

ASL STEM Storybooks: Teaching Big Concepts to Little Deaf Kids



ATOMIC HANDS

STEM Innovation
for Inclusion in
Early Education
(STEMIE)

Drs. Alicia Wooten
& Barbara Spiecker



ATOMIC HANDS

Teaching Big Concepts to Little Deaf Kids

1

ATOMIC HANDS

2

STEM
ACCESSIBILITY
FOR YOUNG KIDS

3

ASL STEM
STORYBOOKS

4

STEM
COMPREHENSION
& INCLUSION

5

BILINGUAL STEM
MATERIALS

6

ASL STEM
RESOURCES



Mission



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FOSTER WONDER & CURIOSITY

in the fields of STEM through the production and dissemination of ASL-centric resources.

EMPOWER THE COMMUNITY

to expand ASL by developing and delivering engaging STEM-related topics through creative language play.

ENCOURAGE COLLABORATION & NETWORKING

opportunities among current and future Deaf STEMists and the community.

Atomic Hands

Non-profit with 30 combined years of scientific expertise

Actively practicing scientists and educators:

- Marine ecologist and immunologist
- Both teach undergraduate classes

Worked with K-12 schools, universities and grant-funded projects on STEM communication and sign development

We are always exploring topics related to STEM and the ASL community and how we can bring these two together



STEM Accessibility for Young Kids



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Research shows that early STEM exposure is crucial for later academic success and is as important as early literacy





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STEM Accessibility for Young Kids

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WHAT ABOUT DEAF KIDS?

About 70% of deaf kids are deprived of language.





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STEM Accessibility for Young Kids



When we say children are “born scientists,” we’re not just being cute. Children really are intentionally exploring their environments.

There are only ~0.15% deaf and hard of hearing STEMists compared to the general population.

ATOMS

Learn about some of the most fundamental concepts in STEM BEFORE the social pressure and intimidation of formal schooling.

Age range: 2-7
Grade range: Preschool-2

Partnership with Science, Naturally!

MY FIRST SCIENCE TEXTBOOK

Atoms

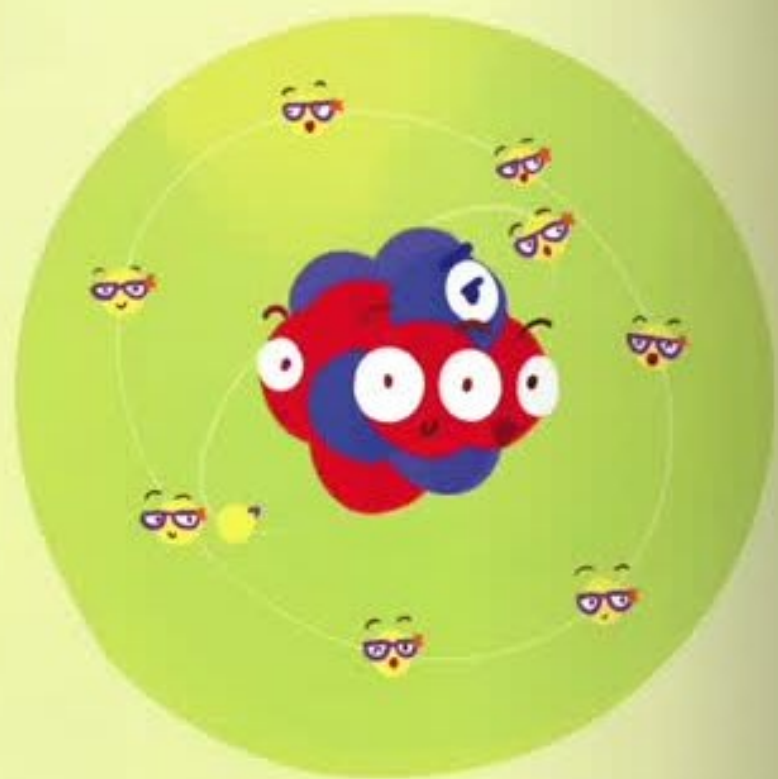
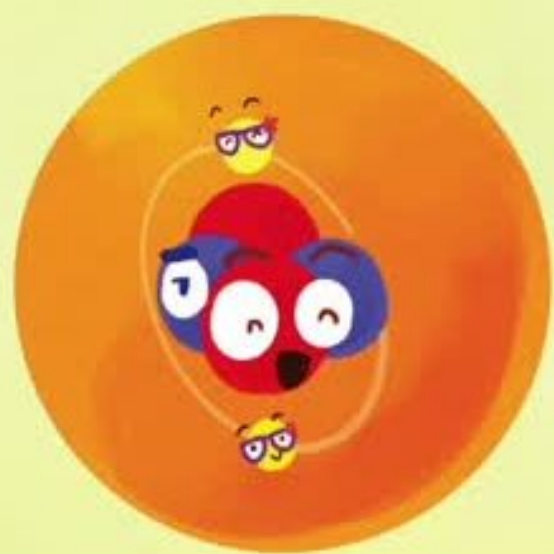


