WOMEN'S HISTORY MONTH

- From the laboratory to the classroom, from outer space to the ballot box, women around the world have been making history since before ancient times. Explore the stories of American abolitionists Harriet Tubman and Sojourner Truth, learn how women around the world have fought for their right to vote, and join in the research of modern female explorers like Hayat Sindi and Asha de Vos as they help us understand our weird and wonderful world.
- Help students celebrate Women's History Month with this curated collection of resources.

SUBJECTS

- *Anthropology, Arts and Music, Biology, Chemistry, Conservation, Earth Science, Engineering, Geography, Physics, Social Studies, U.S. History, World History, Storytelling*

Hayat Sindi, Biotechnologist

Article 1

- Dr. Hayat Sindi is working to advance science education—especially among young women from the Middle East—and biotechnology in developing regions
- People in developing regions often have less access to proper healthcare resources and technology. Using innovative science and her background in biotechnology, National Geographic Explorer Dr. Hayat Sindi is working to change this and other problems around the world.
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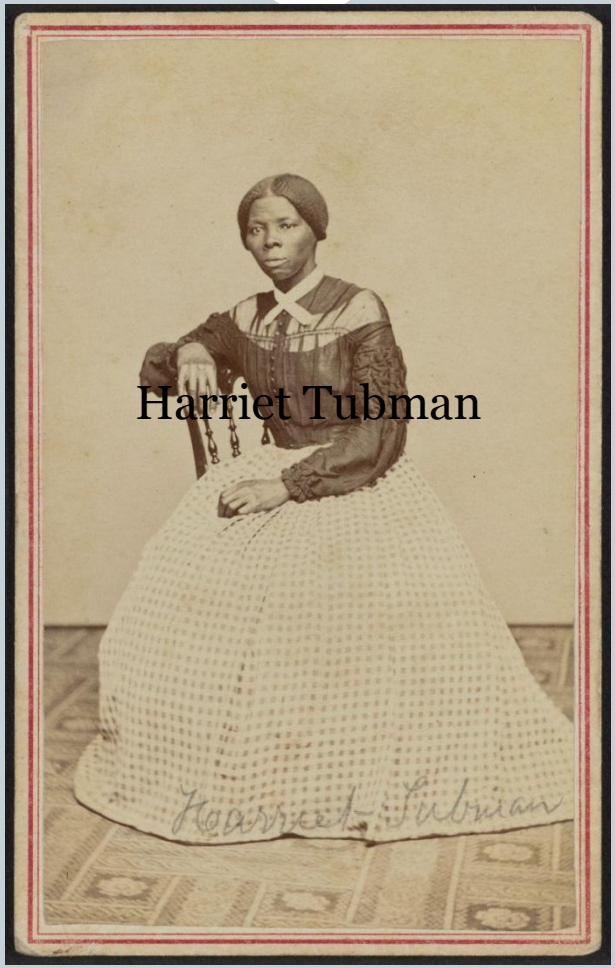
Work and Achievements

- Sindi studied at King's College London, the Massachusetts Institute of Technology, and Harvard University. She received her PhD in biotechnology from Cambridge University in 2001. In doing so, Sindi became the first woman from the Persian Gulf to receive a doctorate. This was one of the first ways that she started to break down barriers for women in the Middle East.
- Sindi cofounded a non-profit in 2007 called Diagnostics for All. Sindi helped create low-cost devices that can be used in developing countries to help diagnose diseases. To this end, she has invented a biochemical sensor that features thermoelastic probes, and she created the Magnetic Acoustic Resonance Sensor (MARS), both of which help diagnose illnesses quickly and on-site. In 2011, Sindi founded another organization, the Institute for Imagination Ingenuity (i2institute), which strives to encourage science education and innovation in younger generation

- Currently, Sindi works at the Islamic Development Bank [IsDB] in Saudi Arabia as a senior advisor to the Islamic Development Bank's President of Science, Technology and Innovation. Every day, Sindi works to empower young women and Arab women to pursue their dreams. Sindi believes in the power of science, technology and innovation to solve some of the world's most pressing development challenges. In 2018, she launched the IsDB's 500 million dollar Transform Fund to support innovators find solutions to development challenges through the power of innovation, the first digital hub of its kind for the developing world.
- "If anything, I would like to think that I have inspired girls to pursue a career in science if that is what interests them. I advocate thinking outside the box, if one's situation is tough, in favor of their ambitions," Sindi said in an interview with UNESCO.

