



PROMOTES
STEAM-BASED
LEARNING CONCEPTS
AND CURRICULUMS!

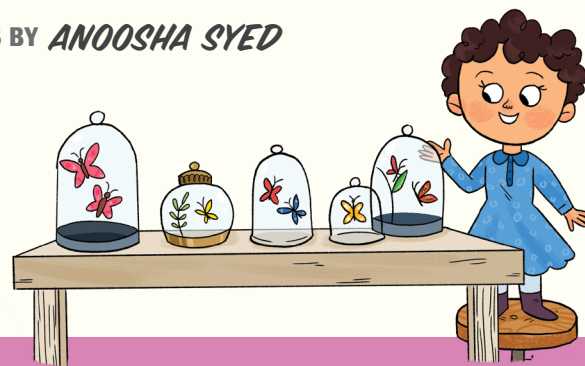
KID SCIENTISTS

TRUE TALES OF CHILDHOOD FROM

★ SCIENCE SUPERSTARS ★

CURRICULUM GUIDE

STORIES BY *DAVID STABLER* ILLUSTRATIONS BY *ANOOSHA SYED*



COMMON CORE CONNECTIONS

Kid Scientists: True Tales of Childhood from Science Superstars contains kid-friendly and relatable childhood stories of sixteen of the world's most important and innovative scientists. This curriculum guide, with connections to the Common Core, includes an array of language arts activities, book discussions, vocabulary instruction, and more to accommodate the learning needs of most students in grades 4-7. Students are asked to be careful readers without jeopardizing the fun of reading.

Noted throughout the guide are correlations between the activities and specific Common Core Language Arts Standards. For more information on specific standards, visit the Common Core website at www.corestandards.org.

* PRE-READING BLUEPRINTS *

Previewing the text helps students understand the informational purpose of the book. Key characteristics of the text include the titles, table of contents, use of illustrations, chapter headings, bibliography, and index. Ask students to compare and contrast the format of *Kid Scientists* with that of a narrative book.

Have students look at the *Kid Scientists* Table of Contents to choose a scientist featured in the book. Then ask them to use the internet to research their scientist to find five facts about him or her they find interesting. Invite students to present their findings with the class. To extend this activity to a post-reading activity, have students go back and check and to see how many of their fun facts were mentioned in the book.

Ask your class the following questions. Have students brainstorm, and then call on individual students to answer and write their answers on the board.

- * List three words that you associate with scientists and inventors.
- * How do you think a person becomes an inventor or scientist?
- * Think of a famous scientist or inventor. What do you think he or she was like as a child?
- * List as many branches of science and math as you can in two minutes.
- * Why are science, technology, engineering, and math important in today's world?
- * List five ways a scientist can get ideas for his or her inventions or scientific breakthroughs.
- * What characteristics do you think a brilliant scientist needs to possess? Why?
- * Which scientist or inventor featured in *Kid Scientists* are you most interested in learning about? Why?
- * Have you ever thought about the person who invented your favorite things or the breakthroughs that have helped to make your life easier?
- * What scientist or inventor would you like to know more about?
- * How do scientists and inventors contribute to the world?
- * How do you think an inventor comes up with his or her inventions?
- * What is one thing you wish you had invented? Why?
- * If you could invent something that doesn't exist yet, what would it be?
- * Write a paragraph on why you think it's important to learn about scientists' backgrounds.

PRE-READING COMMON CORE CONNECTIONS

The Pre-Reading Blueprints address the following Common Core State Standards:

WRITING:

Text Types and Purposes

Grade 4 – W.4.1-3e

Grade 5 – W.5.1-3e

Grade 6 – W.6.1-3.e

Grade 7 – W.7.1-1c, 2-2d, 3-3e

Research to Build and Present Knowledge

Grade 4 – W.4.7-9b

Grade 5 – W.5.7-9b

Grade 6 – W.6.7-9

Grade 7 – W.7.7-9a

SPEAKING AND LISTENING:

Comprehension and Collaboration

Grade 4 – SL.4.1-2

Grade 5 – SL.5.1-1d

Grade 6 – SL.6.1-2

Grade 7 – SL.7.1

Presentation of Knowledge and Ideas

Grade 4 – SL.4.4-6

Grade 5 – SL.5.4-5

Grade 6 – SL.6.4-5

Grade 7 – SL.7.4-5

★ INNOVATIVE DISCUSSION QUESTIONS ★

- ★ Why was Katherine Johnson awarded the U.S. Presidential Medal of Freedom?
- ★ Many adults were convinced Vera Rubin should not become an astronomer. Explain how she proved them wrong.
- ★ In what ways did Sally Ride's early love of sports prepare her for her future as an astronaut?
- ★ How did Neil deGrasse Tyson end up as one of the world's best astrophysicists even though he was not a great student as a young boy?
- ★ In what ways did the kidnapping of George Washington Carver change his life?
- ★ How did Rachel Carson's childhood love of both nature and literature shape her life?
- ★ Give three examples of how Jane Goodall's family contributed to her scientific successes.
- ★ In what ways did autism, a disorder that most people view as a hindrance, help Temple Grandin become a successful inventor?
- ★ How did being smart as a young boy both help and hurt Issac Newton?
- ★ What role did Marie Curie's Polish heritage play in her personal, academic, and professional lives?
- ★ Albert Einstein once said that "wisdom is not a product of schooling but of the lifelong attempt to acquire it." In what ways is this statement a reflection of his young life?
- ★ Why didn't Rosalind Franklin receive recognition for her contributions to science until after her death?
- ★ Give three examples of how, as a boy, Benjamin Franklin found new solutions to old problems.
- ★ In what ways did Ada Lovelace combine her loves of poetry and science to become one of the most important contributors to the fields of science, technology, engineering, and math?
- ★ In what ways did Nikola Tesla prove to be "a child of the light"?
- ★ Explain how Stephen Hawking became one of the world's most brilliant theoretical physicists.
- ★ Compare and contrast two kid scientists' childhoods and explain how each one's upbringing contributed to his or her future successes.
- ★ What do the scientists in each of the four parts of the book—Part One: Reaching for the Stars, Part Two: Green Thumbs and Animal Lovers, Part Three: The Invisible Forces, and Part Four: Do It Yourself—all have in common? Why did the author set the book up this way?
- ★ List all sixteen scientists featured in *Kid Scientists*. Then write down at least one scientific achievement each one is known for.
- ★ Which invention or scientific contribution featured in *Kid Scientists* do you think is the most groundbreaking? Why?
- ★ Using examples from the book, explain how you relate to one of the scientists in *Kid Scientists*.
- ★ Choose three scientists highlighted in *Kid Scientists* and explain how their scientific breakthroughs are still significant today.

DISCUSSION QUESTIONS COMMON CORE CONNECTIONS

The Innovative Discussion Questions address the following Common Core State Standards for **Reading Informational Text**:

Key Ideas and Details

Grade 4 – RI.4.1–3
Grade 5 – RI.5.1–3
Grade 6 – RI.6.1–3
Grade 7 – RI.7.1–3

Craft and Structure

Grade 4 – RI.4.4–6
Grade 5 – RI.5.4–6
Grade 6 – RI.6.4–6
Grade 7 – RI.7.6

Integration of Knowledge and Ideas

Grade 4 – RI.4.7, 9
Grade 5 – RI.5.9
Grade 6 – RI.6.9
Grade 7 – RI.7.9

Range of Reading Level of Text Complexity

Grade 4 – RI.4.10
Grade 5 – RI.5.10

★ VISIONARY VOCABULARY ★

Review this list of vocabulary words that are found throughout *Kid Scientists*. First ask students if they can guess the meaning by rereading each word in the context of the story. Then have them use dictionaries to check themselves and/or define the word. Also have them use each word in a sentence of their own. Since there are so many vocabulary words, you may choose to review these words over a few class periods and assign some for homework. You can also use them for your weekly list, daily word study, or spelling exercises.