ASL STEM Storybook

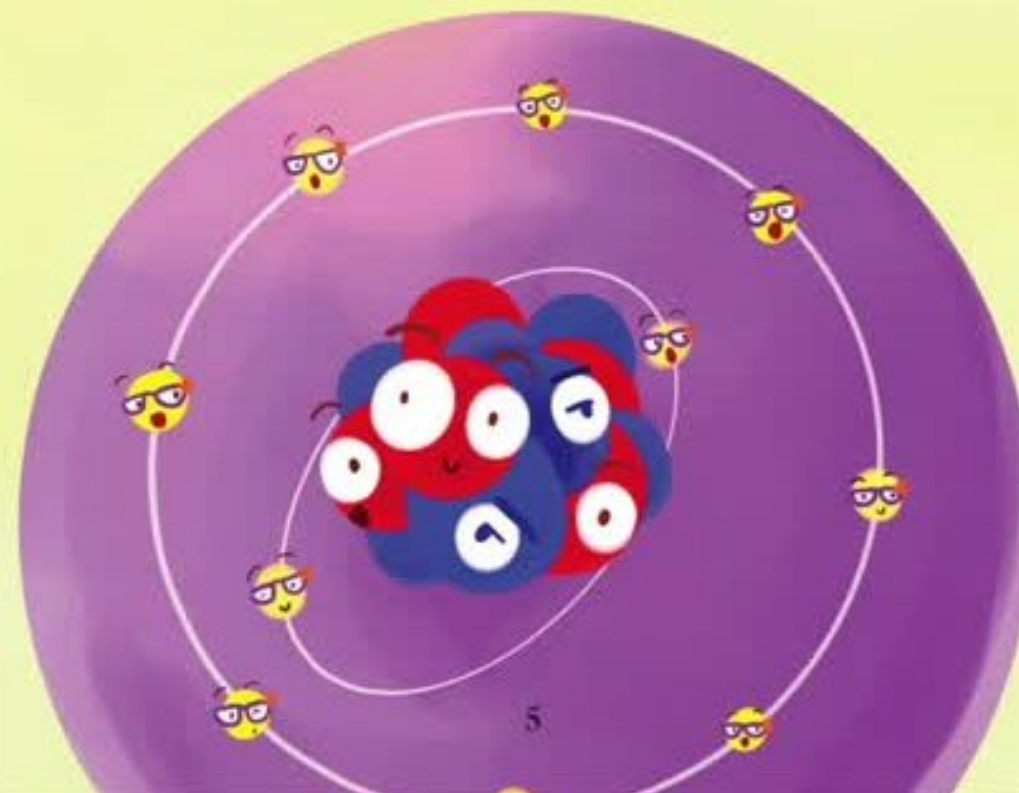


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Written by Mary Wissinger
Illustrated by Harriet Kim Anh Rodis



Say hello to the *atoms* that build
everything you see:



STEM Signs for Comprehension



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If you want to make an **atom**,
the recipe starts with
protons and **neutrons**.



Squish them together, use high heat,
and sprinkle in **electrons**.

STEM Signs for Comprehension



ATOMIC HANDS



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STEM Signs for Comprehension



ATOMIC HANDS

Glossary



- **ATOMIC MASS:** The combined number of protons and neutrons in an atom. On the periodic table, it is shown as the number under each element's full name.
- **ATOMIC NUMBER:** The number of protons in an atom determines an element's atomic number, which is used to categorize elements. On the periodic table, the atomic number is shown in the top left-hand corner of each element label.
- **ATOMS:** The building blocks for all matter in our universe. They are so small that you can't see them, and are made up of even smaller particles called protons, neutrons, and electrons.
- **CHEMICAL BONDS:** Chemical bonds are what join atoms together to create molecules. There are several types of chemical bonds, including covalent and ionic bonds.
- **CHEMICAL SYMBOL:** The abbreviation for the name of an element. The chemical symbol for each element is listed on the periodic table.
- **COVALENT BOND:** A chemical bond that forms between two atoms when they share electrons.
- **ELECTRONS:** Very teeny particles with a negative electric charge. Electrons travel around the nucleus of every atom.
- **ELEMENT:** A pure substance made of one type of atom.
- **FORCE:** The push or pull on something when it interacts with something else. A force can cause an object to move faster, slow down, stay in place, or change shape.
- **GALAXY:** In astronomy, a galaxy is made up of billions of stars, which are each orbited by planets, gas, and dust. It can also mean a large group of people or things.
- **ION:** An atom or molecule that carries a positive or negative electric charge as a result of having gained or lost electrons.

- **IONIC BOND:** A chemical bond that forms when one atom gives away electrons to another atom. The atom that loses electrons becomes positively charged, and the atom that gains electrons becomes negatively charged.
- **MASS:** A measure of how much matter is in an object. Mass is usually measured in kilograms (1 kg = a little over 2 pounds). Mass is different from weight because the mass of an object never changes, but its weight will change based on its location in the universe.
- **MATTER:** Anything in the universe that takes up space and has mass. Matter makes up everything around you.
- **MOLECULE:** A group of atoms that are bonded together to form the smallest unit of a substance that has all the properties of that substance. For example, a water molecule is the smallest unit that is still water.
- **NEUTRONS:** Very teeny particles with no electric charge, found in the nucleus of most atoms.
- **NUCLEUS:** The center part of an atom, made up of protons and neutrons.
- **PARTICLES:** Tiny, singular bits of matter that can range in size from subatomic particles, such as electrons, to ones large enough to be seen, such as particles of dust floating in sunlight.
- **PERIODIC TABLE:** A chart that arranges chemical elements, organized by atomic number.
- **PROTONS:** Very teeny particles with a positive electric charge. Protons are in the nucleus of every atom.
- **SUBATOMIC PARTICLE:** A particle that is smaller than an atom and exists within it. Protons, neutrons, and electrons are all subatomic particles.
- **UNIVERSE:** All of time and space and their contents, including planets and stars, and all other forms of matter and energy.

Creative ASL Play for Deaf Kids



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The strong force holds the nucleus
tight, while **electrons** get to race.



