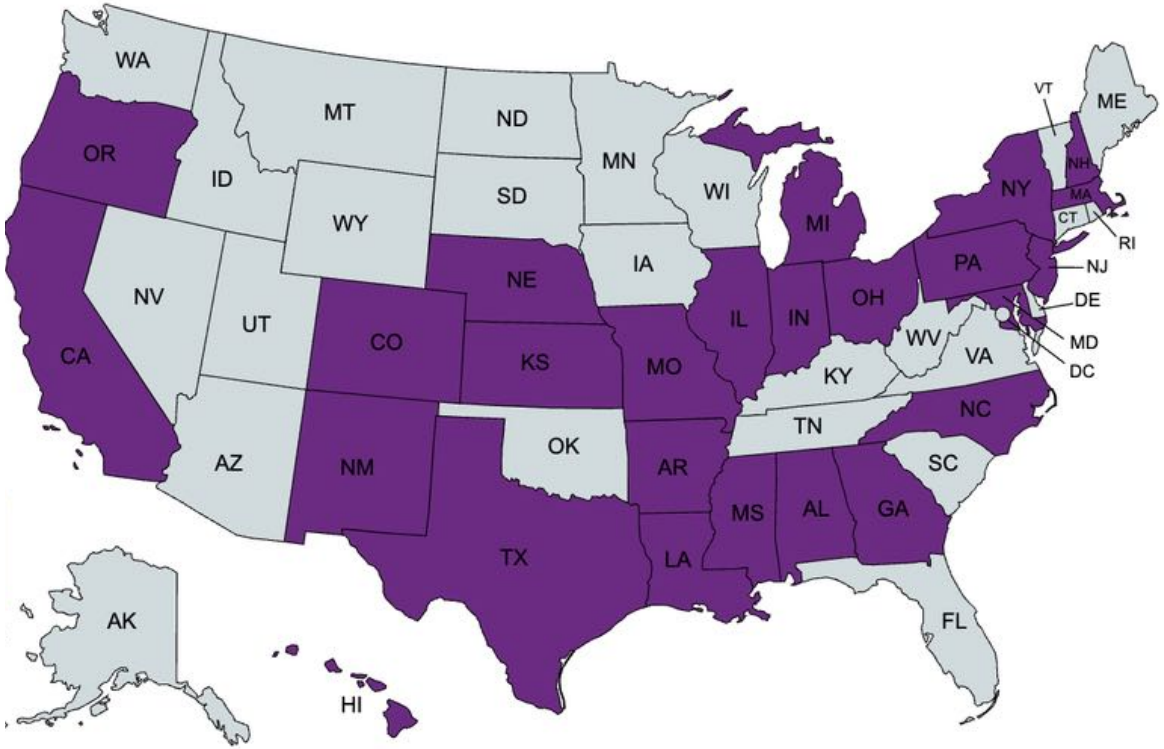


Four courses now available with graduate credits for continuing teacher education through CU Boulder.

PhET for Schools Network

Thanks in part to a generous grant from Verizon, the PhET for Schools Network is providing 63 eligible public school districts and schools access to the **PhET iOS and Android/Chromebook apps**, **PhET Studio**, and **teacher professional development** at no cost for the 2025-2026 school year.

Additionally, **six PhET Fellows** were selected for a rigorous 18-month experience to learn deeply about PhET and then carry out professional development with teachers in their regions and nation-wide.



In the 2025-2026 school year, program participants included:

264 individual schools

95K students

Hundreds of individuals who took one or more of PhET's **12** mini courses on the VIL HQ portal.

U.S. PhET Fellows

These Fellows, all selected from Title 1 or CEP schools, have carried out professional development with hundreds of teachers in in-person and virtual workshop formats at conferences, district events, and across their network.

Localization and Contextualization

PhET maintains a **Translator Network** that supports the translation of PhET simulations, teacher resources, and the PhET website into **131 languages**. In 2025, support from **Learning Equality** ensured the maintenance of the mainstream Arabic and Persian/Farsi collections. *Languages with substantial advancements in 2025 are highlighted below.*

In 2025, PhET added translations into 3 new languages, and completed the collection of simulations with relevant **regional portrayals**.

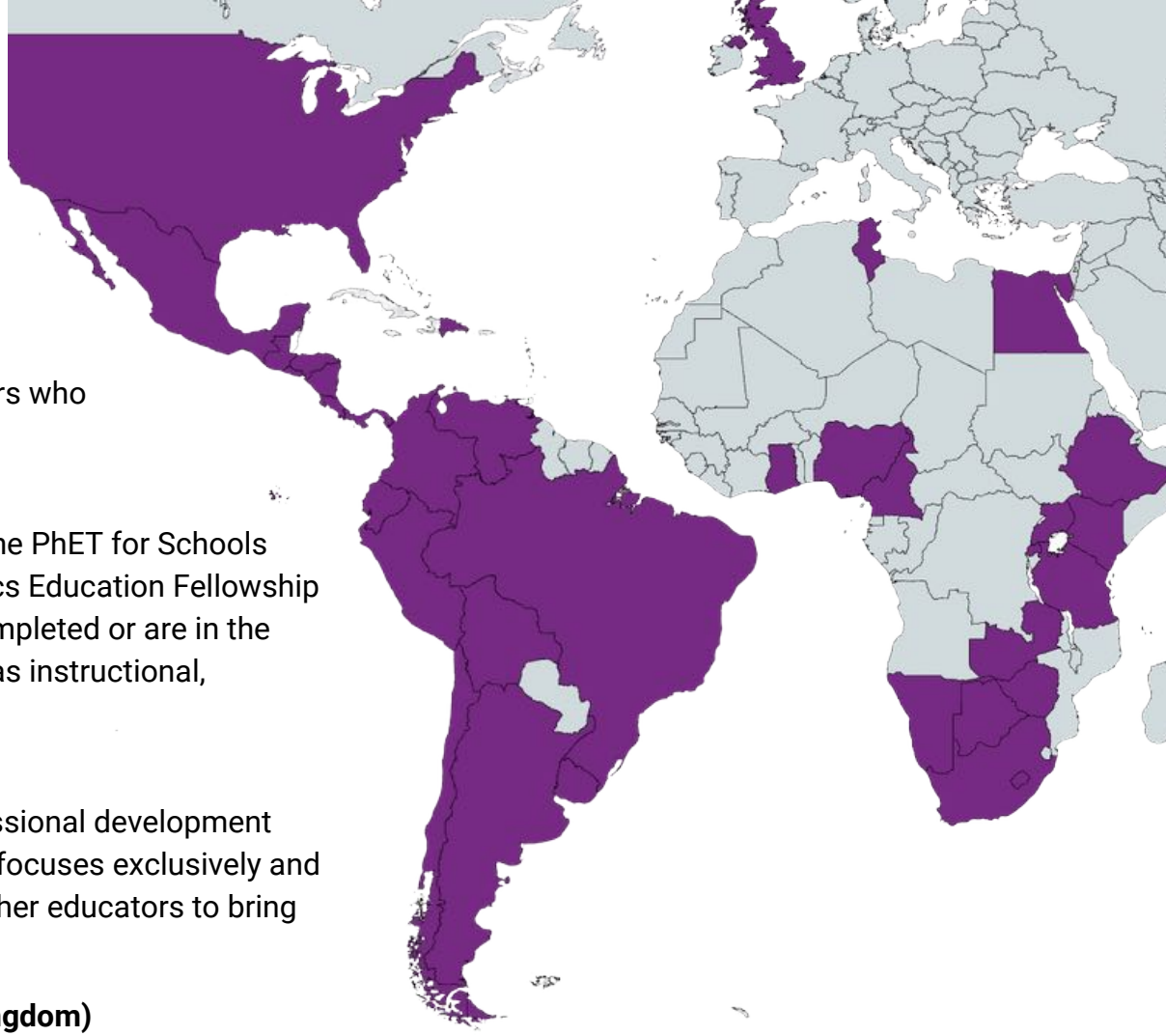
Our future aspirations ...

