



Keith M. Nedved



Wednesday,
February 12, 2020
8:00 AM - 9:00 AM
A222

<https://bit.ly/2vutVcU>



Life-Changing Science Discoveries

[The 50 Greatest Breakthroughs Since the Wheel - The Atlantic](#)

The List

- The printing press, 1430s. ...
- Electricity, late 19th century. ...
- Penicillin, 1928. ...
- Semiconductor electronics, mid-20th century. ...
- Optical lenses, 13th century. ...
- Paper, second century. ...
- The internal combustion engine, late 19th century. ...
- Vaccination, 1796.

[www.theatlantic.com › magazine › archive › 2013/11 › innovations-list](http://www.theatlantic.com/magazine/archive/2013/11/innovations-list)



The Greatest Technological Period in Human History!

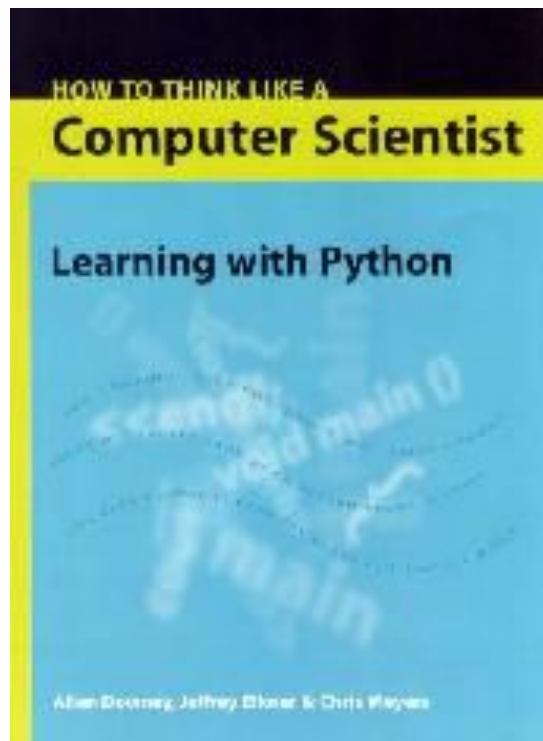
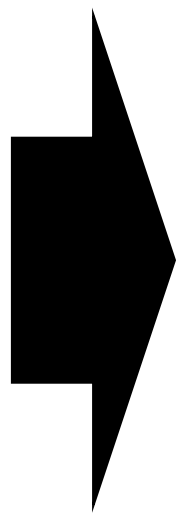


GOAL: Develop resources and curriculum to promote an Interdisciplinary approach toward scientific and historical thought.



21st Century Skills

- **Learning Skills**
 - Critical Thinking
 - Creativity
 - Collaboration
 - Communication
- **Literacy Skills**
 - Information
 - Media
 - Technology
- **Life Skills**
 - Flexibility
 - Leadership
 - Productivity
 - Social



How to Think Like a Computer Scientist

by Allen B. Downey (Author), Jeffrey Elmer (Author), Chris Meyers (Author)

"How to Think Like a Computer Scientist: Learning with Python" is an introduction to computer science using the Python programming language. It covers the basics of computer programming, including variables and values, functions, conditionals and control flow, program development and debugging. Later chapters cover basic algorithms and data structures.

ISBN-13: 978-0971677500

ISBN-10: 0971677506

Think like an innovator, an inventor, a scientist...



Think like a...

Historian	Computer Scientist	Scientist
<p>Instruct students in the four key strategies historians use to analyze documents:</p> <ol style="list-style-type: none">1. sourcing,2. corroboration,3. close reading &4. contextualization	<p>Instruct students to observe the behavior of complex systems, form hypotheses, and test predictions. The single most important skill for a computer scientist is problem-solving.</p>	<p>A scientist thinks methodically using a set of principles called the scientific method to solve problems.</p>



The 6 Science Process Skills

The 6 Science Process Skills
- Kimberly Scott Science

Observing	Classifying	Measuring
This is the most basic skill in science. Observations are made by using the 5 senses. Good observations are essential in learning the other science process skills.	After making observations it is important to notice similarities, differences, and group objects according to a purpose. It is important to create order to help comprehend the number of objects, events, and living things in the world.	Measuring is important in collecting, comparing, and interpreting data. It helps us classify and communicate with others. The metric system should be used to help understand the scientific world.
Communicating	Inferring	Predicting
It is important to be able to share our experiences. This can be done with graphs, diagrams, maps, and spoken word.	An inference is an explanation based on an observation. It is a link between what is observed and what is already known.	What do you think will happen? It is an educated guess based on good observations and inferences about an observed event or prior knowledge.



