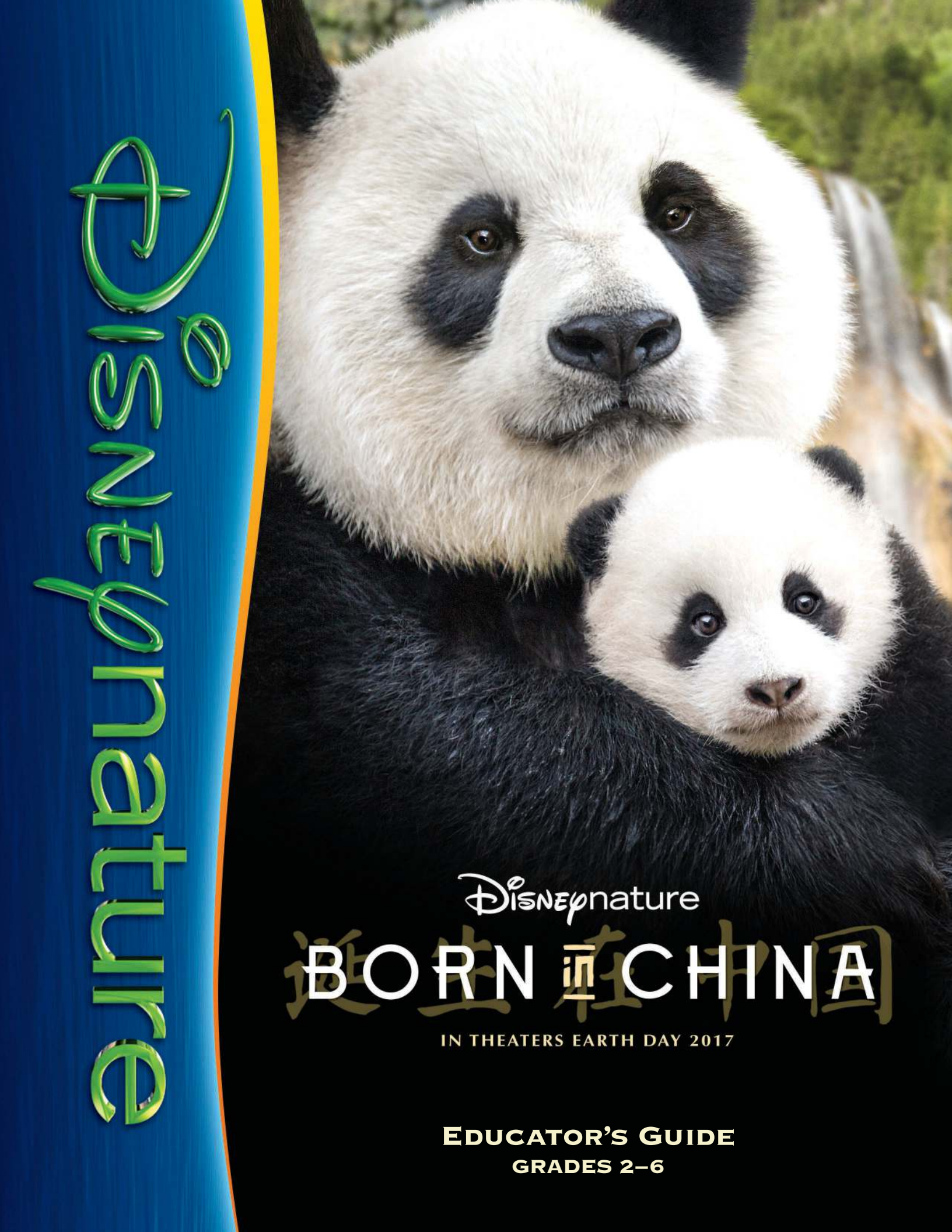
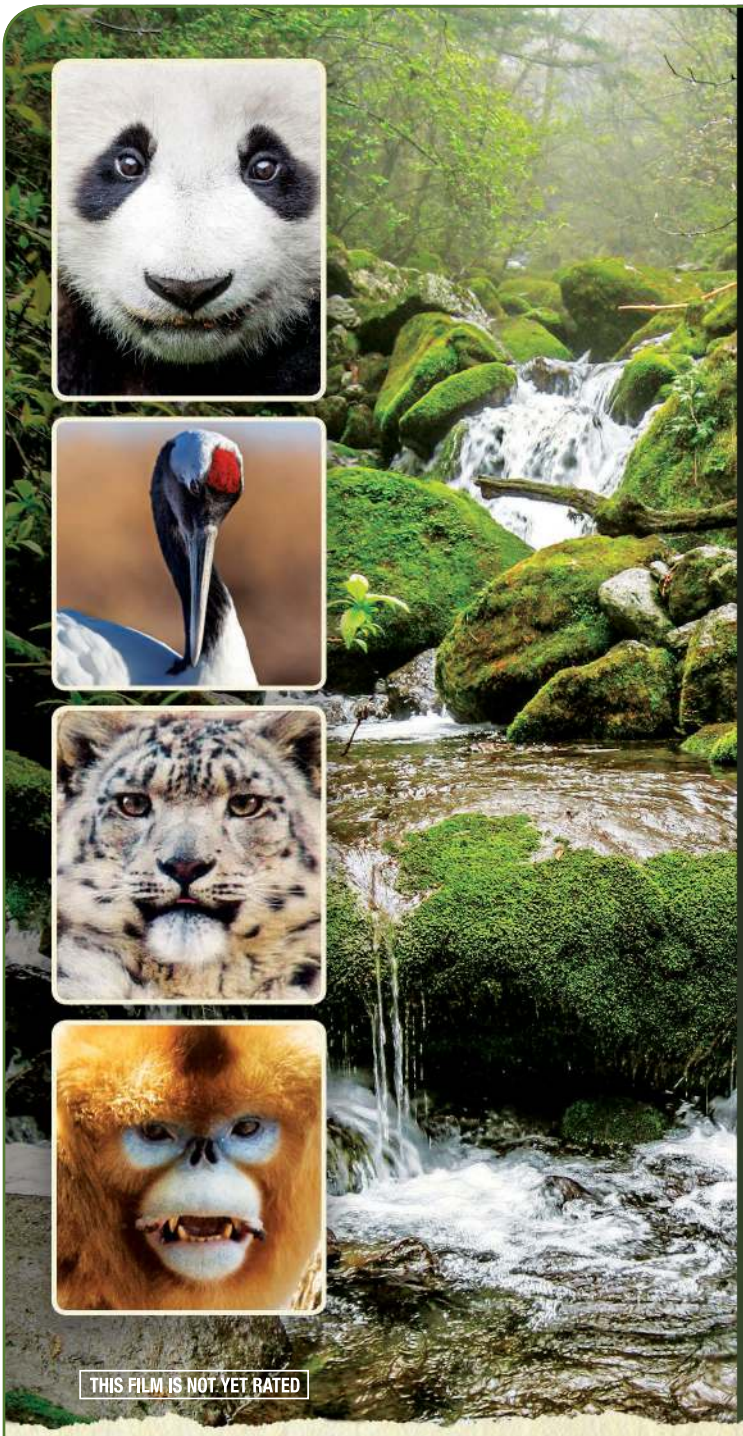


Educator's Guide

Grades 2–6



Disneynature

BORN IN CHINA

IN THEATERS EARTH DAY 2017

Educator's Guide | Grades 2–6

Disneynature's new True Life Adventure film **BORN IN CHINA** takes an epic journey into the wilds of China where few people have ever ventured. Following the stories of three animal families, the film transports audiences to some of the most extreme environments on Earth to witness some of the most intimate moments ever captured in a nature film. A doting panda bear mother guides her growing baby as she begins to explore and seek independence. A two-year-old golden monkey who feels displaced by his new baby sister joins up with a group of free-spirited outcasts. And a mother snow leopard—an elusive animal rarely caught on camera—faces the very real drama of raising her two cubs in one of the harshest and most unforgiving environments on the planet. Featuring stunning, never-before-seen imagery, the film navigates China's vast terrain—from the frigid mountains to the heart of the bamboo forest—on the wings of red-crowned cranes, seamlessly tying the extraordinary tales together. Opening in U.S. theaters on Earth Day 2017, **BORN IN CHINA** is directed by accomplished Chinese filmmaker Lu Chuan, and produced by Disney's Roy Conli and premiere nature filmmakers Brian Leith and Phil Chapman.

See BORN IN CHINA opening week and Disneynature will make a donation to World Wildlife Fund to help protect wild pandas and snow leopards in China.

Learn more at Disney.com/BorninChina

WWF

Further Explore the World of BORN IN CHINA

The BORN IN CHINA Educator's Guide includes nearly 80 pages of lessons and activities targeted to grades 2 through 6. The complete Educator's Guide and additional educational resources are now available at disney.com/borninchina.

The guide introduces students to a variety of topics, including:

- Habitat and Ecosystems
- Biodiversity
- Learned Behaviors
- Communication
- Animal Relationships
- Life Cycle
- Earth's Systems
- Culture and the Arts
- Making a Positive Difference for Wildlife Worldwide

EDUCATOR'S GUIDE OBJECTIVES

✓ *Increase students' knowledge of the amazing animals and habitats of China through interactive, interdisciplinary and inquiry-based lessons.*

✓ *Enhance students' viewing of the Disneynature film BORN IN CHINA and inspire an appreciation for the wildlife and wild places featured in the film.*

✓ *Promote life-long conservation values and STEAM-based skills through outdoor natural exploration and discovery.*

✓ *Empower you and your students to create positive changes for wildlife in your school, community and world.*

Content provided by education experts at Disney's Animals, Science and Environment

P21 PARTNERSHIP FOR 21ST CENTURY LEARNING

© 2016 Disney Enterprises, Inc.

Educator's Guide

TABLE OF CONTENTS

Standards Alignment Chart 4

Welcome to China 6

Lesson 1 Play, Pounce, Pose – An Animal Field Day 20

Lesson 2 Comparing the Animals of Disneynature BORN IN CHINA 25

Lesson 3 Why is Bamboo Important to the Giant Panda? 37

Lesson 4 Yin & Yang – The Relationship Between Negative and Positive Space 44

Lesson 5 High Altitude Animal Adaptations 51

Lesson 6 How Scientists Use Technology to Study Endangered Species 57

Lesson 7 The Silk Road 64

Keyword Glossary 72

ACKNOWLEDGMENTS

The Walt Disney Studios would like to take this opportunity to thank the amazing teams that came together to develop the **Disneynature Born in China** Educator's Guide. It was created with great care, collaboration and the talent and hard work of many incredible individuals.

A special thank you to Dr. Mark Penning and his team at Disney's Animal Kingdom: Animals, Science & Environment for sharing all of their knowledge and insuring the accuracy of the information. These materials would not have happened without the diligence and dedication of Allyson Atkins and Kyle Huetter who worked side-by-side with the scientists and educators to help create these compelling lessons and activities. A big thank you to Clary Powell Pickering for writing the marvelous background information and Rachel Woodworth for her outstanding work on the activity sheets. Thanks to Dr. Anne Savage, Rebecca Phillips, Rachel Daneault, Katie Feilen, Lori Perkins and Hannah O'Malley for reviewing all the materials. Thank you also to Dr. Beth Stevens, Kim Sams and Claire Martin for their leadership. The interdisciplinary and holistic approach to this guide could not have happened without the special talents of Drs Linda Labbo & John Olive, Professors of Emeritus at The University of Georgia, Dr. Deborah Tippins at The University of Georgia, Dr. NaJuana Lee from Fulton County School, Georgia, Dr. Sherry Field from The University of Texas, Austin and Dr. Wayne Nelson from Southern Illinois University. Lastly, thank you to Paul Baribault, Peggie Birkenhagen and Beatriz Ayala at The Walt Disney Studios for their help and unwavering support of this project.

Dr. Lizabeth Fogel
Director of Education, The Walt Disney Studios

© 2016 Disney Enterprises, Inc.

Standards Alignment Chart

	1 Play, Pounce, Pose An Animal Field Day	2 Comparing the Animals of Disneynature BORN IN CHINA	3 Why is Bamboo Important to the Giant Panda	4 Yin & Yang: The Relationship Between Negative and Positive Space	5 High Altitude Animal Adaptation	6 How Do Scientists Use Technology to Study Endangered Species?	7 The Silk Road
NEXT GENERATION SCIENCE STANDARDS							
Matter and its Interactions					2-PS1-1, 2-PS1-2, 2-PS1-3		
Motion and Stability: Forces and Interactions	3-PS2-1, 3-PS2-3 & MSPS2-2						
From Molecules to Organism	4-LS1-2	4-LS1, 4-LS1.1 & MS-LS1-5					
Biological Evolution: Unity and Diversity			2-LS4-1		3-LS4-2, 3-LS4.C		
Earth's Place in the Universe			2-ESS1.C				
Ecosystems: Interactions, Energy and Dynamics			3-LS2.D				
Earth's Systems					3-LS2-2		
Earth and Human Activity						5-ESS3, 5-ESS3.C, 5-ESS3-1, MS-ESS3-2, MS-ESS3.B	
Engineering Design						MS-ETS1-1	
COMMON CORE LANGUAGE ARTS STANDARDS							
Writing	Text Types and Purpose: W3.3c, W4.2d, W4.3c, W5.2d, W5.3c & W5.3d, Production and Distribution of Writing: W2.5, W2.6, W3.5 & W3.6 Research to Build and Present Knowledge: W2.7, W2.8, W3.7, W3.8, W4.7, W4.8, W5.7, W5.8, W6.7 & W6.8	Text Types and Purpose: W4.3, W5.3 & W6.2 Research to Build and Present Knowledge: W4.7, W4.8, W5.7 & W5.8, W6.7 & W6.8				Production and Distribution of Writing: W4.6, W5.6, W6.6, W7.6 & W8.6 Research to Build and Present Knowledge: W4.7, W4.8, W5.7, W5.8, W6.7, W6.8, W7.7, W7.8, W.8.7 & W8.8	Text Types and Purposes: W4.3, W5.3b, W6.3, W7.3 & W8.3 Production and Distribution of Writing: W4.6, W5.6, W6.6 & W8.6 Research to Build and Present Knowledge: W4.7, W4.8, W5.7, W5.8, W6.7, W6.8, W7.7, W7.8, W8.7 & W8.8
Language Standards				Vocabulary Acquisition and Use: LS4.5c, LS5.5c, LS6.5c			
COMMON CORE MATHEMATICS STANDARDS							
Measurement and Data	2.MD.A.1, 2.MD.A.3, 2.MD.A.4, 2.MD.B.5, 3.MD.A.& 4.MD.A.2	4.MD.A.1, 4.MD.A.2 & 5.MD.A.1					4.MD.A.1, 4.MD.A.2 & 5.MD.A.1
Operational and Algebraic Thinking	3.OA.D.9 & 4.OA.C.5						4.OA.A.1, 4.OA.A.2 & 4.OA.A.3
Ration and Proportional Relationships		6.RP.A.1					6.RP.A.1, 6.RP.A.2, 6.RP.A.3, 6.RP.A.3.B & 6.RP.A.3.D
Statistics and Probability		6.SP.A.1					
Standards for Mathematical Practice		3. Construct viable arguments and critique the reasoning of others.					

Disneynature BORN IN CHINA

© 2016 Disney Enterprises, Inc.

Standards Alignment Chart (continued)

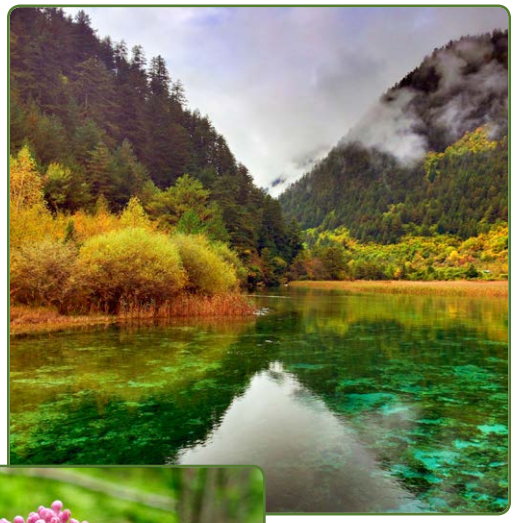
	1 Play, Pounce, Pose An Animal Field Day	2 Comparing the Animals of Disneynature BORN IN CHINA	3 Why is Bamboo Important to the Giant Panda	4 Yin & Yang: The Relationship Between Negative and Positive Space	5 High Altitude Animal Adaptation	6 How Do Scientists Use Technology to Study Endangered Species?	7 The Silk Road
NATIONAL CORE ARTS STANDARDS							
Dance	DA:Pr4.1.2a, DA:Pr4.1.3a, DA:Pr4.1.4a						
Visual Arts			VA:Crl1.2.2a, VA:Cr2.1.2a, VA:Cr3.1.2a, VA:Re7.1.2a, VA:Re7.2.2a, VA:Re8.1.2a, VA:Cn11.1.2a, VA:Cr1.1.3a, VA:Cr1.2.3a, VA:Cr2.1.3a, VA:Cr2.2.3a, VA:Cr3.1.3a, VA:Pr6.1.3a, VA:Re.7.1.3a, VA:Re7.2.3a, VA:Re8.1.3a, VA:Cn10.1.3a, VA:Cn11.1.3a	VA:Cr2.1.4a, VA:Cn10.1.4a, VA:Cn.11.1.4, VA:Cr2.1.5a, VA:Re.7.2.5a, VA:Cn11.1.5a, VA:Cr2.1.6a, VA:Cr2.3.6a, VA:Pr5.1.6a, VA:Re7.1.6a, VA:Re7.2.6a			VA:Cr2.1.4a, VA:Cn10.1.4a, VA:Cn11.1.4, VA:Cr2.1.5a, VA:Re7.2.5a, VA:Cn11.1.5a, VA:Cr2.1.6a, VA:Pr5.1.6a, VA:Re7.1.6a, VA:Re7.2.6a
NATIONAL CURRICULUM STANDARDS FOR SOCIAL STUDIES							
Dimension I						D1.1.3-5, D1.2.3-5, D1.5.3-5	D1.1.3-5, D1.2.3-5, D1.5.3-5
Dimension I Anchor Standards						R1, W7 & SL1	R1, W7 & Sl1
Dimension II						D2Civ.6.3-5, D2Civ.9.3-5, D2Civ14.3.5, D2Geo.2.3-5, D2Geo.5.3-5, D2Geo.9.3-5, D2His.3.3-5, D2His.3.3-5, D2His4.3-5, D2His.10.3-5	D2.Eco.1.3-5, D2Eco.4.3-5, D2Eco.5.3-5, D2Eco.7.3-5, D2Geo.1.3-5, D2Geo.2.3-5, D2Geo.4.3-5, D2Geo.5.3-5, D2Geo.7.3-5, D2His.2.3-5, D2His.4.3-5, D2His.10.3-5
Dimension II Anchor Standards						R1-10, W7, SL1 & L6	R1-10, W7, SL1 & L6
Dimension III						D3.2.3-5 & D3.4.3-5	D3.2.3-5 & D3.4.3-5
Dimension III Anchor Standards						R1-10, W1,2,7-10 & SL1	R1-10, W1,2, 7-10 & SL1
Dimension IV						D4.1.3-5, D4.2.3-5	D4.1.3-5 & D4.2.3-5
Dimension IV Anchor Standards						R1, W1-8 & SL1-6	R1, W1-8 & SL1-6

© 2016 Disney Enterprises, Inc.

Welcome to China!

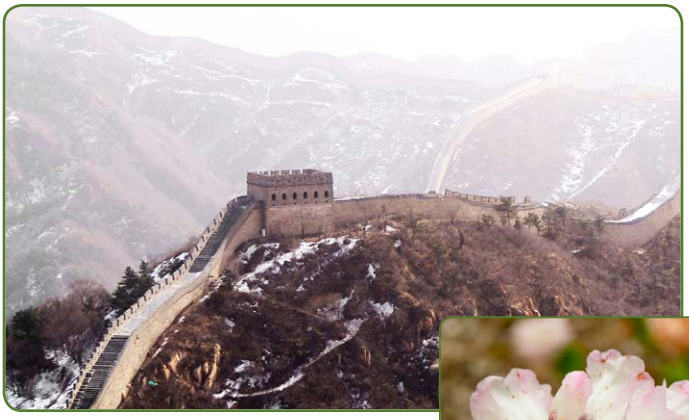
TEACHER'S BACKGROUND INFORMATION

Almost no country on earth can rival the impressive landscapes and cultural heritage of China. As one of the world's oldest civilizations, China has a rich history that began thousands of years ago. Today, modern China is home to 1.3 billion people, the largest population of any country on Earth. This population is diverse, with over 56 officially recognized ethnic groups and 298 living languages. The beautiful, culturally rich land of China covers 370,000 square miles (958,000 square kilometers), which makes it slightly smaller than the United States in comparative area. Beijing, the capital city, is home to the nation's governmental and political institutions, while nearby Shanghai is a bustling port metropolis containing the largest population of any city in the world. Beyond the many urban centers, China's vast wilderness is home to a wide variety of distinct geographic features and unique species.



Within China's borders, one can find a variety of landforms and ecosystems, from mountains and high plateaus to sandy deserts and thick forests. Approximately one third of China is covered by mountains! In the western province of Tibet, the fabled Himalayas are home to the roof of the world, Mt. Everest, the highest point on Earth. Other well-known geographic landmarks in China include the powerful Yangtze River and the arid Gobi Desert. The Yangtze River, the longest in Asia, winds 3,915 miles (6,300 kilometers) in length. To describe the power of this mighty river, Du Fu, an 8th century Chinese poet once wrote, "traveling up the rapids of the Yangtze is more difficult than climbing to heaven." From east to west, cities and towns throughout China were built and continue to thrive along this very important natural waterway. On the northern border of China passing into Mongolia is the Gobi Desert, an immense stretch of rocky land 1,000 miles (1,600 km) long and 300 to 600 miles (500 to 1,000 km) wide. Although dry, with extreme temperatures, the Gobi Desert is home to a small population of nomadic Chinese people who live off the land through livestock agriculture while living in clay homes. They are just one of the many cultures and people who helped establish modern China.

© 2016 Disney Enterprises, Inc.



A GROWING COUNTRY

When exploring China's past, historians break up periods of time by dynasty, when a hereditary line of rulers governed over the country. The first was the Qin dynasty in 221 B.C. established by Qin Shihuang, the first Emperor of China. Qin greatly expanded the size of the country and initiated the building of The Great Wall of China in order to protect the borders of the empire from wandering, barbaric nomads. The last dynasty was the Qing, which concluded in 1912 when the imperial system was replaced by a new form of government. As seen with other growing countries, China's population established communities along rivers in order to have access to water for consumption and transportation. However, China had another force behind settlement, the Silk Road. The Silk Road was a web of trade routes spread across China to connect with surrounding countries in order to expand trade. Named after one of a merchant's most precious and sought after goods, silk, this network of trade served as a conveyor belt for produce, spices, grain, tools, religious objects, artwork, precious stones and more. Trade opened up a whole new world of products previously unavailable to Chinese inhabitants.

CREATIVE CULTURE

The heritage of this powerful country is ingrained in the everyday life of the people, and the culture of this country spans centuries. Many beliefs and philosophies of modern China are inspired by a man named Confucius who lived almost 3,000 years ago. Recurring themes from his teachings include morality, kindness and education. In addition to the philosophy of Confucius, many people of China are guided by the religion of Buddhism. The religion is based on the teachings of Gautama who lived 25 centuries ago in India. He was called the Buddha, which means the awakened one, after his realization of the meaning of life, death and existence.

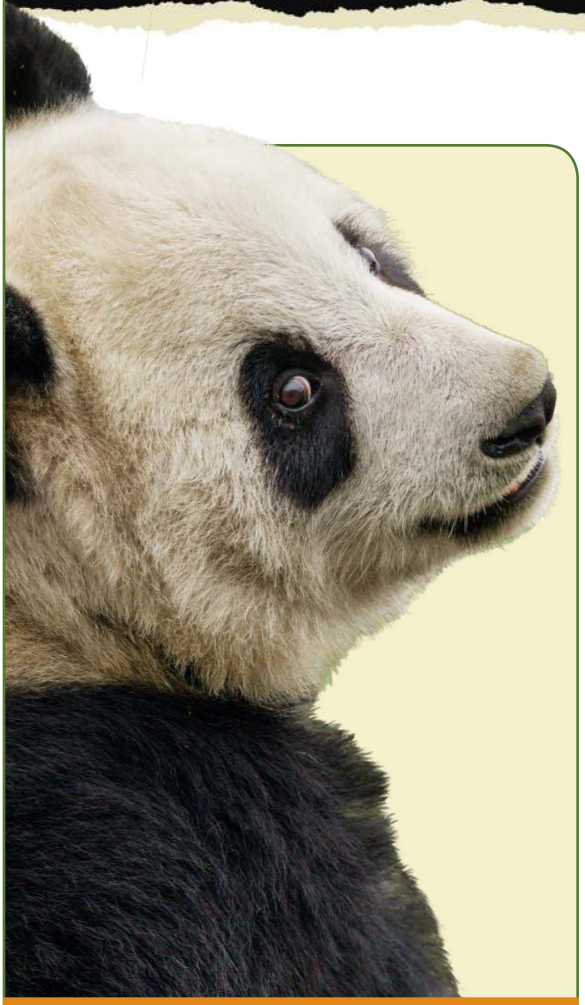
Although China's official language is Standard Chinese or Mandarin, language in China is incredibly diverse with nearly 200 regional dialects. The written Chinese language is one of the most difficult and graphically beautiful languages to transcribe. The traditional alphabet used in much of the western world is substituted with symbols or characters. This form of writing is called calligraphy and was created by the Chinese nearly 2,000 years ago. Within the art of calligraphy, various symbols often convey much more than a word and may instead convey a complex idea or thought such as the wonder of nature.