01 **Ensure that equity is at the core of PhET-based work** by continuing to advance the recommendations of the DEIB in STEM Education Advisory Board.

02 **Leverage Generative AI** to scale the accessibility of PhET simulations for students with diverse learning needs.

03 Expand easy mobile and offline access to PhET sims by fostering corporate and private sponsors for the mobile **PhET App.**

Empowering Teachers and Advancing Pedagogy



PhET's Leadership Programs

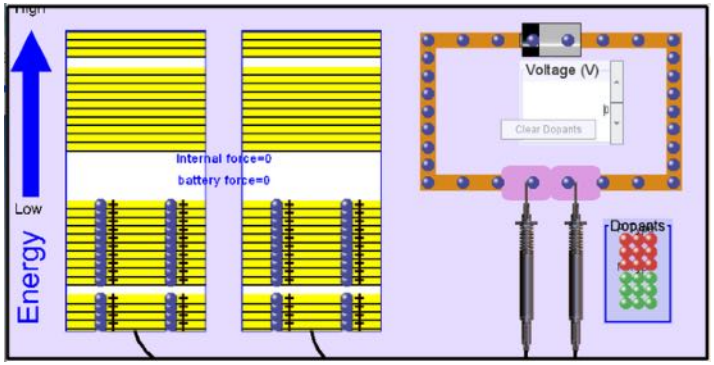
PhET continues to nourish a community of teacher leaders who advocate for high-quality math and science education.

PhET Fellows (U.S., Africa, & Latin America)
In 2025, PhET launched two new Fellowships, including the PhET for Schools Network Fellowship in the U.S. and a Primary Mathematics Education Fellowship in Argentina and Mexico. Now, **81 PhET Fellows** have completed or are in the process of completing a 12-18-month cohort to develop as instructional, association, and policy leaders in their regions.

PhET Instructors (Latin America)
A second Instructors program identified additional professional development leaders, now totaling **35 PhET Instructors**. This program focuses exclusively and in-depth on instructional leadership, helping support teacher educators to bring PhET to professional communities.

Ogden Trust Senior Teacher Fellows at PhET (United Kingdom)
As of 2025, PhET has supported the engagement of **5 Ogden Trust Master Teacher Fellows** placed at PhET. These teachers receive a buy-out of their time (typically half or one day per week) to work on special projects related to the creation of PhET-based instructional resources, teacher professional development for others, or educational research.

TCHIP Master Teacher Fellows at PhET
In late 2025, in coordination with Northern Virginia Community College, **3 TCHIP Master Teacher Fellows** were selected to redesign and incorporate PhET simulations into curricular resources connecting core physical sciences, PhET simulations, and the chip industry.



PhET Fellows

The impact of PhET Fellows is wide-reaching and diverse. Accomplishments include the following:

- Leading PhET teacher workshops
- Training government leaders & policymakers
- Integrating PhET into university teacher pre-service programs
- Hosting conferences for professional societies
- Directly engaging with youth

"It has been an invaluable experience, providing significant opportunities for professional growth. The leadership practice component has fostered personal and professional development, **enhancing my capacity to lead** and my ability to integrate PhET sims into classroom instruction to improve STEM education." ~ PhET Fellow, Africa

"I am convinced that part of **my vocation and calling is to** make an impact in my community to **improve the quality of education**, and **the PhET model is a simple and effective tool to achieve this**." ~ Luis Mijangos, Guatemala

PhET Instructors

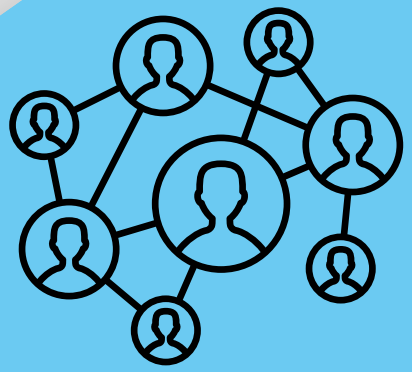
With an explicit focus on instructional leadership, the PhET Instructors program is helping to expand the leadership capacity of individuals who have already completed the *Active Learning in STEM with PhET Interactive Simulations* 60+ hour sequence on Coursera.

Moving forward, each Instructor is committed to leading an in-depth PhET workshops for their region.

"Simulations have managed to make complex concepts more accessible and understandable, **awakening in my students a curiosity and genuine interest in science**."
~ Leidy Zuluaga, Colombia

Ogden Trust Senior Teacher Fellows at PhET

These Fellows are selected for their existing expertise in physics teaching, and supported to carry out individual passion projects across England.