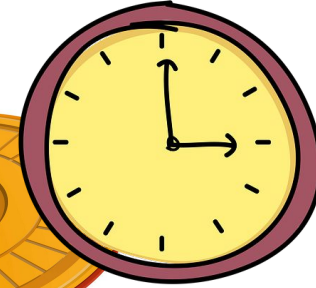
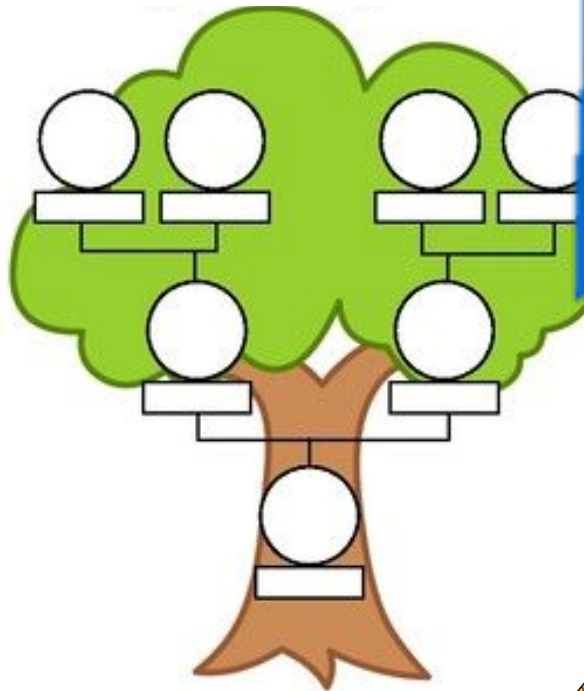
What are the Nine Historical Thinking Skills?

The nine historical thinking skills are grouped into four categories: **Analyzing Historical Sources and Evidence**, **Making Historical Connections**, **Chronological Reasoning**, and **Creating and Supporting a Historical Argument**.

01	Analyzing Historical Sources and Evidence	<ul style="list-style-type: none">• Content and Sourcing of Primary Sources• Interpreting Secondary Sources
02	Making Historical Connections	<ul style="list-style-type: none">• Comparison• Contextualization• Synthesis
03	Chronological Reasoning	<ul style="list-style-type: none">• Causation• Patterns of Continuity & Change over Time• Periodization
04	Creating & Supporting a Historical Argument	<ul style="list-style-type: none">• Argumentation



Elementary





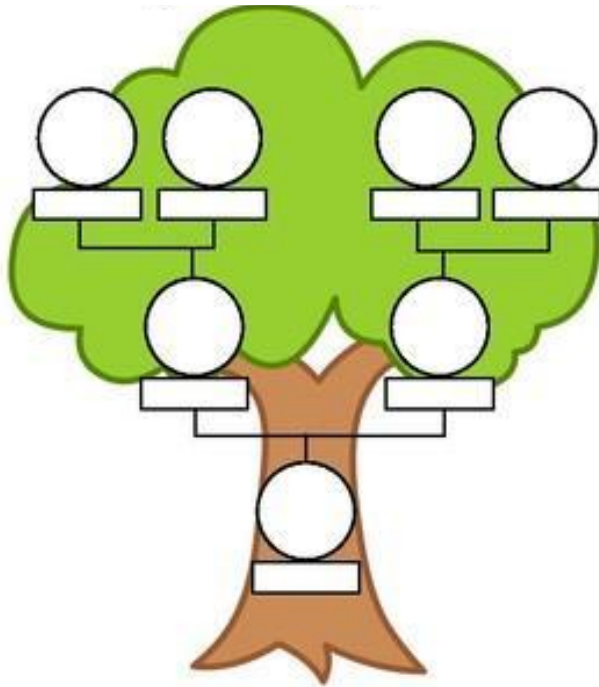
Grades 1-3

Grade 1	Grade 2	Grade 3
Needs (Health & Family)	Jobs (Past, Present, Future)	Communities (Local, State, National & Global)
Timelines (Family: Past Present & Future)	Time & Timelines (Day, Weeks, Months & Year)	Timelines (Family & Community)
Artifacts (Family)	Biographies (Scientific)	Humans & the Environment (Local, State, National & Global)
Needs (Psychological, Safety, Belonging & Esteem)	Jobs (Science & Technology)	Artifacts (Primary & Secondary Sources)