China's connection with nature is seen through both written and artistic works. Mountains, flowers, birds and landscapes are common themes throughout many Chinese art forms. Nature is precious in the Chinese culture. The government has reinforced this by creating over 1,200 reserves to protect plants and animals. You will soon meet some of them! Are you ready to explore China's wilderness and meet the giant panda, golden snub-nosed monkey, snow leopard and neighboring species?

© 2016 Disney Enterprises, Inc.

Meet China's Beloved Icon

The Giant Panda



The giant panda is both culturally significant and endemic to China, meaning China is the only place in the world where giant pandas can be found living in the wild. They are one of the most recognized species in the world and have become a conservation icon for both China and global conservation efforts! Their round bodies and big eyes remind us of human babies, and the way they eat sitting down reminds us of ourselves. It's no wonder we are drawn to these remarkable animals. Giant pandas inhabit the misty mountains of central China, living in fragmented sections of the Sichuan, Shaanxi, and Gansu provinces with millions of people living just outside these forest habitats. China has 67 protected reserves to help save existing giant panda habitat and provide giant pandas with a safe oasis.

PROFILE OF A GIANT PANDA

The giant panda is a unique animal with many specialized adaptations. These elusive and solitary animals can stand as tall as an average person, between 5.2 and 6.2 feet (1.58 and 1.88 meters). Males weigh between 190 and 275 pounds (86 to 125 kilograms) and females are smaller, weighing between 155 and 220 pounds (70 to 100 kilograms). This distinctive bear has black markings on its ears, around its eyes, nose, legs and shoulders. The rest of the woolly coat is white and this thick layer keeps the giant panda warm in the cold, snow-covered mountains of China. These well-adapted bears can live up to 14 to 20 years in the wild.

Although giant pandas are typically thought of as gentle creatures, they are still wild animals that can be as dangerous as any other bear. Strong jaw muscles and large teeth are adaptations that make it easier for giant pandas to crush tough bamboo just as simply as you could snack on celery! A "pseudo thumb" or modified wrist bone helps them grip bamboo more easily. These bears are pros at munching on this crunchy, fibrous plant.

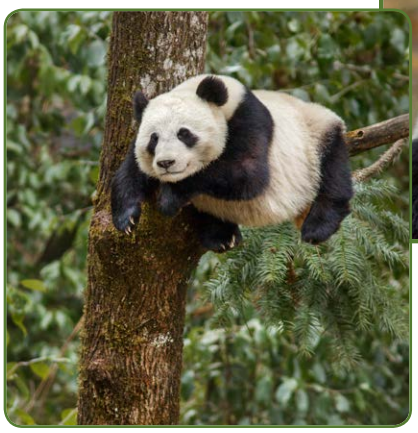
Did you know?

Panda's have six digits on each hand? They have five fingers PLUS an amazing pseudo-thumb!

© 2016 Disney Enterprises, Inc.

BAMBOO – FOREST FOOD OF THE GIANT PANDA

In the broadleaf and old growth coniferous mountain forests of central China, bamboo crowds forest floors, providing a generous buffet to grazing pandas. At elevations of 5,000 to 10,000 feet (1,524 to 3,048 meters) this environment generates heavy clouds creating frequent rainstorms and damp mist that helps keep bamboo flourishing. These temperate forests produce around 30 to 40 inches (76 to 101 centimeters) of rain and snow a year. Although the giant panda has a carnivore's digestive system allowing them to consume some meat, bamboo makes up 99% of their diet. Due to the plants poor nutritional value, giant pandas spend more than 10 hours a day munching on this evergreen grass in an effort to consume more than 40 pounds (18 kilograms) of necessary fuel and energy. Though bamboo has a lot of water in it, nearby streams and rivers fed by melting snow provide them with refreshing water. Giant pandas play an important role in regenerating China's mountain ecosystem. These black and white-colored bears help replant the forest when they leave seed-filled droppings on the forest floors. Over time these replanted seeds grow, helping to replenish the forest. A giant panda eats food much like we do, by sitting down to free up their forearms for grasping and holding bamboo shoots. It almost looks like the only thing missing from their meal is a table and chairs!



A TYPICAL DAY

Giant pandas spend much of their day alternating between eating, resting and sleeping. These bears are not the most active members of the animal kingdom! Unlike other bears in their scientific animal family, they do not hibernate. During harsh winters, they will journey down the mountain to seek warmer temperatures. Giant pandas share their habitat with dwarf blue sheep, multi-colored pheasants, crested ibis, golden snub-nosed monkeys and takin or goat antelopes. Though these are all friendly neighbors, the giant panda must be wary of prowling predators such as jackals, leopards, and the yellow-throated marten. Giant pandas can easily fend off most predators, but these lurking hunters can pose a threat to their much smaller offspring.

COMMUNICATION

Giant pandas prefer to live a solitary lifestyle as it affords greater access to needed resources. Although they may encounter other pandas, when they're on their own they have unique ways of communicating with others from afar. Lone pandas communicate with others by using sounds and scent. Bleating goat-like cries and squeaks echo through the forest in the spring. Scent glands at the base of their tails secrete a waxy substance that is rubbed on trees as a signal to nearby

© 2016 Disney Enterprises, Inc.

giant pandas that they are in the area. Giant pandas have an excellent sense of smell allowing them to easily pick up on this distinctive communication. Males take dust baths, rolling in the dirt allowing the dust to absorb their scent before it floats off into the forest air. Not exactly the way to get clean, but it definitely makes a statement! Giant pandas will scratch tree bark with their massive claws as a visual sign of where they've been. Think of it as the giant panda's way of writing their friends a quick note.

RAISING YOUNG

The gestation period for female giant pandas ranges from 3-5 months, with an average pregnancy lasting 135 days. This wide variation in gestation occurs because the fertilized panda egg usually floats free in the mother's uterus before it implants and begins developing. Once the embryo is attached, its development continues until a panda is born. Female giant pandas only produce 5 to 8 cubs in their lifetime and can start reproducing at 4 to 5 years of age.

When cubs enter this world, they weigh just 3 to 5 ounces (85 to 142 grams) and are pink, hairless and blind. These tiny babies are about the size of a stick of butter and are 900 times smaller than their mom. It's no wonder they are so dependent on their mother for the first 18 months of their life, never venturing very far from her side. Between one and two months, baby giant pandas begin to open their eyes and are carried by mom as she travels outside of the den. Finally these little ones gain some independence at six months, moving alongside mom instead of in her arms. However, mom stays as the primary source of food, nursing for eight to nine months. By three years of age giant pandas leave the protection of their mom and venture off into the forest to live a primarily solitary life.

AN IMPORTANT YET VULNERABLE SPECIES

Although giant pandas have recently been reclassified as vulnerable by the IUCN, they were once considered an endangered species due to their small population size and threats such as habitat loss created by growing cities, increased timber usage and expanding farmland. The word vulnerable refers to the conservation status of a particular species of plant or animal, telling us how close that species is to possible extinction. For many years, giant pandas were on the cusp of disappearing due to extinction and were seen as a symbol of conservation and wildlife protection. The recent reclassification of the giant panda is an incredible conservation success and accomplishment that demonstrates how human actions and collaboration can help reverse the decline of species in the wild. It is estimated, that there are less than 2,500 giant pandas left in the wild in fragmented habitats. Conservation organizations, most notably the World Wildlife Fund, are working to stop habitat loss and ensure there are giant pandas for generations to come. Over 300 giant pandas live in accredited zoos and breeding centers around the world, most of which are in China. China has granted the highest level of protection to the giant panda through the country's wildlife laws.

Now that we've learned about this beautiful bear, it's time to move up the mountains and meet their agile, unique looking neighbor, the golden snub-nosed monkey.

© 2016 Disney Enterprises, Inc.

Meet The Mysterious

Golden Snub-Nosed Monkey

Monkeys are prevalent throughout Chinese culture. These playful and admired creatures are recognized in the Chinese Zodiac calendar, as statues on ancient temples, in paintings and even folklore. The golden snub-nosed monkey is one of China's elusive and rare primates, a species of which little is known. These flat nosed, orange-haired, blue-faced animals spend their lives in the highest treetops in the coldest climates of China, which makes them a difficult species to observe and study. Known also as the Chinese golden monkey or Sichuan snub-nosed monkey, these agile creatures are endemic to China and live in the provinces of Sichuan, Gansu, Hubei and Shaanxi.

PROFILE OF A GOLDEN SNUB-NOSED MONKEY

The golden snub-nosed monkey has a unique appearance, causing it to stand out among other monkeys you have seen before. The name comes from its golden orange-brushed fur and short nose with exposed nostrils. Their shoulders, back, head and tail are a charcoal color with their stomachs and underside remaining a lighter white or yellow color. These monkeys have striking pale blue faces, almost like ice, with surrounding fur covering their cheeks and forehead. The males are overall brighter in color with fire-orange heads. Long hairs cover their shoulders and back like a cape. Unlike other primates, the fur of the golden snub-nosed monkey will extend to their hands, acting like mittens to protect extremities from the extreme temperatures of the high altitude climate.

Standing at 22 to 29 inches (57 to 76 centimeters) tall, golden snub-nosed monkeys have a tail almost as long as their body measuring 20 to 28 inches (50 to 72 centimeters). Males typically weigh on average 40 pounds (18 kilograms) with females nearly half their size around 25 pounds (11.5 kilograms). The snubbed nose is angled up towards the forehead, exposing two long nostrils. Scientists are unsure as to why the nose is shaped this way, however some believe it was developed due to the harsh,

Did you know?

Golden snub-nosed monkeys spend almost all of their time in treetops!

© 2016 Disney Enterprises, Inc.

cold environment the species inhabits. A flattened nose leaves less surface area that can be exposed to frostbite.

FOREST FOOD

Golden snub-nosed monkeys live high up in China's mountainous coniferous and deciduous broad-leafed forests. At elevations of 4,593 to 9,186 feet (1,400 to 2,800 meters), snowfall occurs 6 months out of the year. These adaptive monkeys have evolved to thrive in these climates and are well equipped to handle this environment. Their habitat often crosses over into the giant panda's neck of the woods making them next-door neighbors! Similar to the giant panda, during the winter months the cold climate forces the monkeys to move down the mountain in order to find available food sources.

Golden snub-nosed monkeys are resourceful foragers, flexing their diet based on what is available. During winter, bark, lichen and seeds become the main diet for golden snub-nosed monkeys as they are almost always available after some digging in the snow to find them. Lichen is a fungi that grows on rocks and trees and looks like a light green plant or moss. Think of them as the potato chips of the forest. They can find them everywhere, even in the winter! The rest of the year golden snub-nosed monkeys will eat an assortment of leaves, buds and fruit. They will also eat insects and small vertebrates such as birds or even bird eggs. Like the giant panda, the golden snub-nosed monkey enjoys soft, new growth bamboo shoots. It's a watery appetizer that will quickly rehydrate them while they search for other food. In addition to lapping up water at a nearby stream, golden snub-nosed monkeys have been observed eating snow in the winter. Snowballs for dessert anyone?

A TYPICAL DAY

Golden snub-nosed monkeys are mostly arboreal, spending 97% of their day in the mid to high canopy of treetops. Adult male monkeys are the leaders and protectors spending the most time on the ground out of any others in the group. Golden snub-nosed monkeys are quite active during the day, traveling for food in the morning and afternoon with a break in the middle for a short nap to warm up and re-energize. While moving through their forest habitat, golden snub-nosed monkeys will walk on all fours, climb or leap to get to their destination. Golden snub-nosed monkeys can also walk bi-pedally, or on two feet, typically when traveling on the ground. This helps them keep an eye out for predators, allowing them to easily leap into the trees when needed.

The golden snub-nosed monkey shares its habitat with a wide variety of forest creatures including the giant panda, Asian black bear, musk deer, porcupine and a variety of colorful birds. Their forest habitat is also home to another unique species, the takin, a large hoofed mammal with horns and thick coat that is often referred to as a goat antelope. Some neighboring species also create threats. Predators such as the wolf, Asiatic golden cat, leopard, fox, Indian civet, tiger, weasel, goshawk and golden eagle keep the golden snub-nosed monkey alert and on guard.

COMMUNICATION

These social monkeys form large family groups, called troops, ranging from sub groups of 20 to 70 in the winter to combined groups of 600 members in the summer. Imagine the size of that family reunion! Smaller sub units of monkeys join together to form these large groups. It is believed that the size of the groups may change depending on predators and food availability. These sub units are formed either with one mature male and many females with their offspring or with all males. Males are always keeping watch and will create dramatic displays and vocalizations to scare away threatening

© 2016 Disney Enterprises, Inc.

predators or other monkeys. Baring of teeth, loud cries, chasing and grabbing at an intruder are all ways to scare off a danger to the troop.

To communicate with one another, golden snub-nosed monkeys sing to family members using a variety of high-pitched squeaks to signal alarm, say hello and comfort each other. These vocalizations are often made without even moving their face, almost like a ventriloquist! Grooming and hugging are other ways of communicating within the group, offering companionship and comfort. Hugging is also a method of keeping warm in the winter, huddling close to keep out the cold.

RAISING YOUNG

Females are slow to mature and begin reproducing at 5 years of age. Golden snub-nosed monkeys gestation is 6.5 months and females typically give birth to one infant at a time. When these little monkeys enter the world their hair is white-grey with long black hairs on the back and head. As they grow older and become more independent from their moms, their coat starts to change color, developing golden orange and brown hues. Their face is at first pink and later develops the icy blue pigment.

Their mother is the main caretaker with other females assisting and males stepping in when needed to provide protection. Infants are carried by their mothers until they are two weeks old. After that time, they begin to explore staying close to mom while eating and playing nearby. At two to three months old, these young monkeys start to play and socialize with other monkeys their age. Golden snub-nosed infants nurse until they are about one year old, during this time they begin to learn how to forage and will start consuming solids around 5 months of age.

LOSING CRITICAL HABITAT

Golden snub-nosed monkeys are an endangered species and face many challenges including habitat loss and poaching. Growing cities, increased farming and development of land are taking away precious forest terrain that is critical to the survival of these monkeys. In some cultures their soft, fire-orange coat is sought after due to the belief that it can prevent rheumatism or an inflammation of the joints. Protecting this unique and rare species is an ongoing effort.

Scientists don't know exactly how many golden snub-nosed monkeys are left in the wild, but believe there are only 8,000 - 10,000 remaining Conservation organizations like the World Wildlife Fund are working to save the forests that are home to these monkeys and many other species. The Chinese government has listed the golden snub-nosed monkey under the Chinese Wildlife Protection Act. In addition there are protected areas where the monkey can live peacefully including Baihe, Foping, Shennongjia and Wanglang Nature Reserves.

We've studied this special monkey and its amazing traits and now it's time to explore the rocky terrain of China in search of the snow leopard.

© 2016 Disney Enterprises, Inc.

Meet China's Elusive Big Cat

The Snow Leopard

The snow leopard is a stunning, ring-spotted large cat that lives in the western mountains of Central Asia. About 60% of the snow leopards habitat can be found within the borders of China, throughout Tibet and Quinghai. Snow leopards are often referred to as the ghost cat due to their beautiful grey coat and rarity of sightings. Climbing the rocky mountaintops, snow leopards will camouflage into the white, jagged terrain, eluding their prey and many scientists attempting to study this mysterious species.

PROFILE OF A SNOW LEOPARD

Snow leopards stand about 24 inches tall (60 centimeters) at the shoulder. Their bodies are long and sleek, measuring 4 to 5 feet (0.9 to 1.15 meters) from the head to the base of their tail. Snow leopards weigh between 77 to 121 pounds (35 to 55 kilograms) with the males weighing 30% more than the females. These powerful cats have short front legs and long hind legs used as a spring to propel them forward as much as 30 feet (9.1 meters) in one jump, almost the length of a school bus! Their tail is almost as long as their whole body measuring up to 40 inches (1 meter). This thick tail helps the snow leopard balance when they are pouncing from rock to rock. During the cold winter months, snow leopards wrap their tails around their bodies like a scarf for warmth at night.

However, the tail is not the only adaptation that helps the snow leopard survive in their high altitude habitat. Their thick coat of fur is white to yellow in color with a grey speckled and black-circled pattern. The rings, referred to as rosettes, create a beautiful and striking pattern that acts as camouflage among the rocky mountain terrain, making it easier to sneak up on prey! Snow leopards have short rounded ears to hold in heat and a wide nose to heat the cold outside air before reaching their lungs. Even their feet are made for cold weather as their large paws work like snowshoes keeping them from sinking into the snow. The hair between their toes acts as protection, keeping the paws from becoming frostbitten during the harsh mountainous winters.

Did you know?

During cold winter nights, a snow leopard's tail can function as a scarf, wrapping around their body to help keep them warm.

© 2016 Disney Enterprises, Inc.

FOOD

Snow leopards prefer cliffs, rocky ridges, grassy slopes and valleys in the cold and arid mountains of China. These areas provide the perfect lookout for spotting prey! Availability of prey determines the snow leopard's home range, which can often vary between 11 to 386 square miles (30 to 1,000 square kilometers). Snow leopards mark their territory to define their range, but these ranges often overlap, as this species is not overly territorial. This nomadic animal roams its home range and beyond every eight to ten days to hunt for food.

Blue sheep, Asiatic ibex and argali are usually what's for dinner, although these prey animals sometimes weigh three times as much as the snow leopard! This cat can feed on a blue sheep for up to a week. Hunting sheep and goats is essential to the ecosystem as these herds would otherwise eat too many plants and prevent other wildlife from consuming the sparse shrubs and grasses. Snow leopards are opportunistic predators eating what they can find including smaller mammals such as rabbit, marmot, pheasant and partridge. When meat is scarce, snow leopards even feed on greenery, eating grass, twigs and other vegetation in order to survive. However, food scarcity often leads to conflict with humans, as snow leopards may prey on farmer's livestock when necessary which can create animosity.

A TYPICAL DAY

Snow leopards are known to be crepuscular, meaning they are most active at dawn and dusk. However, due to their shy nature, if people are living nearby they become completely nocturnal, active only at night. If there are few people around, these quiet cats venture out in the middle of the day. Even though snow leopards are the top predators in their mountain habitat and not preyed upon, they are easy to scare off, making it difficult for scientists to study them without the use of technology.

Although there are many different theories as why some big cat species live in groups while others prefer solitude, snow leopards seem to thrive on their own. These skilled hunters are thought to use snow, rain and fog to their advantage while

© 2016 Disney Enterprises, Inc.

stalking their prey, and working alone helps prevent them from being spotted when hunting. Once territory has been established, solitude provides greater access to resources as they do not have to share within a group dynamic.

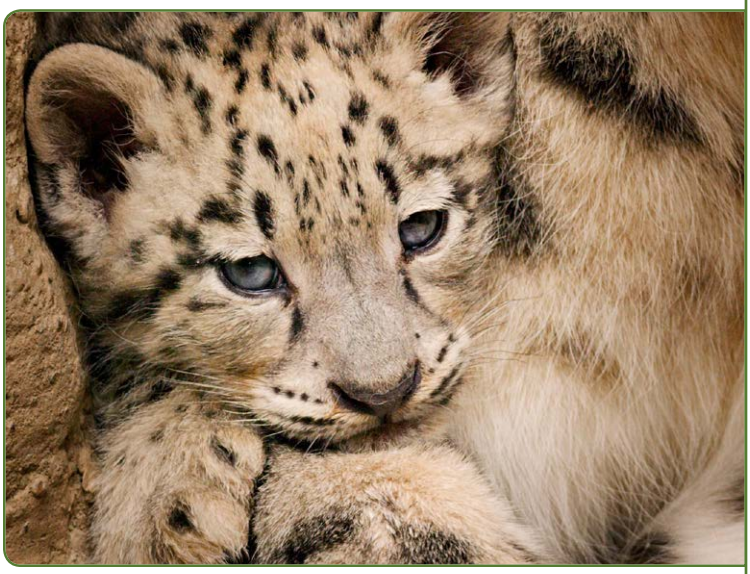
COMMUNICATION

Snow leopards communicate with one another through sound and scent. Although snow leopards cannot roar like other big cats, they have a variety of vocalizations such as a purr, mew, hiss, growl, moan and yowl. Some of these sounds are very similar to those that a house cat would make!

Another form of snow leopard communication occurs through scent markings. Snow leopards create "smelly signposts" by scraping the ground with their hind legs and spraying urine against the rocks. This signals where the snow leopard has been and marks the perimeter of a home range.

RAISING YOUNG

Female snow leopards can begin to reproduce around 2-3 years old and the gestational length is approximately 3 months. Typically, females will have a litter of 2-3 cubs. The mother will raise and protect her cubs alone in a hidden den surrounding them with her fur for warmth. At this stage, the young are helpless and don't even open their eyes for an entire week! Weighing 11 to 25 ounces (320 to 708 grams) at birth, these cubs are born with beautiful spotted coats, much like their parents. The cubs stay safe inside the den while their mother hunts for food, returning often to nurse. After two months, the cubs start to eat solid food. By three months of age, they venture outside of the den to observe hunting behaviors. Finally, at one year of age, mom teaches them how to hunt. When the cubs near 2 years of age, they will leave home to start a solitary life on their own.



AN IMPORTANT YET ENDANGERED SPECIES

Snow leopards are an endangered species, making them rare and in need of our protection. Poaching and illegal trade of their coat and bones for medicinal purposes have long been a threat to snow leopards. Expanding farmland shrinks habitat for not only the snow leopard but also its prey, making their hunting of prey much more difficult. In addition, farmers hunt these cats in order to protect their livestock herds in the winter when the snow leopards are hunting for food. Only 4,000 – 6,500 snow leopards are reported to be left in the wild. Conservation and awareness efforts continue among scientists, zoos and conservation groups, including Panthera, the Snow Leopard Trust and the World Wildlife Fund. In addition, the establishment of protected lands such as the National Nature Reserve in Quinghai allows snow leopards the ability to roam freely, protected from the growing world around them.

After exploring the quiet world of the snow leopard, we move onward to meet an iconic and graceful bird well-recognized in Chinese culture.

© 2016 Disney Enterprises, Inc.

Meet China's Noble

Red-Crowned Cranes

Far across from the snow leopard's rocky mountains, beyond the giant panda's bamboo covered forest and past the golden snub-nosed monkey's snow covered trees is the territory of the red-crowned crane. The red-crowned crane is a well-recognized endangered bird in China and lives in the northeastern region, taking winter vacations to Eastern China to escape some of the bitter cold weather. This white-bodied bird has dark, black-brushed wing tips and a black neck and face. A bare head exposes bright red skin and long slate gray legs support this 15 to 22 pound bird (6.8 to 9.9 kilograms). At 5 feet tall (1.5 meters) with wings that spread up to 8 feet (2.4 meters), this graceful bird is quite the beauty.

PROFILE OF A RED-CROWNED CRANE

Throughout Chinese culture, cranes have been seen as a symbol of fidelity, good luck and love. They stand for nobility and immortality in China. For these reasons, the crane is utilized in Chinese art and is admired by many throughout the country.

Red-crowned cranes are a unique species and special within China. They are very different from other birds because they nest on the ground in shallow, bowl-shaped nests made of dead reeds. They prefer marshes or swamps to nest in with ample amounts of food nearby. Red-crowned cranes are opportunistic omnivores eating fish, insects, rodents, amphibians, reeds, grasses, berries and other plants.

COMMUNICATION

Their long, coiled windpipe is the perfect instrument for their many different vocalizations. In addition to their calls, red-crowned cranes communicate through dance. Seemingly choreographed dances between cranes can indicate

Did you know?

Red-crowned cranes use dance moves, like bouncing and leaping, to communicate with each other.

© 2016 Disney Enterprises, Inc.

territorial fights or mating rituals. Dances may include leaps into the air, bouncing up and down or running with wings spread outward from their bodies. Some may see their dance as humorous and others may view it as a beautiful bird ballet!

RAISING YOUNG

Red-crowned cranes live in flocks and form a lifelong bond with their mate. Females lay white or pigmented eggs that hatch after one month. Hatchlings are covered in yellow feathers and weigh 5 ounces (0.15 kilograms). Though their parents protect them, hatchlings leave the nest on their first day and are swimming by the time they are two to three days old!

AN IMPORTANT YET ENDANGERED SPECIES

Although rare and respected throughout the Chinese culture, red-crowned cranes are an endangered species, with only 2,750 remaining in the wild. With wetland destruction and continued agricultural and industrial development, their habitat is continually threatened. These elegant birds almost became extinct in the twentieth century when they were hunted for their beautiful feathers. Many international agreements now protect this species and their habitat by outlawing hunting of red-crowned cranes. Protected areas have ensured some of their habitat remains safe and preserved.