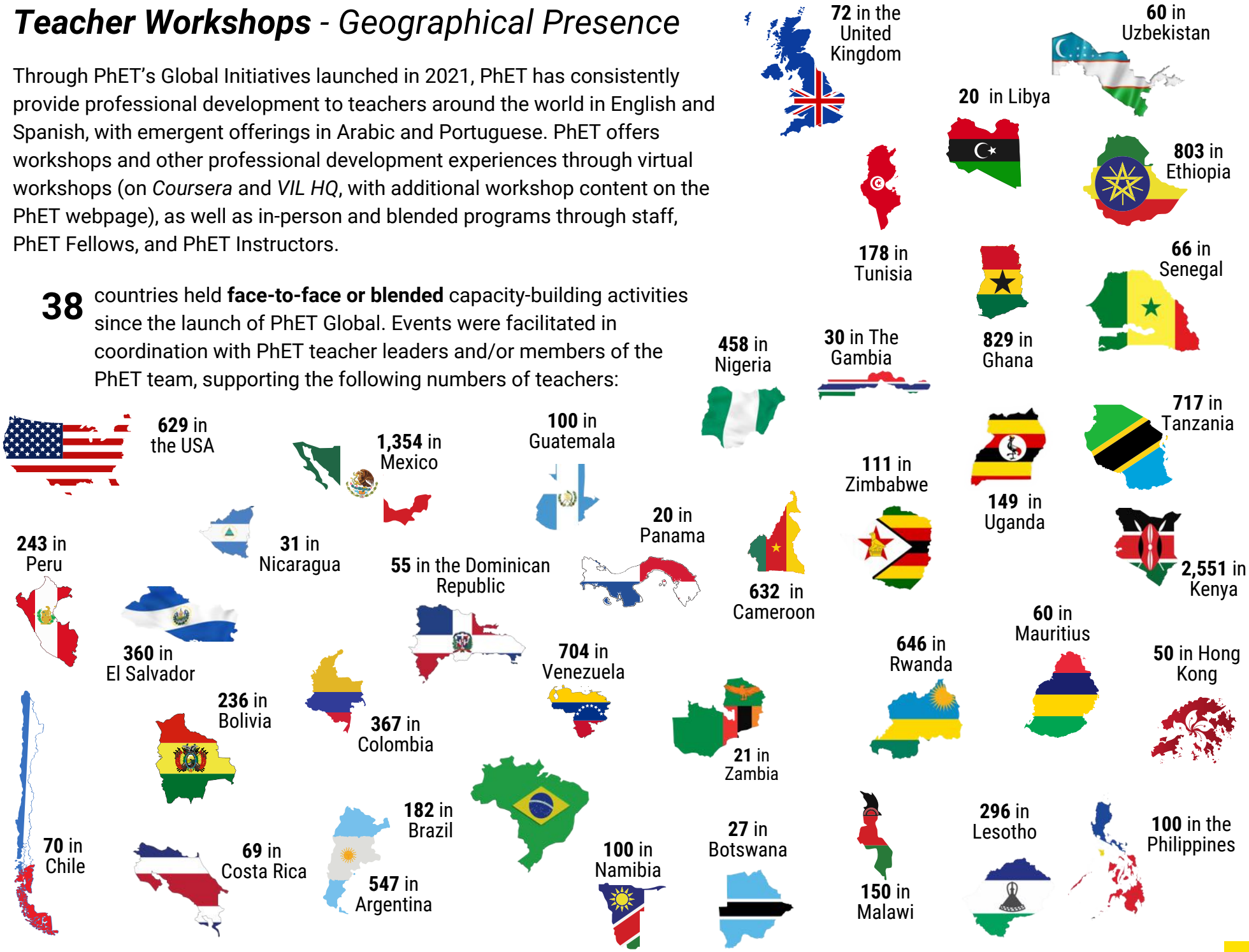
143K+

teachers reached through PhET Global programs between January 2021 and December 2025.

Teacher Workshops *- Geographical Presence*

Through PhET's Global Initiatives launched in 2021, PhET has consistently provide professional development to teachers around the world in English and Spanish, with emergent offerings in Arabic and Portuguese. PhET offers workshops and other professional development experiences through virtual workshops (on *Coursera* and *VIL HQ*, with additional workshop content on the PhET webpage), as well as in-person and blended programs through staff, PhET Fellows, and PhET Instructors.

38 countries held **face-to-face or blended** capacity-building activities since the launch of PhET Global. Events were facilitated in coordination with PhET teacher leaders and/or members of the PhET team, supporting the following numbers of teachers:



Teacher Workshops *- Extended In-Person Learning*

1,326 teachers have participated in extended (3-100 hour) professional development (not including *Coursera* workshops) since the launch of PhET Global. These workshops were offered in a variety of formats, including on partner learning management systems and during in-person events.

These workshops typically required teachers to demonstrate mastery through...

- creation of lesson plans
- lesson demonstrations with an observing colleague
- and/or a portfolio of evidence of implementation

***Teacher Workshops** - Virtual*

7 courses offered via *Coursera* in 3 languages

105+ hours of professional development

16,348 teacher enrollments (cumulative)

1,547 teachers (cumulative) completed the specialization, providing **evidence of implementation** of PhET with their students.

755,541 students indirectly reached through teacher participants (cumulative)

"The Specialization has been very valuable in helping me plan more **engaging, equitable, and student-centered lessons**, and I appreciate the practical strategies and guidance."

~ Course participant (Lebanon)

77-95% of **teacher participants** reported 1-9 months after taking the course that they **continued to make use of PhET simulations** and active learning pedagogies.

Researcher and Practitioner Webinar Series

PhET aims to improve effective pedagogical practice broadly. To enhance awareness of effective practice and bolster the research community, PhET has offered regular 1-hour webinars since the launch of PhET Global.

68,216

cumulative teacher engagements with the Latin America "Teaching with PhET" webinar series.

19,586

cumulative teacher engagements with the Africa "Share & Discuss" webinar series.

966

cumulative teacher engagements with general global webinars (excluding partner webinars).

Our future aspirations ...

01 Build networks of highly-effective STEM teacher leaders and change agents through sponsorships of the **PhET Fellowship** program globally.

02 Establish the PhET team and community of Fellows and Instructors as a leader in continuing teacher education, providing systemic and sustainable improvement through extended **teacher professional development experiences.**

03 Institutionalize the use of PhET simulations and active-learning strategies by supporting government agencies—in collaboration with our local PhET Fellows—to develop **curricular alignment** and **instructional supports**.

Advancing Impact through Innovation, Collaboration, and Community

PhET-iO Simulations

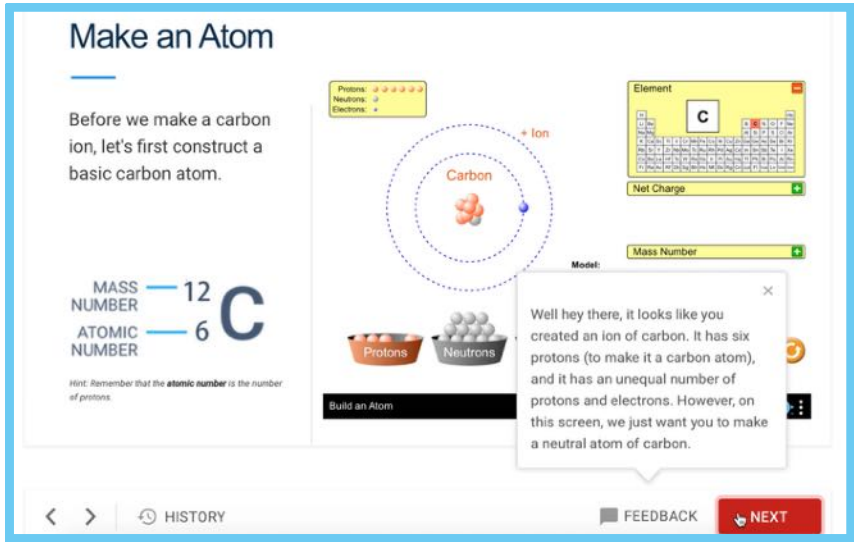
The PhET team continues its accelerated push to ensure that PhET simulations are compatible with PhET-iO, enhancing sims with powerful instrumentation and interoperability features.

PhET-iO instrumentation of simulations has advanced our work by:

- Moving the PhET collection toward compliance with **Web Accessibility Content Guidelines**--a major task for our dynamic sims.
- Fueling our newly-released, educator- and curriculum designer-facing sim customization tool, **PhET Studio.**

Additionally, with PhET-iO:

- **Edtech companies** can create customized learning experiences, while giving teachers and administrators more comprehensive insight into learner activity and performance.
- **Academic researchers** can test pedagogical designs, build authentic assessments of student inquiry skills, curiosity, engagement, etc., and pioneer advanced feedback based on student interactions.



Learn more about PhET-iO: https://phet-io.colorado.edu/

PhET-iO features include the following enhancements:

CUSTOMIZE

- Create learning scenarios.
- Hide or disable UI controls.
- Change text labels.
- Set specific values.

INTEGRATE

- Create rich experiences.
- Record data into a table.
- Grab a screen shot.
- Monitor a goal.

ASSESS

- Create performance tasks.
- Measure STEM practices.
- Power learning analytics.
- Drive adaptive feedback.