Katherine Johnson: You Can Count on Me

calculations
guidance
develop
prejudice
heroin
humanity
inherited
knack
genius
regretted
enthusiasm
attend
progress
impression
advantages
permitted
uncertain
segregated
expected
sacrifice
interruption
capacity
various
constellations
astronomy
countess
transfixed
native
intimidated
historically
pupil
pioneer
notoriously
furiously
relished
excel

Vera Rubin: Galaxy Girl

fascination
astronomer
gazing
telescope
overcame
engineer
exhibits
aluminum
pedestal
unexpected
residents

dazzled
kaleidoscope
polished
cylinder
interior
reflectors
mesmerized
meteors
streaking
inky
orbiting
scold
celestial
observations
linoleum
persuaded
amateur
lecture
estimate
convertible
lack
prominent
dismissed
degree
breakthroughs
galaxies
dark matter
governs
controversial
compliment
debt

Sally Ride: Team Player

determination
invaluable
vault
immigrants
restrictions
convince
casserole
devouring
statistics
terrorize
navigator
foreign
distracted
dull
intervene
encouragement
pursue
recalled

atomic
prestigious
amassed
physiology
biology
organisms
haul
devote
laboratory
competitive
commander
competent
prodigy

Neil deGrasse Tyson: Look Up!

passion
vast
domed
amphitheater
booming
waxed
vaporized
encounter
planetarium
simulation
piqued
subway
distinguished
socializing
potential
binoculars
craters
magnified
infinitely
majestic
outstretched
chipped
artillery
extension cord
arouse
expedition
complex
marveled
poised
astrophysicist
renowned
enrolling
quarks
black hole
respected

George Washington Carver: The Plant Whisperer

trailblazing
botanist
crops
enslavement
immortality
frontiersman
immigrated
waning
bushwhackers
brazen
objected
abducted
raid
scout
whooping cough
reunited
abolished
aftereffects
bout
crochet
snickered
dubbed
venture
abundant
sought
specimens
inspection
inquisitive
constant
possessions
lodging
kindling
midwife
herbs
blacksmith
agricultural
falsely
preach
patented
sentiment

Rachel Carson: A Sense of Wonder

legendary
pollution
impact
environment
insurance
keen

woodlands
diary
belched
rooting
fossilized
teemed
rural
processes
cocoon
metamorphose
seafaring
verse
inscribed
creatures
badges
runners-up
recounted
contributors
professional
safekeeping
dogfights
recreation
chronicled
temporarily
habits
praised
perfectionism
thesis
urged
recklessly
squander
aquatic
household

**Jane Goodall:
Bringing the Outdoors In**

habitat
commotion
swooped
swatted
boundaries
unearthed
exasperated
wriggling
stuffy
reluctantly
incident
henhouse
triumph
privacy
exultant
frantically
idyllic
menagerie
rambunctious
society
admission
donated
proceeds
charity

companion
ambitions
foremost
hesitation
nurture

**Temple Grandin:
Through an Animal's Eyes**

autism
manservants
indicated
epilepsy
sensory
onrushing
variety
continuously
enthralled
propeller
anxious
lash out
taunted
expelled
prance
bridle
unruly
filly
groom
chute
vaccination
hypersensitivity
grasped
motivate
advocate
humane

**Isaac Newton:
Underachiever No More**

underachiever
herding
confrontation
goofing
prematurely
elevated
infancy
drafty
geometric
replica
chisels
hatchet
sundial
apothecary
principles
ailments
novelty
new-fangled
contraption
miller
neglected
reputation
blustery

egged on
prevail
reserves
bloodthirsty
throng
triumphant
tormented
loafing
headmaster

**Marie Curie:
A Secret Education**

revolutionized
elements
radium
polonium
barometer
mineral
electroscope
apparatus
informal
re-enacting
citizens
patriots
monitored
nevertheless
devised
scheme
heritage
inspector
fluently
tasked
reciting
tuberculosis
leisurely
carefree
devoted
rafters
suspended
refreshed
rejuvenated
decree
historians
philosophers
independence
detection
numerous

Albert Einstein: Bad Albert

dismayed
oddly
monstrosity
eventually
noggin
specialist
proclaiming
relieved
rarely
motorized
confident

uttered
prone
hurled
confounded
tedious
navigational
drone
secondary
acquire

**Rosalind Franklin:
An Inquiring Mind**

inquiring
gender
apparent
skeptical
rebels
suffragist
cur
notorious
absolute
scandalous
alarmingly
invariably
pursuits
satisfying
squidgy
logical
envy
frail
resented
croquet
tadpoles
newt
thwarted
allies
resistance
biophysicist
structure