Creative ASL Play for Deaf Kids



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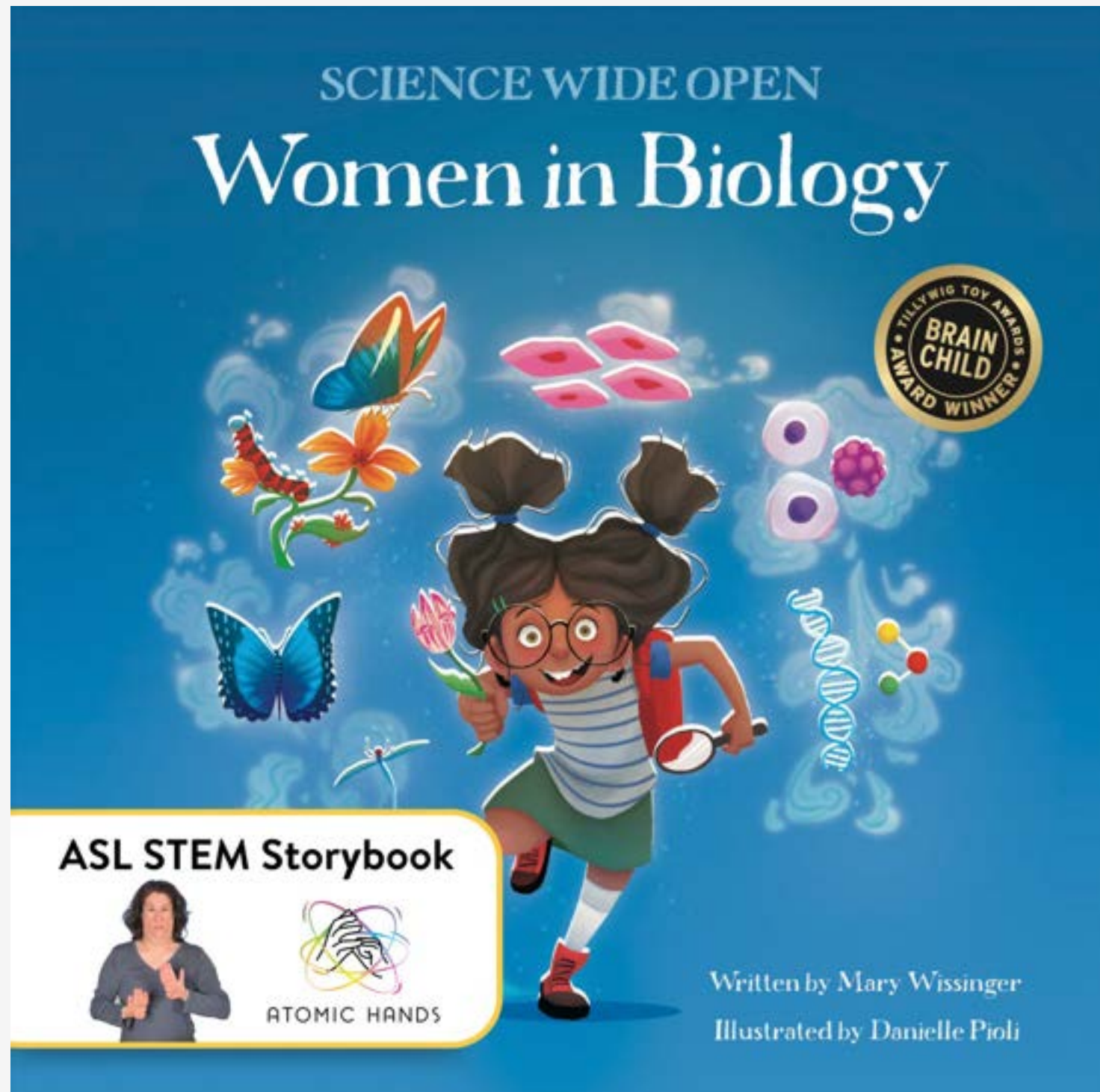
Creative ASL Play for Deaf Kids





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Other Available ASL STEM Storybooks



WOMEN IN BIOLOGY

Age range: 7-10

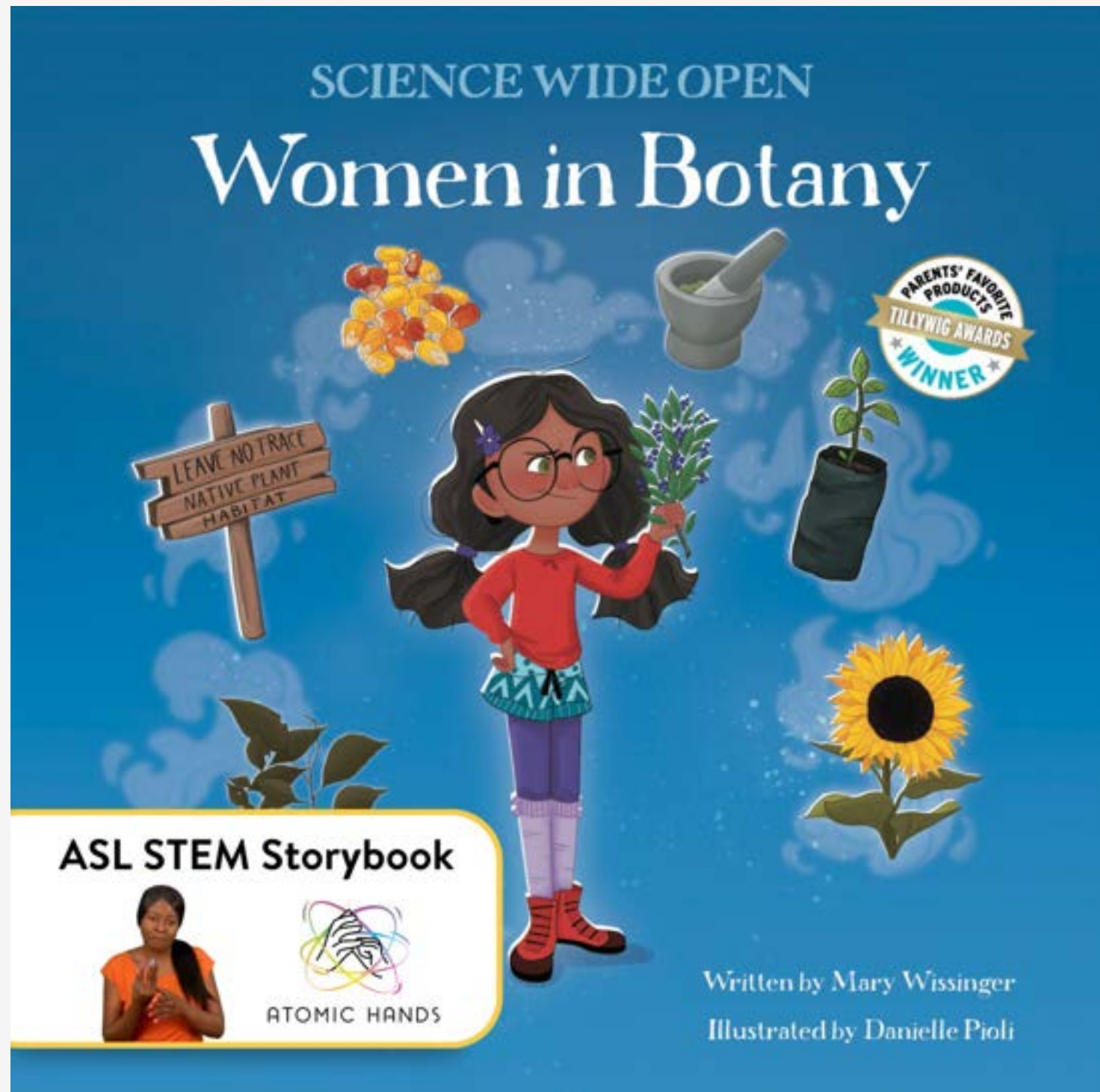
Grade range: 2-5

Take a peek inside the mysterious world of living things! Learn alongside the inspirational women who've changed the world with their scientific discoveries. This fun story of biology is a perfect place for young scientists to start their own journeys of discovery and wonder.