46

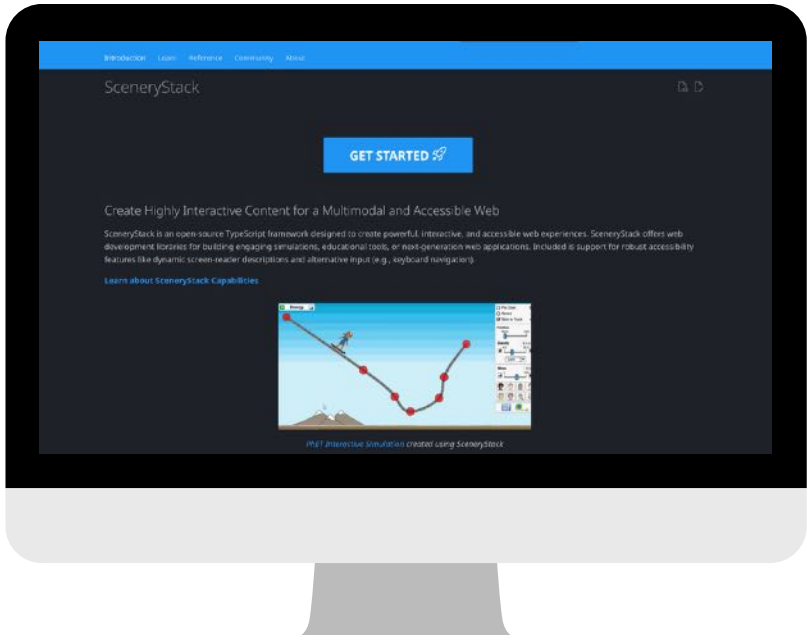
simulations enhanced with PhET-iO functionalities.

SceneryStack & the Open-Source Community

PhET's commitment to the open-source community goes beyond simply releasing PhET's source code under an open license. In mid-2023, PhET launched a new open-source community - **SceneryStack** - centered on PhET's foundational common code and pioneering innovations and research in making highly interactive web media accessible for diverse learners.

Learn more about SceneryStack: scenerystack.org

In 2024, with new funding from NSF, we advanced SceneryStack and the new **scenerystack.org** website, making it easier than ever to get started building interactives with SceneryStack and to engage with a growing community of developers and designers focused on creating and advancing technologies for inclusive, multimodal web interactives (simulations, games, apps, tools).



Our future aspirations ...

01 Accelerate the progress of **web accessibility for interactive media** through the **SceneryStack** technology, community, and inclusive design advocacy.

02 Establish SceneryStack as an **independently-governed open-source organization** that empowers designers and developers to create high-quality interactive media.

03 Realize **a full collection of PhET-iO simulations**, adding 80+ more PhET-iO simulations for use in research and education products.

04 Develop a **community of researchers** engaged in using **PhET-iO** to answer open questions about teaching, learning, and assessment.

05 Collaboratively **research the potential of Generative AI + PhET Sims** to engage students in productive inquiry and discourse through Socratic dialogue.

Advancing PhET's Sustainability

PhET is committed to ensuring that its simulations always remain free to students and teachers. PhET continues to advance its **mission-driven business model**, through multiple revenue streams.

Direct-to-Consumer

Free PhET Website

Free web-based use and downloads.

Low-Cost PhET App

$0.99 purchase for individuals

- Bulk licenses for schools / districts through the **PhET App for Schools** program.
- Private app builds for technology distribution initiatives.

PhET Studio

PhET Studio **New in 2025!**

License options: classroom, curriculum, and commercial

- Create, save, and share initial simulation states as **presets**
- Manage institutional access through admin features

Business-to-Business

Basic Partnership

PhET INTERACTIVE SIMULATIONS

$10,000-$20,000 per year.

- 10 hours of technical support
- Easy sim integration with a metadata service
- Hassle-free updates (maintenance, new features, new sims)
- Brand alignment, with permission to use PhET's logo in communications
- Reduced partnership cost for organizations in the developing world.

PhET-iO Partnership

PhETio INTERACTIVE SIMULATIONS WITH INTEROPERABLE FEATURES

Per-student licensing, revenue share, or usage-based

- 10 hours of technical support
- Ability to customize, integrate, and assess learner engagement with ease

Donors

Giving Platform

PhET relies on the generosity of supporters through grants and small and large donors.

SCAN ME

PhET Studio

Learn more about PhET Studio:
https://phet.colorado.edu/en/studio/

In 2025, we launched **PhET Studio**, a new product to bring the **power of PhET-iO to classroom teachers** and **support PhET's sustainability as an open core project** with recurring revenue. PhET Studio is the first premium product, meant to enhance everyday use of simulations with **customization**.

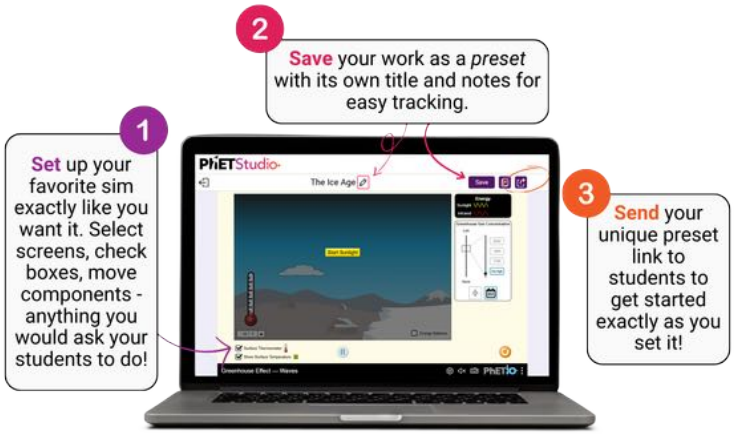
The Making of PhET Studio

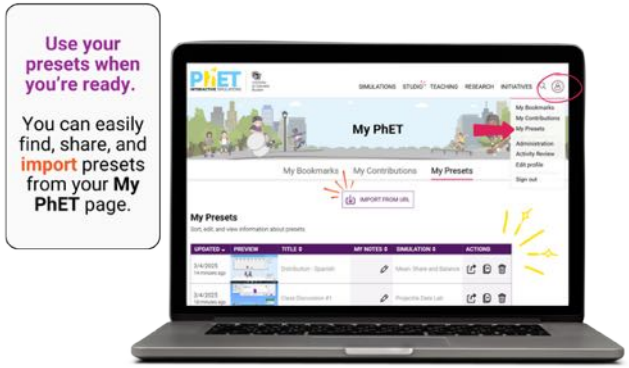
PhET Studio's development has been a first-of-its-kind launch for the PhET team, requiring new processes and demands. To ensure its success, we have:

- Conducted market research to identify where a new product would bring the most value to teachers,
- Engaged in co-design with teachers and curriculum advocates to make sure the product met their needs,
- Advanced the infrastructure necessary to manage direct sales to individuals and schools, and
- Expanded our team to include individuals with deep experience with commercial STEM education technology products.
- Additionally, we are conducting ongoing research to ensure we are building the most valuable functionalities.