**Benjamin Franklin:
Father of Invention**

founding
bifocals
solution
tall-masted
minister
chandler
scum
vats
inventive
makeshift
wharf
pilfered
techniques
declassified
paddling
artificial
palette
prototype

reservations
strenuous
stake
downstream
foresight
prowess
onlookers
colonies
commonwealth
extolling
wholesome
statesman
constitution

Ada Lovelace: Poetical Scientist

poetical
flamboyant
playboy
prim
misadventures
parallelograms
rhombus
separated
stable
epic
vowed
accordingly
forbade
shorthand
stern

taskmaster
seeking
aliments
governesses
fiery
increasingly
munching
merely
smitten
anatomy
abroad
festooned
reprimanded
discontinue
blueprints
envisioned
enchantress

Nikola Tesla: Like Mother, Like Son

neon
orthodox
despite
ingenuity
four-poster
hinges
churning
aftermath
scraps
severe

prospect
trundled
sturdy
placidly
bulged
belfry
salvo
musketry
tattered
feat
regain
arose
unveiling
anticipation
nozzle
suction
torrent
harness
gadget
generated
junebug
whirled
appalling
terminated
endeavors
distraught
contained
ushered
turbine

Stephen Hawking: The Boy Builder

balsa wood
raging
campaign
survey
rubble
repaired
glittering
withdrew
occasions
scraped
opulent
prefabricated
aghast
uncoordinated
garbled
underestimated
elaborate
medieval
treaties
budgets
amplifier
accompany
lively
credited
switchboard
soldering

After your class is familiar with the vocabulary list, invite them to choose 15 to 20 words and use them to write their own short stories featuring a scientific breakthrough or invention they wish could make one day.

VOCABULARY COMMON CORE CONNECTIONS

The Visionary Vocabulary activities address the following Common Core State Standards for **Language**:

Conventions of Standard English

Grade 4 – L.4.1-2
Grade 5 – L.5.1-2
Grade 6 – L.6.1-2
Grade 7 – L.7.1-2

Knowledge of Language

Grade 4 – L.4.3
Grade 5 – L.5.3
Grade 6 – L.6.3
Grade 7 – L.7.3

Vocabulary Acquisition and Use

Grade 4 – L.4.4-6
Grade 5 – L.5.4-6
Grade 6 – L.6.4-6
Grade 7 – L.7.4-6

✧ TRAILBLAZING LANGUAGE ARTS AND STEAM-BASED ACTIVITIES ✧

Brainy Business Cards

Instruct your class to make business cards for the scientists featured in *Kid Scientists*. Traditional business cards measure 3.5 inches by 2 inches. Using the pictures and facts found in the biographies and on the internet, have students research the scientists' lives and work. Then have them create cards featuring facts about a scientist on one side and his or her greatest inventions, achievements, and scientific contributions on the other. Have students present their cards to the class.

Life-Sized Scientists

Split your students into groups and assign (or let them choose) a figure featured in *Kid Scientists*. Have them research how tall he or she was. Next, using rolls of kraft paper and measuring tape, instruct them to measure out their scientist's height and draw a likeness of him or her. Then have students hang up their creations and take turns measuring and marking one another's heights on the paper next to the scientist. Finally, have students figure out the difference between the scientist's height and their own.

Innovative Investigators

Tell your students to become reporters for the day. Ask them to choose a figure from *Kid Scientists* to investigate. Then have them use material from the book and do so outside research to create an informational piece about an event or achievement from that scientist's life to share with the class. Their piece can take the form of a traditional magazine or newspaper article, blog or vlog post, podcast, or television segment.

Selling Science

Have your students create a brochure advertising an invention featured in *Kid Scientists*. Invite them to illustrate their brochure with drawings or pictures of the inventor and invention, and then write blurbs about how and why it was invented, what it does, and how it helps people. Spark creativity by encouraging them to create testimonials from people who like the invention, to list its uses and awards, and to say where to buy it. After

everyone is finished, hang up the brochures to inform other classes about these groundbreaking inventions!