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Other Available ASL STEM Storybooks



WOMEN IN BOTANY

Age range: 7-10

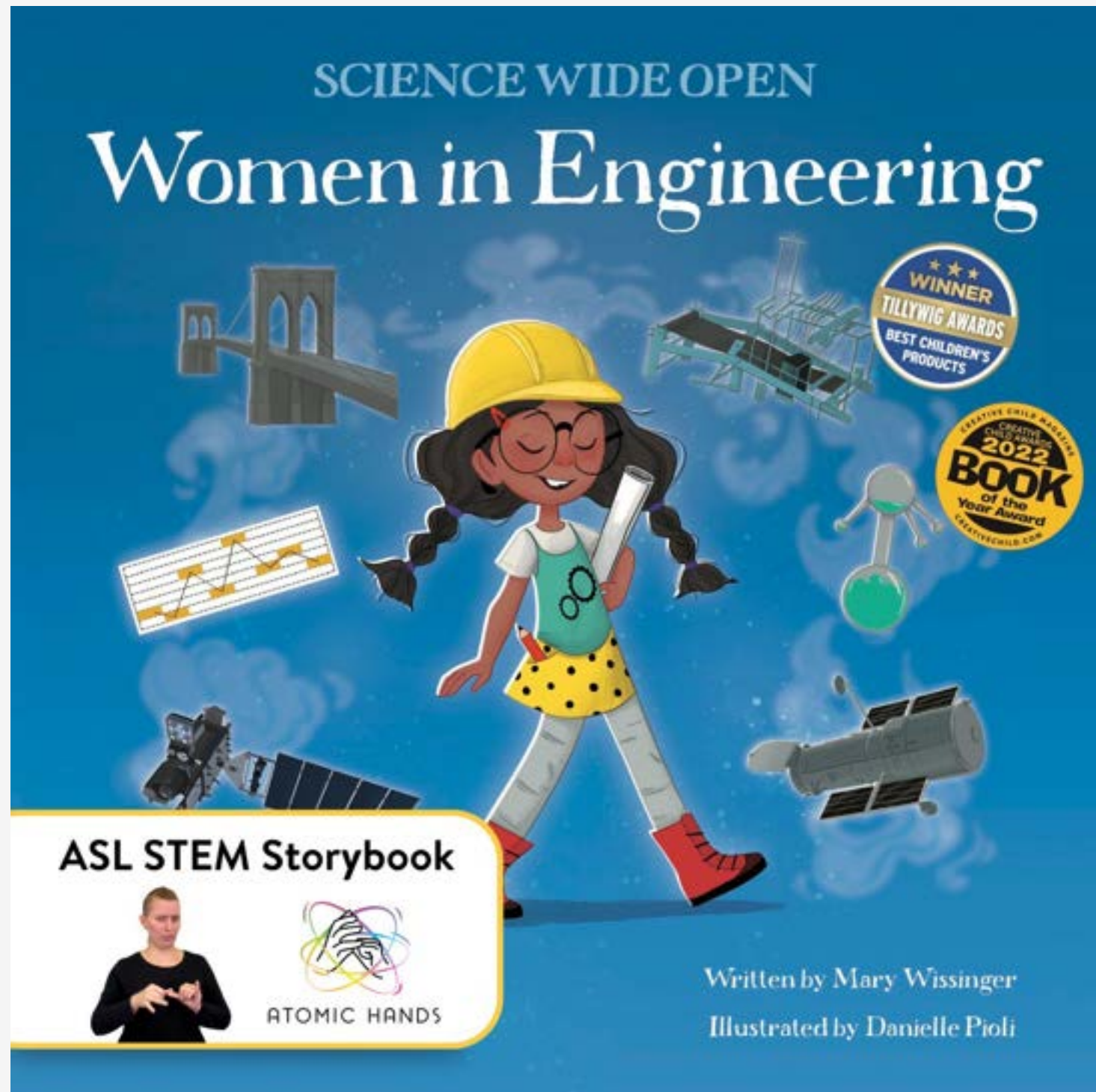
Grade range: 2-5

Women in Botany introduces kids to the science of botany, guided by the investigative questions of a spunky girl. Learn about timeless women botanists who have used tiny seeds to do huge things like create new medicines, feed their communities, and help preserve the environment.



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Other Available ASL STEM Storybooks