© 2016 Disney Enterprises, Inc.

You Can Make An Impact!

By sharing what you have learned about giant pandas, golden snub-nosed monkeys snow leopards and red-crowned cranes, you are on your way to helping protect these species! Shared knowledge creates awareness, which can lead to action. A positive attitude towards all animals can help make a conservation impact when combined with actions that benefit the world around us. While you may not live in China with these rare and fascinating creatures, you probably do live in an area with a wide variety of animals near your own home. Think about ways you can help these animals.

Create Wildlife–Friendly Habitats.

Consider creating a place for wildlife to thrive in your yard. Provide a water source, a place for animals to live and plants that provide food. Before you know it, your backyard could be home to all kinds of insects, plants, and animals.

Reduce, Reuse, Recycle and Replenish.

Reduce your consumption (achieve a small "footprint"). Reuse items that normally are just tossed into the trash and recycle everything you can. Replenish the earth by planting a tree, which provides food and a home for many animals. Trees even help clean the air!

Make Wise Conservation Choices.

Finding alternative ways to travel such as carpooling, biking and walking are all great options to lessen your impact on the environment. Think sustainable! When shopping at the store, before you toss an item into the cart ask yourself is it sustainably sourced?

Choose Pets Wisely.

Though many regulations exist around the world to protect wild animals, the illegal pet trade still takes many wild animals directly from their homes. When the time comes to add a furry, feathery or scaly addition to your family, be sure you know where it came from and consider adopting a pet from your local animal shelter.

Connect with Nature.

Explore the natural world around you. Take a nature walk or hike with your family and friends to learn more about wildlife in your community. You might find that you have quite the ecosystem in your own backyard!

Learn More.

To expand your knowledge of wildlife in the world around you, visit an AZA-accredited zoo or aquarium. Take the opportunity to learn about wildlife and conservation efforts being made around the world to protect animals.

Support Conservation Organizations.

Check out organizations that protect wildlife around the world like the Disney Conservation Fund.

Disney CONSERVATION FUND

DISNEY CONSERVATION FUND

The Disney Conservation Fund helps to protect many of China's most threatened species including giant pandas and snow leopards. The fund, part of Disney Citizenship, supports nonprofit organizations that reverse the decline of at-risk wildlife, and engage communities in their protection. The fund also works to increase the time kids spend in nature by supporting programs that provide experiences for outdoor exploration and discovery. The Disney Conservation Fund was established in 1995 and to date has supported more than 300 nonprofit organizations and more than a thousand conservation projects worldwide. You can learn more about the Disney Conservation Fund by visiting Disney.com/conservation.

© 2016 Disney Enterprises, Inc.

LESSON 1

PLAY, POUNCE, POSE

An Animal Field Day

诞生在中国

THEME	GRADE LEVEL	SUBJECT AREA	BACKGROUND INFORMATION
Field Day	2–5	***Focus:*** Language Arts, Social Studies, Art & Math ***Extensions:*** Math	Pages 9, 12, 15, 17

VOCABULARY: *description, environment, functional, mindfulness, navigate, persuasive, pose, stalking*

STUDENTS WILL BE ABLE TO...

- Design, photograph, and title a mindful pose
- Compare and contrast thoughts and feelings associated with mindful animal poses
- Describe and explain the movements that the animals make in their environment
- Measure and record the movements for each animal
- Combine the movements of animals to complete an obstacle course

WHAT YOU'LL NEED

- Digital camera
- Printer
- Printer paper
- Adult volunteers
- Cardstock suitable for printing
- Hula hoops or ropes shaped in circles
- Tape measures
- Traffic cones
- Gym mats or blankets
- Rolled up towels
- Masking tape
- Broom sticks
- Chairs
- Bean bags
- Stop watches
- Shoe boxes
- Poster paper
- Color markers
- Whistles for field day officials
- Water
- Lesson 1 PowerPoint:
  - *Activity Sheet 1: Animal Poses*
  - *Activity Sheet 2: Yoga Poses*
  - *Activity Sheet 3: Template for Mindful Animal Poses*
  - *Activity Sheet 4: Choreographing a Mindful Exercise*
  - *Activity Sheet 5: Field Day Participant Cards*
  - *Activity Sheet 6: Recording Animal Movements*
  - *Activity Sheet 7a and b: Animal Prints*
  - *Activity Sheet 8: Golden Snub-Nosed Monkey Station*
  - *Activity Sheet 9: Giant Panda Station*
  - *Activity Sheet 10: Snow Leopard Station*
  - *Activity Sheet 11: Red-Crowned Crane Station*

When the animals from Disneynature BORN IN CHINA move through their environment, their motions are purposeful. Whether they are hunting, walking or playing, their movements change to fit their needs and help them survive in beautiful but harsh environments. Explain to students that people can learn a lot about themselves by making personal connections with endangered species. For centuries, the people of China have been inspired by the native animals of their country. Show students a video of a young boy doing Tai Chi (pronounced "tie jee") in a park http://taichivideos.org/young-boy-performs-chen-style-tai-chi-chuan/. Remind students that each of the flowing actions began as a series of poses. Those poses came from observations of animals such as the crane, snake, tiger and monkey.

GET STARTED: *MINDFUL POSES*

STEP 1: Explain to students they will be creating poses inspired by the animals from **Disneynature BORN IN CHINA**. These poses will be combined with mindfulness exercises. Explain that mindfulness refers to the ability to calmly focus your mind and think peaceful thoughts. Display

Disneynature BORN IN CHINA

© 2016 Disney Enterprises, Inc.

1 Play, Pounce, Pose

An Animal Field Day

诞生在中国

and discuss *Activity Sheet 1*. Each student will select one of the **Disneynature BORN IN CHINA** animals that inspire an idea for a mindful pose.

STEP 2: Display *Activity Sheet 2.* Discuss how the poses represent one posture or action taken by an animal. Give students a few minutes to work with a peer to give and receive feedback on making a pose like the selected animal. Take a picture of each student assuming their animal pose; then print out the pictures or transfer them to a digital device that allows students to add their photo to a unique template.

STEP 3: Distribute *Activity Sheet 3*. Students will insert their photos into the template (digitally or physically) and complete the sections. Post the completed templates on a bulletin board or in a slide show. Students can share their poses by guiding classmates in assuming their pose and reflecting on the accompanying feelings and thoughts.

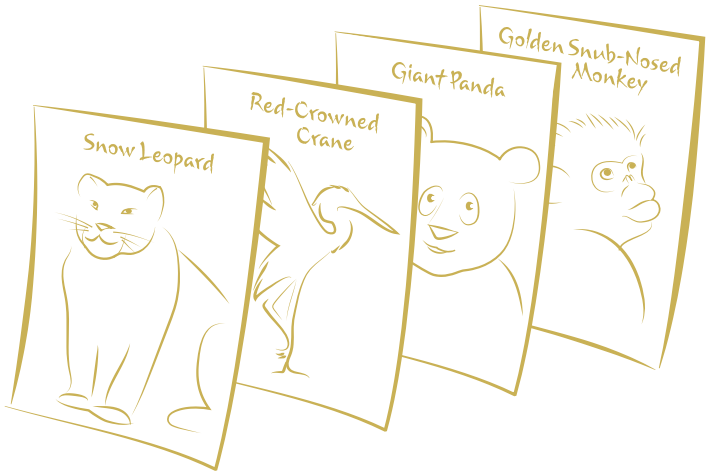
STEP 4: Follow directions on *Activity Sheet 4*. Students gather in small groups of three to prepare a slow-motion exercise routine that combines their poses.

STEP 5: Students perform their routines for the class; then invite classmates to join in. During the routines, the teacher can play Chinese bamboo flute music https://www.youtube.com/watch?v=E9YHBUef9OM to accompany the students' performances.

PREPARING FOR FIELD DAY

STEP 1: One of the interesting observations about the animals from **Disneynature BORN IN CHINA** is how and why they move within their environments. Review students' observations and refresh their memories by viewing short videos of each of the animal's movements. Provide students with *Activity Sheet 6* and ask them to describe how each animal moves when completing specific tasks. Examples include: the golden-snub-nosed monkey leaping through trees http://www.arkive.org/golden-snub-nosed-monkey/rhinopithecus-roxellana/video-06a.html; a snow leopard surveying its environment and hunting http://www.arkive.org/snow-leopard/panthera-uncia/video-00a.html; giant pandas exploring their natural habitat while eating http://video.nationalgeographic.com/video/pandas_wild; the red-crowned crane's dancing ritual http://www.arkive.org/siberian-crane/leucogeranus-leucogeranus/video-06a.html.

STEP 2: Students help prepare for the field day by working as a class and small group teams.



STEP 3: Working in their four assigned animal teams:

a. Students draw a poster of their animal that will be used as a sign for the qualifying stations.

b. Distribute copies of *Activity Sheet 7a and b* to each of the four teams. Students make a set of 12 tracks for their animal. These will be placed on the course and used to help participants stay on track. Place the correct set of prints on the right edge of each qualifying station. Students will help set up the qualifying station for each animal. With the teacher's help, students gather the needed materials and lay out the course according to the diagram.

Team 1 (Golden Snub-Nosed Monkey): Distribute *Activity Sheet 8*.

Team 2 (Giant Panda): Distribute *Activity Sheet 9*.

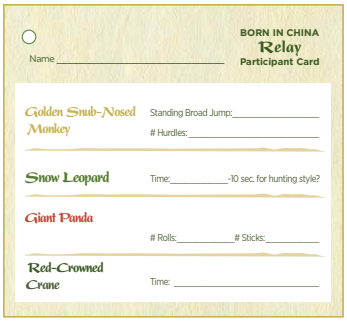
Team 3 (Snow Leopard): Distribute *Activity Sheet 10*.

Team 4 (Red-Crowned Crane): Distribute *Activity Sheet 11*.

FIELD DAY

STEP 1: Start field day by making sure each student has a Participant Card (*Activity Sheet 5*). Announce that students will run through each of the four qualifying stations.

STEP 2: Teams line up at each of the four qualifying stations and use the movements of the animals, as described, to complete the stations.


BORN IN CHINA Relay Participant Card

Name _____

Golden Snub-Nosed Monkey
Standing Broad Jump:_____
Hurdles:_____

Snow Leopard
Time:_____-10 sec. for hunting style?

Giant Panda
Rolls:_____ # Sticks:_____

Red-Crowned Crane
Time: _____

© 2016 Disney Enterprises, Inc.

PLAY, POUNCE, POSE

An Animal Field Day

STEP 3: Assign one person in each team to be the captain. Each team will start at one of the qualifying stations. The teacher blows a whistle to start the action. The presiding adult volunteer at each station records how long it takes every member of the team at their station to finish. The teacher blows the whistle when all teams have finished their stations each team will move to the station on their right. Repeat this pattern until teams return to their original station. Each team will add up how much time it took for them to complete all four stations. They turn their results into the adult volunteer for their station who will determine the winner and presents their findings to the teacher.

STEP 4: The teacher reminds students that the purpose of the field day was to have fun, get outside and appreciate how animals seen in **Disneynature BORN IN CHINA** move through their environments. By learning more about the animals, we are more likely to care about their futures.

KEEP GOING

Enrich students' insights into the movement of animals seen in **Disneynature BORN IN CHINA** with extension activities from different content areas.

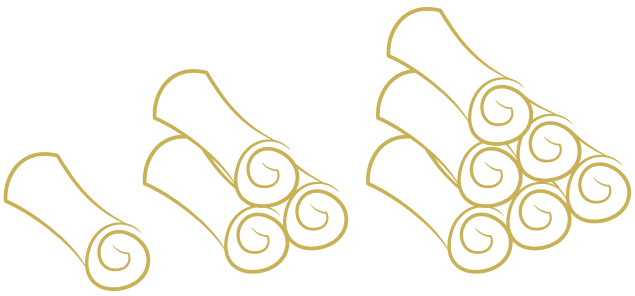
LANGUAGE ARTS: Follow Me

Invite students to enjoy a game on the playground of Follow the Leader. The teacher may start off making movements of different animals that the students mimic. They can take turns guessing which animal would make the movement. If they are correct, they become the leader.

MATH: Jumping over the Towel Roll Pyramids (Grade 5)

The golden snub-nosed monkey field day station requires hurdles for students to jump over. Older students may enjoy preparing a sequence of pyramids to jump over, ones that get progressively wider and higher. Add some fun with math as you prepare.

Prior to the activity, create towel rolls to build your sequence of pyramids for the students to jump over. Preview the diagram, showing how to make five pyramids by laying towel rolls lengthwise on top of each other.



The number of rolls in each pyramid is a triangular number. Ask students the following questions:

a. You can figure out the number of rolls in the 5th pyramid by adding what number to the ten rolls in the 4th pyramid?

b. How many rolls would you need to add to the 5th pyramid to make the 6th pyramid? Do you see a pattern? Can you describe the pattern or the rule for finding the number of rolls in the next pyramid in the sequence?

c. You would need 55 rolls to make the 10th pyramid. How many rolls would you need to make the 11th pyramid?

d. What about the 12th pyramid?

e. Extra Challenge: How many rolls to make the 20th pyramid?

[Answers to questions: A: 5; B: 6; the pattern is that you add the pyramid's number to the number of rolls in the previous pyramid; C: 66; D: 78 E: 210 (20x21/2)]

RESOURCES FOR TEACHERS:

Books

- Adams, Douglas and Mark Carwardine. *Last Chance to See.* New York: Harmony Books, 1990. ISBN-13: 978-0345371980
- Kaiya, Zhou and Zhang Xingduan. Baiji. *The Yangtze River Dolphin and Other Endangered Animals of China.* Washington, D.C.: Stonewall Press, 1991. ISBN-13: 978-0913276563

Websites

- Indoor Obstacle Course http://fun.familyeducation.com/exercise/activity/37126.html
- Keeping Students In Motion http://www.gophersport.com/blogentry/obstacle-course
- Pentatonic Chinese children's song https://www.youtube.com/watch?v=vOzG6DWK9vg
- Children's Music Do-Re-Mi https://www.youtube.com/watch?v=A3Yn0ugqrml

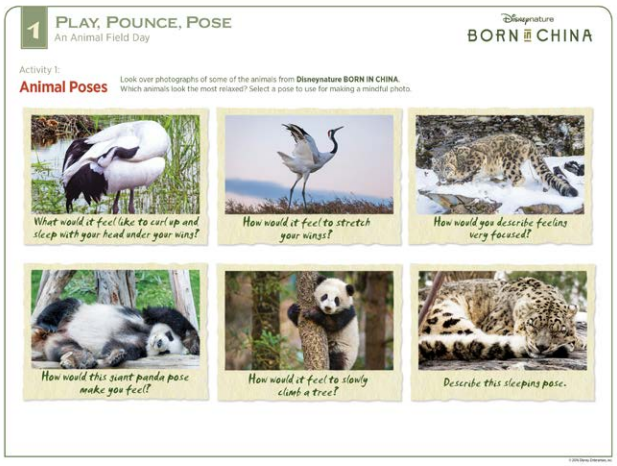
RESOURCES FOR STUDENTS:

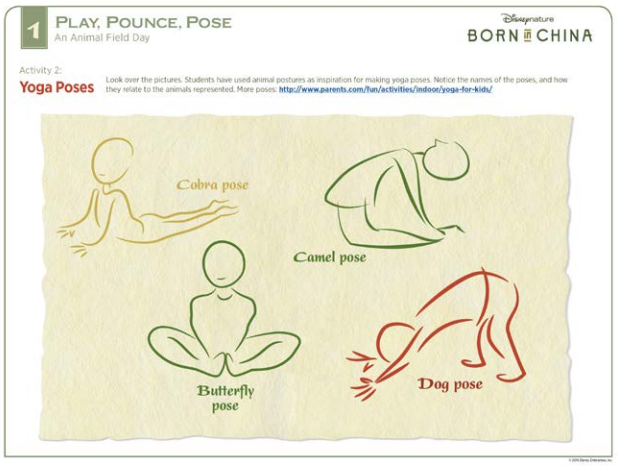
Books

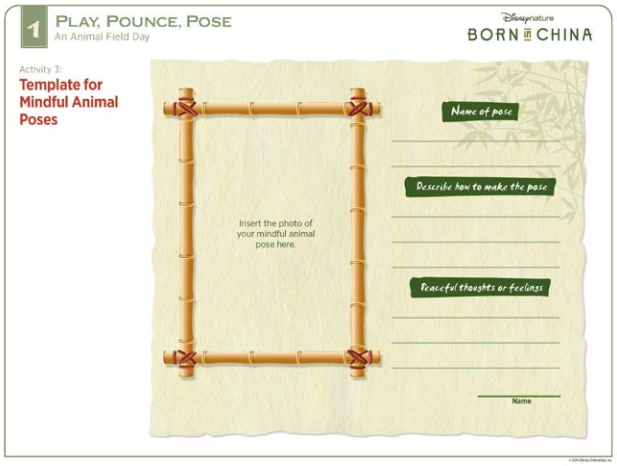
- Kainen, Dan and Carol Kaufman. Safari: A Photicular Book. New York: Workman Publishing Company, 2012. ISBN-13: 978-0761163800

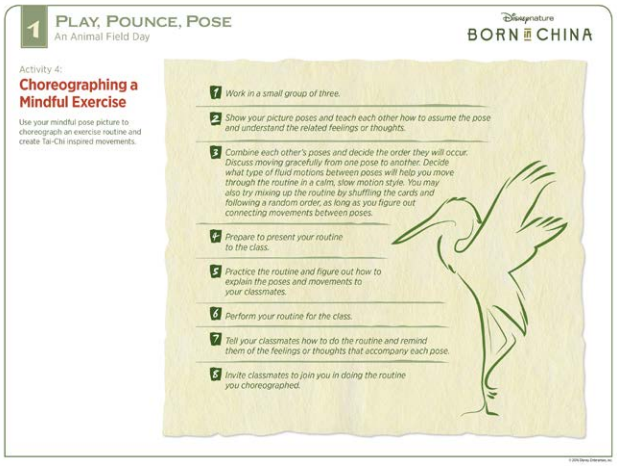
© 2016 Disney Enterprises, Inc.

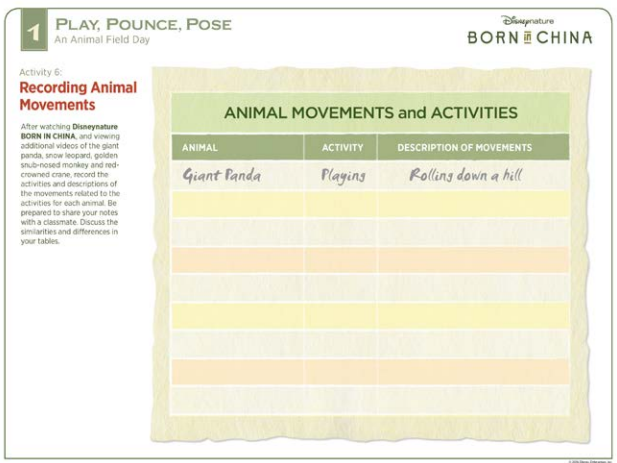
Lesson 1 PowerPoint Activities







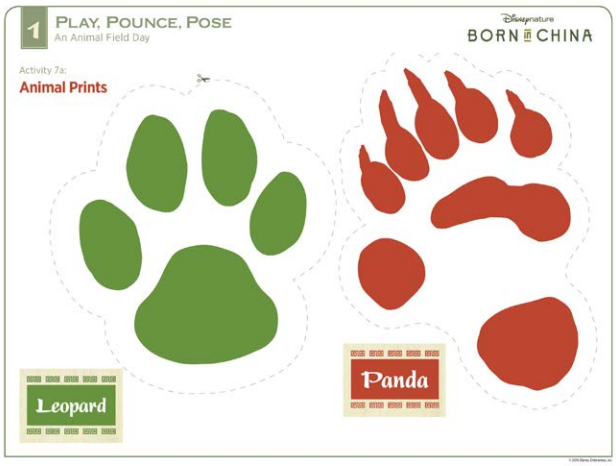


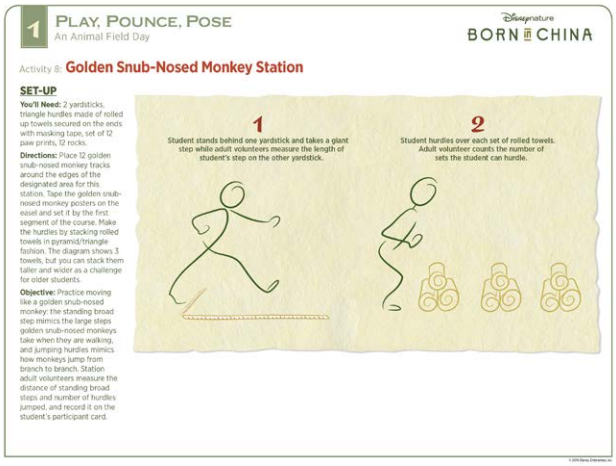


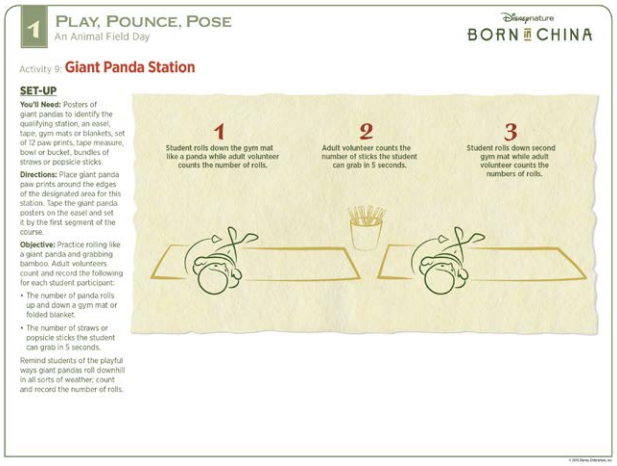
Disneynature BORN IN CHINA

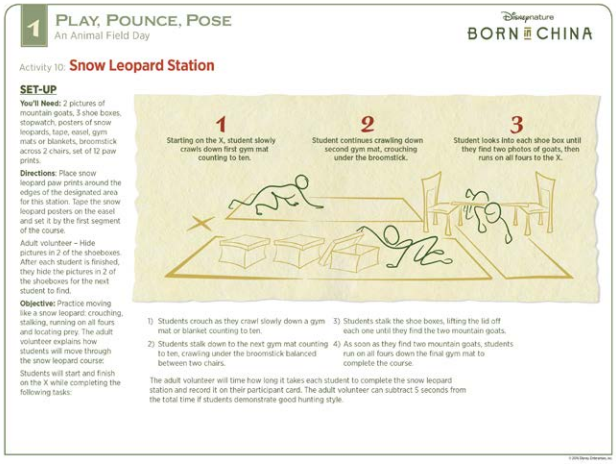
© 2016 Disney Enterprises, Inc.

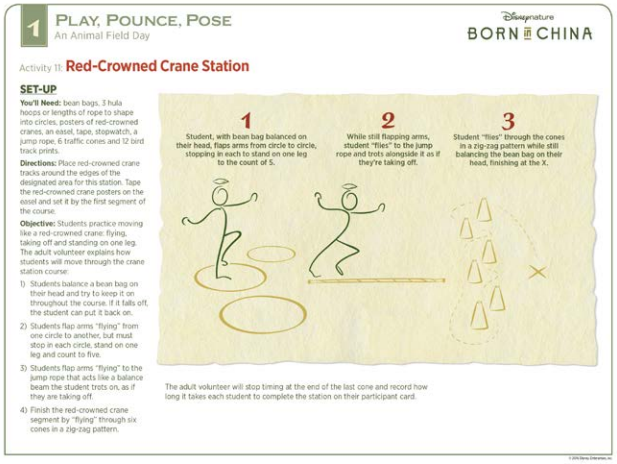
Lesson 1 PowerPoint Activities continued











© 2016 Disney Enterprises, Inc.

LESSON 2

Comparing the Animals

of Disneynature BORN IN CHINA

诞生在中国

THEME	GRADE LEVEL	SUBJECT AREA	BACKGROUND INFORMATION
Physical Characteristics – Classification	4–6	***Focus:*** Science & Math ***Extensions:*** Science, Language Arts & Art	Pages 8–18

VOCABULARY: *camouflage, classification, digit, invertebrate, mammal, pseudo, vertebrate, warm-blooded*

STUDENTS WILL BE ABLE TO...

