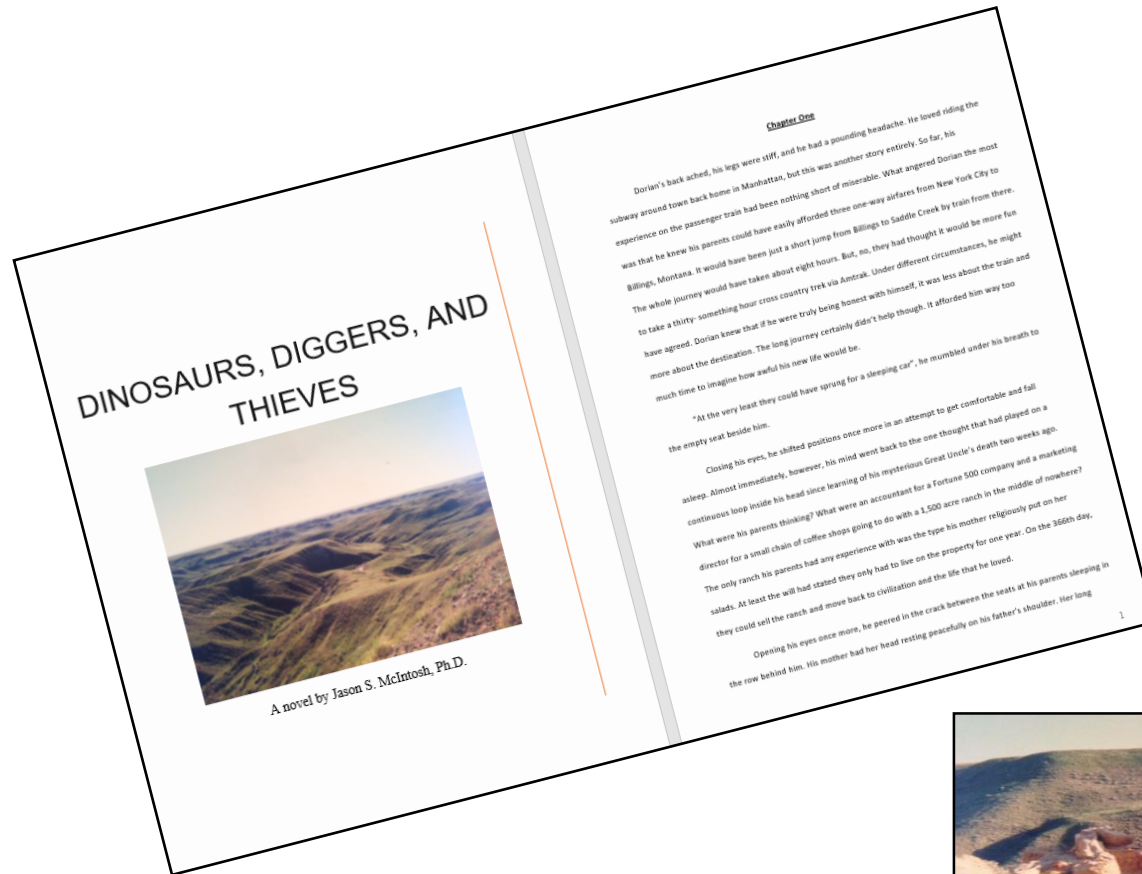
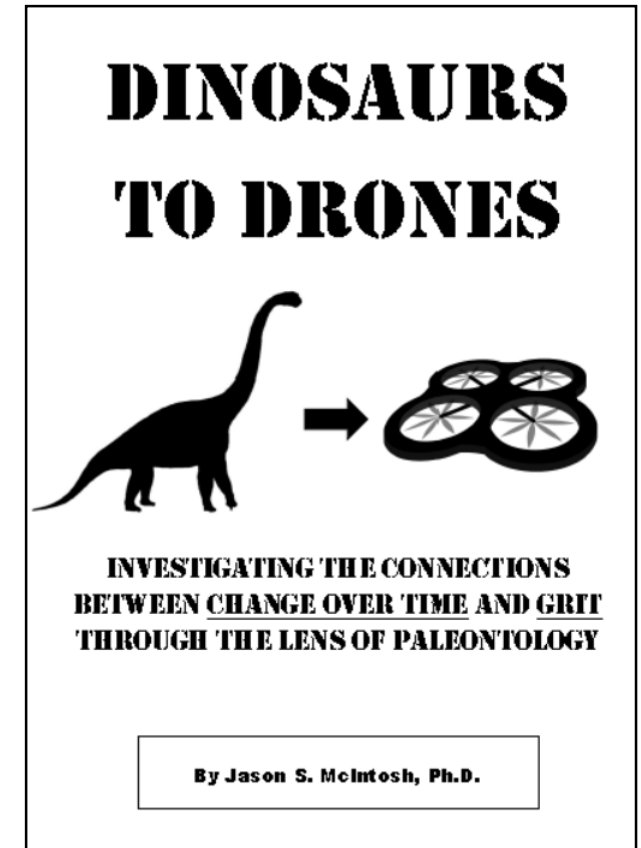
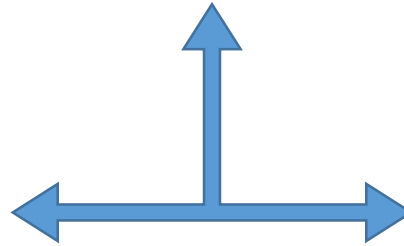


# **Dinosaurs to Drones:** ***Investigating the Connections Between Change Over Time and Grit Through the Lens of Paleontology***

by Jason S. McIntosh, Ph.D.