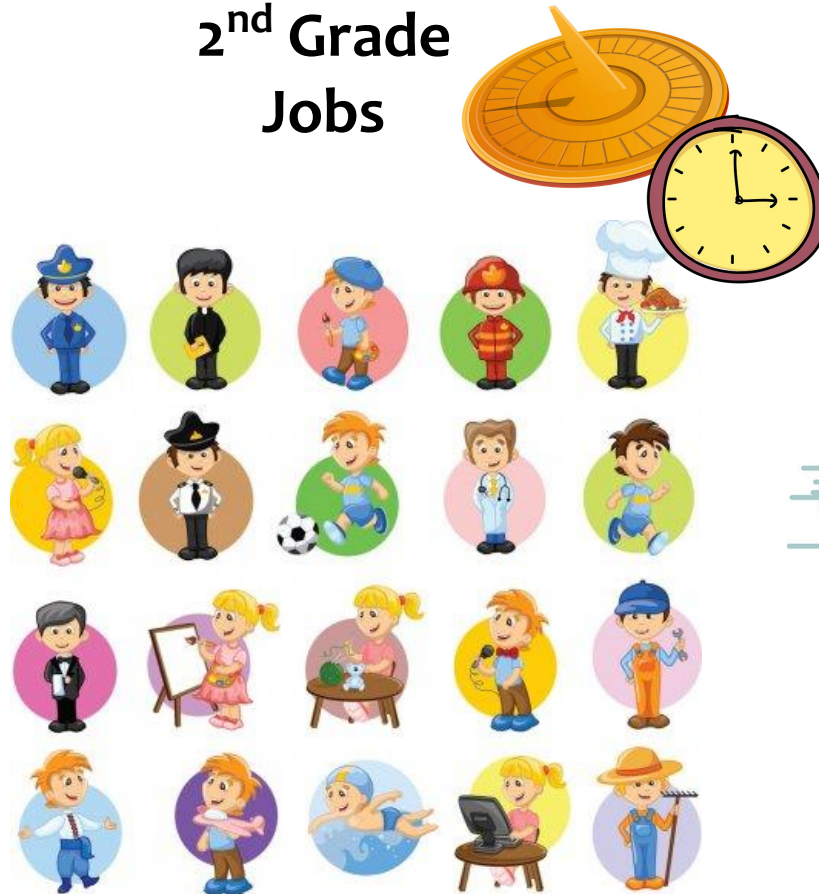
Grades 1-3

1st Grade
Family & Needs



Family Tree
Wants vs. Needs

2nd Grade
Jobs



Schedule
Time

3rd Grade
Communities



Local &
Global



Grades 4-6

Grade 4	Grade 5	Grade 6
Social Studies (Ohio & the United States)	Farming & Food (Western Hemisphere)	Goods & Resources (Eastern Hemisphere)
Timelines (Ohio)	Time & Timelines (Day, Weeks, Months & Year)	Timelines (BC/BCE & AD/CE)
Artifacts (Family)	Earth & Space (Life & Growth)	Earth & Space (Natural Resources & Geography – Silk Road)
Needs (Psychological, Safety, Belonging & Esteem)	Life Science Exploration (Latitude/Longitude & Geography)	Life Science (Cells: food cells, cellular respiration)

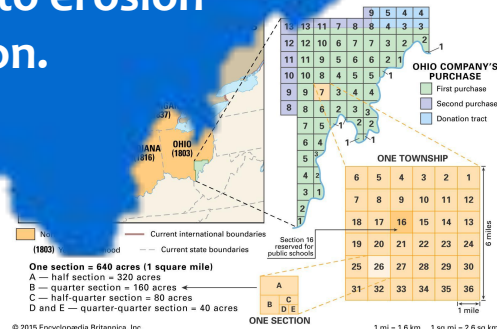


Grades 4-6

4th Grade
Ohio &
The USA

Science of Ohio

- Earth's (Ohio's) surface has specific characteristics and landforms that can be identified.
- The surface of Earth (Ohio) changes due to weathering.
- The surface of Earth (Ohio) changes due to erosion and deposition.