WOMEN IN ENGINEERING

Age range: 7-10

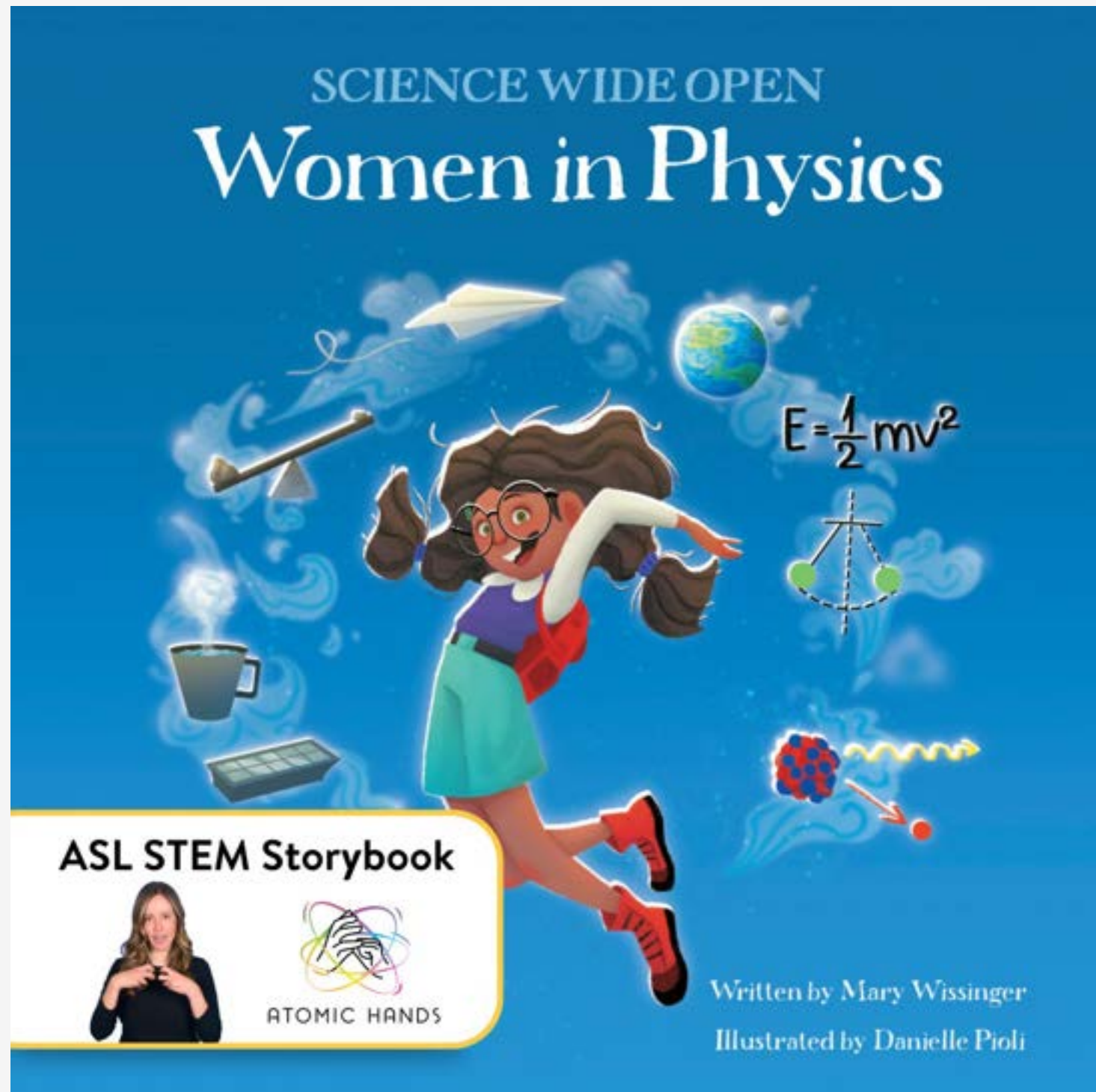
Grade range: 2-5

Women in Engineering introduces kids to six determined women—from ancient times to present day—who have dreamed up ideas to improve and connect the world. Explore the field of engineering through the questions of a spunky girl whose inquiries guide an engaging, scientifically accurate conversation.



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Other Available ASL STEM Storybooks



WOMEN IN PHYSICS

Age range: 7-10

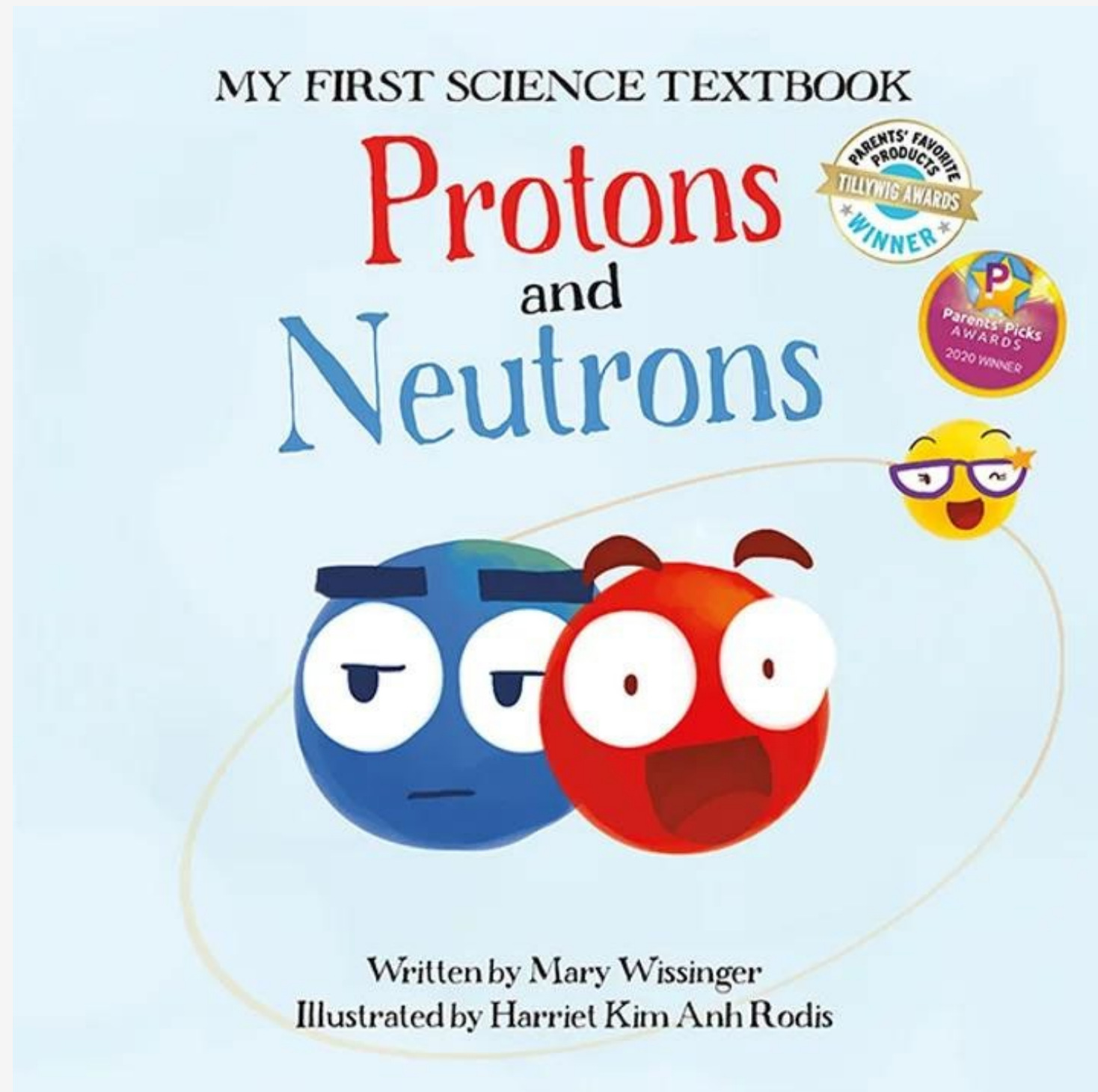
Grade range: 2-5

Discover the power of curiosity and resilience by following a conversation between a spunky young protagonist, who asks questions about the world around her, and a scientifically astute narrator, whose answers are crafted to be both accurate and understandable for to a young mind. In this way, learning the basics of physics becomes an effortless outcome of enjoying the story.