"The personalization of PhET Studio helps me to focus my students on the specific area within the simulation so that they don't get distracted. PhET Studio makes [the learning activity] more purposeful." ~ Middle School Science Teacher, USA

PhET Studio Features



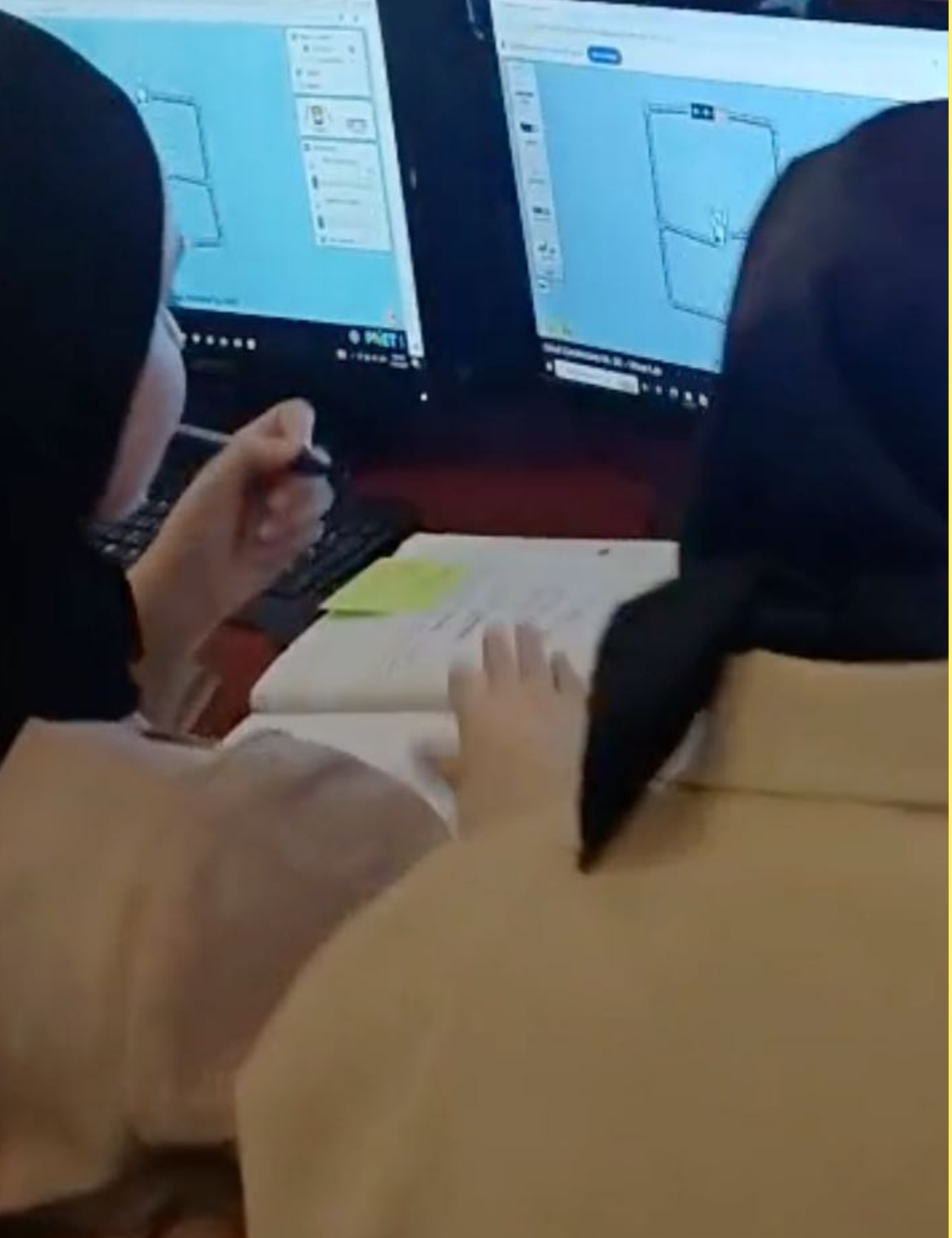


Since March 2025:

8,440 activated PhET Studio users

2,916 presets made with PhET Studio

52,398 sim runs from a PhET Studio preset link



Our future aspirations ...

01 **Grow PhET's partnership programs** to increase revenue and bring engaged interactivity to more education products.

02 Expand PhET's mission-driven revenue streams through a **strategic collaborations with governments, school systems, and large-scale assessment providers**.

03 Build revenue generating activities around PhET **teacher professional development products and services**, leveraging the community of PhET Fellows.

04 **Advance PhET's infrastructure** to increase efficiency, lower costs, and maximize our opportunities.

05 **Build a Global Advisory Board** to guide, support, and accelerate PhET's work and impact around the world.

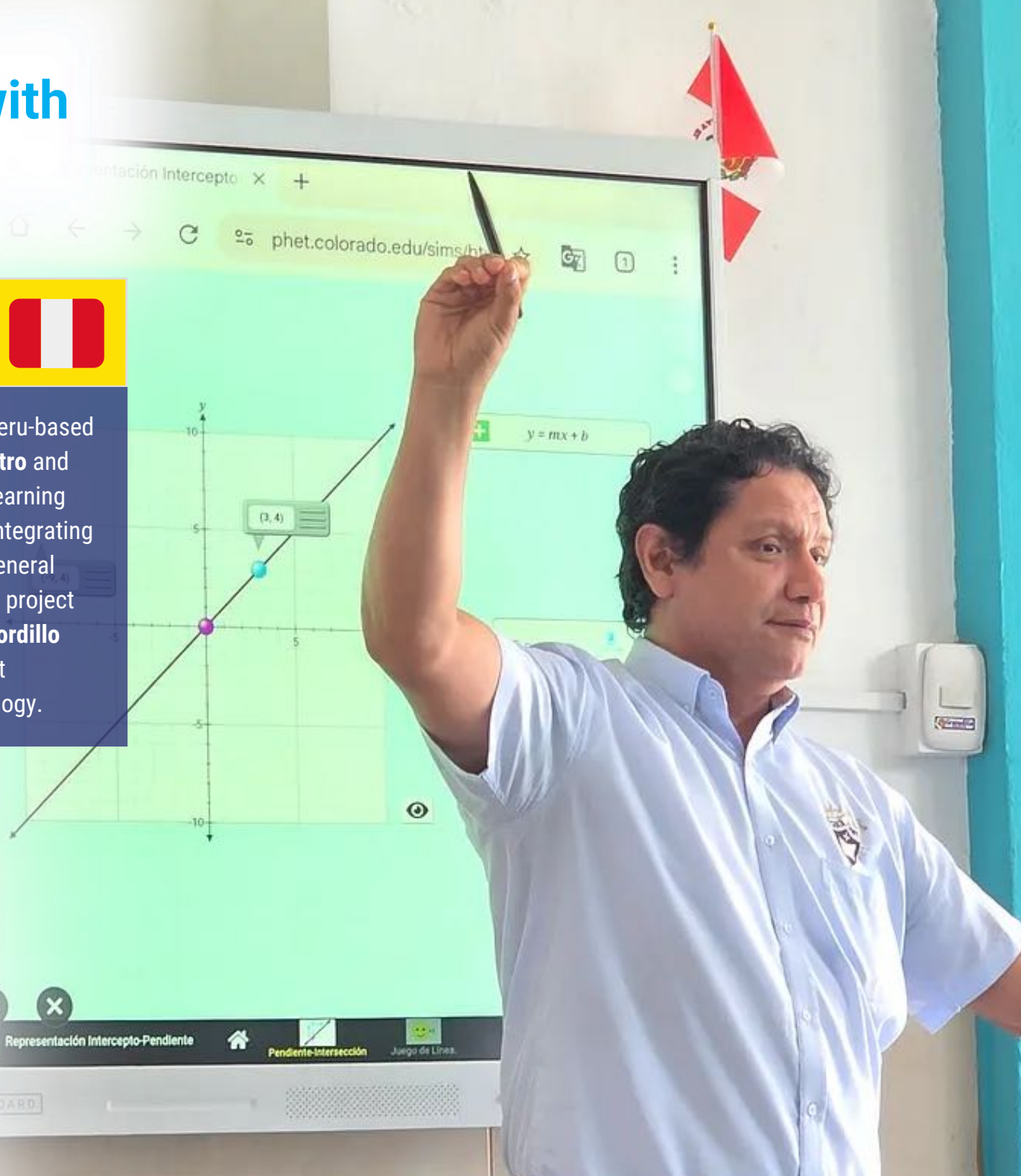
Success Stories

Explores vignettes about PhET's impact on the following pages, and read more stories online.