Harriet Tubman



Key Figures in the Abolitionist Movement

- While officially recognized as a movement with the involvement of white religious groups, black activists were always a critical part in dismantling slavery in the United States. These abolitionists—many of them, formerly, enslaved—proved highly influential to advocating for freedom—for themselves and their people. Some participated directly in the rescue of those running away from enslavement, while others swayed public opinion with eloquent speeches and writings in favor of racial equality.

- Harriet Tubman was born on a plantation around 1820 in Dorchester County, Maryland. Life was strenuous and harsh as she labored in the fields of her enslaver. One day when she was an adolescent while visiting the general store, she was caught in the middle of a confrontation between a man running from his enslaver and an overseer. Tubman was struck in the head with a metal weight—possibly by accident, or possibly for intervening on the enslaved man's behalf. The injury was severe and left Tubman suffering from seizures and narcolepsy for much of her life.

  Upon the death of her enslaver, there were rumors that Tubman was going to be sold and sent farther south. Harriet fled north until she reached Philadelphia, Pennsylvania. Living in freedom, she observed, “There was such a glory over everything; the sun came like gold through the trees.”

Abolitionist Harriet Tubman escaped slavery and then returned to lead others to freedom

- Tubman worked as a domestic servant, cook, and laundress while living in Philadelphia. But, while she enjoyed her freedom, she could never forget those she had left behind on the plantation. Thus, Tubman would make dangerous trips to the South and led others out of their shackles. Historians believe Tubman took as many as 19 trips south and while we may never know the exact number of slaves assisted by her actions, some put the number as high as 300.

  As Tubman said in her authorized biography, *Harriet, the Moses of Her People* by Sarah H. Bradford: "I had reasoned this out in my mind, there was one or two things I had a *right* to, liberty or death; if I could not have one, I would have the other; for no man should take me alive; I should fight for my liberty as long as my strength lasted, and when the time come for me to go, the Lord would let them take me."

Jane Goodall

Be Like Jane: Observing, Conserving, and Communicating

About the photo

- Gombe, Tanzania - Jane Goodall and infant chimpanzee Flint reach out to touch each other's hands. Flint was the first infant born at Gombe after Jane arrived. With him, she had a great opportunity to study chimp development—and to have physical contact, which is no longer deemed appropriate with chimps in the wild.
- Ethologist and conservationist Jane Goodall redefined what it means to be human and set the standard for how behavioral studies are conducted through her work with wild chimpanzees in Gombe Stream National Park, Tanzania.

- Dr. Valerie Jane Morris-Goodall, best known simply as Jane Goodall, was born in Bournemouth, England, on April 3, 1934, to Margaret (Vanne) Myfanwe Joseph and Mortimer (Mort) Herbert Morris-Goodall. As a child, she had a natural love for the outdoors and animals. She had a much-loved dog, Rusty, a pony, and a tortoise, to name a few of their family pets. When Jane was about eight she read the Tarzan and Dr. Dolittle series and, in love with Africa, dreamed of traveling to work with the animals featured in her favorite books.
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- Jane was unable to afford college after graduation and instead elected to attend secretarial school in South Kensington, where she perfected her typing, shorthand, and bookkeeping skills. She retained her dream of going to Africa to live among and learn from wild animals, and so she took on a few jobs including waitressing and working for a documentary film company, saving every penny she earned for her goal. Finally, at age 23, she left for Africa to visit a friend, whose family lived on a farm outside Nairobi, Kenya.

Conservation

- Her first mission was to improve the conditions for chimpanzees held at medical research facilities. Jane set up several refuges for chimps freed from these facilities or those orphaned by the bushmeat trade. She established the Jane Goodall Institute (JGI) in 1977, a global community-centered conservation organization, and JGI's program Roots & Shoots in 1991, which encourages young people around the world to be agents of change by participating in projects that protect the environment, wildlife, or their communities. She met with anyone she felt could be key to protecting places like Gombe Stream National Park and species such as her beloved chimpanzees and has been an advocate for protecting animals, spreading peace, and living in harmony with the environment.

- Jane is still hard at work today raising awareness and money to protect the chimpanzees, their habitats, and the planet we all share. She travels about 300 days a year giving speeches, talking to government officials and business people around the world encouraging them to support wildlife conservation and protect critical habitats.

Artist and Metalsmith: Valerie Ostenak

Rapids

- Rapids is a 2003 neckpiece by metalsmith Valerie Ostenak. It is crafted from sterling silver, turquoise-colored copper wire, and freshwater pearls. Freshwater pearls are produced by mussels, while saltwater pearls are produced by oysters.