COMING SOON: ASL STEM Storybooks



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PROTONS AND NEUTRONS

Age range: 2-7

Grade range: Preschool-2

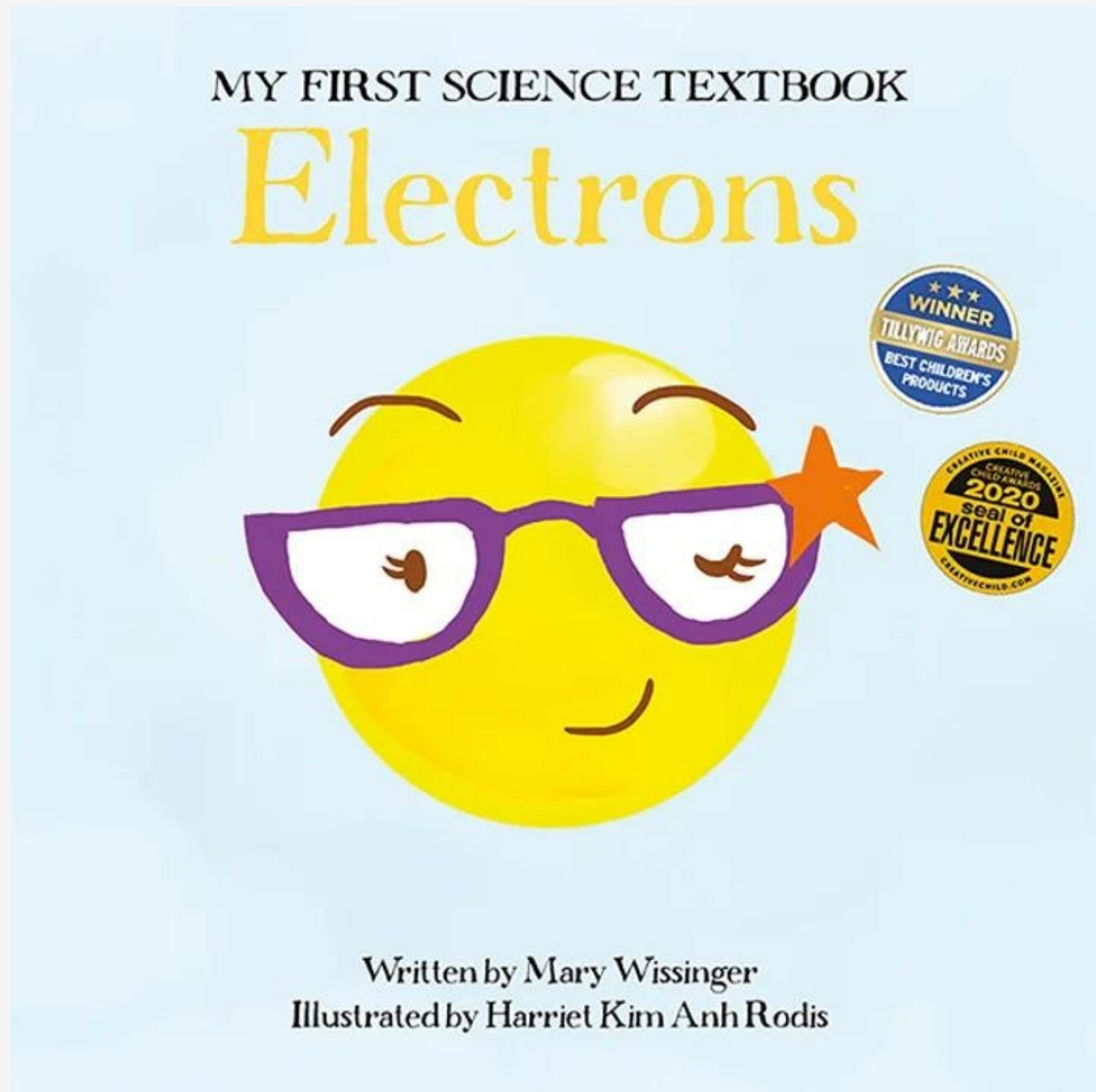
Spark scientific curiosity in kids of all ages! This light-hearted, scientifically accurate book turns Chemistry 101 into a delightful tale of universal friendship.

Through simple rhyming sentences, colorful pictures, and engaging characters, you'll learn about the structure of an atom; protons, neutrons, and electrons; charge and mass properties; molecules and compounds; covalent and ionic bonds; the periodic table; and so much more.

COMING SOON: ASL STEM Storybooks



ATOMIC HANDS



ELECTRONS

Age range: 2-7

Grade range: Preschool-2

Ellie the Electron's story is the stuff of Chemistry legend, full of mystery and excitement!

Learn the basics of chemistry through simple rhyming sentences, vibrantly colorful science pictures, and engaging, energetic characters. You'll learn about the structure of an atom, electrons, charge and mass properties, and so much more.

STEM Comprehension & Inclusion at a Young Age



1. TEACH THRU PLAY

Use STEM toys and games, such as blocks and magnets. Count with them and sign what happens!



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STEM Comprehension & Inclusion at a Young Age



2. NATURE BASED ACTIVITIES

Take learning outside! Sign what you see, what it feels like (wind), and anything you may smell. Point out animals; toddlers love that!

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3. PEER INTERACTION

Deaf kids will acquire language with their peers! At a young age, encourage play dates. When older, encourage activities that require teamwork and collaboration.



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5. FIELD TRIPS

Look to the usual children's and science museums, but don't forget places like local farms and urban gardens or markets to spark student interest. Learn common words and signs prior to visiting.