- Compare and contrast selected physical characteristics of animals
- Demonstrate the process of scientific classification
- Compare measurements of animal characteristics (age, weight, length, height, etc.)
- Make quantitative decisions about relationships among animals
- Use multiple resources to conduct research on physical characteristics of animals
- Demonstrate an understanding of structure and of the giant panda's 6th finger or "pseudo thumb"
- Create a simulation of an animal adaptation

WHAT YOU'LL NEED

- Oven mitts
- Masking tape
- Wooden pegs
- Markers
- Clothes pins
- Pencils
- Wooden spoons
- Paper

- Lesson 2 Activities:
  - *Activity Sheet 1: Physical Characteristics Research Guide*
  - *Activity Sheet 2a: Compare/Contrast Matrix Animals*
  - *Activity Sheet 2b: Compare/Contrast Matrix Animals*
  - *Activity Sheet 3a, b, c: Can You Pick Up Objects Like a Giant Panda?*
  - *Activity Sheet 4: The Technology Design Cycle*
  - *Activity Sheet 5: Make a Mix-up Book of Animal Hair Styles*

Most students at the upper elementary grades will have a basic understanding of how objects can be classified into groups according to common attributes. As a review, provide students with a selection of different kinds of objects, such as a mixed group of vegetables, different brands/types of markers, or shoes. Students begin by separating the items—each group should have something in common. For example, students can make a group of hard vegetables and soft vegetables, a group of washable or non-washable markers, or a group of running shoes and dress shoes. Next, they should separate the groups into two smaller groups. The second set of vegetables, markers, or shoes should once again be divided into two smaller piles or subgroups that share an attribute such as color or size. Students discuss the process of scientific classification by discussing the groups and subgroups. Ask students if there are other ways the groups could be classified (e.g., laces vs no laces, surface stitching or no surface stitching, fine point vs wide point markers, light or dark color markers). Remind students that the process of scientific classification requires scientists to observe and define specific attributes. Remind students that this process is similar to the way scientists classify animals.

GET STARTED

STEP 1: Explain that the giant panda, snow leopard and golden snub-nosed monkey, like humans, are classified as **mammals**. While they share the common attributes of mammals, they are remarkably different in terms of other physical and behavioral characteristics. Students will complete a small research study to help them better understand the unique

© 2016 Disney Enterprises, Inc.

physical characteristics of these threatened species. In the first part of this activity, students will collect information to compare the physical characteristics across the three mammals and with humans. Distribute *Activity Sheet 1* and explain how students will use the matrix to keep track of information they gather from different resources. Students will use the information they collect to fill in the data on *Activity Sheet 2a* for the four different animals and answer the questions at the bottom of the sheet. Students may work in peer pairs to share their information and answer questions.

STEP 2: As an extension to the compare and contrast activity, have students collect data on the physical characteristics of the three mammals featured in Step 1 as well as other **Disneynature BORN IN CHINA** animals. Invite students to work in small groups to identify other characteristics of the animals they would like to investigate (e.g. fur or skin color, number of infants born together). Students will choose four characteristics and create their own group matrix. Small groups will exchange the matrices and use the shared information to complete their research. Once completed, students will share their findings with the class.

STEP 3: Have students share their findings. Discuss the importance of conducting research that draws from many resources to find a balanced understanding of a topic. Ask students what consequences might occur if only limited sources are used. Conclude by inviting students to share which comparisons among the animals they found the most interesting, and why.

KEEP GOING

Enrich students' insights into the unique characteristics of animals from **Disneynature BORN IN CHINA** with extension activities from different content areas.

SCIENCE: Simulate the Pseudo Thumb of the Giant Panda

STEP 1: Students will follow a process called The Technology Design Cycle. Distribute *Activity Sheet 4* and point out the importance of each step of the cycle they will complete. One of the unique physical characteristics of the giant panda is a sixth finger or "pseudo thumb" used for grasping bamboo. In this activity, students work in peer pairs to simulate how the giant panda uses its pseudo thumb when eating bamboo.

STEP 2: Divide students into peer pairs, providing each pair with one copy of *Activity Sheet 3a, b, & c.* Give the pairs of students a few minutes to look over the different steps involved. Hand out

the materials (oven mitt, masking tape, wooden pegs, clothes pins and wooden spoon) to each pair.

Guide the students through the simulation challenge. The "getting ready" step involves students getting their hands in "panda" condition. Students will use an oven mitt with a fixture inserted in the oven mitt's "thumb" to simulate the panda's false thumb and then try to pick up sticks using this simulation of a panda's paw. The student is not allowed to put their thumb into the mitt's thumb – all five of the student's digits must be in the mitt. Students will first try to pick up wooden objects, such as pencils, wooden spoons or clothespins, with all five digits enclosed in the finger-space of the oven mitts.

STEP 3: The activity phase allows students to learn how a pseudo thumb helps the panda grasp bamboo. Students work with a partner to try to collect objects, using the "Panda Paw" for five minutes. They will then remove the pseudo thumb (clothes pin) from the oven mitt and see how many objects they can pick up.

WRAP UP: Allow the students to share their findings. Discuss the usefulness of the pseudo thumb for giant pandas. Reflect on the experience of participating in the pre-determined steps of The Technology Design Cycle in conducting the simulation.

SCIENCE: Animal Adaptations Technology Design Challenge

This activity may require several class periods. Students should be encouraged to design, test and revise and test again during The Technology Design Cycle.

STEP 1: Explain that scientists and engineers sometimes solve design challenges in a collaborative workshop. Show a video of how designers use 3D technology to create useful robot hands for children who need them. http://enablingthefuture.org/taΔ2Δ23

© 2016 Disney Enterprises, Inc.

rosthetic-hand/.

After viewing, ask students to discuss the complexities involved in designing a robot hand. Explain how the pseudo thumb extension activity was an example of the process of working collaboratively to understand a problem, test, observe and consider ways to reach success. The giant panda's pseudo thumb is just one example of the many adaptations that animals have in order to survive the environments in which they live. Ask students to recall other animals from **Disneynature BORN IN CHINA** and describe what adaptations they had. Have students develop their own challenge or suggest one of the three listed below.

STEP 2: List the following challenges as options for students on the board:

1. How does a red-crowned crane's wing work? Red-crowned cranes use their wings to communicate with each other through a dancing motion during territorial fights and mating season. Create a crane's wing to simulate the movement of a stretching – opening – closing motion.
2. How does a snow leopard's paw work? Snow leopards walk across deep snow without sinking. Create snowshoes to simulate a snow leopard's paws.
3. How does a golden snub-nosed monkey's leg work? Golden snub-nosed monkeys are known for their leaping ability and acrobatics. Simulate a golden snub-nosed monkey's leg movements by creating an object that can leap long distances.

STEP 3: Divide the class into groups of 3 or 4 students. Small groups will attempt to replicate the aspects of one of the species discussed, just as they did with the mitt for the giant panda hand. This activity will bring to life The Technology Design Cycle.

STEP 4: Refer students back to *Activity Sheet 4*. Explain to students that they will follow the steps as they complete their selected design challenge.

STEP 5: Students will list and then gather the materials they will need, draw sketches of their design, and consider which parts of their design might involve tinkering or adjustments.

STEP 6: Students will need time to conduct mini-trials for each step in the design process. Encourage students to make notes and sketches of their adjustments so they can refer to them when sharing their experiences. Serve as a resource for small groups. Offer feedback or lead them to additional resources as needed.

STEP 7: At the end of the challenge invite students to discuss the process, failures, successes and results. Discuss what students learned about the design of their adaptation and how it relates to their own bodies and those of other animals seen in **Disneynature BORN IN CHINA.**

WRAP UP: There is no "correct" answer to the design challenge. The Technology Design Cycle involves the processes of defining a problem, brainstorming solutions, creating the best possible solution, testing the solution and evaluating the solution (but not necessarily in a linear fashion). Students should be provided with an opportunity to discuss the processes they used and ideas they discussed in the design challenge and modify their original designs by returning to Step 2 in the design cycle, if time allows.

LANGUAGE ARTS & ART: Making a Mix-up Book of Animal Hair Styles

Making a Mix-Up Book about animal hair styles is a good way for students to show what they've learned about animal fur or skin from their research.

STEP 1: Go over the directions on *Activity Sheet 5*.

STEP 2: Students complete the directions on Activity Sheet 5 and make their mix-up books.

STEP 3: Students share their books in peer pairs. As they read, students mix-up pages and see if they can figure out why the narrative doesn't match the selected animal.

WRAP UP: For students interested in learning more about how

RESOURCES FOR TEACHERS:

- Stone, Lynne M. *Wildlife of China*. Vero Beach: Rourke Publishing Group, 2001. ISBN-13: 978-1559163217
- Smith, Andrew T., et al. *A Guide to Mammals of China*. Princeton: Princeton University Press, 2008. ISBN-13: 978-0691099842

RESOURCES FOR STUDENTS:

- Kalman, Bobbie. *How do Animals Adapt?* New York: Crabtree Publishing Company, 2000. ISBN-13: 978-0865059573
- Gibbons, Gail. *Giant Pandas*. New York: Holiday House, 2004. ISBN-13: 978-0823418282

© 2016 Disney Enterprises, Inc.

Activity 1: Physical Characteristics Research

Keep track of your progress and research resources as you use Activity Sheets 2a & b to guide your study.

Place a (✔) in the intersection of the animal you researched and the resources you used as you filled in the matrices of Activity Sheets 2a & b.

RESEARCH GUIDE MATRIX

ANIMALS	BOOKS	SCIENCE MAGAZINES	INTERNET	DISNEYNATURE BORN IN CHINA	LIST BIBLIOGRAPHIC INFORMATION: AUTHOR, TITLE; WEB PAGE
Humans					
Golden Snub-Nosed Monkey					
Snow Leopard					
Giant Panda					
Red-Crowned Crane					
Takin					

Keep the sub-topics in mind as you search for information in the resources you select:

- Age when fully grown
- Adult body length/height
- Weight fully grown
- Warm bloodied or cold bloodied
- Fur, feathers or skin and coloration
- Adult tail length
- Length of newborn
- Weight at birth
- Give birth to infant or lay eggs
- Number of infants or eggs at one birth

© 2016 Disney Enterprises, Inc.

Activity 2a: Compare/Contrast Matrix Animals

NOTE: Usual typical ranges for these data

MAMMALS	WEIGHT AT BIRTH	WEIGHT FULLY GROWN	LENGTH OF NEWBORN	ADULT BODY LENGTH/HEIGHT	ADULT TAIL LENGTH	AGE WHEN FULLY GROWN
Humans			12 – 20 inches	5 – 6.5 feet	zero	20 years
Golden Snub-Nosed Monkey						
Snow Leopard						
Giant Panda						

Hints for solving these mathematics problems:

- To decide which animals are the "biggest" or "smallest" find the ratios of the weight of each animal compared to the other animals by dividing each animal's weight by another animal's weight. Do the same for adult body lengths or heights. Which ratios will help you make your decisions?
- Divide the weight of the adult by the weight of the infant (this will give you the approximate number of infants it would take to equal the weight of the adult).
- Divide the weight of the infant by the weight of the adult (this will provide you with a fraction for answering the other two questions).

1) Which mammal is the smallest when born? _____

2) Which mammal weighs the least when born?_____

3) Which adult is almost 900 times heavier than its newborn?_____

4) Which adult mammal is the "biggest"? Explain your choice? _____

5) Calculate how many newborns it would take to equal the weight of the adult for each mammal. _____

6) Compared to the adult's weight, which mammal has the largest newborn (as a fraction of its own adult weight)? _____

7) Compared to the adult's weight, which mammal has the smallest newborn (as a fraction of its own adult weight)? _____

© 2016 Disney Enterprises, Inc.

Activity 2b: Compare/Contrast Matrix Animals

Example of Animal Physical Characteristics Compare/Contrast Matrix

ANIMAL	FUR, FEATHERS OR SKIN	COLOR(S) OF FUR, FEATHERS OR SKIN	LAYS EGGS OR INFANT BIRTH	NUMBER OF EGGS OR INFANTS
Humans	Skin	Varied	Infant	Usually only 1 but can have as many as 6 or 7!
Golden Snub-Nosed Monkey				
Snow Leopard				
Giant Panda				
Red-Crowned Crane				
Takin				

1) Which animal is most like a human? _____

   Why? _____

2) What particular physical characteristics help the animals survive in their environment (these are usually referred to as "adaptations")? _____

   _____

3) Which animals have fur? _____

   How does the fur help them? _____

4) Which animals have feathers? _____

   How do the feathers help them? _____

5) Which animal gives birth to the most infants at one time? _____

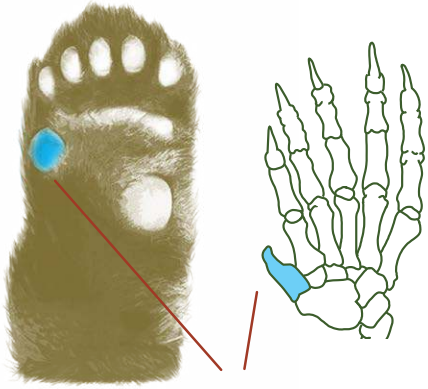
6) Why are the physical characteristics of these animals important for surviving in the mountains of China? _____

© 2016 Disney Enterprises, Inc.

Activity 3a: Can You Pick Up Objects Like a Giant Panda?

Problem Scenario

You are a team leader of a group of scientists studying a giant panda living in the high mountain ranges of central China. You notice that the giant panda's major source of food is bamboo shoots, stems and leaves—in fact, your records of food intake, indicate the giant panda needs more than 30 pounds (13 kg) of bamboo a day. You are puzzled, because the giant panda's grip is different from your human grip. As a scientist you want to learn more about how giant pandas use their specialized hand to help hold and strip the bamboo shoots. Being a clever scientist, you set up a simulation challenge for your team to satisfy your curiosity.



Read the Problem Scenario then follow the steps to get a "feel" for what it's like to pick up food with a hand that has a pseudo thumb.

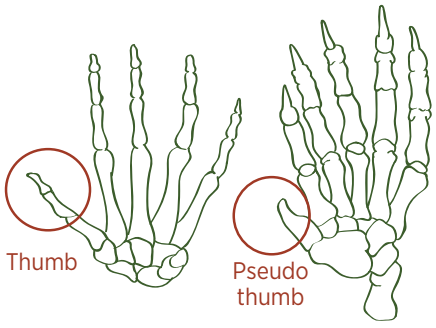
Get Ready For The Simulation Challenge:

Refine the Problem - Observation & Study

First, the team examines picture (a) to notice how the giant panda holds the bamboo stick in the middle of its paw while using its "6th" thumb.

Second, the team looks closely at picture (b) of the giant panda's paw. The blue spot locates the position of the pseudo thumb. Now look at the drawing of the bones inside the paw, showing the position of the pseudo thumb (highlighted in blue). The giant panda's thumb is not a true thumb.

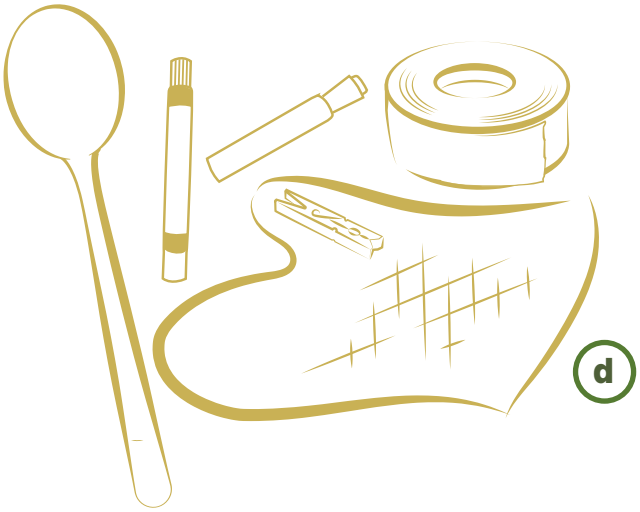
Third, look at the picture (c) that displays a comparison of a human hand and a giant panda's hand. What differences do you notice?



© 2016 Disney Enterprises, Inc.

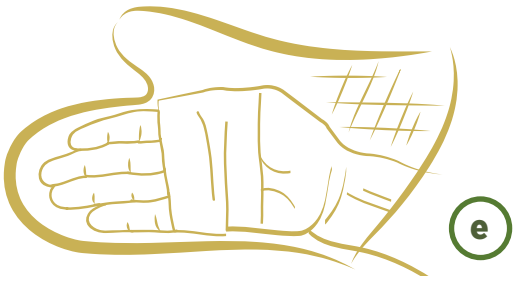
Activity 3b: Can You Pick Up Objects Like a Giant Panda?

The Simulation Challenge: In the following activity the team leader has considered a list of brainstormed options, and has created a possible solution on how to make a human hand simulate a giant panda's hand. The team leader has chosen to use an oven mitt and a wooden peg or another hard object for the giant panda's false thumb. Remember as you do the challenge and test the solution, you can't put your thumb in the thumb of the oven mitt. Your fingers and thumb must be inside the mitt.


d

STEP 1: *Gather your set of materials: large oven mitts, masking tape, wooden peg, markers, a wooden spoon, pencils, or pieces of bamboo as seen in picture (d).*

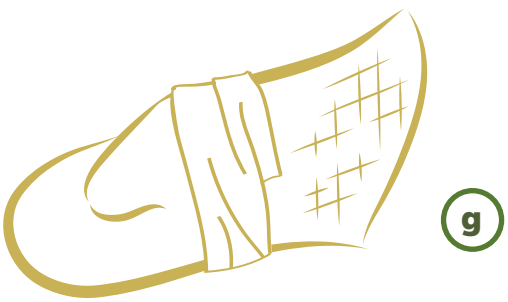
STEP 2: *Prepare your hand. Work with a partner to tape each other's right hand so your thumb cannot be used. See picture (e). Slip on the oven mitt. Try picking up pencils, wooden spoons and clothespins with nothing in the thumb of the oven mitt. How did you do?*


e

STEP 3: *Use a pseudo thumb to get a "feel" for what it's like to have a giant panda's hand. Insert a bone-like appendage, clothespin or long eraser, in the oven mitt's thumb to simulate the giant panda's false thumb. See Picture (f) for location of the peg (shown on the outside of the mitt).*

f

STEP 4: *Put all five fingers and thumb inside the mitt part of the oven mitt. The positions of hand and peg are shown on the outside of the mitt in picture (f). Partners will wrap masking tape, around each others' oven mitt so it's thumb points towards the palm of your hands, as in picture (g).*


g

© 2016 Disney Enterprises, Inc.

Activity 3c: Can You Pick Up Objects Like a Giant Panda?

STEP 5: *Each pair of partners should scatter a few small sticks of bamboo, markers, wooden spoons, or thick pencils around the floor.*

Working with your partner, try to collect as many as you can, using your "Giant Panda Paw" for five minutes. Remove the bony appendage (clothes pin) from the oven mitt's thumb and see how many objects you and your partner can pick up. See the series of photographs in Picture (h).

Be prepared to share how many objects you and your partner were able to pick up with and without the "false thumb" using the oven mitt.

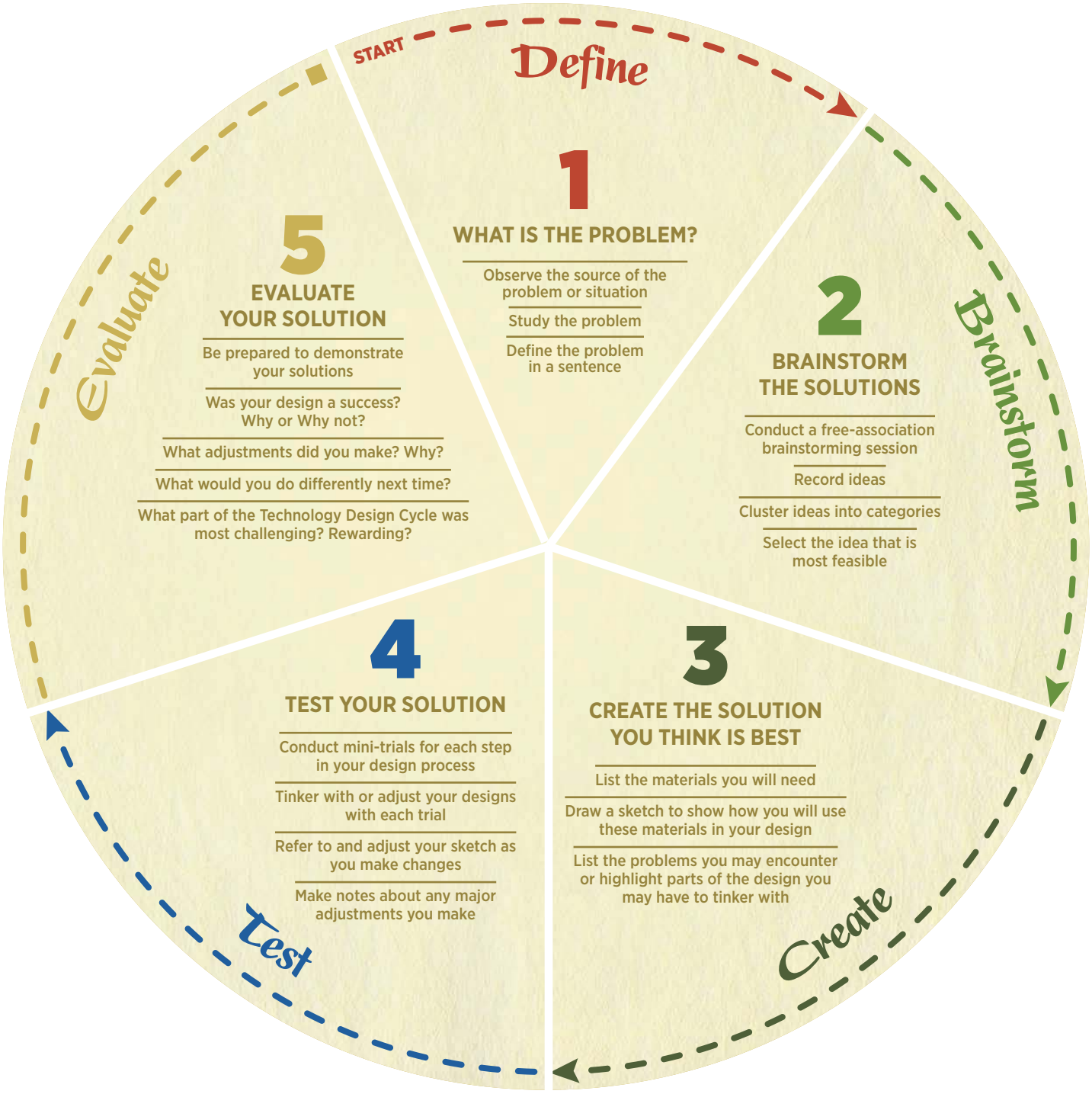
Discuss whether or not the use of the "pseudo thumb" is an advantage or disadvantage when picking up objects.

- How does the thumb of a human hand or a monkey's hand help in picking up objects?
- How does the sixth finger or "pseudo thumb" benefit the giant panda? What might happen if giant pandas did not have this extra digit?

h

© 2016 Disney Enterprises, Inc.

Activity 4: The Technology Design Cycle



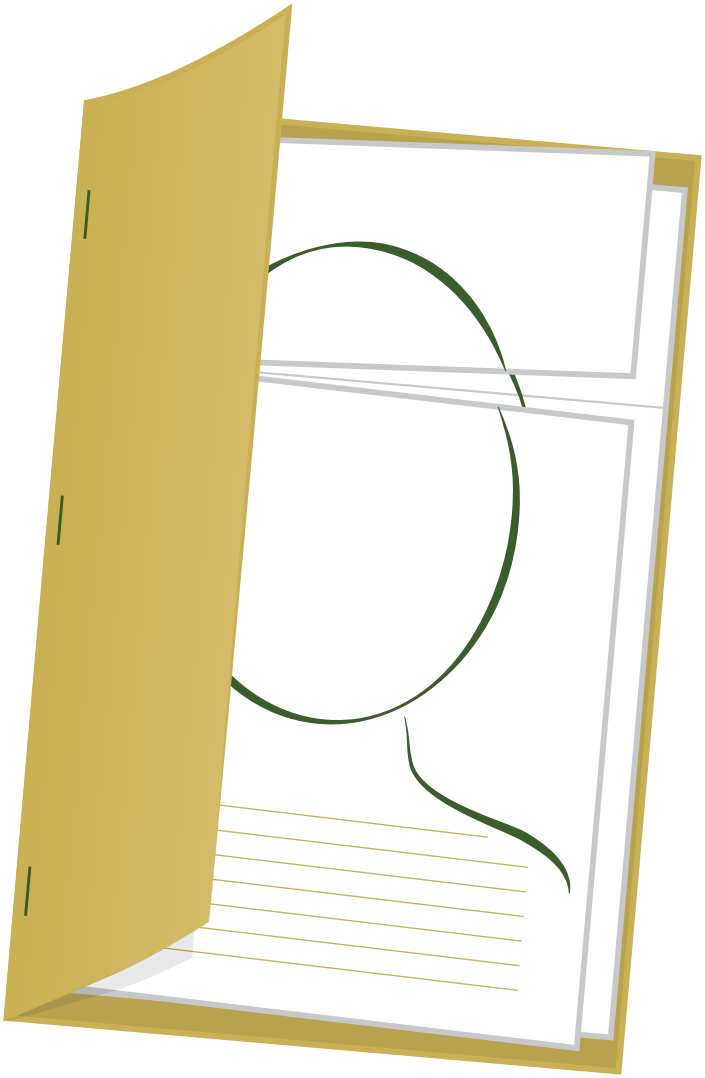
© 2016 Disney Enterprises, Inc.