5th Grade
Farming &
Foods
Western
Hemisphere



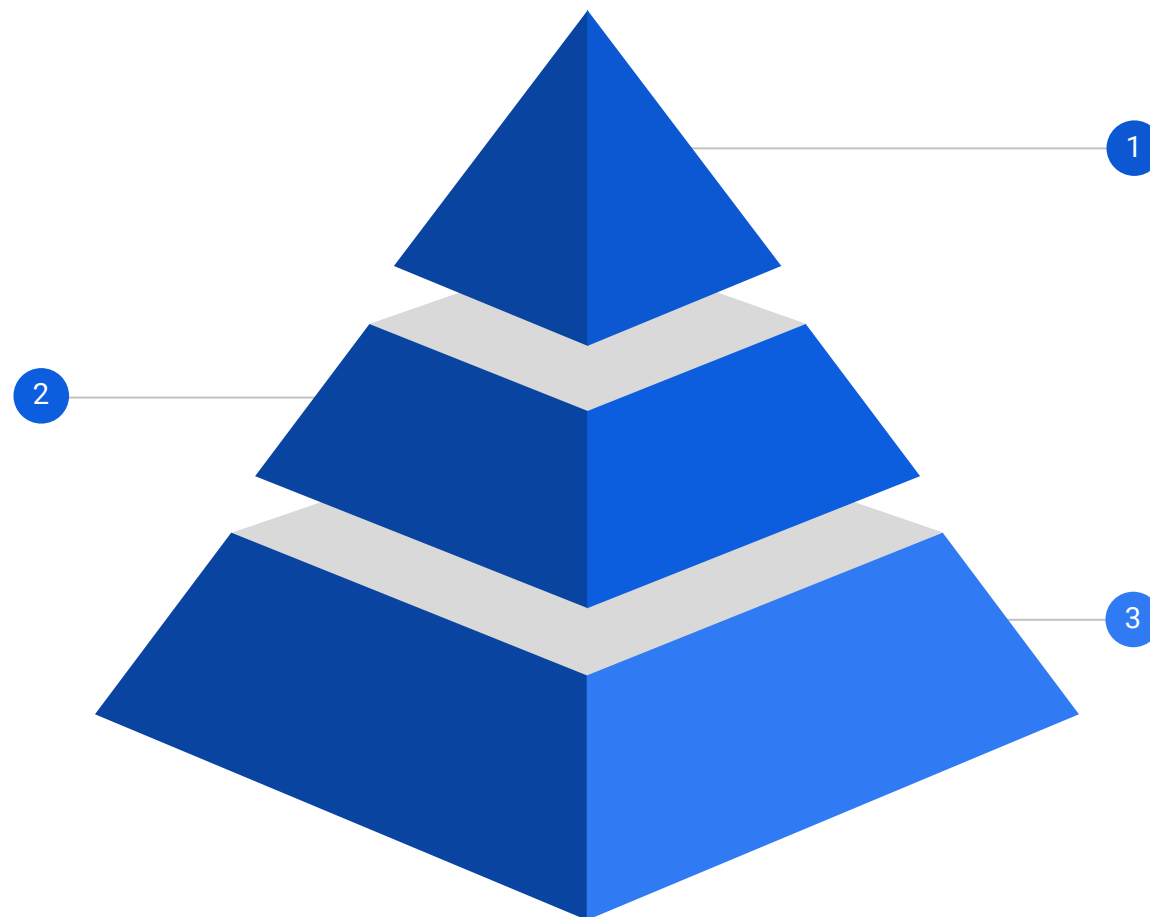
6th Grade
Goods &
Resources
Eastern
Hemisphere





Middle School: Grades 7-8

Grade 8
THEME: U.S.
STUDIES FROM 1492
TO 1877:
EXPLORATION
THROUGH
RECONSTRUCTION



6 high school social studies courses:
American History,
American Government,
Modern World History,
Economics and Financial
Literacy, Contemporary
World Issues and World
Geography