TECHNOLOGY



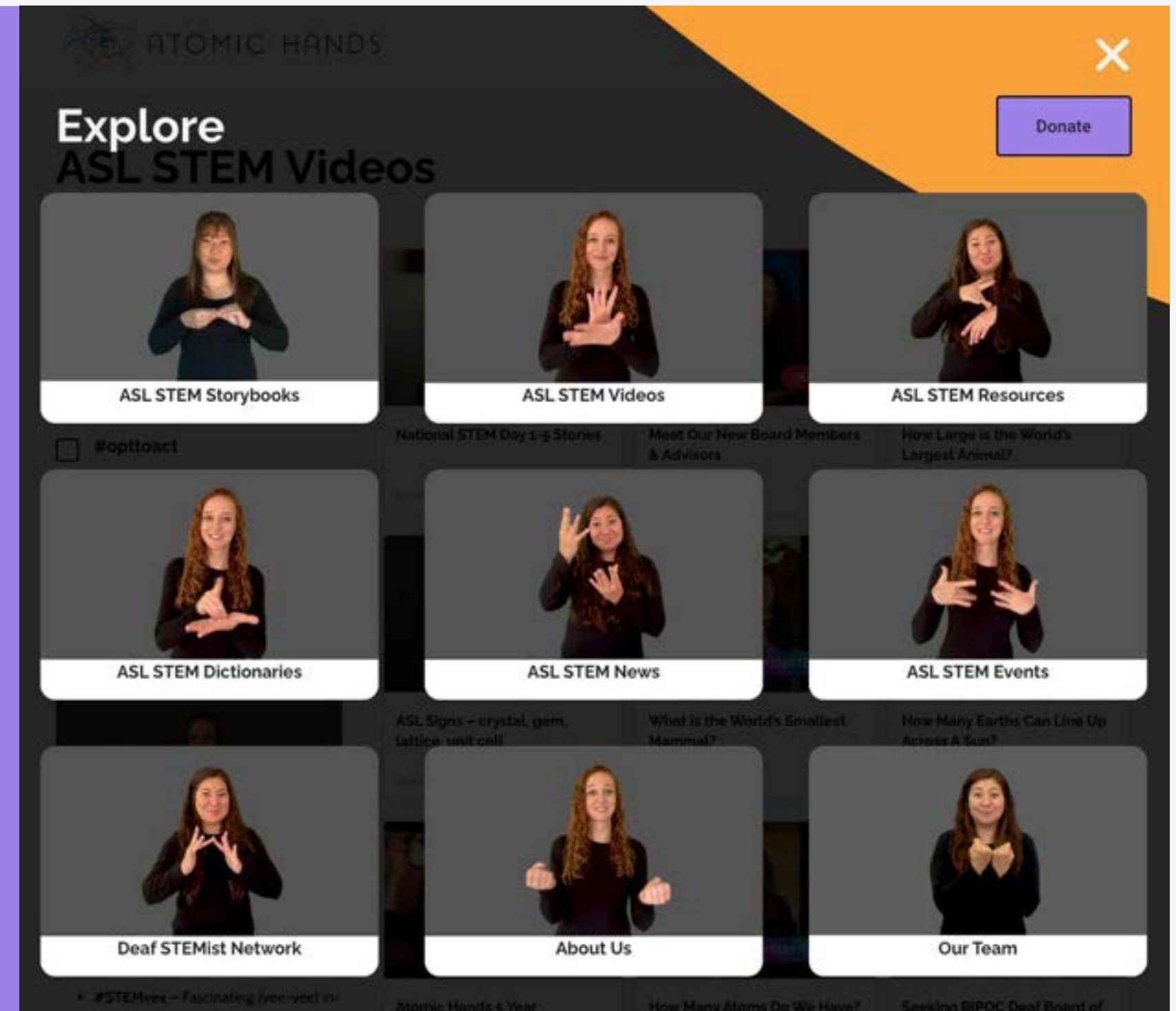
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Deaf Future STEMist
Jovaline, Age 2

Using Atomic Hands' Bilingual STEM Resources



- Read, watch, and sign along with our ASL STEM Storybooks
- Use our ASL STEM Videos as an inspiration for activity ideas at home
- Learn more about other STEM fields and organizations through our Resource page
- Review our ASL STEM Dictionaries to learn STEM signs
- Check out ASL STEM Events that may be happening near you
- Use our Deaf STEMist Network to find deaf STEMists to follow





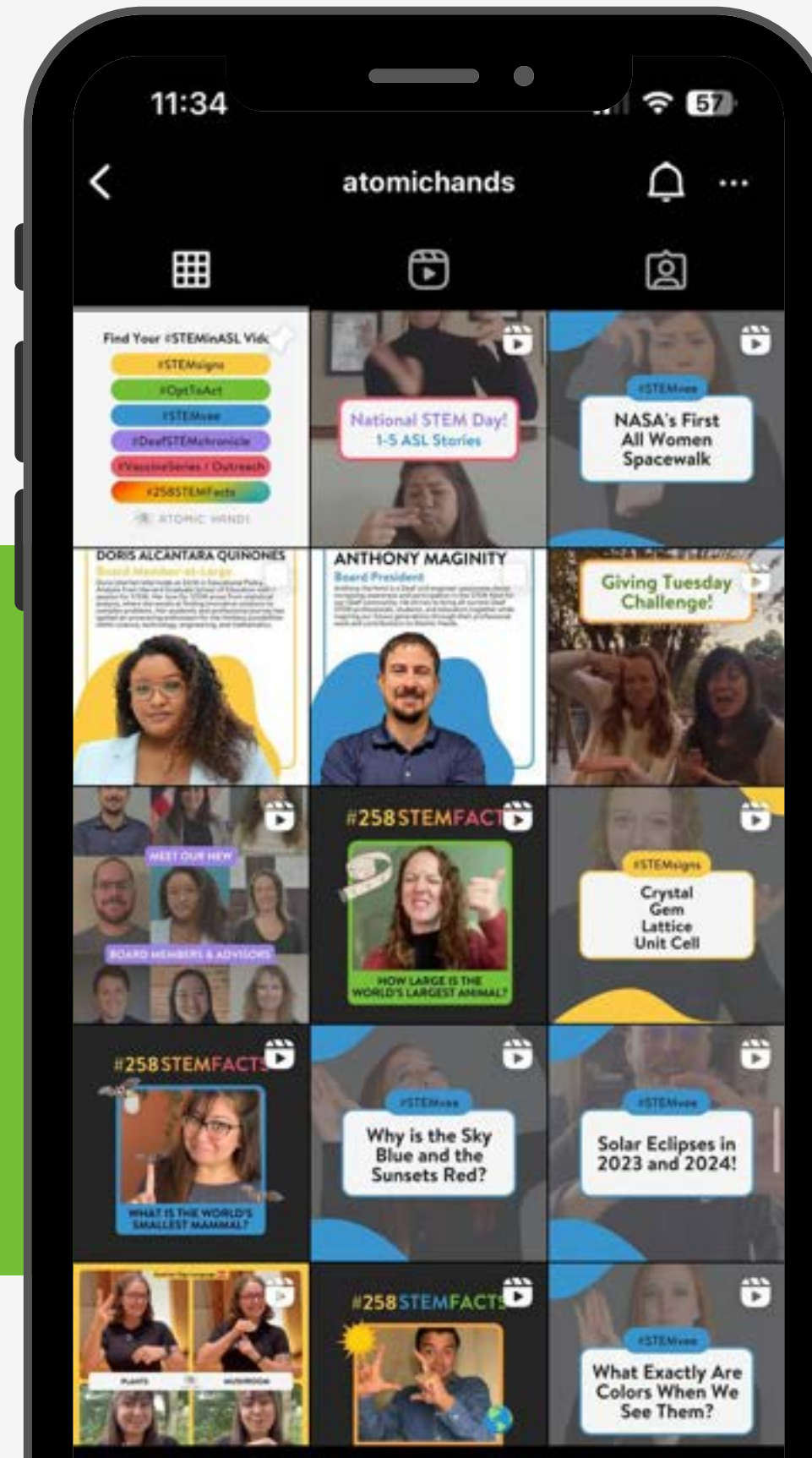
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Our Work & The Impact