Activity 5: Make a Mix-up Book of Animal Hair Styles

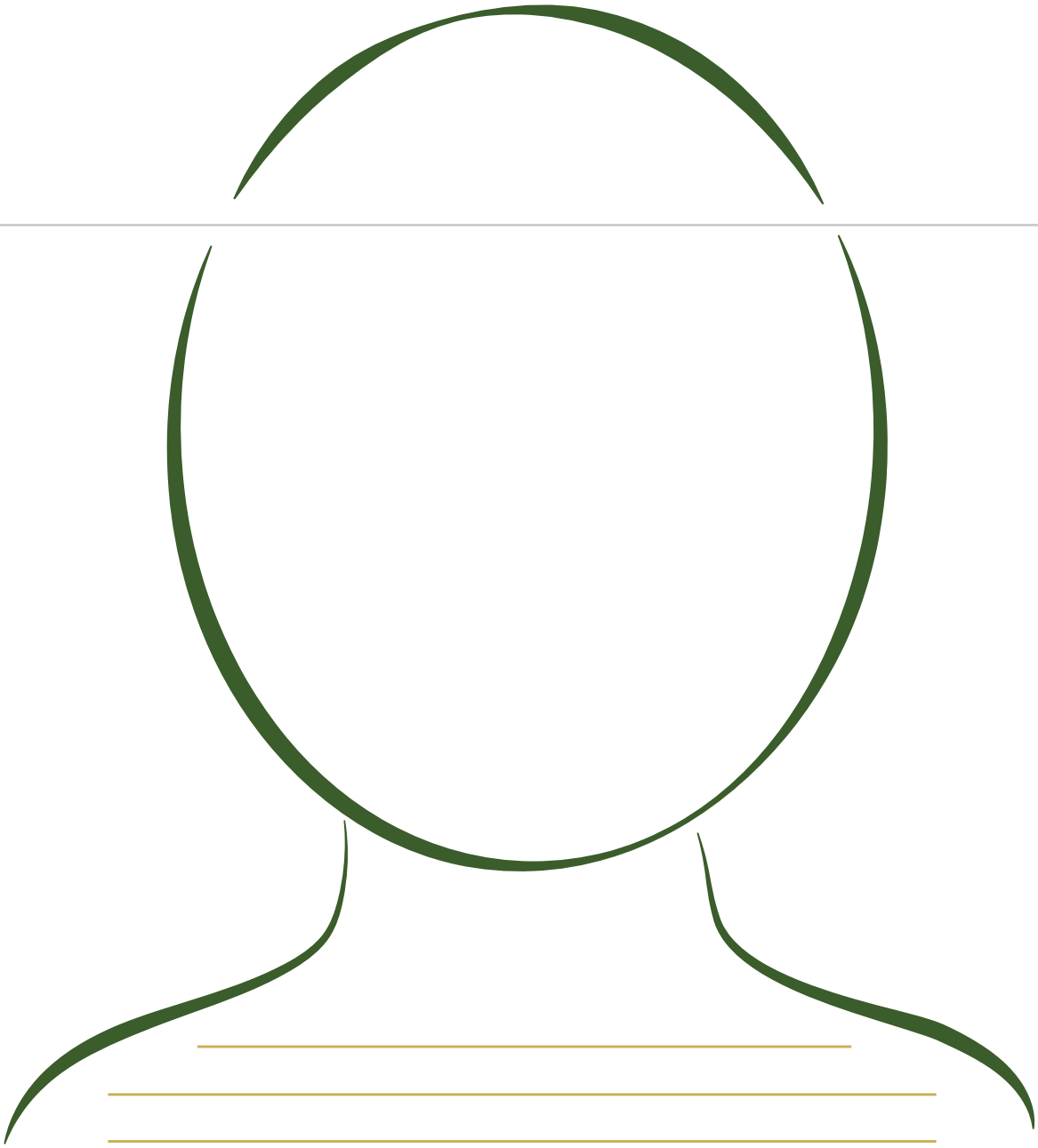
See if you can trick your friends with your mix-up book. When you share your book with classmates, mix up the pages and see if your friends can figure out what's wrong.

What facts have they learned about each animal's fur or skin that does not align?

1) Draw your facial features under the dotted line.
2) Write the name of the animal's fur you have selected at the top of each page.
3) Use crayons to draw what your hair would look like with that animal's fur on the top and sides of the head.
4) Complete the narrative at the bottom of each page. Write how things would be different for you, if you had the selected animal's hair.
5) Repeat for each page and each animal.
6) Staple construction paper to the front and back on the staple lines on the left of the pages.
7) Title and draw an illustration on the line front cover. Don't forget to list your name as the author/ illustrator.



© 2016 Disney Enterprises, Inc.



Disneynature

BORN IN CHINA

© 2016 Disney Enterprises, Inc.

LESSON 3

Why is Bamboo Important

To The Giant Panda?

诞生在中国

THEME	GRADE LEVEL	SUBJECT AREA	BACKGROUND INFORMATION
Habitat	2–3	***Focus:*** Science & Art ***Extensions:*** Art	Page 9

VOCABULARY: *altitude, bamboo, carrying capacity, deforestation, density, joint, limiting factor, pores, porous, species, territorial, waterproof*

STUDENTS WILL BE ABLE TO...

- Explain the importance of bamboo in the diet of the giant panda
- Observe and discuss properties of bamboo
- Determine the number of giant pandas in a habitat that can be supported in relationship to the amount of food that is available
- Assess the qualities of bamboo and other various woods
- Predict and confirm which will float or sink, bamboo, hardwood or softwood

WHAT YOU'LL NEED

- Fresh cut bamboo plants/stems (available in home supply stores, garden centers or nurseries)
- Drinking straws
- Large bowls
- Magnifying glasses
- Masking tape
- Paper bags
- Salt
- Samples of hardwoods (oak, maple, or walnut)
- Samples of softwoods (pine and spruce)
- Several sets of poker chips or checkers
- Permanent marker
- Water
- Lesson 3 Activities:
  - *Activity Sheet 1: Will it Float or Will it Sink?*
  - *Activity Sheet 2: Will You Survive?*
  - *Activity Sheet 3: Chinese Bamboo Ink Painting*

Bamboo is a plant that is essential to the diet of the giant panda. Scientists suggest that 99% of the panda's diet consists of bamboo shoots, stems and leaves. Bamboo is a type of grass that is notable for its smooth, hollow, jointed stems. But due to bamboo's poor nutritional value, the giant panda must eat close to 30 pounds (13 kg) of bamboo shoots every day. Discuss with students that bamboo is not only a food source for giant pandas, it is also used to make many everyday objects due to its fast growth, strength, light weight and resistance to moisture. Teachers can find images online to show students a few examples of objects made of bamboo.

GET STARTED

STEP 1: Students will conduct an experiment on bamboo. Bamboo looks like a large tree and is sometimes referred to as a bamboo tree. Both bamboo and trees are plants, but bamboo is a grass that is somewhat different from the wood of a tree. Bamboo has a hollow, jointed stem and appears in various shades of green when living. Dry bamboo is usually a lighter green or yellowish color. Explain to

© 2016 Disney Enterprises, Inc.

3 Why is Bamboo Important to the Giant Panda?

诞生在中国

students that one way to better understand bamboo is to examine it closely.

STEP 2: Distribute fresh cut bamboo stems, drinking straws and magnifying glasses. Guide students' observations with the following questions:

1. How many joints do you count on the stem? Explain that each joint has a partition that helps to **waterproof** the bamboo stem.
2. What color is the stem?
3. Does the stem feel light or heavy?
4. With a straw, drop some water onto the bamboo stem. What do you observe?
5. What do you notice about the bamboo when you view it under a magnifying glass? Discuss students' observations.

STEP 3: Distribute and go over *Activity Sheet 1*. Explain to students that they will be learning more about bamboo and how it compares to other types of wood by conducting a float or sink experiment. They will work in small groups, using *Activity Sheet 1* to record their predictions and the results. Discuss their findings as a class, summarizing the unique properties of bamboo.

Note to teachers:

1. *If an object's density is less than that of water, the object may float (density is the weight per unit of volume). This float and sink activity provides students with first-hand experiences with the concept of density.*
2. *Objects will float/sink differently depending on whether or not they are placed in fresh water or salt water. Salt water is denser than fresh water. An object that will sink in fresh water might float in salt water if it is less dense. Density and buoyancy are two related concepts that are typically introduced at higher grade levels.*

STEP 4: Students will learn more about the role that bamboo and other resources serve in the giant panda's habitat by playing *The Giant Panda Resources Game.*

a. **Before playing**, remind students that giant pandas need food, water, shelter and space to successfully live in their habitat. The amount of bamboo available limits the population of giant pandas that can live in a particular environment. We call this a **limiting factor**. Because the giant panda is somewhat solitary and **territorial**, the amount of space available to it is another limiting factor. Bamboo plants, the giant panda's main dietary resource, flower and die every fifty to one hundred years. Show students the following video that explains the fast growth of bamboo https://www.youtube.com/watch?v=-aARFhjJ7EA. Explain to students that even though bamboo grows quickly, it can be difficult during certain times for giant pandas to find enough food until new shoots of bamboo begin to grow. The clearing of land for farming or logging may also affect the amount of bamboo available to the panda.

b. **Preparing for the game**. Gather sets of poker chips and/or checkers pieces and place a piece of masking tape on each. Label the tokens as follows:

Type of Marker	Label
150 bamboo chips	B & 9 kg.
30 water chips	W
30 food source chips	10 rodents (R) 6 eggs (E) 8 insects (I) 3 yams (Y) 3 bananas (BA)
50 space chips	Sp & 5 sq. km (for square kilometers)
30 shelter chips	Sh
150 milk chips	M

c. Scatter the chips in a large open area on the playground or nearby field. Do not tell students what the numbers and letters on the chips stand for. Explain to the students that they will be giant pandas living high in the mountains of China searching for food, water and space. Ask the students to stand horizontally along a starting line.

© 2016 Disney Enterprises, Inc.

d. Designate one additional student to be an injured giant panda—this student should hop only on one foot throughout the activity. Each student should be provided with a paper bag that they will use to collect their food, water and space chips.

e. At a signal from the teacher, students should walk into the "forest" to collect the chips with a slow pace and lumber along like a giant panda. They do not walk on their hind legs like other bears. They usually walk at speeds of 1.2 to 1.8 miles per hour, usually foraging for food. The age of the panda and the nature of the terrain can affect the speed. They must return to the starting line each time they pick up a chip. Students should continue to search for chips until all have been collected.

f. This activity represents a seven-day week in the life of a giant panda. In this activity, an adult giant panda needs 20–30 pounds (9–14 kg) of bamboo shoots a day in order to survive. Thus, in a week's time it requires 140–210 pounds (64–95 kg) of bamboo. Explain to the students the following information about the giant panda's diet. The giant panda's diet consists of 1% of other food items such as bulbs, insects, eggs, bananas or small rodents. Giant pandas, like all animals, need water, which they get from mountain streams and bamboo shoots. Although giant pandas do not hibernate, they require shelter from cold weather. They usually shelter in caves, holes in trees or thick groves of bamboo. A single adult panda needs at least 6.2 mi (10 square km) of space to support it—a pair of breeding pandas would need more than 17.3 mi (28 square km) of space.

Can you eat as much as a panda? In a single day a panda can eat 20-30 pounds of bamboo, but what does that look like?

20-30 pounds of bamboo = 7-10 20lb watermelons = over 2,000 granola bars

g. After all of the chips have been collected, explain to students what the letters/numbers represent. Ask students to determine if they have enough of each limiting factor to survive the week based on the information provided in *Activity Sheet 2.*

Wrap Up: Follow the activity with a class discussion of the results. Students should discuss questions such as:

1. Were you able to collect enough chips to meet all of your survival needs for one week?
2. What is the difference between a giant panda that is surviving and one that is thriving?
3. What do you think might happen to giant pandas who did not obtain enough food, shelter, water or space cards?
4. Did the injured giant panda meet all of its needs? Why or why not?
5. What happens to a giant panda population if there is not enough food to survive?
6. What factors might cause a shrinking food supply for the giant panda?
7. Are there other animals that might also be affected by a shortage of food?

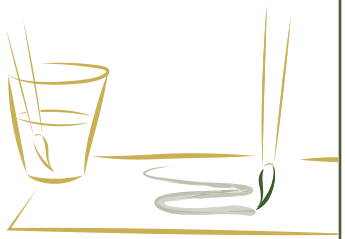
KEEP GOING

Enrich students' insights into the value of bamboo with extension activities from different content areas.

SCIENCE: Bamboo Scavenger Hunt

Students can conduct an Internet search to find images of objects made of bamboo. Place the collected images on a bulletin board, sorting by category (e.g., furniture, sporting equipment, etc.). Students or teachers can collect the images and create a PowerPoint to share with the class. To further students' understanding of the wide use of bamboo, students form teams and conduct a "bamboo scavenger hunt" in and out of class: classroom, school or home. Students have two days to conduct the hunt by simply listing each object. In class, discuss how many objects each team found. How did they determine the object was made with bamboo? What are other uses for bamboo?

ART: Chinese Bamboo Ink Painting



Inform students that ink wash painting originated with Chinese calligraphy over 6,000 years ago. It is a type of brush painting that uses black ink that is diluted to create different values. When Chinese artists learned to create ink paintings it involved years and years of practice, copying particular subjects in very specific ways. Ink is permanent, so the brush strokes cannot be corrected. If a mistake is made the entire artwork has to be redone. Each brush stroke is unique and artists practice the

© 2016 Disney Enterprises, Inc.

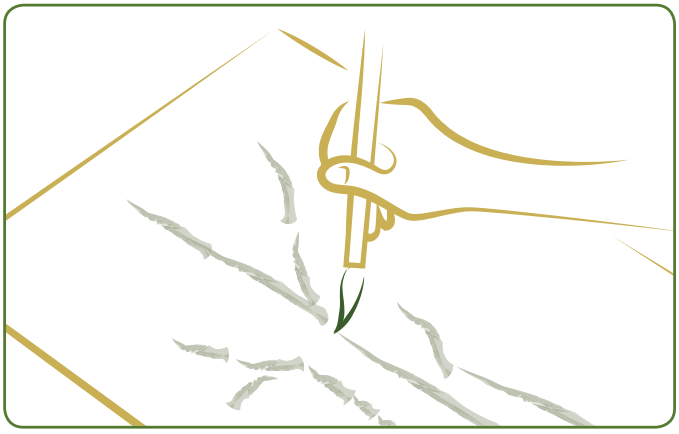
same strokes for years to become good at it. Ink paintings are traditionally created on long scrolls of paper and the subject matter is often that of nature, animals and people.

You'll Need: brushes, black tempera cakes or liquid paint, cups, live bamboo plants, paper towels, white copier paper (8.5x14)

STEP 1: Visit http://www.chinaonlinemuseum.com/painting-bamboo.php for images of bamboo ink paintings of growing bamboo that students can look over and describe: main stalks, branches and leaves. Point out how the branches grow in a "V" shape from the jointed sections.

STEP 2: Hand out brushes, paint, paper towels, cups, water, white copier paper.

Follow the steps below to help students practice the brushstrokes needed to make a painting of bamboo, using Chinese artists' techniques.



A. DRY BRUSH TECHNIQUE PRACTICE: Have students practice with a dry brush while telling them to:

1. Hold the brush vertically, with your arm in a loose curve, and sit tall; no part of your hand or arm should be touching the table.
2. Make circular strokes in the air above the table to practice using your whole arm and shoulder.
3. Make straight strokes away from yourself and pulling toward yourself.

B. OPTIONAL: LOADING INK PRACTICE: Have the students practice loading ink onto the brush while telling them:

1. You will load your brush with grey and black 'ink' to create a range of light and dark values. This will give your painting the feeling of being 3D.
2. If using tempera cake, tell the students to:
   a. Wet their brush, then make 1 or 2 strokes across black tempera cake to create grey ink.
   b. Blot your paintbrush on the paper towel so your brush isn't dripping, then using just the tip go over the tempera cake again to get blacker ink on the tip.
3. If using liquid tempera, tell the students to:
   a. Make a puddle of grey paint by mixing a little paint with water on one side of palette (paper plate).
   b Then load the brush with grey paint, blot, and add dark black paint to the tip.

C) PRACTICE MAKING BRUSH STROKES: Have students practice making brush strokes while telling them:

1. Practice making quick strokes on white copier paper;
2. Try pushing down slightly at the beginning of the stroke then lifting at the end.
3. Blot brush on paper towel to make point again between strokes.
4. Experiment and practice with wet and dry strokes, pull strokes toward you and away from you.

STEP 3: Distribute *Activity Sheet 3*. Have students follow the steps to practice each type of brushstroke needed to make a final painting. Position live bamboo plants around the room so students may view them from different angles. As they examine the plants, they will follow the shapes they see and use the appropriate brushstrokes to create a bamboo painting. Display the final bamboo paintings on a bulletin board for everyone to enjoy. Discuss how Chinese artists use natural materials, such as bamboo brushes to create pictures of bamboo in nature!

RESOURCES FOR TEACHERS

Websites

- The Metropolitan Museum of Art http://www.metmuseum.org/search-results?ft=bamboo+ink+painting

RESOURCES FOR STUDENTS:

Books

- Freeman, Marcia S. *Giant Pandas*. Capstone Press, 1998 ISBN-13 978-0736880992
- Gish, Melissa. *Living Wild: Pandas*. Mankato MA: Creative Paperback, 2012. ISBN-13 978-0898126747
- Zeigler, Jennifer. *Pandas*. Scholastic, 2012. ISBN-13 978-0531210802

© 2016 Disney Enterprises, Inc.

Activity 1: Will it Float or Will it Sink?

ITEM	PREDICTION		ACTUAL	
Wood sample #1	YES	NO	YES	NO
Wood sample #2	YES	NO	YES	NO
Wood sample #3	YES	NO	YES	NO
Bamboo sample #1	YES	NO	YES	NO
Bamboo sample #2	YES	NO	YES	NO

1) Compare the bamboo stem with different kinds of wood. How do the pieces of bamboo and wood feel?_____

2) Predict whether the pieces of wood and bamboo will float in water. Circle your predictions before the experiment and the results in the "Actual" column on the *Will it Float or Will it Sink?* table.

3) Place a bamboo stem in a large bowl of water and observe. Add several blocks or pieces of wood to the same bowl of water. Include both hardwoods and softwoods. Discuss your observations with your small group._____

4) Leave the pieces of wood and bamboo in the water several days then observe them to see if there are any changes. Record your observations here: _____

5) What would happen if you conducted the same experiment in salt water? Do you think the results would be similar or different? Stir several teaspoons of salt into the water and find out. Record your observations here: _____

© 2016 Disney Enterprises, Inc.

Activity 2: Will You Survive?

Use the following information to determine if you would survive or thrive the limiting factors in your giant panda habitat. Be prepared to discuss your findings with classmates.

ONE WEEK | ONE ADULT PANDA

Needed for one adult panda to THRIVE for one week:

- 200 pounds (91 kg) of bamboo chips
- Two other food source chips
- Two water chips
- One shelter chip
- Three space chips

Needed for one adult panda to SURVIVE for one week:

- 140 pounds (64 kg) of bamboo chips
- One other food source chip
- One water chip
- One shelter chip
- Three space chips

ONE WEEK | ONE ADULT PANDA + TWO CUBS

Needed for one adult panda with two cubs to THRIVE for one week:

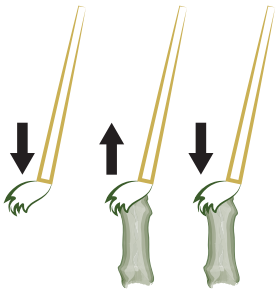
- 200 pounds (91 kg) of bamboo chips
- 84 units of milk (12 per day per cub)
- One other food source chips
- One water chips
- One shelter chip
- Two space chips

Needed for one adult panda with two cubs to SURVIVE for one week:

- 140 pounds (64 kg) of bamboo chips
- 84 units of milk (12 per day per cub)
- For both cubs to survive 168 units of milk are needed (there are not enough chips for both cubs to survive).
- One water chip
- One shelter chip
- Three space chips

© 2016 Disney Enterprises, Inc.

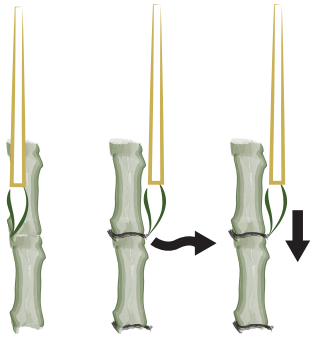
Activity 3: Chinese Bamboo Ink Painting



1 Bamboo Stalk Brushstroke

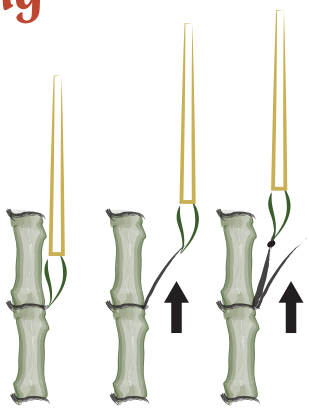
(Note: Bamboo sections get thinner and longer as they grow)

- Begin at bottom of paper
- Push brush down with bristles on side
- Stroke quickly upward and stop
- Push brush down again and lift
- Repeat to top of paper



2 Bamboo Joints Brushstroke

- Use dark black ink
- Hold brush in vertical position
- Use the tip of the brush
- Make a thin curved pulling stroke
- Push down a bit at both ends

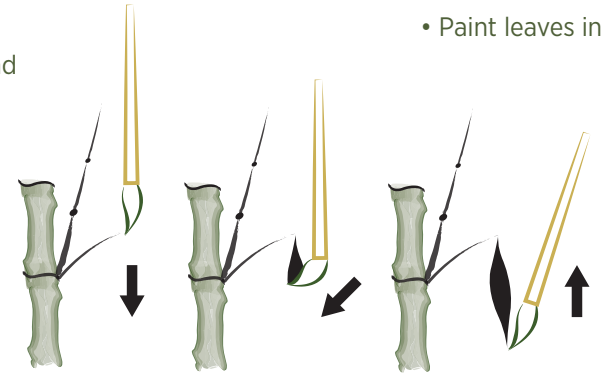


3 Bamboo Branch Brushstroke

- Hold brush upright
- Pull upward lightly touching the paper
- Push down a little bit then lift
- Branches grow in a Y from stalk sections
- Like stalks, branch sections get thinner and longer as they grow

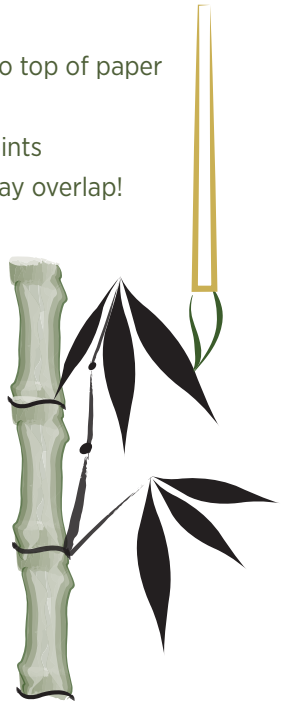
5 Bamboo Leaves Brushstroke

- Leaves are pointed at both ends
- Start with brush straight up
- Touch paper slightly with pointed tip
- Pull brush forward and push down
- Finish leaf stroke by lifting the tip
- Start painting leaves from branch end



6 Putting Strokes Together

- Paint stalks first, from bottom to top of paper
- Curve or angle 2 or 3 stalks
- Paint branches growing from joints
- Paint leaves in groups – they may overlap!



© 2016 Disney Enterprises, Inc.

LESSON 4

YIN & YANG

The Relationship Between Positive and Negative Space

诞生在中国

THEME	GRADE LEVEL	SUBJECT AREA	BACKGROUND INFORMATION
Contrast	4–6	***Focus:*** Art ***Extensions:*** Art & Language Arts	Page 26

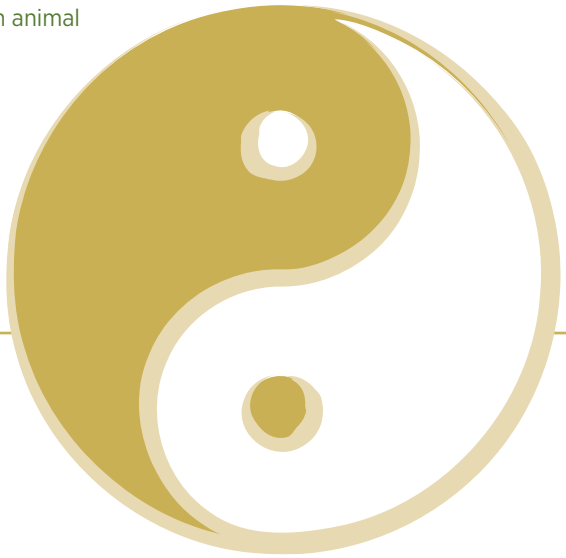
VOCABULARY: *antonym, complimentary antonym, graded antonym, relational antonym, contrast, negative space, positive space, subtractive method, Jianzhi, yin, yang*

STUDENTS WILL BE ABLE TO...