Grade 7
THEME: WORLD
STUDIES FROM 750
B.C. TO 1600 A.D.:
ANCIENT GREECE TO
THE FIRST GLOBAL
AGE



Middle School: Grades 7-8

Grade 7	Grade 8
Early Trade Routes Salt - Gold - Amber - Ash (Concrete) Stone - Bronze - Iron - Steel	The Naturalist Alexander von Humboldt
Scientific Revolution	The Publisher & Inventor Benjamin Franklin
Age of Exploration Spice Trade - Oceans - Columbian Exchange	Lewis & Clark
The Enlightenment	Industrialization



Grade 7

Physical Science

- Scientific Revolution
- Elements
- Energy transformed

Life Science

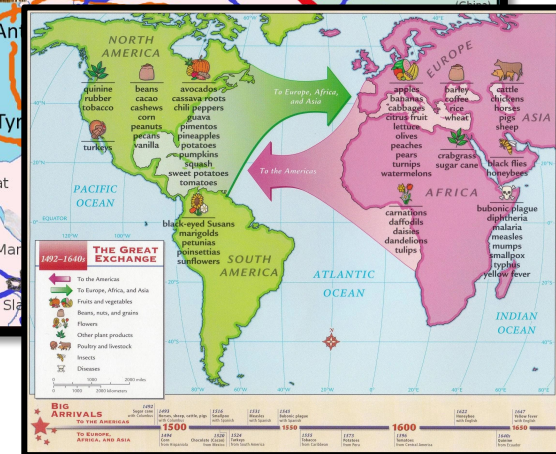
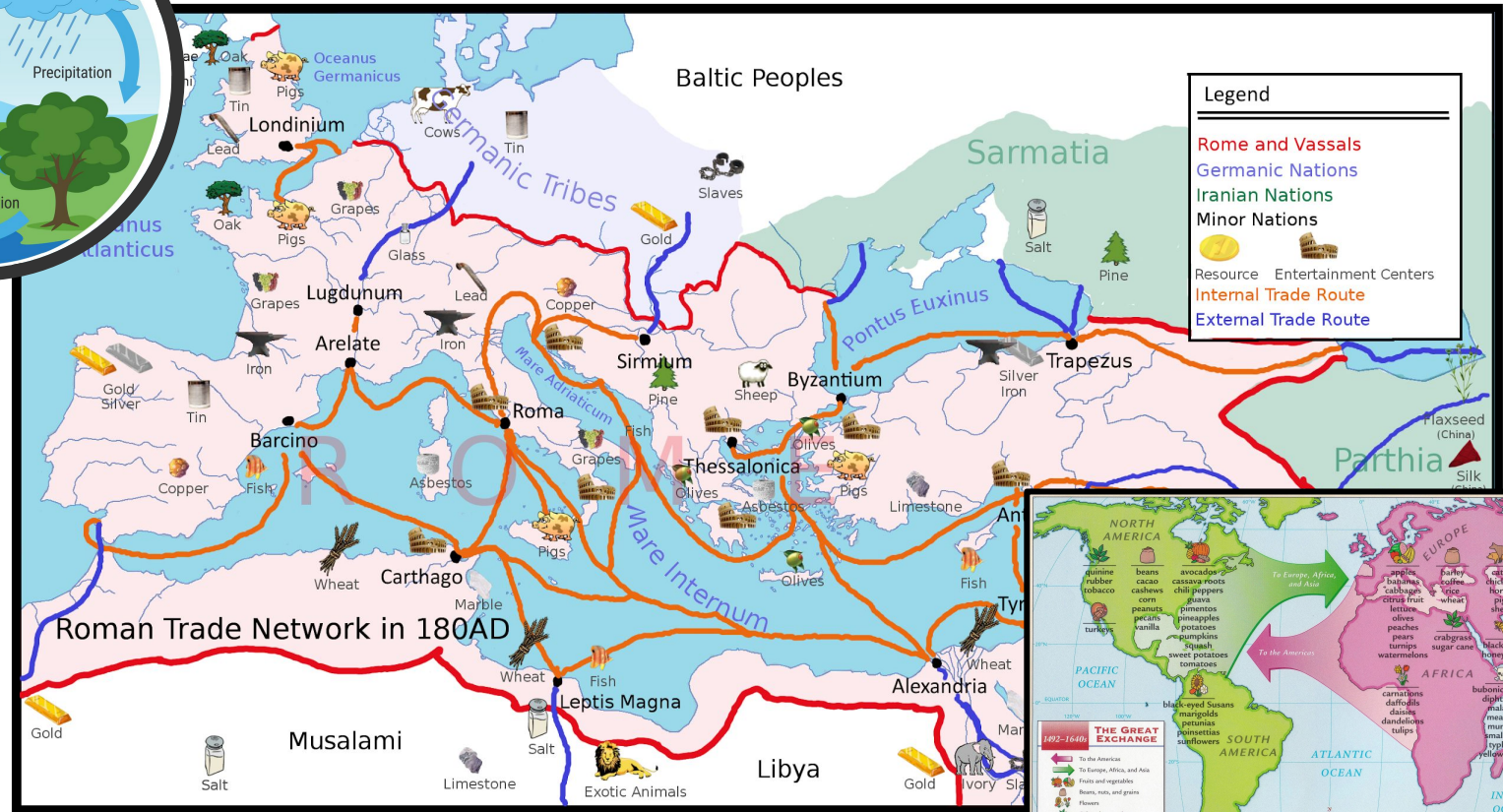
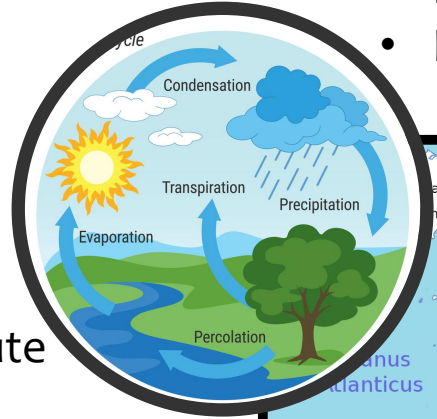
- Salt
- Food/energy/biomes
- The Exchange