Regional Impact with Local Partners

PhET Simulations as Catalysts for Critical Thinking in Peru

In collaboration with **TeachUNITED** and Peru-based professional teaching societies **Ser Maestro** and **VIVA**, PhET is co-leading a professional learning experience for **120+ Peruvian teachers**. Integrating PhET sims as a core resource for using general evidence-based practices promoted by all project collaborators, individuals such as **John Gordillo Gordillo** demonstrate how having the right resources naturally promotes good pedagogy.



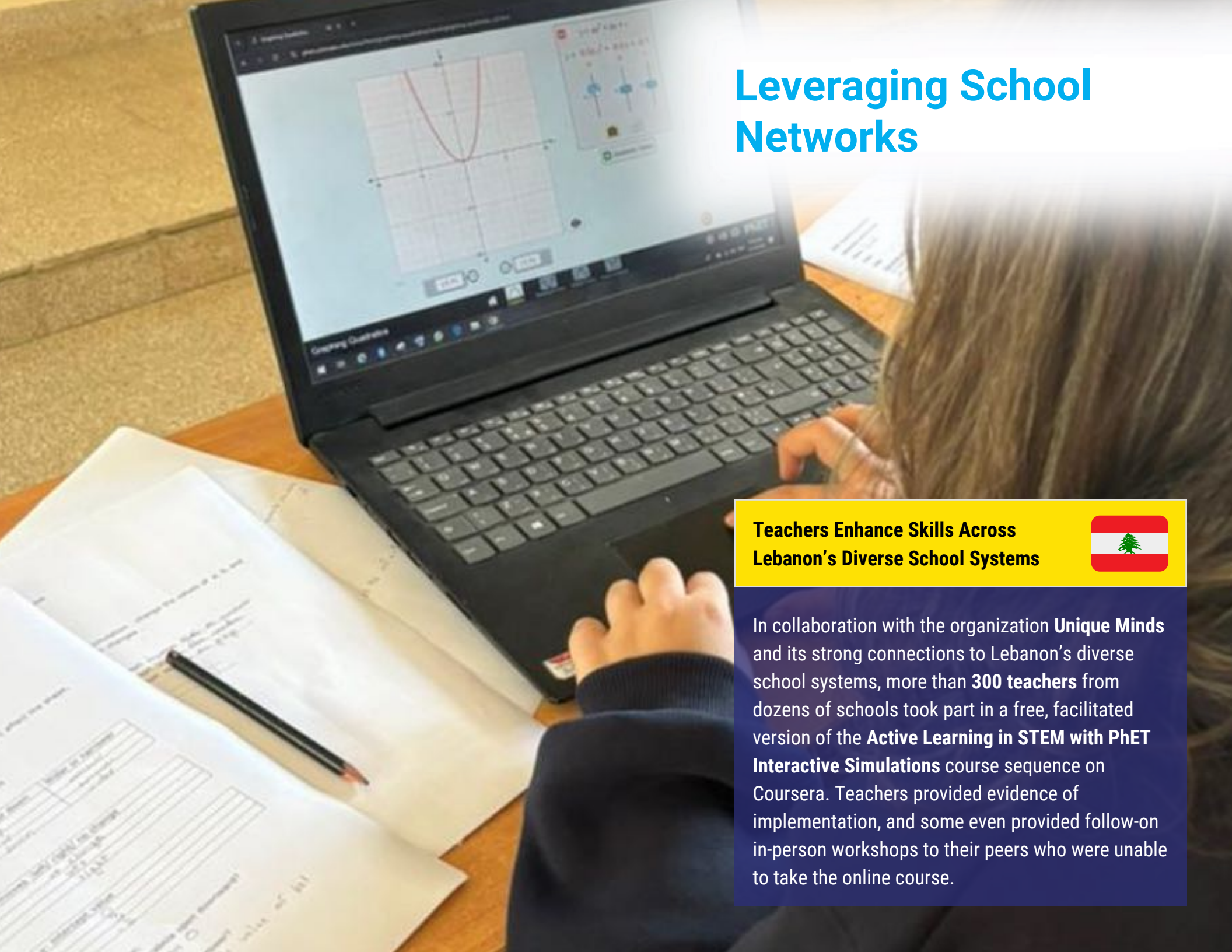
Partnering with Private Industry

PhET Forms Educational Infrastructure in High-Needs U.S. Schools

Thanks in part to a generous grant from **Verizon**, a U.S.-based telecommunications company, the PhET for Schools Network provides multiple benefits to low-resource schools, including free access to the mobile PhET App, PhET Studio, virtual and in-person teacher professional development, and the possibility for teachers to engage in an 18-month PhET Fellowship program. More than **627 teachers** participated in in-person or virtual workshops through this program.

Synergistic work with Corporate Foundations to Strategically and Systemically Impact Secondary Education

A team of five PhET Fellows and Instructors (**Myriam Villegas, Rocío Lucero, Daniel Ammar, Roxana Jaramillo** and **Eugenia Márquez**) collaborate with the support of **Siemens Foundation Argentina** to advance STEM education through workshops across Argentina's provinces, bringing together teacher networks, universities, and local ministries of education.



Leveraging School Networks

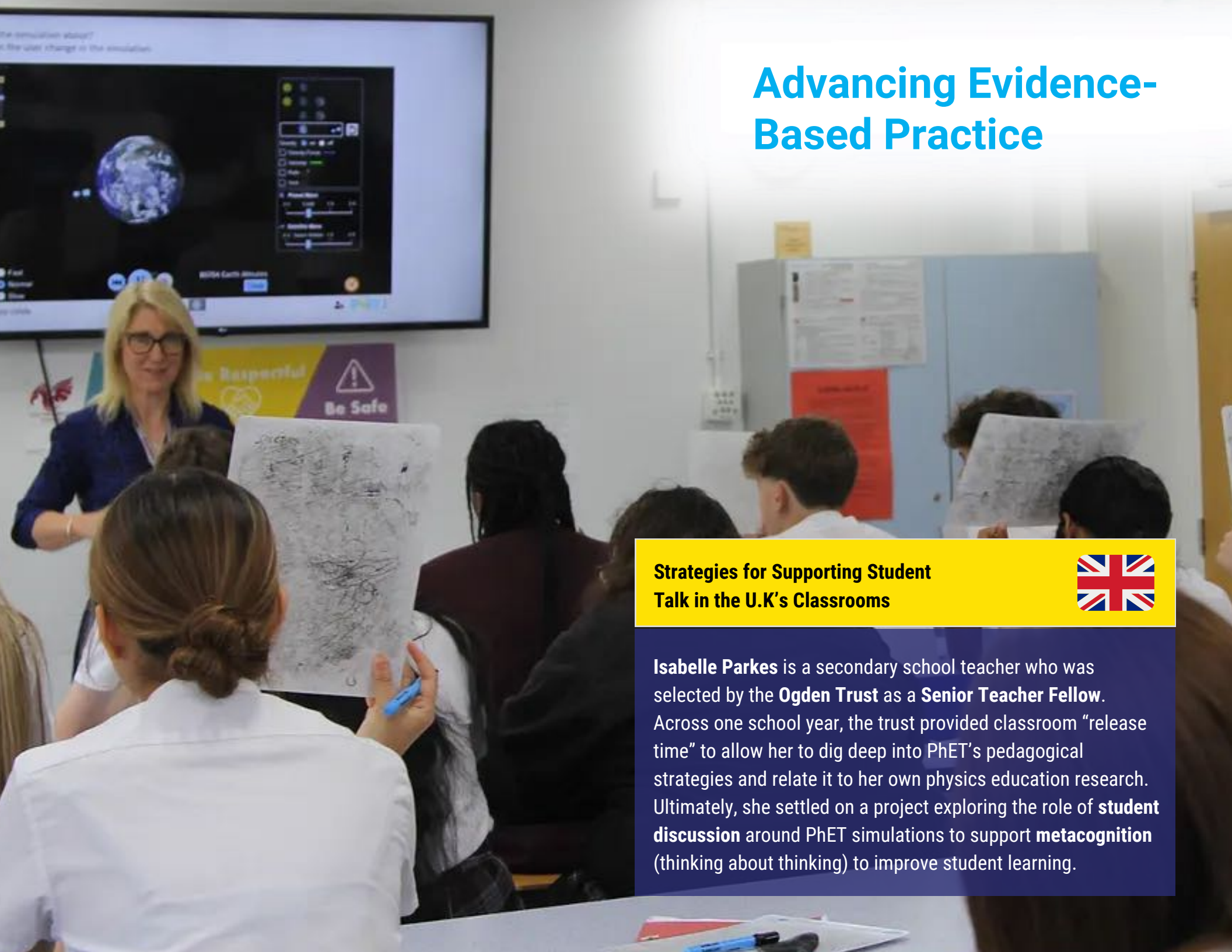
Teachers Enhance Skills Across Lebanon's Diverse School Systems