- Discuss yin and yang as complimentary opposite relationships
- Demonstrate the use of positive and negative space to create artwork
- Determine the significance of Chinese paper cut artworks in representing an animal

WHAT YOU'LL NEED

- Small sharp pointed scissors
- Glue sticks or glue
- Heavy weight paper or cardstock in contrasting colors
- **Disneynature BORN IN CHINA** animal templates
- Pencil & eraser
- Black marker
- Lesson 3 Activities:
  - *Activity Sheet 1: Golden Snub-Nosed Monkey Pattern*
  - *Activity Sheet 2a & b: Antonym Matching Game*
  - *Activity Sheet 3: Catch the Contrast Music Game*



In Chinese culture, yin and yang represent two opposite principles in nature that exist in pairs, such as moon and sun. They are not static; they don't represent two separated things. In other words, the nature of Yin Yang lies in interplay of the two components. Inform students they will be making a decoration called a window flower by using the ancient Chinese art of paper cutting. Explain that both zhi (paper) and Jianzhi (paper cutting) were invented in China centuries ago. The artistic creations, chuāng huā, or window flowers, are displayed for health, prosperity or decoration. Show students examples of window flower art http://www.dreamstime.com/photos-images/traditional-chinese-paper-cut.html**. Compare and contrast the various designs. Point out how the sharp contrast between the red positive spaces and the white negative spaces in the background make the animal subjects stand out. The contrast of negative (white paper) and positive space (red paper) represents the Chinese philosophy of yin and yang, the relationship between opposites: positive (yang) and negative (yin). Show students the China Radio International video about the origins and artistry of Jianzhi** https://www.youtube.com/watch?v=jJ0YbUOUsuw

GET STARTED

STEP 1: After viewing **Disneynature BORN IN CHINA** or clips online, ask each student to select a favorite animal and write a two to three sentence explanation for their choice. Students should include what is unique about the animal's shape, coloration or physical characteristics. Explain that the process of paper cutting involves drawing or following an intricate pattern on a flat sheet of paper. The background shapes, or negative spaces, are then cut out of the paper, leaving the image, or positive space. Students may choose to draw a pattern for their selected animal on a sheet of cardstock or trace the templates provided on *Activity Sheet 1.*

STEP 2: Students who use an activity sheet template will carefully cut away and remove all the background

© 2016 Disney Enterprises, Inc.

material/shapes, leaving open holes or negative space. The material that remains will be positive space. If a student is drawing their favorite animal, they will examine the examples on *Activity Sheet 1*, and notice that the patterns inside the animals consist of enclosed shapes. After drawing, make sure students thicken the outlines and contour lines with a black marker. Next, students should cut away the material and shapes that are not part of the positive space, leaving open holes, or negative space. The material that remains is the positive space.

STEP 3: Using glue, students will secure the positive paper cutting to a white or contrasting colored sheet of paper.

WRAP UP: Have the students title and display their finished pieces. Conduct a gallery walk and invite each student to discuss the use of positive and negative space to create an image that represents something unique about the animal they selected.

KEEP GOING:

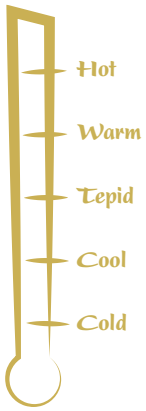
Enrich students' insights into yin and yang with extension activities from different content areas.

LANGUAGE ARTS: Antonym Matching Game

Invite students to explore contrast by playing a game that matches sets of antonyms.

STEP 1: Explain that when people think of antonyms they usually think of words that are opposite. But there are three types of antonyms that can help us understand the nature of the contrasts involved in the Chinese philosophy of Yin and Yang. Write these three words on the board: graded, complementary and relatable.

STEP 2: Point out that graded antonyms are words that may have a range of other words between the two opposite extremes. For example, hot and cold are graded antonyms because there are many different types of temperature that lie between them: hot - warm - tepid - cool - cold. Invite students to think of other graded antonyms.



STEP 3: Explain that complementary antonyms are pairs of words with opposite meanings but are not on a continuum like graded antonyms. For example, come and go.

STEP 4: Discuss that relational antonyms are pairs of opposite words that have an evident connection or association. For example, teacher and pupil. A pupil can't exist without a teacher and a teacher can't exist without a pupil.

STEP 5: Make copies and distribute *Activity Sheet 2a & b* to each student. Follow the directions to help students explore contrasting antonyms. Relate the game to the notion of artistic Yin and Yang, a philosophy that relies on the interplay or relation between contrasting colors to create art.

MUSIC: Catch The Contrast Game

Tell students they can learn more about contrast by identifying opposite elements in musical compositions. Composers and performers use opposite elements to heighten the effect of the music on the listener. One of those elements is the presence of sound and silence, which is similar to light and dark in visual art. Other contrasts in music include: loud and soft, high and low, or fast and slow. Music performed by voices or instruments also features contrasts in timbre (the quality of the sound, such as resonant, or dry, or cool, or bright), or in the shape of melodies (jagged or smooth, leaps or steps). Students will play a game that requires them to "catch" musical contrasts by listening for, flagging, and identifying opposite relationships in music they hear.

You'll Need: *Activity Sheet 3*, construction paper, scissors, black markers, popsicle sticks, glue or glue stick, a music or media player. Recommended list of musical selections include the Silk Road Ensemble (Yo Yo Ma) https://m.youtube.com/watch?v=gs7IDSCqYyQ; https://m.youtube.com/watch?v=jAic5B57J9Y

STEP 1: Each student will make two "Catch the Contrast" flags: a) cut two 5 inch squares – one with light color and the other with dark construction paper; b) use a sharpie marker to write "Catch the Contrast" on both squares; c) glue a popsicle stick to the bottom back of each square.

STEP 2: Write on the board and discuss a list of the opposite elements of music that they will hear. Attune students' ears to the activity by listening to one passage and demonstrating how the game works. You may play a segment of any of the following selections of traditional Chinese music: Colorful Clouds Chasing Moon http://www.ibiblio.org/chinese-music/MP3/TD11.Colorful_Clouds_Chasing_Moon.mp3; Crows Playing with Water http://www.ibiblio.org/chinese-music/MP3/TD13.Crows_Playing_with_Water.mp3; Stepping Up http://www.ibiblio.org/chinese-music/MP3/TD10.Stepping_Up.mp3. Raise a light or dark flag when you hear an element, then identify which element you heard. Invite students to practice a time or two along with you. Students who aren't attuned to traditional Chinese music may spot contrasts in Yo Yo Ma's Silk Road Ensemble (see above).

© 2016 Disney Enterprises, Inc.

STEP 3: Before you play another song, remind students to raise a flag when they hear a particular example of one of the opposite music elements. The flag they raise should signal the type of contrast they heard.

STEP 4: After the game, discuss the relationship between the opposite pairs. Did the students have any difficulty choosing which flag to raise? Was it problematic to select only one element? If so, the purpose of the game was realized. Opposites in music exist, but they are only identifiable when heard together. Like a relational antonym, (See Language Arts Extension Activity) one doesn't exist without the other.

RESOURCES FOR TEACHERS

Books

- Bothwell, D., & Mayfield, M. *Notan: The Dark-Light Principle of Design*. Dover Publications, 1991.
- Da-Wei, K. *Chinese Brushwork in Calligraphy and Painting: Its History, Aesthetics, and Techniques*. Dover Publications, 1990.
- Li, S. *Making Chinese Papercutting* (English Edition). Amazon Digital Services, 2010

Websites

- Folk art passed on from generation to generation http://www.macauart.net/News/ContentE.asp?id=160918
- Chinese Paper Cut http://www.chinafacttours.com/facts/art/chinese-paper-cut.html

RESOURCES FOR STUDENTS

Books

- Compestine, Ying Chang. *The Story of Paper*. New York: Holiday House, 2003.

CONTRASTS IN CHINA'S BEAUTIFUL SCENERY

The Gobi Desert

Sanjiangyuan Reserve

© 2016 Disney Enterprises, Inc.

Activity 1: Golden Snub-Nosed Monkey Pattern

Cut away all of the GOLD SHADED parts in this pattern.

© 2016 Disney Enterprises, Inc.

Activity 2a: Antonym Matching Game

Remember: Antonyms come in three types: **graded**, **complementary** and **relational**, but all antonyms have one thing in common. They are sets of words that represent opposite concepts.

Game Set-up:

- Before starting the game, add your own antonym sets by writing two opposite words on the blank cards.
- You may also add antonym sets by writing three graded opposite words.

* Two example sets of cards have been filled in, the rest are blank for you to complete.

- Cut out the cards

Game Play

1) The goal of the game is to make the most antonym matches.
2) Two players sit across from each other.
3) Shuffle or mix-up two decks of cards and place them face down in the middle of the playing surface.
4) To start the game, each student draws one card and places it face up in front of their playing surface.
5) Players alternate drawing two cards and turning them face up. If the cards are antonyms the player who turned the cards over keeps the match.
6) The game continues until all of the cards have been played.
7) The winner is the player with the most matches.

Can you name more examples of these types of antonyms?

Graded
ex. hot / cold

Complementary
ex. come / go

Relational
ex. teacher / pupil

© 2016 Disney Enterprises, Inc.

Activity 2b: Antonym Matching Game Cards

common	unique
black	white

© 2016 Disney Enterprises, Inc.

Activity 3:

Catch the Contrast Music Game

The contrast of musical elements can reflect the Chinese philosophy of yin and yang. Refer to the list of selected opposite musical elements to determine which light or dark flag to raise when you hear an opposing element in a musical passage. Be ready to say which element you heard.

Opposite Musical Elements

Light Colors Represent POSITIVE	Dark Colors Represent NEGATIVE
Sound	Silence
Fast	Slow
Loud	Soft
High	Low
Smooth	Jagged
Long Notes	Short Notes

Be prepared to discuss your experience playing the game:

Was it easy to identify separate opposite musical elements?

Did everyone agree whether the opposites were light or dark?

Why or why not?

© 2016 Disney Enterprises, Inc.

LESSON 5

High Altitude Animal Adaptations

诞生在中国

THEME	GRADE LEVEL	SUBJECT AREA	BACKGROUND INFORMATION
Adaptations	2–3	***Focus:*** Science & Language Arts ***Extensions:*** Language Arts	Pages 11–16

VOCABULARY: *adaptation, altitude, climate, insulation, offspring, temperate*

STUDENTS WILL BE ABLE TO...

- Describe the importance of adaptations to animals living in the high altitude mountain ranges and temperate forests of central China
- Identify some of the adaptations that help the snow leopard, giant panda, golden snub-nosed monkey, blue sheep and mountain goat survive in cold, mountainous environments
- Conduct an experiment to determine which materials are the best insulators for keeping warm

WHAT YOU'LL NEED

- Aluminum foil
- Blanket
- Buckets
- Coffee mugs (4 of the same shape but different sizes)
- Coffee mugs (4 of the same size but different materials)
- Coins
- Paper plates
- Geophysical world map
- Hot water
- Hot water bottles
- Ice cubes
- Large ziplock bags
- Newspaper
- Plastic bags
- Shortening, such as Crisco
- Thermometers
- Thin plastic disposable gloves
- Timers
- Writing paper
- Lesson 5 Activities:
  - *Activity Sheet 1: China Animals' Adaptations*
  - *Activity Sheet 2: Station Findings*
  - *Activity Sheet 3: Tweets About Heat*

Ask students to locate China on a geophysical map of the world. Point out the mountain ranges across central China. Explain that this habitat is home to many unique animals that live in high altitudes where the atmosphere is thin and temperatures are cold. These animals must change or adapt over time to survive in this cold climate. These changes, which happen over millions of years, are known as adaptations. In order to live successfully in high mountain altitudes, China's animals have both physical and behavioral adaptations which they pass along to their offspring. Distribute *Activity Sheet 1* and discuss the way each adaptation is an advantage for survival in the high, cold mountain climates of China. Explain how humans also have distinct adaptations for walking, holding, seeing and talking. Ask students to brainstorm some of the adaptations that help humans or animals survive.

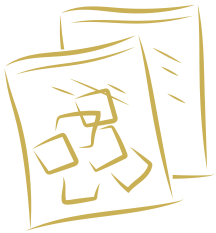
© 2016 Disney Enterprises, Inc.

5 High Altitude Animal Adaptations

GET STARTED

Each of the steps listed in this lesson relates to a learning station that teachers will set up for peer pairs to conduct experiments.

STEP 1: Remind students that the snow leopard stores fat in its thick, furry tail and can wrap it around its body to provide **insulation** in the cold mountain environment. Like many mammals living in cold habitats, the snow leopard has a thick fur coat. In many cases, animals living in very cold temperatures are able to stay warm because they have a layer of fat in between their inner organs and skin. Insulation can slow down the loss of heat from warm things and foster the gaining of heat by cool things. The snow leopard's thick fur and fat help prevent loss of heat from its body. In the following activities we will investigate how we can keep ourselves warm. Distribute *Activity Sheet 2* so students can record the results of their experiences.



STEP 2: Station 1 - Place two large ziplock bags on the table. Working in pairs, have one student blow into one of the bags until full and then seal the bag. The other student will fill a bag with ice cubes. Place the bag with ice cubes on the partner's hand and leave in place for 10 seconds. Ask the student to describe how his/her hand felt. Next place the bag filled with air on the partner's hand. Place the bag filled with ice cubes on top of the bag with air and leave in place for 10 seconds. Ask the students to share whether their hands were colder or warmer with the bag of air in between the bag of ice. Explain to students how the layer of air acts as an insulator, keeping the hand warm.

STEP 3: Station 2 - In the next part of this sequence of activities have a bucket of ice water on the table. One student should wear a thin, plastic disposable glove (or a baggie sealed with a rubber band around the wrist). Place the hand with the plastic glove in the bucket of ice water for 10 seconds. After 10 seconds, the student should describe how his/her hand felt. The student will then cover the glove with a layer of shortening. Place the shortening covered glove in the water again for 10 seconds. Compare the results. Explain to students the shortening is similar to the insulation provided by the fat stored in the snow leopard's tail.

STEP 4: Station 3 - Students will explore what materials are the best insulators for keeping warm. Place four hot water bottles on the table. Students should place a different material on the top of each water bottle and leave it in place for three minutes. Students should select from materials such as cardboard plates, aluminum foil, newspaper, plastic bag, coins, writing paper, etc. After three minutes students should discuss which materials feel the warmest and coldest. Ask students which materials would make the best insulators for keeping warm. Explain to students the best materials for insulation are the ones with the lowest thermal conductivity: paper, plastic or Styrofoam are much better than glass.

STEP 5: Station 4 - In the final station students explore how size is related to insulation. The teacher should introduce the use of a thermometer if students do not have prior experience with this measurement tool. Provide four mugs that are the same shape and made of the same material but have different sizes. Place an equal amount of hot water in each mug and record the initial temperature. Ask students to predict which mug will stay the warmest after five minutes. After five minutes record the temperature of each mug again. Place the mugs in order from warmest to coolest. Explain to students the variable of interest is the size of the mug. How

© 2016 Disney Enterprises, Inc.

well a mug can insulate and keep water warm is a function of the ratio between the surface area and the volume. The larger mug has a greater surface area to volume ratio so will not lose heat as quickly as the smaller mug

WRAP UP: There are many similarities between the way people use insulation and how animals use it in nature. The fur of the golden snub-nosed monkey provides insulation in snowy conditions. The thick fur and stored fat in the tail of the snow leopard is an important adaptation. Invite all students to imagine they are a snow leopard living in the high mountains of China. Students lay on the floor and curl up, imagining their tail is wrapped around their body as they sleep. Students cover themselves with different material such as: a) blanket; b) layer of newspapers; c) bed sheet; d) jacket. Ask students which material provides the best insulation? Why?

KEEP GOING

Enrich students' insights into high altitude adaptations with extension activities from different content areas.

LANGUAGE ARTS: Tweets About Heat

Students apply what they have learned about insulation and temperature by answering a series of simulated twitter questions. They can only answer in 140 characters. Students can't use Twitter until they are 13 years old, but some elementary teachers are creating class accounts (see twitter http://theinnovativeeducator.blogspot.com/2012/12/why-on-earth-would-2nd-graders-use.html) for class projects. Distribute and go over *Activity Sheet 3*. After students write their answers, post collections of their responses on the bulletin board or class web page. Students compare their answers in a class discussion, highlighting the reasons for their suggestions, drawn from their insulation experiments at learning stations.

RESOURCES FOR TEACHERS:

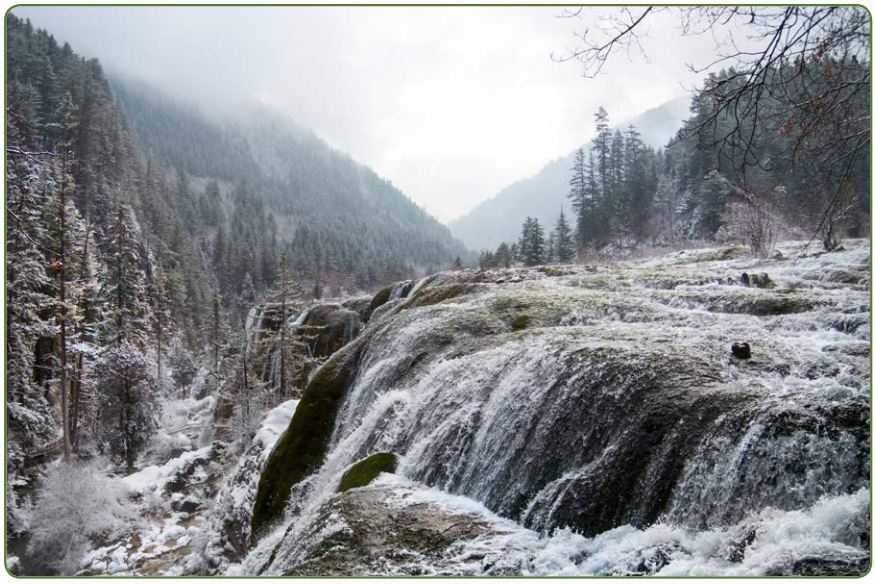
Websites

- Elusive Snow Leopard http://www.discovery.com/tv-shows/planet-earth/videos/elusive-snow-leopard/

RESOURCES FOR STUDENTS:

Books

- Ada, Alma Flor. *Yours Truly, Goldilocks.* New York: Aladdin Paperbacks, 2001. Print. ISBN-13: 978-0689844522
- Alex, Susie. *Snow Leopard: Fun Facts Photo Book for Children.* Amazon Digital Services, Inc., 2015. Kindle file. ASIN: B00TRCKA0M
- Hatkoff, Juliana, Isabella Hatkoff, and Craig Hatkoff. *Leo the Snow Leopard: The True Story of an Amazing Rescue.* New York: Scholastic Press, 2010. ISBN-13: 978-0545229272
- Loewen, Nancy. *Sincerely Yours: Writing Your Own Letter.* North Mankato: Picture Window Books, 2009. ISBN-13: 978-1404853393
- Poppenhager, Nicole. *Snow Leopards*. New York: North-South Books, 2006. ISBN-13: 978-0-7358-2087-6
- Teague, Mark. *Dear Mrs. LaRue: Letters from Obedience School*. New York: Scholastic, Inc., 2002. ISBN-13: 978-0-439-20663-1



© 2016 Disney Enterprises, Inc.

Activity 1: China Animals' Adaptations

Adaptation	Animal	Advantage
Brownish to blue coat	Blue sheep	Hiding in shadows of rocks
Hard hooves with soft pads	Mountain goat	Climbing steep cliffs
Constant Movement	Golden snub-nosed monkey	Avoiding predators
Flattened nose	Golden snub-nosed monkey	Prevent frostbite
Fur	Golden snub-nosed monkey	Insulation for warmth
Strong jaw muscles	Giant panda	Chewing bamboo
Large molar teeth	Giant panda	Chewing bamboo
Black and white coloration	Giant panda	Hiding in shadows of the forest
Sixth finger or "pseudo" thumb	Giant panda	Grasping bamboo shoots
Thick fur with black or brown spots	Snow leopard	Protection from predators
Long tail	Snow leopard	Climbing with balance
Large chest	Snow leopard	Breathing at high altitudes
Sharp eyesight	Snow leopard	Search for prey
Strong hind legs	Snow leopard	Leaping across rocks
Fat stored in thick, furry tail	Snow leopard	Insulation for warmth
Feathers	Red-crowned crane	Insulation for warmth
Long legs	Red-crowned crane	Wading in wetlands
Long beak	Red-crowned crane	Catching fish

© 2016 Disney Enterprises, Inc.

Activity 2: Station Findings

Station 1

(✔) Which variable made your hand warmer:

_____ Hand on bag of ice

_____ Bag of air between bag of ice and hand

Why was the variable you selected warmer?

_____

_____

_____

Station 2

(✔) Which variable made your hand warmer:

_____ Gloved hand in bucket of ice

_____ Gloved hand with Crisco in bucket of ice

Why was the variable you selected a good insulator?

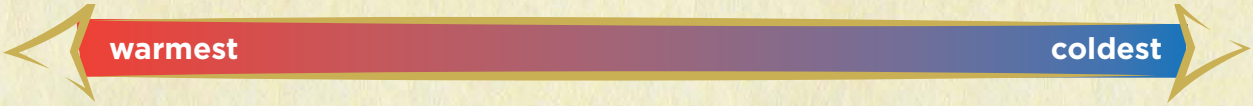
_____

_____

_____

Station 3

Write the materials you tested on the continuum scale from warmest to coldest.



Which materials would make the best insulator for keeping warm?_____

Station 4

Variable to explore: Size of the mug

Predictions:	Initial Temperature	Temperature after five minutes	Observations

© 2016 Disney Enterprises, Inc.

Activity 3: Tweets About Heat

@PandaExpert, your followers have tweeted you questions about insulation using #AllThingsInsulation because you are an expert in insulations of all kinds. How would you reply to each of your followers' questions in 140 characters per tweet?

What's happening? 140 Characters

Ask me anything about insulation #AllThingsInsulation

Water Lover @lovesallthingsnature 28 July

It is winter time and I got a new pool toy I want to play with. How can I stay warm in the cold water? #AllThingsInsulation

140 Characters

Enjoying Nature @getoutandplay 29 July

When I play outside in the snow I need to wear warm booties. What materials are best for inside my booties? #AllThingsInsulation

140 Characters

Enjoying Nature @getoutandplay 29 July

What are good travel cups to keep my hot cocoa warm? #AllThingsInsulation

140 Characters

© 2016 Disney Enterprises, Inc.

LESSON 6

How Scientists Use Technology To Study ENDANGERED SPECIES

诞生在中国

THEME	GRADE LEVEL	SUBJECT AREA	BACKGROUND INFORMATION
Conservation	4–6	***Focus:*** Science & Social Studies ***Extensions:*** Science & Language Arts	Page 19

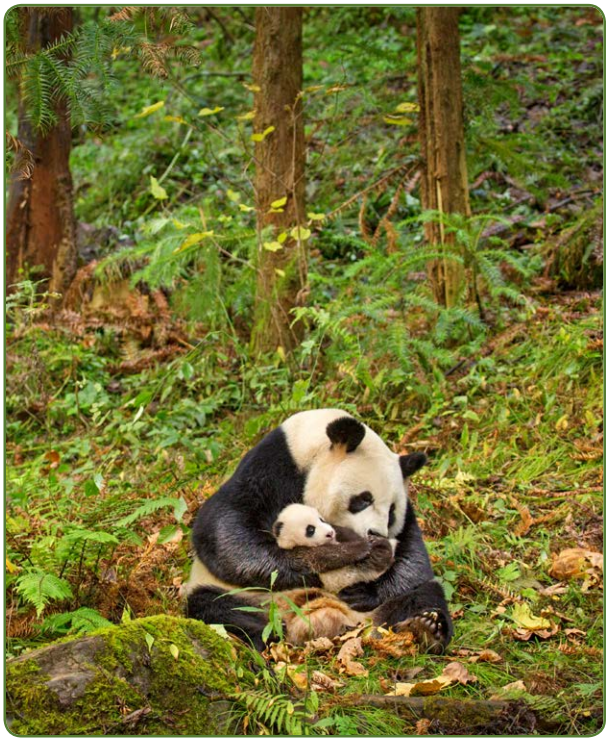
VOCABULARY: *conservation, corridors, documentation, elevation, elusive, endangered, extinct, fragmentation, habitat , reclusive, research site, satellites, species, sustainable, vulnerable*

STUDENTS WILL BE ABLE TO...

- Take research notes from a research summary
- Determine contrasts between aerial photographs of a habitat area before and after a natural disaster
- Discuss how using technology impacts research of remote habitats
- Discuss the importance of conservation organizations and the scientists who study endangered species
- Evaluate possible solutions to the problem of habitat loss

WHAT YOU'LL NEED

- Markers or crayons
- Poster board
- Writing paper
- Lesson 6 PowerPoint Includes:
  - *Activity Sheet 1: Technology That Extends Scientists' Reach*
  - *Activity Sheet Station 2a, b & c: Using Satellite Imagery to Study Impact of a Natural Disaster on Habitat*
  - *Activity Sheet 3: Using Maps to Show Habitat Change Overtime*
  - *Activity Sheet 4a & b: Habitat Fragmentation & Possible Recovery*



Explain that the giant panda's natural habitat in China is so isolated that it was very difficult for scientists to study them in the past. The giant panda's habitat has diminished greatly from its origins. Only small areas across several (six) mountain ranges remain, and they are treacherous for humans to reach. To study giant pandas in the wild, scientists have learned how to track the species and use technology to record their environment, behavior, diet, mating and changes affecting them. By documenting findings and sharing information, scientists and conservationists can work together to save habitats, increase birth rates, and make positive environmental changes.