Biography

- As a young girl, Valerie once joined her grandmother on a cruise to Scandinavia. Leaving from New York City, they visited Iceland, Norway, Sweden, Denmark, Finland, and the Soviet Union. Showing how geography changes in the course of a lifetime, the Soviet Union doesn't exist anymore. And a Russian city Valerie visited, Leningrad, is now known as St. Petersburg.

  At Northern Arizona University in Flagstaff, Valerie originally studied science, with plans to become a veterinarian or marine biologist. But her life changed one day in phylogenetics (*fi-loh-jeh-NEH-tihks*) class. (Phylogenetics is an advanced biology class that studies the way organisms are related to each other.)

About life in New York

- MOST EXCITING PART OF YOUR WORK
- Creating. "Celebrating nature, celebrating the diversity of things that are growing, I'm part of the creative part of the universe," she says.

MOST DEMANDING PART OF YOUR WORK

- Physical exhaustion. "The energy it takes to be creative is so much stronger than people realize. . . . It is as physically demanding to design and execute a painting as it is to dig ditches."

HOW DO YOU DEFINE GEOGRAPHY?

- "I think geography is the overall view of where I live and its relationship to other places."

- Even in urban areas, Valerie is fascinated by nature's power and ability to persevere. "I get so happy when I see a dandelion coming up through asphalt," she says.

About the personality

- SO, YOU WANT TO BE AN . . . ARTIST
- “Take business classes!” Valerie recommends. “You may have a drive to paint or draw, to make things in wood or metal. Ultimately, you’re going to have to turn it into a business.”

  GET INVOLVED
- Valerie encourages families to visit local botanical gardens. Often these open-air nature museums display artwork in addition to flowers and plants. Botanical gardens offer visitors a chance to see how artists complement and interpret nature.

Annie Griffiths | Photography Without Borders

- Annie Griffiths was one of the first female photographers to work for National Geographic. Over the span of her career, she has traveled to nearly 150 countries taking pictures. Annie has collaborated on several books including Last Stand: America's Virgin Lands. She also founded Ripple Effect Images a nonprofit organization documenting programs throughout the developing world that work to empower women and girls.
- Use the resources in this collection to prepare your students for her upcoming National Geographic Live! student matinee experience. Use the "Before the show" ideas to introduce students to Annie Griffiths and the topics (culture, climate change, women's empowerment, storytelling, photography) that she will discuss during the show. Use the "After the show" ideas to extend the learning after the event has ended.

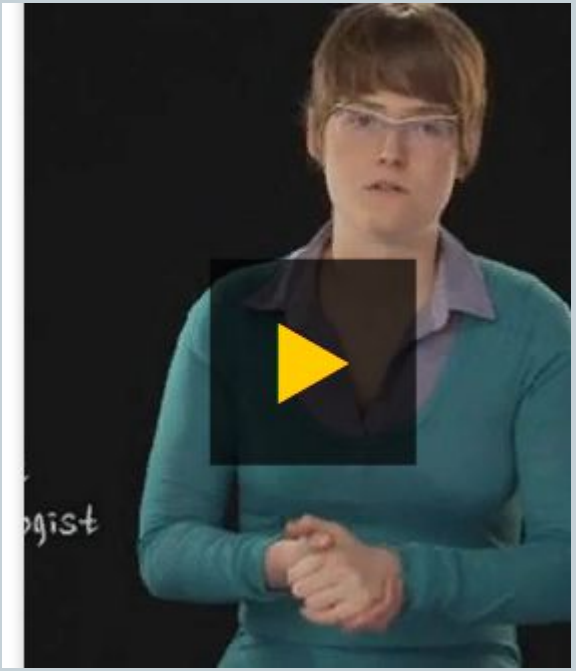
- Storytelling is the cultural practice of sharing stories with others. There are many forms of storytelling—oral, digital, and written—and the medium used is often reflective of the people telling the stories. Each group has specific tales they tell and many serve a purpose such as entertainment, cultural preservation, or instilling moral values. Photography, while also a form of art, is often a part of storytelling, especially in its digital form. One indication the art of photography has become its own form of storytelling is the phrase “a picture is worth 1,000 words.”
- Capture your students in action with these materials on storytelling and photography

Storytelling and Photography

Political boundaries

The power of images

Amber Case



Cool Scientist: Amber Case

- The work of Amber Case, a cyborg anthropologist, focuses on the interface of culture and technology. She discusses how she merged her studies in sociology, anthropology, and engineering with her passion for making technology more efficient and user-friendly, allowing people to connect and better understand one another.