Invention Replication

Divide your students into teams, and then ask them to make a list of all of the inventions in *Kid Scientists* by skimming the book. Then have them choose one invention and replicate it. Students can make the item or a working model of it. Encourage students not to be discouraged by emphasizing the importance of trial and error. After they finish, hold a science and technology fair where teams can showcase their inventions.

Clever Comparisons

There are now five books in the Kid Legends series: *Kid Scientists*, *Kid Authors*, *Kid Presidents*, *Kid Athletes*, and *Kid Artists*. Have students choose one scientist and another person featured in another Kid Legends book. Then have the children compare and contrast the two figures by listing things they have in common and things about them that are different. Spark interest by suggesting they look at: why each person is famous, their career, their family life, things that inspired them, childhood experiences, how they overcame obstacles, and what they are remembered for today. Instruct students to use their lists to help them write a compare-and-contrast essay.

Scientific Shark Tank

Divide students into teams. Invite each team to brainstorm about a common problem that needs a solution. Then, using *Kid Scientists* as inspiration, ask them to invent something that solves the problem. Let them create a prototype of their invention as well as a presentation in the form of a pitch that highlights the benefits of their invention, the problems it solves, how it can be built, and how it can help people. Invite faculty and staff to listen to the teams' pitches and vote to "invest" in inventions they like.

LANGUAGE ARTS ACTIVITIES COMMON CORE CONNECTIONS

The Trailblazing Language Arts **STEAM-Based** Activities address the following Common Core State Standards:

WRITING:

Text Types and Purposes

- Grade 4 – W.4.1-3e
- Grade 5 – W.5.1-3e
- Grade 6 – W.6.1-3.e
- Grade 7 – W.7.1-1c, 2-2d, 3-3e

Production and Distribution of Writing

- Grade 4 – W.4.4-6
- Grade 5 – W.5.4-6
- Grade 6 – W.6.4-5
- Grade 7 – W.7.4-6

Research to Build and Present Knowledge

- Grade 4 – W.4.7-9b
- Grade 5 – W.5.7-9b

Grade 6 – W.6.7-9

Grade 7 – W.7.7-9a

SPEAKING AND LISTENING:

Comprehension and Collaboration

- Grade 4 – SL.4.1-2
- Grade 5 – SL.5.1-1d
- Grade 6 – SL.6.1-2
- Grade 7 – SL.7.1

Presentation of Knowledge and Ideas

- Grade 4 – SL.4.4-6
- Grade 5 – SL.5.4-5
- Grade 6 – SL.6.4-5
- Grade 7 – SL.7.4-5

★ ABOUT THE BOOK ★

From the author who brought young readers *KID ATHLETES*, *KID PRESIDENTS*, *KID ARTISTS*, and *KID AUTHORS* comes *KID SCIENTISTS*, a lively look into the childhoods of the world's most brilliant scientists.



Forget the moon landing, the Nobel prizes, and the famous inventions. When the world's most brilliant scientists were growing up, they had regular-kid problems just like you. Albert Einstein daydreamed instead of paying attention in class. Jane Goodall got in trouble for bringing worms and snails into her house. And Neil deGrasse Tyson had to start a dog-walking business to save up money to buy a telescope. *Kid Scientists* tells these stories and more with full-color cartoon illustrations on nearly every page. Learn all about the young lives of Stephen Hawking, Temple Grandin, Nikola Tesla, Ada Lovelace, Benjamin Franklin, Marie Curie, Issac Newton, Rosalind Franklin, Sally Ride, Rachel Carson, George Washington Carver, Vera Rubin, and Katherine Johnson.

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Ages 9 to 12 | Grades 4 to 7

★ ABOUT THE AUTHOR & ILLUSTRATOR ★

David Stabler is the author of *Kid Presidents* (Quirk Books, 2014), *Kid Athletes* (Quirk Books, 2015), *Kid Artists* (Quirk Books, 2016), and *Kid Scientists* (Quirk, 2017). He lives in New York City. **Anoosha Syed** is an illustrator and character designer for animation. She lives in Toronto.