GET STARTED

Students will step into the shoes of scientists who use technology to study giant pandas in the isolated and remote areas of China. Distribute *Activity Sheet 1.* Invite students to organize the pictures that are scattered on the scientist's desk. Give them a few minutes to complete the activity. Guide a discussion on the different technology and images they noticed. Remind students that aerial images are pictures of the Earth's surface taken from an airplane or drone. **Satellite** images are taken from devices on satellites and are digitally rendered. Camera traps are placed in an animal's habitat; a sensor snaps a photograph when an animal is nearby. Telephoto lenses allow

© 2016 Disney Enterprises, Inc.

a photographer to take photos of animals in their habitat from far away. Different types of images taken by different types of devices allow scientists to extend their reach into remote or isolated areas.

By analyzing the data and information other scientists have contributed, students can form conclusions about giant panda habitat loss and make informed recommendations.

STEP 1: Set up each scientist station, one for each activity sheet: *Activity Sheet 2a, b, c: Station 1 - Using Satellite Imagery to Study Impact of a Natural Disaster on Habitat; Activity Sheet 3: Station 2 – Using Maps to Show Habitat Change Overtime; Activity Sheet 4a and b: Habitat Fragmentation & Possible Recovery.*

Discuss the problems facing scientists who study giant pandas.

Problem 1: Giant pandas live in a remote area and are too difficult to reach.

Problem 2: It can be difficult to get permission from authorities to set up observation stations to conduct field work.

Problem 3: In-depth studies conducted in the field are time-consuming and expensive.

Next, go over the activity sheets with students before opening the stations for their work. The purpose of the research is to learn how scientists use technology to overcome the problems they face. The goal of the station projects is to discover how habitats for giant pandas have changed and continue to change. Students may work in partner pairs or alone.

STEP 2: Station 1 - Inform students that the Station 1 activities lay the foundation for the other three stations. Students will complete the activities in Station 1 as a large group/whole class; then they will break into small groups and complete the remaining stations. Student groups should rotate through each station in order, as the information they learn at each will be used at the next location. At Station 1, the class will begin the activity by taking notes on a summary of a research report on the devastating Sichuan earthquake of 2008, noting the technology used in the research study. Second, they analyze and compare maps to see panda habitat loss. Next they will analyze and compare two photographs of the mountains taken before and after the earthquake. Finally, they will analyze and compare two satellite images of the same region.

STEP 3: Station 2 - Scientists not only study maps, but they outline the borders of habitat areas in order to keep track of how those borders grow, remain the same, or change over time. In this activity, students will look at three maps that outline the giant pandas' habitat areas over time. Following the directions on *Activity Sheet 3*, students will consolidate the information onto one map and describe how the habitat areas have changed over the years.

STEP 4: Station 3 - Students will have the opportunity to pull together many of the resources and skills they have learned at the other stations. Their task will be to analyze many visual resources, provided on *Activity Sheet 4*, to draw conclusions and answer questions about the past and future of recovery of habitat from prior loss to fragmentation.

STEP 5: Station 4 - Candid Camera Traps & Camps
Students can visit http://wwf.panda.org/wwf_news/multimedia/ to view several videos of animals that were caught on camera traps. Observing animals in remote places as they go about their daily lives helps scientists discover new insights about the animals they study. Students may share any new findings they observe while viewing the videos.

Invite students to view panda cams that are available in zoos around the world. By visiting several cams, they can observe how giant pandas move and live throughout the day. Students can keep a class observation record on a clipboard to accumulate and share data.

Wrap Up: Discuss the shrinking habitats of animals in China and efforts to help them. Ask students to consider the following questions: How will scientists use technology to study animals in the future? What kinds of technology will they use? What resources were most helpful to you, when you stepped into the shoes of a scientist?

© 2016 Disney Enterprises, Inc.

How Scientists Use Technology To Study ENDANGERED SPECIES

KEEP GOING

Enrich students' insights into conservation with extension activities from different content areas.

SCIENCE & LANGUAGE ARTS: Marketing Campaign

For many years, groups of scientists and others who are concerned about animals have worked together in conservation organizations to protect **endangered** and **vulnerable** animals. As the giant pandas' natural habitat has shrunk due to factors such as deforestation, it is increasingly important that scientists find out more about these animals. Collaborating with or supporting a conservation organization helps students become involved with saving endangered **species** on an international level.

In this activity, students will select one of the species from **Disneynature BORN IN CHINA** and design a **local marketing campaign** in order to develop awareness.

STEP 1: Working within small class teams, students will research the organizations that support these species and select the conservation organization they would like to support.

STEP 2: Next, each team creates marketing materials designed to persuade classmates to support their cause. Marketing materials are based on the species they chose and how they would market to their classmates as well as network with other organizations. Each team creates a set of "marketing posters" that includes: a logo or symbol, photographs, tagline, drawings, and perhaps a PowerPoint presentation running on a laptop or handheld.

STEP 3 (Optional): Based on the creativity of the "marketing campaign" for the conservation organization and accompanying art and photos, classmates will select the most persuasive conservation organization to support.

STEP 4 (Optional): The class will plan how to enact the campaign to raise awareness on social media, and to support conservation efforts around the world.

The International Union for Conservation of Nature (IUCN) places threatened animals and plants on a list that includes three major categories:

- **Vulnerable** (VU)
- **Endangered** (EN)
- **Critically endangered** (CR)

SCIENCE: Habitat Loss and the Golden Snub-Nosed Monkey

Habitats are places that provide organisms with the food, water and space they need. The golden snub-nosed monkey is found in the mountain ranges of central China where the climate is cold and wet. During the summer months the golden snub-nosed monkey eats tree leaves. However, during the winter months, when temperatures become very cold, the golden snub-nosed monkey can still find food in upper **elevations** by eating bark and lichens. Increasingly, the pressures of habitat loss are making it more difficult for the golden snub-nosed monkey to find food and raise its offspring. Female golden snub-nosed monkeys will have only one infant in a two to three year period of time, so population growth is also a slow process.

Long Live the Golden Snub-Nosed Monkey

Today the lives of many animal and plant species are threatened because of habitat loss. The golden snub-nosed monkey, takin and ibis are all endangered species. What does it mean if a species is endangered? An organization known as the International Union for Conservation of Nature (IUCN) places threatened animals and plants on a list that includes three major categories: vulnerable (VU), endangered (EN) and critically endangered (CR). When a species is described as vulnerable it is at risk because the number of animals or plants found in the wild is starting to decline. Animals and plants which are endangered have populations that are severely declining due to threats like pollution and practices such as farming, hunting, deforestation and poaching. The golden snub-nosed monkey has been hunted for years because of its beautiful, warm fur. When an animal or plant is listed as critically endangered and placed on what is known as the Red

© 2016 Disney Enterprises, Inc.

List, only a few exist and they have trouble reproducing in the wild. Institutions, such as accredited zoos and aquariums, wildlife refuges and other facilities work to maintain and increase the number of these threatened animals through breeding programs. But in order for these animals to be successfully placed back in the wild there must be a healthy habitat that has everything they need to survive.

STEP 1: The Problem
Discuss students' initial ideas for answering the question: What can be done to preserve the natural habitat of the golden snub-nosed monkey population?

STEP 2: Alternative Solutions to the Problem
There are a variety of ways to address the threat of habitat loss to threatened animals living in the mountains of China. Below is a list of five possible solutions to this problem. Working in small groups, students conduct research about the problem of habitat loss for the golden snub-nosed monkey and then add two more possible solutions to the list. Tell students to try to make these solutions as realistic as possible. Students may use websites, books, or other resources.

Possible Habitat Loss Solutions for the Golden Snub-nosed Monkey

1. Create wildlife **corridors** that help the monkeys and other threatened species move across terrain.
2. Limit the amount of logging or construction in areas near the habitat.
3. Create and implement a wildlife management plan that focuses on all organisms that share its environment.
4. Educate people about ways they can reduce their own "carbon footprint."
5. Provide financial incentives to farmers who use **sustainable** agriculture practices.

STEP 3: Evaluating the Alternative Solutions
Now that students have come up with some additional solutions to the problem, they need to decide which solutions are the best. In this section, they will be thinking about ways to judge whether or not the solutions they came up with are good solutions. The following list of criteria includes five ways to measure whether or not each solution is a good solution. Within their groups, students add two other criteria they can use to rate the solutions from the last section.

Solutions for Loss of Habitat for the Golden Snub-Nosed Monkey

1. The solution reduces the loss of habitat.
2. The solution is practical and technologically possible.
3. The solution is cost effective (does not cost too much).
4. The solution improves the economy in the area.
5. The solution is long-term rather than short-term.
6. _____
7. _____

STEP 4: Putting It All Together
Students will draw an Alternative Solutions for Habitat Loss Matrix on a separate piece of paper. From their list of alternative solutions, they will select five solutions that they want to rank and list them along a column on the left side of the matrix. From their list of criteria, they will select five that they want to use in ranking the alternative solutions. They will list these criteria across the top of the matrix.

Scoring: Students will rank each solution listed along the left column of the matrix five times—one for each of the five criteria. Use the scale below to rank their solutions. For example, if one of the criteria for evaluating the solutions is "the solution is cost-effective" then look at each solution and rank those in order from one to five. The solution that would be the most cost-effective would receive a score of five. The solution that would be the least cost effective would receive a score of one. The solutions in the middle would be ranked with

© 2016 Disney Enterprises, Inc.

scores between two and five. Do not give two solutions the same score.

Post the following ranking scale so students may refer to it during the activity:

1. The solution does not meet the criteria at all.
2. The solution somewhat meets the criteria.
3. The solution meets the criteria fairly well
4. The solution does a good job of meeting the criteria
5. The solution does an outstanding job of meeting the criteria.

WRAP UP: Once students have finished scoring each solution, they will fill in a total points column on the right side of the matrix by adding across each row. Ask students the following questions:

1. Which do you believe to be the best solution?
2. Is the solution that received the highest score from your group the one you believe to be the best? Why or why not?
3. Compare the results of your group with other groups. Did other groups select the same solution? Why or why not?

RESOURCES FOR TEACHERS

Websites

- Camera Trap Gallery http://www.wired.com/2013/02/camera-trap-gallery/
- National Zoo Panda Cam http://nationalzoo.si.edu/animals/webcams/giant-panda.cfm
- Nature Conservancy - China Biodiversity http://www.nature.org/media/china/chinabook-part1-lowres.pdf
- ABC News – Tracking China's Golden Snub-Nosed Monkey http://abcnews.go.com/blogs/lifestyle/2013/06/tracking-chinas-rare-golden-snub-nosed-monkey
- Stories of communities – including children – helping snow leopards https://www.worldwildlife.org/stories?species_id=snow-leopard
- WWF Together App http://www.worldwildlife.org/together

Books

- Cao, Debora. *Animals in China: Law and Society*. New York: Palgrave Macmillan Animal Ethics Series, 2015. ISBN-13: 9781137408013.
- Fox, Mary Virginia. *Satellites*. New York: Benchmark Books, 1996. ISBN-10: 0761400494
- Miller, G. Tyler & Spoolman, Scott E. *Environmental Science, 15th Edition*. Independence, KY: Cengage Learning, 2016.ISBN-13: 9781305090446
- Schwarzenbach, Alexis. *Saving the World's Wildlife: The WWF's First Fifty Years*. London: Profile Books, 2011.ISBN-10: 1846685303
- Zhi, Lu. *Giant Pandas in the Wild: Saving an Endangered Species*. New York: Aperture, 2005. ISBN-10: 0893819972

RESOURCES FOR STUDENTS:

Websites

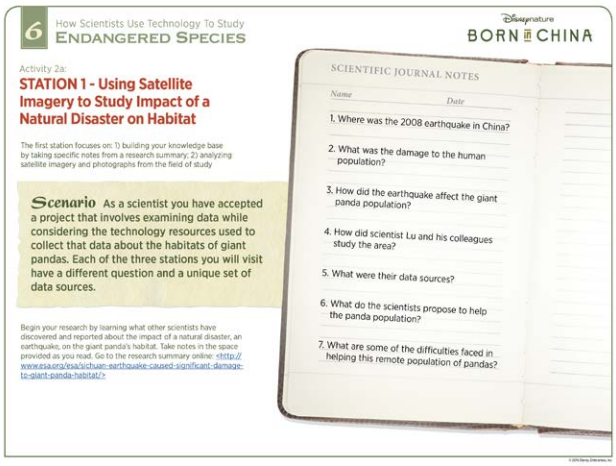
- World Wildlife Fund – Giant Panda http://www.worldwildlife.org/species/giant-panda
- Snow Leopard Conservancy http://snowleopardconservancy.org/about-us/
- Snow leopards https://www.worldwildlife.org/species/snow-leopard

Books

- Allen, Kathy. *Giant Pandas in a Shrinking Forest: A Cause and Effect Investigation*. Mankato, MN: Capstone Press, 2011.ISBN-10: 1429654015
- Burchett, Jan & Vogler, Sara. *Earthquake Rescue (Wild Rescue)*. Mankato, MN: Stone Arch Books, 2012. ISBN-10: 1434245926
- Imbriaco, Alison. (2006). *The Giant Panda: Help Save This Endangered Species!* Myre-portlinks.Com
- Kalman, Bobbie. *Endangered Pandas*. St. Catharines, ON: Crabtree Publishing Company, 2005. ISBN-10: 0778718581
- Montgomery, Sy. Photographs by Nic Bishop. *Saving the Ghosts of the Mountain: An Expedition Among Snow Leopards in Mongolia*. Boston, MA: HMH Books for Young Readers, 2009. ISBN-10: 0547727348
- Ripper, Chuck. *Golden Snub-Nosed Monkey, United Nations Endangered Species First Day Cover (FDC)*, Cheyenne, Wyoming: Fleetwood, 2004. ASIN: B00WFHIADA
- Scherer, Glenn and Fletcher, Marty. *The Snow Leopard: Help Save This Endangered Species!* 2007. ISBN-10: 1598450409
- Allen, Thomas B. *America From Space*. ON, Canada: Firefly Books, 1998. ISBN-10: 1552092801

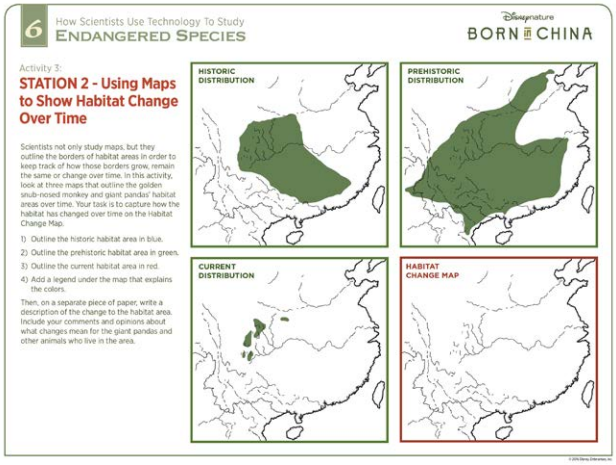
© 2016 Disney Enterprises, Inc.

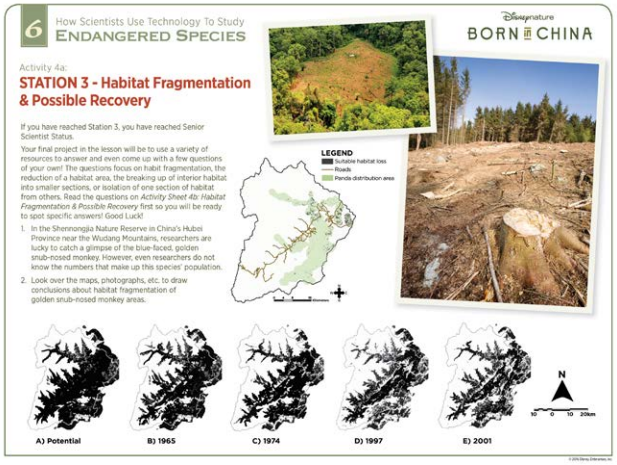
Lesson 6 PowerPoint Activities

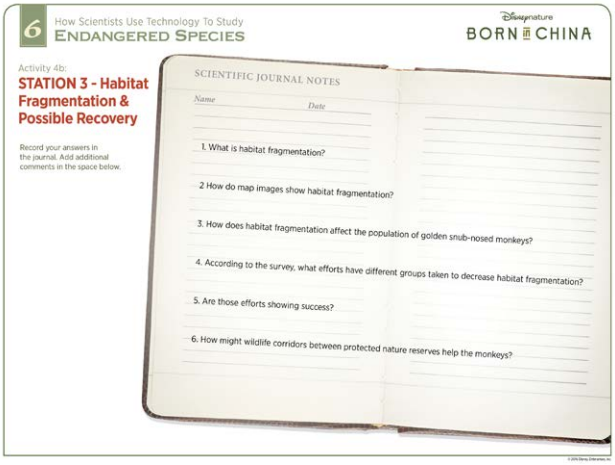


© 2016 Disney Enterprises, Inc.

Lesson 6 PowerPoint Activities continued







© 2016 Disney Enterprises, Inc.

LESSON 7

The Silk Road

诞生在中国

THEME	GRADE LEVEL	SUBJECT AREA	BACKGROUND INFORMATION
Culture	4–6	***Focus:*** Social Studies, Art & Math ***Extensions:*** Art, Language Arts & Math	Pages 6–7

VOCABULARY: *alpine steppes, caravan, culture, exchange rate, fecund prairies, landforms, merchant, monk, oasis, pilgrim, province, travelers, temperate deserts, temperate forests, temperate steppes*

STUDENTS WILL BE ABLE TO...

- Explain the significance of the Silk Road
- Discuss the flow of new materials and beliefs along the Silk Road
- Discuss the influence of the Silk Road in spreading ideas as well as goods
- Identify locations of cities and their trade products along the Silk Road
- Organize, develop, refine and complete artistic ideas and work
- Develop and refine artistic techniques for presentations
- Perceive, interpret, analyze and evaluate artistic work
- Synthesize, interpret and relate knowledge and personal experiences
- Make personal, cultural and global connections to art

**This lesson will take several days to complete; however, the time may be shortened by reducing the number of learning centers.*

WHAT YOU'LL NEED

- Chess pieces
- Mini drink umbrellas
- File folders (one for each student)
- Index cards with a spray of perfume
- Poster board
- Markers
- Raw noodles
- Stapler
- Tables for center work
- Disneynature **Born In China** coins (see Art & Math Extension)
- Each Activity Sheet lists materials for specific project
- The Silk Road PowerPoint:
  - *Activity Sheet 1: Silk Road Map*
  - *Activity Sheet 2: My Silk Road Travel Log*
  - *Activity Sheet 3a & b: City 1 - Chang'an*
  - *Activity Sheet 4a & b: City 2 - Lanzhou*
  - *Activity Sheet 5a & b: City 3 - Dunhuang*
  - *Activity Sheet 6a & b: City 4 - Korla*
  - *Activity Sheet 7a & b: City 5 - Samarkand*
  - *Activity Sheet 8a & b: City 6 - Merv*
  - *Activity Sheet 9a, b & c: City 7 - Antioch*

Ask students if they've ever been on a long car trip, perhaps across the country. What would it be like if they had to walk or ride a camel on a 7,000 mile trip? **Travelers** of the Silk Road in China had to make such a journey. Explain to students that the Silk Road was an ancient system of roads and travel paths that allowed traders and travelers to cross China to the lands beyond. The routes allowed for expansion of trading, communication and **culture**. In exchange for silk and other materials, trade goods included items such as gemstones, jade, gold, spices, horses, cattle and ivory. Inform students that completing a round trip journey on the Silk Road could take up to two years.

Discuss how the trade routes created a fluid network for the exchange of ideas, culture, music and art. Goods, inventions and beliefs were carried in the minds and saddle packs of travelers as they crossed the mountains and deserts of Central Asia, connecting East Asia to the Mediterranean. Remind students that most people only visited one or two cities before returning home. The extremes of geography along the routes illustrate the challenges of trade. Falling to 177 ft (154 meters) below sea level and rising to 24,278 ft (7,400 meters) above sea level, the routes touched great rivers, alpine lakes, crusty salt flats, vast deserts, snow-capped mountains and '**fecund**' prairies. The climate varied from extreme

© 2016 Disney Enterprises, Inc.

drought to semi-humid; while vegetation covered temperate forests, temperate deserts, temperate steppes, alpine steppes and **oases.**

GET STARTED

In order to better understand the dynamic flow of ideas and materials along the Silk Road, students will get to step into the shoes of travelers to experience the impact of traveling the road in three segments:

Segment 1: Preparing a City-Trading Center. Students will work in small groups to set up a learning station for each one of the seven cities along the Silk Road.

Segment 2: Traveling the Road. Students will take turns traveling the road by completing activities at seven City-Trading Centers.

Segment 3: Sharing Travel Experiences. Students will return to their original City-Trading Center and discuss the most memorable experiences that helped them understand how goods, materials and ideas traveled along the Silk Road.

STEP 1: Distribute *Activity Sheet 1*. The map will help students keep track of their learning experiences along the seven City-Trading Centers. Hand out copies of *Activity Sheet 2* that have been stapled to the front of file folders. Ask students to fill out the information on the left, and then look over the names of cities and stamps on the right. Explain that they will be saving activity sheets, related to learning experiences, in their folders. As each activity is completed, they will check off the travel stamp for each City-Trading Center on their Travel Log.

STEP 2: Students will work in seven small groups to set-up a learning station for each one of the cities along The Silk Road. Divide the class into seven small groups, one for each City-Trading Center. Give each small group one of the activity sheets for their assigned city:

City 1: **Chang'an** - *Activity Sheet 3a & b*

City 2: **Lanzhou** - *Activity Sheet 4a & b*

City 3: **Dunhuang** - *Activity Sheet 5a & b*

City 4: **Korla** - *Activity Sheet 6a & b*

City 5: **Samarkand** - *Activity Sheet 7a & b*

City 6: **Merv** - *Activity Sheet 8a & b*

City 7: **Antioch** - *Activity Sheet 9a, b & c*

Each small group will become experts on their city by: a) learning about the city from the information provided, b) trying out the suggested activity so they can help other "travelers," who will visit their learning center, c) making a poster about their city to display at their center, d) managing the activity table and the materials at their center, including pricing articles for sale.

Scatter a few of the following items in some of the centers: index cards with a spray of perfume; chess pieces; mini drink umbrellas, noodles. Place a "Free" sign in front of the items. See how many of the items "spread" across the cities. This demonstrates how traders picked up and spread ideas, inventions and goods simply by traveling the Silk Road.

STEP 3: Students will take turns running the center (2 at a time) and traveling the road by completing activities at six other City-Trading Centers. Explain that as they visit each center, they will find out what different types of travelers would find interesting at each stop. These travelers include: traders, archaeologists, historians, poets, storytellers, artists, scholars, inventors, musicians, pilgrims and monks. Set the mood by playing music from China while students are visiting the centers: Chinese Classical Orchestra

- https://m.youtube.com/watch?v=Nmm3kMI1t3M
- https://m.youtube.com/watch?v=9UC-Clb5r3I

Be sure to help students take turns in playing the role of the City-Trading Center hosts and the travelers on the Silk Road.

Each traveler should be given a number of **Disneynature BORN IN CHINA** coins according to the possible wealth of their character. Students can decide which kind of traveler would most likely be wealthy and which might have very little money.

© 2016 Disney Enterprises, Inc.

7 THE SILK ROAD

诞生在中国

At the end of each time period, discuss students' progress in visiting each City-Trading Center. Make note of the art and projects they are creating, what articles they purchased and what they were able to sell or trade. Assemble their projects in a display area, but whenever they travel the road, they must take everything they've made or collected with them. (This helps students understand the importance of portability, size, and durability of goods).

STEP 4: Students will return to their original City-Trading Center and discuss the most memorable experiences they had while traveling that helped them understand how goods, materials and ideas traveled along the Silk Road. They will also determine whether or not they made a profit from their trading activities and take inventory of their current possessions.

WRAP UP: Guide the closing conversation with the following debriefing topics:

a. How easy was it to help travelers learn to do the activity at your center?

b. Which activity taught you the most about gaining knowledge by traveling on the Silk Road?

c. What was the hardest item to take with you on your journey? What does that say about the importance of portability of items?

d. How many travelers picked up free items along the way? How might that relate to the spread of goods, ideas, inventions on the Silk Road?

e. Which type of traveler do you think learned the most on the Silk Road: *traders, archaeologists, historians, poets, storytellers, artists, scholars, inventors, musicians, pilgrims or spice traders?*

f. Which type of traveler do you think profited (economically) the most from their travels along the Silk Road?

KEEP GOING

Enrich students' insights into the Silk Road with extension activities from different content areas.

SOCIAL STUDIES: Explore the Modern Silk Road

Decide on a product, such as a t-shirt, that you think could be or is marketed, sold or bartered along the Silk Road of today. You may also choose to explore the route of a new product from source of origin to the marketplace and to you (e.g., oil, clothing, technology.) How does the item move from production to market to buyers? What are potential dangers or detours? Are there any barriers, political unrest or economic challenges? Use online resources to complete your exploration. You may also conduct interviews with local business people to learn how their products get to their shops. What components make up the modern Silk Road? Write up your findings in a flow chart and share your findings with the class.