Earth Science

- Exploration
- Hydrological Cycle
- Earth/Sun/Moon

Trade Routes

- Ancient Europe - Tin Route
- Ancient Asia - Tea Route
- Rome - Amber Road
- Rome - Salt Route
- Rome - Incense Route
- Middle Ages - The Silk Road
- Middle Ages - Old Salt Road
- Middle Ages - Trans-Saharan Trade
- Exploration - The Spice Route
- Exploration - The Columbian Exchange



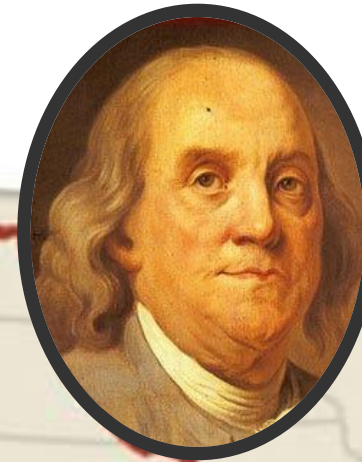


Grade 8

Alexander von Humboldt

Benjamin Franklin

Lewis & Clark



<http://www.lewis-clark.org/>





High School - 6 courses

- 1. American History,**
- 2. American Government,**
- 3. Modern World History,**
- 4. Economics and Financial Literacy,**
- 5. Contemporary World Issues**
- 6. World Geography**



High School - 6 courses

People & Events

Mendeley -
Inventing the
perfect day: daily
routines of famous
scientists





Thank You!

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Selected Resources:

<https://twitter.com/craigncipolla/status/371218727070871552>

<https://sites.google.com/site/handsonscienceinvestigations/Home/science-process-skills-1>

<https://www.historiatimelines.com/shop/timeline-history-wall-charts/history-of-science-timeline>

<https://www.mendeley.com/careers/article/inventing-the-perfect-day-daily-routines-of-famous-scientists/>

[www.theatlantic.com › magazine › archive › 2013/11 › innovations-list](http://www.theatlantic.com/magazine/archive/2013/11/innovations-list)

<https://www.youtube.com/playlist?list=PL8dPuuaLjXtNppY8ZHMPDH5TKK2UpU8Ng>