In collaboration with the organization **Unique Minds** and its strong connections to Lebanon's diverse school systems, more than **300 teachers** from dozens of schools took part in a free, facilitated version of the **Active Learning in STEM with PhET Interactive Simulations** course sequence on Coursera. Teachers provided evidence of implementation, and some even provided follow-on in-person workshops to their peers who were unable to take the online course.

Supporting Shifts in National Policy

Integrating PhET Simulations into the Cameroonian Curriculum

Even after her graduation as a 2023 PhET Fellow, **Tabot Delphine Fondia** continues to urge the government of Cameroon to more explicitly and intentionally incorporate PhET simulations into the national curriculum. Through in-person workshops, she has provided professional development to dozens of ministry of education officials and hundreds of teachers.



Advancing Evidence-Based Practice

Strategies for Supporting Student Talk in the U.K's Classrooms

Isabelle Parkes is a secondary school teacher who was selected by the **Ogden Trust** as a **Senior Teacher Fellow**. Across one school year, the trust provided classroom "release time" to allow her to dig deep into PhET's pedagogical strategies and relate it to her own physics education research. Ultimately, she settled on a project exploring the role of **student discussion** around PhET simulations to support **metacognition** (thinking about thinking) to improve student learning.

Research & Effectiveness

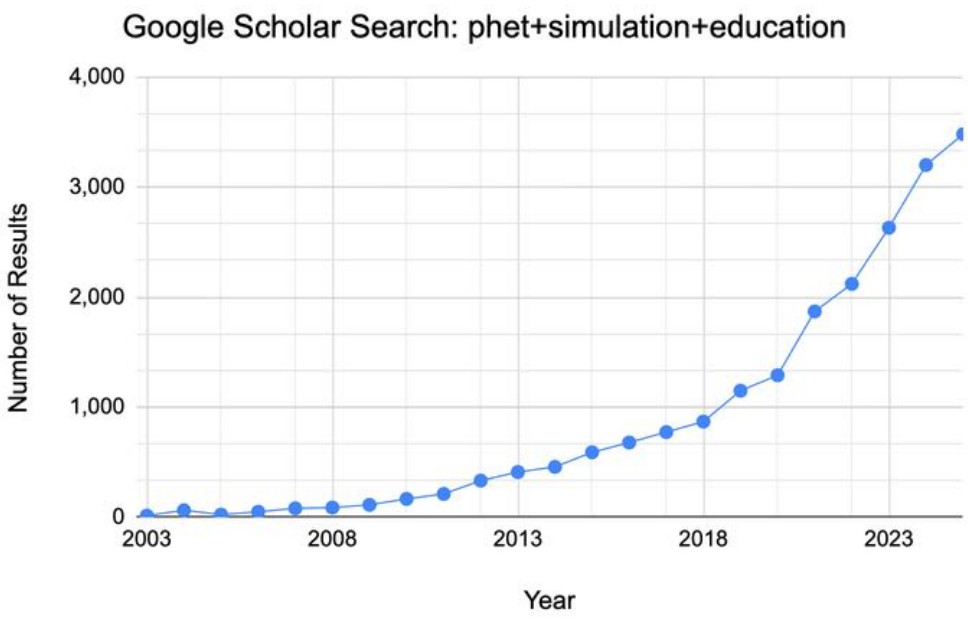
Research

PhET simulations are based on discipline-based education research (what we know about students' assets and struggles as they learn math and science), involve students in the design process, and have garnered interest from thousands of researchers external to our team.

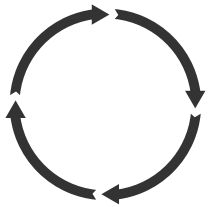
21,000+ Google Scholar references to PhET simulations.

Research shows that PhET simulations...

- are **developed with research-based design** on learning.
- support teachers to **transition from teacher-centered to student-centered instruction**.
- result in **significantly higher learning gains** than traditional instruction.
- **improve students' attitudes** about learning STEM.
- support the **development of STEM process skills**.
- help **close the learning gap between males and females**.



01 PhET simulations... are developed with research-based design on student learning.



PhET simulations follow a cycle of design, development, and testing that makes use of design research and discipline-based education research on common student prior knowledge, learning challenges, physical and cognitive differences, and motivation. *If we do not see expected outcomes in their use of the simulation, we do not publish it, and go back to design.*

Further Reading

Foundational design principles	Adams et al., 2008 Podolefsky et al., 2010
Inclusive features	Moore at al., 2015
Role of play and exploration	Johnson-Glenberg et al., 2014 Whitacre et al., 2018

02 PhET simulations...support teachers to transition from teacher-centered to student-centered instruction.

Teachers who make use of PhET simulations inherently see shifts in their classroom dynamics, including more student talk, inquiry, and agency.

Further Reading

Teacher facilitation & student agency	Atabas et al., 2020
Power of open play to center instruction on student ideas	Moore et al., 2013 Podolefsky et al., 2013

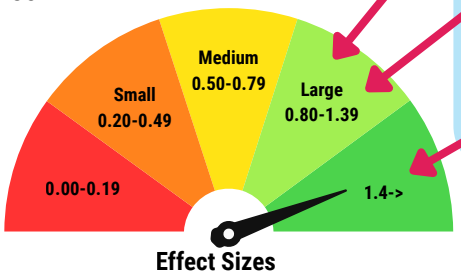
03 PhET simulations…result in significantly higher learning gains than traditional instruction.

When teachers use PhET simulations paired with active learning, inquiry-based strategies, students learn substantially more than through traditional instruction. In many cases, using PhET simulations can be more effective than using physical equipment, especially when topics involve abstract concepts.

These findings generally hold true across

- Gender (males, females)
- Discipline (science, math)
- Socioeconomic contexts

In addition to existing research on mathematical thinking as part of science education, research exclusively on mathematics classrooms demonstrates PhET's impact on learning.