LANGUAGE ARTS: And Ode to Smell

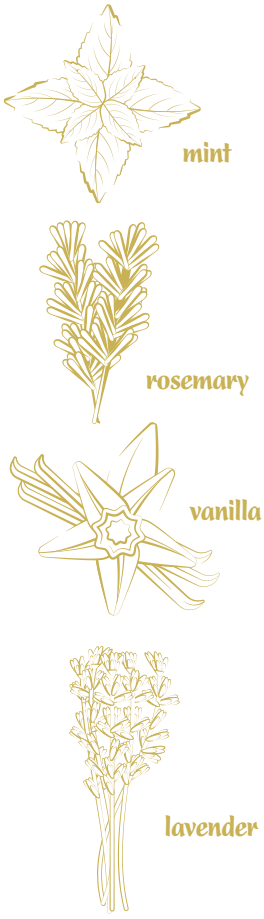
An ode is a poem that is written to lavish praise (deserved or undeserved) on a person, place, thing, or event. An Irregular Ode is a form of poetry that is written without specific meter or rhyme scheme. The focus is on using free verse to express the virtues or theme of the topic.

The topic, in keeping with the focus of the Silk Road activities, is on the aromas to be enjoyed with an aromatherapy ingredient.

You'll Need: peppermint, rosemary, vanilla, lavender, paper, pencil or pens.

STEP 1: Smell the different fragrances and select one that smells the most appealing to you.

STEP 2: Go online and find an aromatherapy website that explains what the scent may evoke or do when you smell it. For example, rosemary may improve your ability to remember events or tasks that you have to accomplish.



STEP 3: Make a list of six things about the scent you have selected. How does it make you feel? Does it remind you of anything else you have experienced? How is the fragrance supposed to help you? What does the ingredient look like?

STEP 4: Write a short sentence that praises each thing on your list of six. Give as much detail or sensory images that will help readers appreciate the depth of your experience. But keep in mind that odes are meant to be succinct, so on your final edit, tinker with over-flowery words.

STEP 5: Give your ode a title. Sprinkle some of the fragrance onto the paper. Share your ode with a classmate and see if they can appreciate and understand the praise you have given your fragrance.

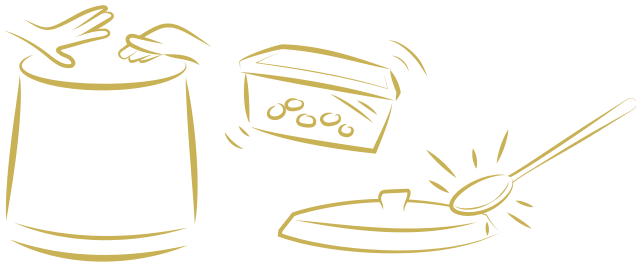
MUSIC: Drum Circle Experience

Students will assemble percussion instruments and participate in a drum

© 2016 Disney Enterprises, Inc.

7 THE SILK ROAD

诞生在中国



circle that represents the joy of music as celebrated along the Silk Road.

You'll Need: drums - plastic buckets that hold 1 quart, 1/2 gallon, 1 gallon or 5 gallons of liquid; shakers - plastic containers with snap on lids and that hold 1/2 pint or 1 pint of liquid, small pebbles, marbles, nuts & bolts, washers, clear packing tape; cymbals - lids from old pots and pans, wooden spoons, pencils, small dowels; and black markers

STEP 1: Make percussion instruments. Students will decide which instruments they will make: drums, shakers or cymbals.

a. To make drums turn upside-down plastic buckets or other similar containers in various sizes listed above. These buckets can be recycled food containers or plastic utility buckets, etc. The "drum head" is the bottom of the bucket.

b. To make shakers fill the small plastic containers with various shaking materials listed above. Use clear packing tape to seal the lid on the "shaker" containers.

c. To make cymbals use the lids from pots and pans. Use wooden spoons, pencils and small dowels as strikers for the cymbals.

d. Decorate the percussion instruments with markers. Designs may include animals from **Disneynature BORN IN CHINA**. Consider going online and finding the Chinese characters representing music for students to write on their instruments.

STEP 2: Invite students to join a percussion orchestra that is arranged in a circle. Provide an example, https://www.youtube.com/watch?v=9Eplmop9NHE&index=2&list=RDk29u967cuv4.

Organize the seating in the circle by instrument type, so that students playing similar instruments are sitting next to each other (e.g., all cymbals next to each other, all shakers next to each other, all small drums, all medium drums, etc.).

STEP 3: *Drum Circle Chant 1* – The object of this activity is for the students to play the instruments in unison, following a steady beat. The leader of the chant goes to the middle of the circle with an instrument in hand (the first time through, the teacher may need to be the leader, but subsequently anyone can lead). The leader chants in a steady rhythm the following: "Everyone play your *Drum*, play your *Drum*, play your *Drum*." Students in the drum circle strike their instrument whenever they hear the word "*Drum*". As the chant repeats, the leader can change the speed of the beat, as well as the words of the chant. Improvise. Have fun!

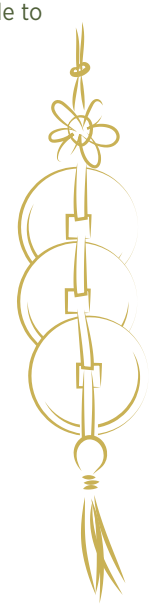
STEP 4: *Drum Circle "Rumble" 2* – Help students discover how to make steady, continuous sounds on their instruments and follow conductors' signals.

Shakers can make continuous sounds by rapidly moving the hand and arm back and forth. Rattle drums can make continuous sounds by moving the stick back and forth between fingers or palms. Drums can make continuous sounds by using both hands (or sticks) to rapidly strike the head. Cymbals can make continuous sounds by rattling two lids together, or using a stick to rapidly strike the lid.

Explain that the leader will stand inside the drum circle with arms outspread to point at specific spots along the circle. The leader may use one arm to point at individuals or a wider span with both arms. Rumble rules state that if a student is within the pointing range, they should play their instrument. If not, they should wait. If the leader raises arms higher, children should play their instruments louder. If the leader lowers their arms, children should play softer.

The leader "conducts" the rumble by turning within the circle, widening and narrowing the range of their arms, sometimes pointing at individuals, sometimes using both arms to indicate a range. Turning in slow (or fast) circles will produce interesting sounds. Students discuss the differences in sound as the rumble progresses.

STEP 5: Close by discussing the sense of purpose and community shared by members of the drum circle. By working together and following the conductor they were able to make memorable music, but more importantly they shared a musical moment. Invite students to imagine the camaraderie shared by travelers along the Silk Road when they shared in a community of music making.



ART & MATH: Make and Exchange Coins on the Silk Road

You'll Need: light colored cardboard or heavy construction paper, crayons, markers, scissors, yarn or ribbon

STEP 1: Make copies of the coin pattern, or have students trace or draw the coin pattern onto light colored paper or cardboard. They should make at least three coins.

STEP 2: Students cut out the coins. Then cut a square opening in the center.

© 2016 Disney Enterprises, Inc.

7 The Silk Road

诞生在中国

STEP 3: Students look at examples of ancient coins and color their set of coins. They decorate their coins, drawing at least one **Disneynature BORN IN CHINA** animal on each coin. They may also add Chinese characters that represent what each coin is worth.

STEP 4: Students thread a length of yarn or ribbon through the centers of the coins as indicated in the example and tie them off.

STEP 5: Students discuss how they might give and make change when using coins on the Silk Road. How many snow leopard coins might it take to make one giant panda coin?

The following are possible coin **exchange rates** that could be used when using these coins to buy and sell goods along the Silk Road:

1 Giant Panda = 5 Snub-Nosed Monkeys (SNM)

1 Snow Leopard (SL) = 3 Snub-Nosed Monkeys

1 Snub-Nosed Monkey = 4 Red-Crowned Cranes

1 Red-crowned Crane = 2 Snakes (SK)

How many Red-crowned Crane coins would equal 1 Giant Panda coin? (4x5=20)

How many Giant Panda coins would equal 5 Snow Leopard coins? (3, 5 SL = 3*5=15 SNM = 3 Giant Panda)

How many snake coins would equal 1 Snow Leopard? (24, 8SK=1SNM, 3SNM=1SL so 3x8=24)

Can you exchange 1 Giant Panda coin for Snow Leopard coins only? (No) What combination of coins that includes a SL coin could be exchanged for 1 Giant Panda coin? (1SL + 2 SNM or 1 SL + 1 SNM + 4 cranes or 1 SL + 8 cranes etc.)

Coin pattern

RESOURCES FOR TEACHERS

Books

- Hansen, Valerie. *The Silk Road: A New History*. London: Oxford University Press, 2012. ISBN-13: 978-0195159318
- Liu, Xinru. *The Silk Road in World History*. London: Oxford University Press, 2010. ISBN-13: 978-0195338102

RESOURCES FOR STUDENTS:

Books

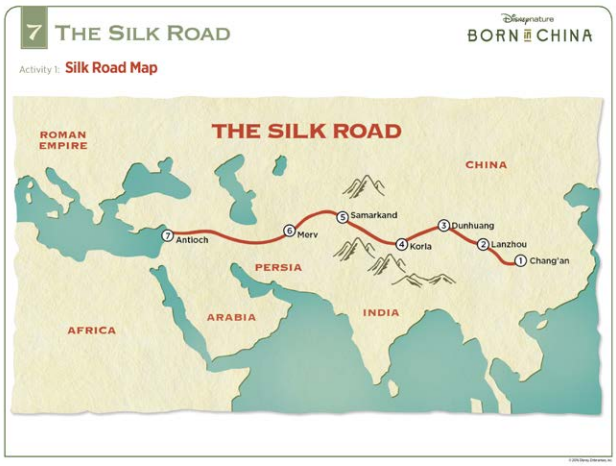
- Christensen, Bonnie. *A Single Pebble: A Story of the Silk Road*. Roaring Brook Press, 2013. ISBN-13: 978-1596437159
- Galloway, Priscilla & and Dawn Hunter. *Adventures on the Ancient Silk Road*. Annick Press, 2009. ISBN-13: 978-1554511976
- Kang, Hildi. *Chengli and the Silk Road Caravan*. Tanglewood Press, 2011. ISBN-13: 978-1933718781

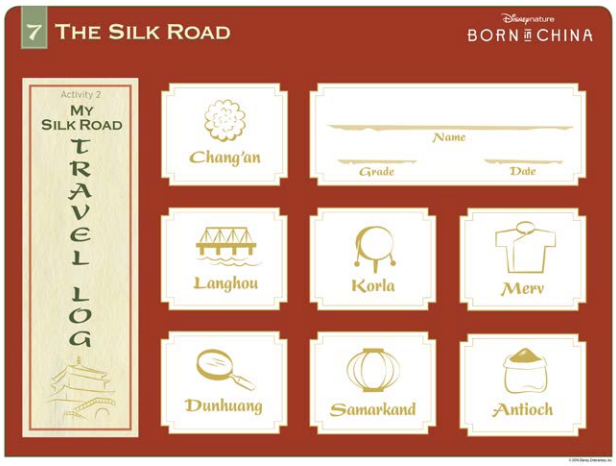
Music

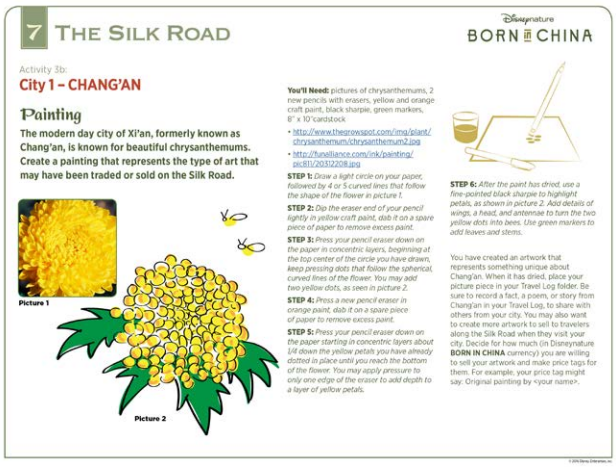
- Ma, Yo-YO. *The Silk Road: A Musical Caravan*. Smithsonian Folkways Recordings, 2002. CD.

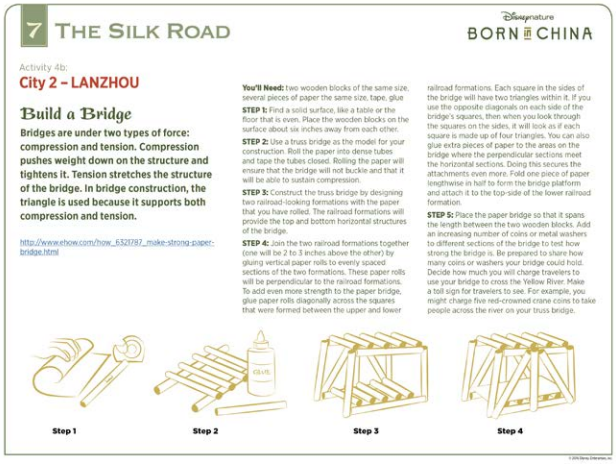
© 2016 Disney Enterprises, Inc.

Lesson 7 PowerPoint Activities





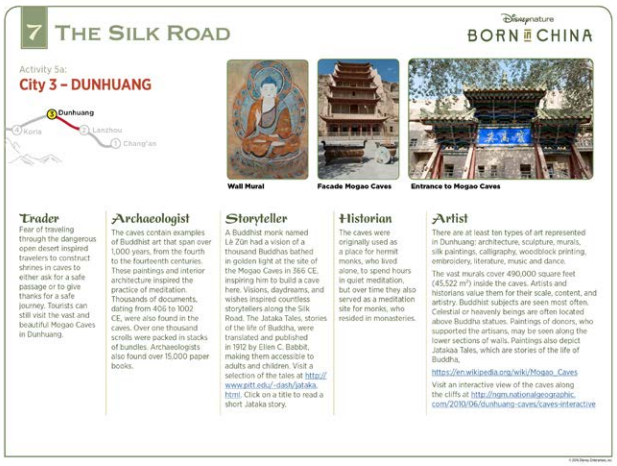


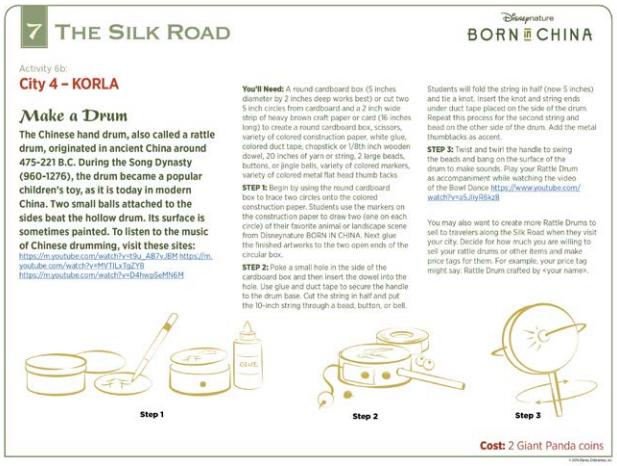


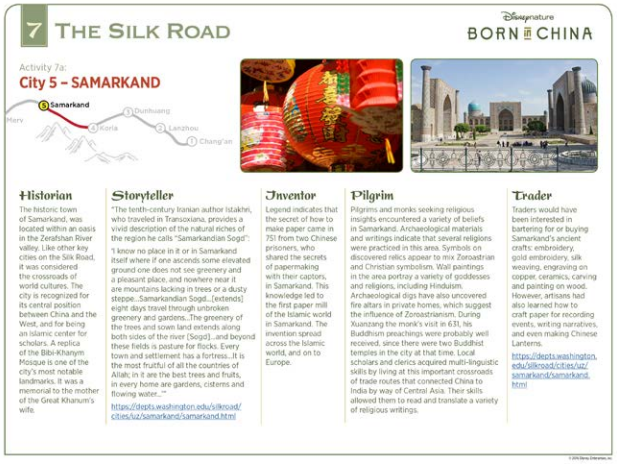
Disneynature
BORN IN CHINA

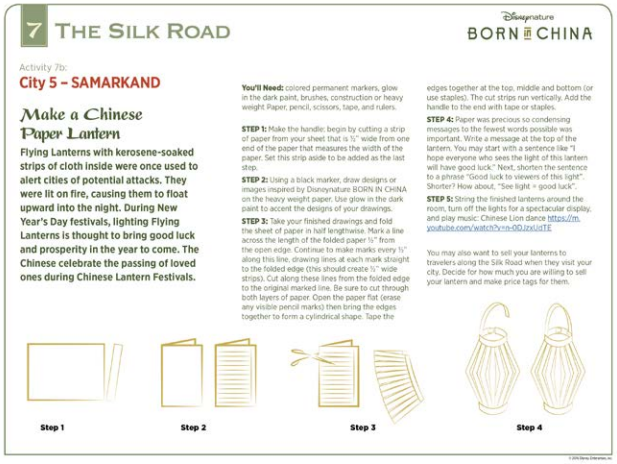
© 2016 Disney Enterprises, Inc.

Lesson 7 PowerPoint Activities continued



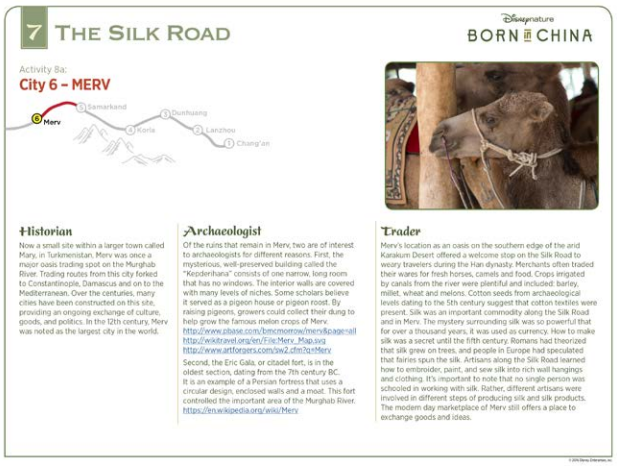


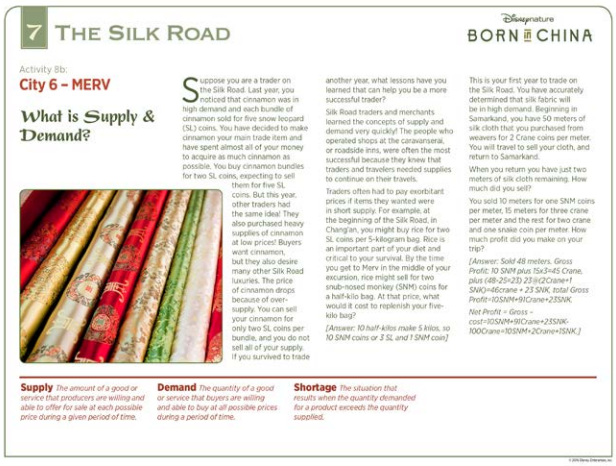


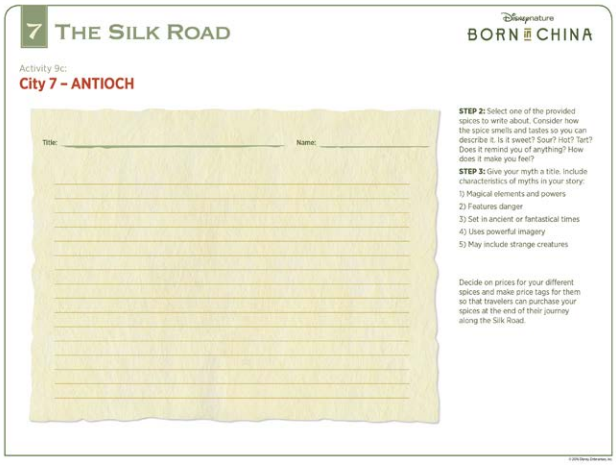


© 2016 Disney Enterprises, Inc.

Lesson 7 PowerPoint Activities continued







Disneynature
BORN IN CHINA

© 2016 Disney Enterprises, Inc.

Keyword Glossary

诞生在中国

Adaptation: a trait that helps an organism or species survive in its environment.

Alpine steppes: elevated, flat, un-forested grassland habitat.

Altitude: the height of an object or point above sea level.

Antonym: a word that has opposite meaning to another word

Bamboo: a fast growing grass found in tropical or temperate regions.

Camouflage: something such as shape or color that protects an animal from attack by making the animal difficult to see.

Caravan: a group of people or animals traveling on a long journey together.

Carrying capacity: the limit to which an environment can support wildlife based on the amount of natural resources available.

Classification: grouping organisms based upon similar characteristics or appearances.

Climate: a constant weather pattern for a particular location.

Complementary antonym: pair of words with opposite meanings with no middle ground; it is either one or the other.

Contrast: to compare two things that are clearly different from each other.

Conservation: the protection and preservation of plants, animals and the natural world.

Corridors: narrow strips of habitat that act as passage ways or bridges to connect separate patches of habitat.

Culture: the beliefs, customs, way of life, art, music, etc., of a particular society, group, place, or time.

Deforestation: the act of cutting or clearing a primarily tree covered area.

Density: the degree to which matter is compacted together; density equals mass of a substance divided by the unit of volume.

Description: a statement that explains the physical characteristics of something.

Digits: fingers or toes.

Documentation: a recording of information to be referred upon another time.

Elevation: an object's height above a certain point.

Elusive: something that is hard to find, capture or comprehend.

Endangered: a label given to a species by the International Union for Conservation of Nature when a species is threatened by extinction.

Environment: surroundings and conditions within a specific area, including factors that can influence a plant or animal's survival.

Exchange Rate: a number used to calculate the difference in currency between regions or cultures.

Extinct: none left in existence; no longer living in the wild or in captivity.

Fragmentation: breaking down into smaller segments.

Fecund prairies: fertile grassland.

Functional: of or having practical use or purpose.

Graded antonym: opposite words that have a range of other words between them; for instance rating something as either excellent, good, satisfied, bad or awful.

Habitat: a place where plants and animals have everything they need to survive.

Insulation: materials used to prevent the loss of heat.

Invertebrate: an animal that lacks a spine and typically has some kind of outer shell.

Jianzhi: ancient art of paper cutting.

Joint: the thin, rough line connecting bamboo stalks where buds grow and develop into a branch; also known as a node.

Landforms: different natural formations such as mountains, rivers and valleys that can be found on Earth's surface.

Limiting factor: a resource an organism needs to survive; the amount of this resource available helps regulate a sustainable population of those organisms.

Mammal: warm-blooded animals with backbones and hair that typically give birth to live young and produce milk to feed offspring.

Merchant: someone who buys goods in large quantities to sell for a profit.

Mindfulness: a state of awareness of an individuals thoughts, emotions and actions without judging them as good or bad.

Monk: a member of a religious community of men typically living under vows of poverty, chastity and obedience.

Navigate: how an animal finds its way to a different location or position.

Negative space: when the 2-dimentional background space around an art subject makes an interesting shape.

Offspring: the reproductive young of a plant or animal.

Oasis: a lush area with vegetation and water surrounded by a desert.

Persuasive: to convince another to believe or act in a certain way.

Pilgrim: a religious person traveling towards a holy place.

Pores: small openings on a surface that allows liquid, gases or small particles to pass through.

Porous: a material that has lots of tiny holes, which allows liquid or air to pass through.

Pose: to hold a particular body movement.

Positive space: the space taken up by the main subject of an art piece.

Province: a region divided from a large country; this territory has its own responsibilities or special interest.

Pseudo: fake or not genuine.

Reclusive: to be withdrawn; to live a solitary life; to be alone.

Relational antonym: opposite words that have an evident connection or association; one cannot exist without the other.

Research site: the location where one carefully studies a subject to gain new knowledge.

Satellite: a machine that has been sent to space to transmit information back to Earth for further research or study.

Species: a group of similar plants or animals that can reproduce young.

Stalking: when a predator will slowly follow prey or watch them before making their move of attack.

Sustainable: to use a natural resource without depleting it.

Temperate deserts: region known for very hot days and summers, very cold nights and winters and little rainfall.

Temperate forest: a forested region that experiences all four seasons and drastic weather changes.

Temperate steppes: region known for little rainfall, high evaporation rate, hot summers, cold winters and low vegetation productivity.

Territorial: an animal that is protective towards something they feel they have claimed as their own.

Travelers: a group of people that go on long journeys together and often do not stay in one place long.

Vertebrate: an animal that has a spine.

Vulnerable: a label given to a species by the International Union for Conservation of Nature when a noticeable amount of the population is declining and at risk of becoming an endangered species.

Warm-blooded: having a relatively constant body temperature, typically independent to the surrounding environment, resulting from having a means to produce one's own heat and control one's body temperature.

Waterproof: when something does not allow water to enter, pass through or remove it

Yang: one of the opposite segments of nature that when together with yin they form the universe; represented by light.

Yin: one of the opposite segments of nature that when together with yang they form the universe; represented by dark.

http://www.merriam-webster.com

© 2016 Disney Enterprises, Inc.