- 140+ ASL STEM Videos
- 90+ Deaf STEMists
- 85+ News & Events
- 40+ Resources
- 5 ASL STEM Storybooks

With our unparalleled collection of all things STEM in ASL and work towards STEM language development, we have more projects coming soon such as:

- Mini STEM Courses
- ASL STEM Storybooks





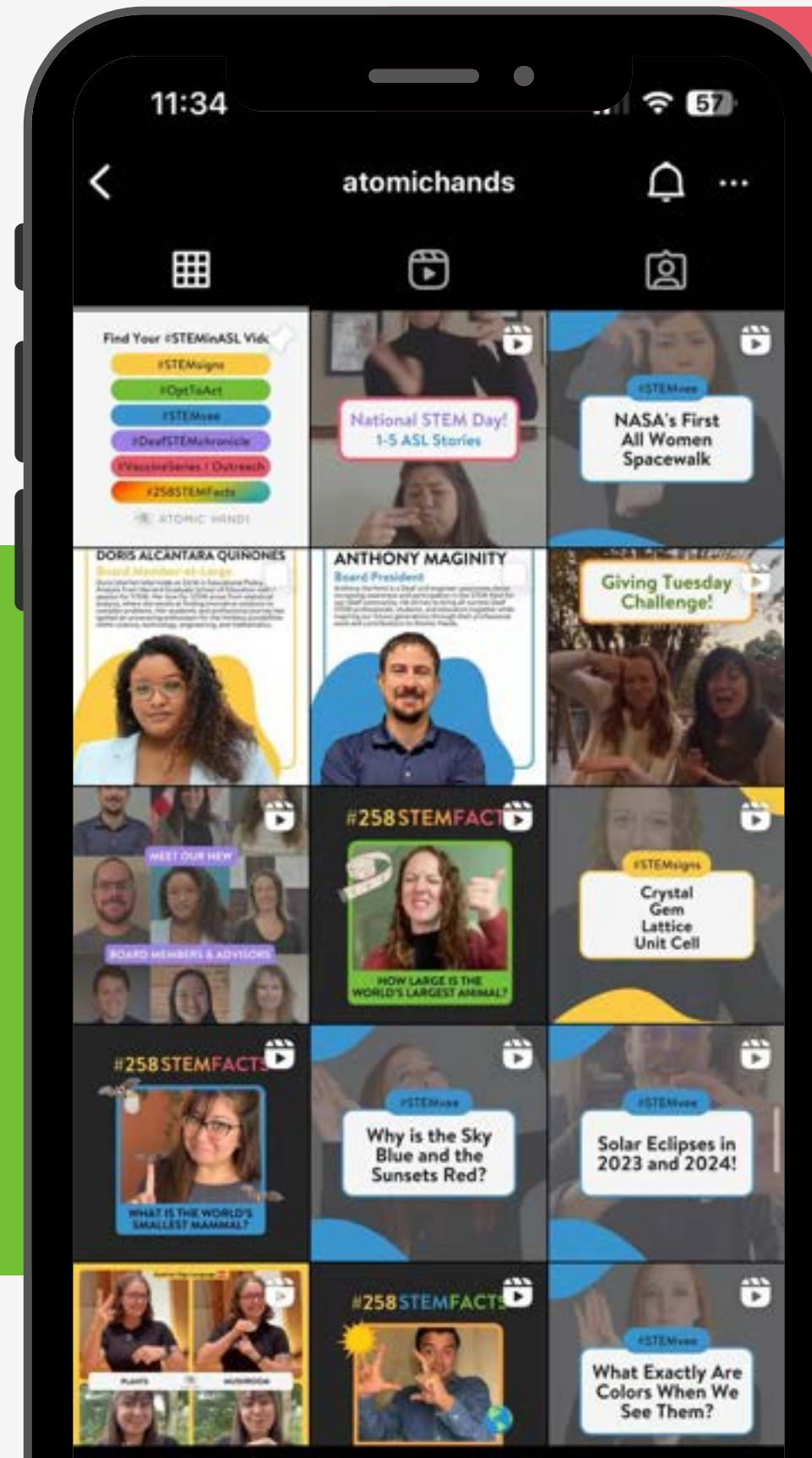
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Seeing sheer joy on people's faces as they finally accessed and comprehended STEM content in their native language, ASL.

- 75-year-old person adopted eco-conscious practices
- 12-year-old student expressed newfound appreciation for science
- Countless community members shared that they wish our resources were available earlier in life

Services



ATOMIC HANDS

TRANSLATION

We produce top-quality English to ASL translation services for anything STEM related.



Services



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TRAINING & CONSULTATION

Customized training and consultation on topics that include learning STEM in ASL, creating a deaf-friendly STEM workplace, and developing ASL-centric STEM resources.



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RESOURCE DEVELOPMENT

We offer expertise in developing ASL STEM content, videos, and signs.



THANK YOU!



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ASL STEM Storybooks



ASL STEM Videos



Facebook



Instagram



Deaf STEMist Network



ASL STEM Shop



Atomic Hands Website



Please reach out anytime - we'd love to hear about your ideas and examples!



info@atomichands.com



www.atomichands.com



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