Effect sizes represent the magnitude of difference in performance by students who received the intervention (use of interactive simulations) vs. those who received traditional instruction.

Meta-analyses

Fadillah et al., 2026

- 20 empirical studies (100% with PhET)
- Average effect size of d = 0.83

Antonio & Castro, 2023

- 15 quasi-experimental studies (85% with PhET)
- Effect sizes up to g = 1.26; weighted average of g = 0.941

Rutten et al., 2012

- 17 quasi-experimental studies (interactive sims, generally)
- Effect sizes up to d = 1.54.

Literature Review

Banda & Nzabahimana, 2021

- 31 quasi-experimental studies (all with PhET)
- Up to 37% higher normalized gains than control

Early Math Fraction Concepts

Highlights for Further Reading

Hensberry et al., 2015

- Conceptual knowledge of fractions increased significantly pre-to-post, with intervention effect size d = 1.18
- Larger effect size than the average found from a meta-analysis of studies for this topic, d = 0.28.

Aboraya, 2021

"The results showed that there is a clear positive effect on raising the level of achievement of students in abstract mathematical concepts in favor of the experimental group. … Students were found to highly favor using the simulation website."

Math Teachers' Instructional Strategies

Findley et al., 2017

Teachers use PhET simulations to:

- Supplement lessons
- Enhance lessons
- Drive lessons

Atabas et al., 2020

- PhET sims support math teachers' shifts toward student-centered instruction.

04 PhET simulations...support the development of STEM process skills.

Further Reading		
	Coordinating Representations	Podolefsky et al., 2010
	Scientific Creativity	Astutik & Prehanti, 2018
	Critical Thinking	Sulisworo et al., 2019
	Science Communication	Rosero et al., 2022

05 PhET simulations...help close the learning gap between boys and girls.

PhET simulations do not discriminate against gender: males and females demonstrate equal achievement as a result of PhET-based teaching interventions.

Further Reading		
	Gender gaps in students' performance	Ben Ouahi et al., 2021
	Effect of gender	Pember & Achor, 2017

06 PhET simulations...improve students' attitudes about learning STEM.

Students in research studies involving PhET simulations often demonstrate high levels of engagement, and report increased motivation or interest in learning about STEM in diverse socioeconomic (e.g., minority serving institutions, community colleges) and geographic contexts.

Further Reading		
	USA	Salame & Makki, 2021 Taibu et al., 2021
	Africa	Chumba et al., 2020 Ramnarain & Penn, 2021
	Asia	Buar & Obiedo, 2025
	Latin America	Díaz-Pinzón, 2017

Financials & Sustainability

...

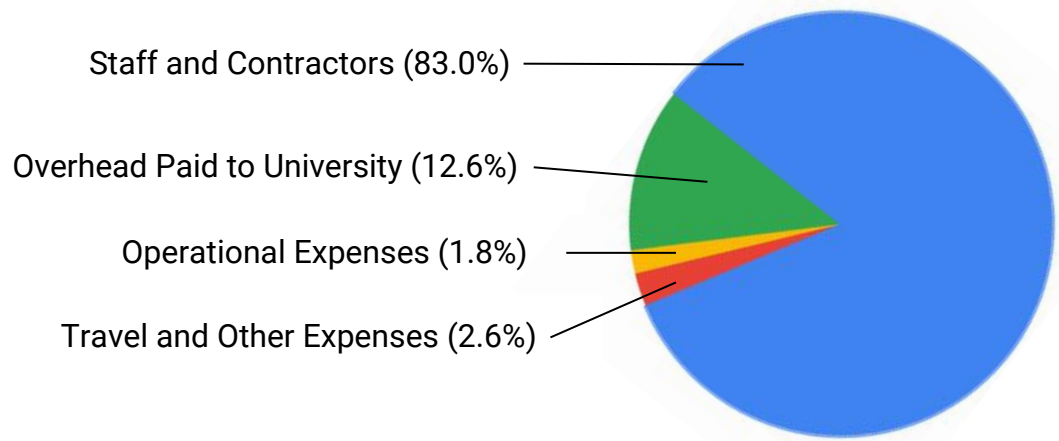
Operations

PhET operates as a nonprofit and is a project within the Department of Physics at University of Colorado Boulder, a 501(c)(3) organization in the United States.

A portion of PhET's budget goes to university indirect costs (~13%). In return, PhET receives various services and benefits from the University of Colorado Boulder, such as human resources, legal support, research oversight, etc.

Expenses in 2025

$4.1M total expenses



Revenue in 2025

While PhET is largely sustained through grants, PhET continues to grow its recurring earned revenue through the PhET Partnership program and other products. With 70+ licensing partners, PhET has added substantial value to edtech products on the market, increased learner access to PhET simulations, and partially sustained PhET's mission to ensure that simulations remain free to teachers and students.

Revenue and Expenses

	Grants*	Services	Licensing/ Revenue	Donations	CU Boulder
New Revenue	$ 8,059,178	$ 272,202	$ 511,770	$ 156,042	$ 223,279
Total Expenses Supported By	$ 2,835,486	$ 282,531	$ 495,520	$ 269,994	$ 201,511
% of Expenses	69%	7%	12%	7%	5%

On April 25, 2025, the National Science Foundation (NSF) terminated PhET's Pathways to Open Source Ecosystems (POSE) Phase II grant, which had $1M in unused funds remaining. Our grant was one of over 1,000 grants abruptly terminated by NSF, affecting vital research, education, and open science efforts across the country.

Grant and Contract Revenue

In 2025, PhET was grateful to be supported by:

- Akamai Foundation
- Amgen Foundation
- Bill and Melinda Gates Foundation
- Cisco Foundation
- Gordon and Betty Moore Foundation
- Howard Hughes Medical institute
- Mastercard Foundation
- National Science Foundation
- TeachUNITED
- Verizon
- Yidan Prize Foundation

A Strategic Path to Sustainability

In 2025, PhET engaged with the **Harvard Business School Alumni Consulting Group** to develop a strategy to maximize sustainability. Outcomes from this work encourage us to focus on funding growth primarily through a combination of philanthropic capital and diversified earned revenue.

PhET intends to take two concrete actions in 2026 to ensure sustainability:

- Hiring a **Director of Development** and a **Grants Coordinator**, allowing PhET to proactively cultivate relationships in a landscape where ~75% of foundation opportunities are invitation-only, increasing our win rate and long-term revenue sustainability.
- Transitioning the core simulation collection from a **CC-BY** to a **CC-BY-NC (non-commercial)** license.

Cost Per User

With roughly 250M+ online sim runs per year, plus 25%+ estimated offline usage, on a ~$4M annual budget, **PhET's cost per sim-based learning session is extraordinarily low — around 2 cents.**

To put that in context, the U.S. federal government spends approximately $28 per student on education research and development. PhET is reaching learners for a tiny fraction of that.

Be An Agent for Change

We invite you to share in our vision of a world where science and math are inclusive, enjoyable, and empowering.

Support our work by:

- Making a donation or grant for our work.
- Engaging in a partnership.
- Scheduling a time to meet with us to learn more about our work.

Reach out to us at phethelp@colorado.edu to get in touch with our executive office.

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Page 20: PhET

Page 22: PhET Fellows (refer to phet.colorado.edu/en/phet-global/fellows)

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Page 28: PhET Instructors / Ogden Trust Senior Teacher Fellows at PhET

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