4<sup>th</sup> -8<sup>th</sup> grade unit  
that includes a 26  
chapter novel and  
30 accompanying  
lesson plans



# Designed using the most well-researched curriculum model for gifted students in our field called the Integrated Curriculum Model

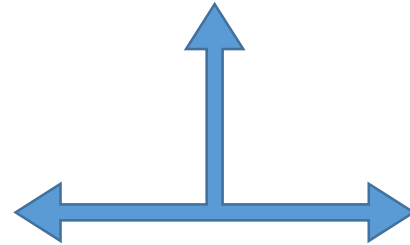
(VanTassel Baska & Brown, 2007)

Universal Concepts	Advanced Content	Process-Product
<ul style="list-style-type: none"><li>• Change over time</li><li>• Grit</li></ul>	<ul style="list-style-type: none"><li>• <u>Thinking like a paleontologist</u>:<ul style="list-style-type: none"><li>✓ Reading cladograms</li><li>✓ Following the bone trail</li><li>✓ The process of fossilization</li><li>✓ Using a brunton</li><li>✓ Applying the Pyramid of Inference</li><li>✓ Interpreting the Antiquities Act of 1906</li><li>✓ Geologic time spiral</li></ul></li><li>• <u>The science of drones</u>:<ul style="list-style-type: none"><li>✓ History of Quadcopters</li><li>✓ Gyro-stabilization</li><li>✓ Four forces of flight</li><li>✓ MEMS (micro-electro mechanical systems)</li><li>✓ Global Positioning Systems</li><li>✓ Future of drone technology</li></ul></li><li>• <u>Language arts</u> (e.g., foreshadowing, character sketches, journal writing)</li><li>• <u>Math</u> (e.g., if/then statements, graphing, change formula, measurement)</li><li>• <u>Social Studies</u> (e.g., timelines, bone wars, geography, historical change events)</li></ul>	<ul style="list-style-type: none"><li>• Problem-based learning</li><li>• Shared inquiry</li><li>• Research skills</li></ul>

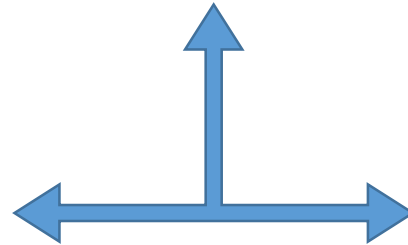
# Example Activities

Sample Choice Activities	
CHOICE A	
Materials:	-Blank paper -Dinosaur skeleton puzzle
Directions:	Draw on a piece of blank paper what you saw in your mind as Dorian described the fossil that laid in front of him. Examine the image shown below this box. Can we know for sure this is what a hadrosaur looked like? Why or why not? We do know that the dinosaur was articulated. Define the word <i>articulated</i> as used in the chapter. Demonstrate the difference between articulated and unarticulated using the pieces of a small wooden dinosaur skeleton puzzle now. Check with the teacher to see if you were correct.
Assessment:	You will be asked to share your answer to the questions and to demonstrate the difference between articulated and unarticulated using the dinosaur skeleton pieces.
CHOICE B	
Materials:	-Computer with internet access -Blank paper
Directions:	Tom used to work for the Museum of the Rockies. Go to their website and explore the type of work they do: <a href="https://museumoftherockies.org">https://museumoftherockies.org</a> . We know that Tom and the town cannot dig on federal land without permission. Click on the document linked here that describes the Antiquities Act of 1906. Read through the document and write down anything that pertains to Tom's situation: <a href="https://www.nps.gov/history/local-law/fhpl_antiact.pdf">https://www.nps.gov/history/local-law/fhpl_antiact.pdf</a>
Assessment:	You will be asked to describe the work done by the Museum of the Rockies. You will also need to share the portions you highlighted while reading the Antiquities Act of 1906.

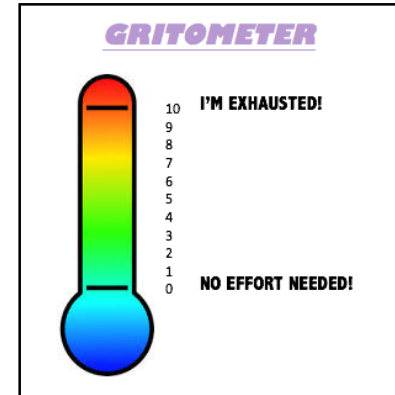
Includes daily  
choice menus  
and addresses all  
eight multiple  
intelligences