To read about the personality

- Amber Case is a National Geographic Emerging Explorer and the director of the Environmental Systems Research Institute (ESRI) Research and Development Center in Portland, Oregon. As the daughter of two broadcast engineers, Case learned early how to engage her curiosity for science, mathematics, and engineering. While attending Lewis & Clark College, she combined her engineering experience with studies in sociology and anthropology. This merger developed into a passion for understanding the symbiotic nature of humans and technology, which launched her career in cyborg anthropology.

  As a cyborg anthropologist, Case explores the interface between humans and technology and how those interactions impact people and culture over time. A cyborg is an organism that has had external components added to it so that it can better adapt to changing conditions. According to Case, human interactions with technology, especially interactive devices like computers, tablets, and cell phones, make us all cyborgs. Anthropology is the science of the origin, development, and culture of human beings. Cultures are formed, in large part, by the tools and technologies they create. Throughout human history, tools have been important extensions of the physical self, and now, anthropologists like Case believe tools are extensions of the mental self as well.

- The result is that humans are able to connect more easily and more quickly than ever before. Social networks, online gaming, and virtual interfaces are just a few examples of tools being used to extend the mental self. Case believes these human-technology interactions amplify humanness because they allow people to overcome the geographic and social barriers that would otherwise prevent them from connecting with one another. One practical application of Case's work in cyborg anthropology is Geoloqi, the location-sharing company she co-founded. The Geoloqi system works to better integrate technology with real life by providing location-based information in real time.

  Through her ongoing research, Case continues to support the philosophy of computer pioneer Mark Weiser, who said, "The best technology should be invisible, get out of your way, and let you live your life."

Mary Seacole

About the personality

- Mary Seacole was the author of *Wonderful Adventures of Mrs. Seacole in Many Lands*. The memoir details her adventurous life as a 19th-century entrepreneur. Seacole traveled from her home in Jamaica to Panama, England, and the Crimea (a peninsula in what is now Ukraine).

To read on

- Mary Seacole was a daring adventurer of the 19th century. A Jamaican woman of mixed race, she was awarded the Order of Merit posthumously by the government of Jamaica and celebrated as a “Black Briton” in the United Kingdom.

- Seacole authored a book based on her travels in Panama—where she ran a store for men going overland to the California Gold Rush—and her experiences in the Crimean War, where she ran a store and catering service for officers. There, her compassion and dedication earned her the nickname “Mother Seacole.”

Crimea

- Seacole set up her British Hotel between Sevastopol and Balaklava in the Crimea, naming the spot Spring Hill. (Spring Hill is now part of Ukraine.) The British Hotel was not a "hotel" in the modern meaning of the word. While Seacole's original intention had been to open "a mess table and comfortable quarters for sick and convalescent officers," in fact she established a hut which served as an all-in-one store-restaurant for officers, with a "canteen" for ordinary soldiers.

"Pleasure was hunted keenly," she writes, and was found in "cricket matches, picnics, dinner parties, races, theatricals . . . My restaurant was always full." Her kitchen sold everything from soup to fish, curry to custards, pastries to poultry.

To celebrate

Commemorative stamps have been issued in her honor, both by Jamaica and the U.K. Royal Mail. In them, she is portrayed wearing medals—which, however, were never awarded to her (medals were given only to the military).

In 2004, more than 10,000 people voted Mary Seacole the “Greatest Black Briton.”

Recording a Dying Language

“Marie’s Dictionary”

- “Marie’s Dictionary” tells the story of Marie Wilcox, a Native American woman who is the last fluent speaker of Wukchumni, and a dictionary she created that documents the language. The Wukchumni tribe is part of the broader Yokuts tribal group native to Central California; the tribe has yet to be recognized by the federal government.
- United Nations Educational, Scientific and Cultural Organization (UNESCO) estimates that half of the 7,000 living languages spoken today will disappear if nothing is done to preserve them. In the United States, many Native American languages are struggling to survive—more than 130 of these languages are currently at risk, with 74 languages considered "critically endangered," according to UNESCO. Each of these endangered languages preserves priceless cultural heritage.

From the film

- • "In America, there are many cultures, like the Wukchumni, whose stories, histories and families are connected through that language," filmmaker Emmanuel Vaughan-Lee said. As these languages become extinct, people can lose these connections. Why do you think it is important to preserve languages? What connections do you think could be lost when a language, like Wukchumni, goes extinct?

To read on

- • A historical and cultural museum is creating an exhibit called "Vanishing Languages." If you had to convince the museum to feature the Wukchumni language as part of its exhibit, what would you include in your proposal? Why do you think her work should be recognized in the museum? How might Marie's actions impact the future of the Wukchumni language? How could her actions provide a historical context of her people?