Visual / Spatial	p.22, Timelines p.27, Dinosaur cladograms p.34, Geologic time spiral p.66, Drawing dino crime scenes p.83, Sketches using grid
Bodily / Kinesthetic	p.43, Dino Plinko p.59, Hands-on experiment with faux fossil p.92, Building model of a gyroscope p.103, Breaker Space Breakdown activity p.114, Choice to create a skit
Logical / Mathematical	p.19, Converting acres to feet p.56, Knowledge doubling curve p.61, If-then statements p.63, Logic puzzles p.108, Formula for percent change
Interpersonal	p.45, Problem-based learning in groups p.77, Cryptic conversations p.81, Predator Competitor T.K.O. game p.89, Real-life prejudice scenarios p.100, Grit Games planning
Intrapersonal	p.24, Strategies for making friends p.29, Dealing with loss p.79, Six habits of highly organized people p.70, Dealing with fear
Naturalist	p.55, Horned toad vs. Zuul crurivastator p.67, Wildlife in Montana p.79, Apex predators p.93, Astronomy activity p.120, Global warming and the dinosaurs
Musical	p.39, Choice to create a musical p.74, 'Flow' choice activity p.114, Biography of musician in the book "She Persisted" p.114, Choice to create a ballad or poem
Verbal / Linguistic	p.23, Shared inquiry discussion p.49, Thinking hats discussion p.73, Foreshadowing p.85, Antiquities Act discussion p.95, Awesome Idioms activity

[illegible][illegible]

- 1 = Found no other evidence of the skeleton
- 2 = Found the entire skeleton, but it is on federal land
- 3 = Found the skull of the skeleton. Role the dice again. If it lands on an even number, the skeleton is on private land. If it lands on an odd number, it is on public land.
- 4 = Found the entire skeleton and it is on private land
- 5 = Found a few shattered remnants, but nothing substantial
- 6 = Roll again



Name \_\_\_\_\_ Date \_\_\_\_\_

How many did you attempt?

How many did you solve correctly?

Record how far you were able to count in one minute below:

Trial #1- \_\_\_\_\_  
Trial #2- \_\_\_\_\_  
Trial #3- \_\_\_\_\_

Record how long your group took to build the cup pyramid using only the rubber band and string below:

Have a groupmate verify you completed the maze by yourself without copying by signing their name below:

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## Care and Feeding of a Dino

Name \_\_\_\_\_ Date \_\_\_\_\_

**Directions:** Use the books provided and/or approved websites to research important facts about your chosen dinosaur.

Name of Dinosaur \_\_\_\_\_

Type of Dinosaur (circle one): Ornithischian Saurischian Theropod

Primary Food Sources:

Preferred Habitat:

Physical Characteristics:

Labeled Diagram of the Dinosaur: (Draw a picture in the space below)

More to Explore: (List three unanswered questions you have about your dinosaur)

- 1.
- 2.
- 3.



## PREDATOR COMPETITOR T.K.O.

Name \_\_\_\_\_ Date \_\_\_\_\_

**Directions:** The acronym T.K.O. stands for total knockout in the world of competitive boxing. Imagine you and your partner are competitors in the boxing ring. Each of you will choose an apex predator from the past or present to battle each other in the ring by rolling the dice. The number you roll corresponds to the options you have to choose from. Your choice should be kept a secret and recorded in the space provided at the bottom of this page. When both of you are ready, reveal your selections at the same time and use the book Apex Predators by Steve Jenkins to determine which apex predator would win that round of the fight. *Make sure to pay attention to whether the fight is on land, air, or water.* The person with the most points after 12 rounds is the winner and earns the T.K.O!

### APEX PREDATORS

	Choice 1	Choice 2	Choice 3
1	Terror Bird	Saber-Tooth Tiger	Giant Freshwater Ray
2	Komodo Dragon	Teratodon	Titanoboa
3	Mosasaurus	Dimetrodon	Utahraptor
4	Anomalocaris	African Wild Dogs	Daedon
5	Dunkleosteus	Giant Short-Faced Bear	Great White Shark
6	Hatzegopteryx	Fossa	Siberian Tiger

### THE BOXING RING

Round #	Setting	My Choice	Partner's Choice	1 Point if you won	Round #	Setting	My Choice	Partner's Choice	1 Point if you won
1	Land				7	Sea			
2	Air				8	Land			
3	Sea				9	Land			
4	Land				10	Sea			
5	Land				11	Air			
6	Sea				12	Land			

Challenge Round: Play the game again, but research new apex predator yourself.



## Colors

Black	-atri
Blue	-cerule
Green	-viridi
White	-albi
Yellow	-flav

## Size

Dwarf	-pumili
Gigantic	-ingenti
Large	-grandi
Tall	-proceri
Short	-brevi

## Shape

Curved	-cyрто
Flat	-plani
Hollow	-cavi
Horned	-cornut
Round	-circuli

## Texture

Bare	-nudi
Rough	-asper
Spiny	-spini
Wrinkled	-corrugat
Bearded	-criniti

## Numbers

One	-mono
Two	-bi
Three	-tri
Four	-quadri
Seven	-septem
Ten	-decim

## Parts

Claw	-ungui
Foot	-pedi
Head	-capit
Tail	-caud
Tooth	-denti

