

Meteoroids & Asteroids (#7)

Grade Level: 3

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National Content Standard Alignment

- Science (NSTA):
- Content Standards A, D & F
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- English Language Arts (NCTE):
- Standards 3, 7, 11, & 12

Student Learning Objective(s)

- SWBAT understand that phenomena from space also affects the earths' landscape.

Assessment

- Formal: Students will complete two worksheets and teacher will provide written feedback
- Informal: Teacher observation, questioning throughout lesson and information gaining when students share their decisions (closure)

Materials/Resources

Stone Wall Secrets by Kristine and Robert Thorson

Student's "stone wall journals"

Plastic container filled $\frac{1}{4}$ with flour (bottom) and $\frac{1}{4}$ with cocoa powder (top)

Rocks of varying sizes (enough for each group to use 3 different sized rocks)

Worksheets #7 & #8 (found in "appendix – worksheets" document)

Crayons, glue sticks & art supplies

Learning Activities

Initiation

- Teacher reviews what students have been studying in the previous lessons such as stones, stonewalls and the book, *Stone Wall Secrets*. Teacher prompts students with questions to provoke recall and engage students. The following questions are examples:
 - Can anyone tell me about this book?
 - Why are stonewalls important to some people?
 - How are stones formed?
 - Where does the story take place?
- Teacher explains that today, the class will finish the book and talk about meteoroids and asteroids.

Lesson Development

- Teacher reads aloud beginning “Stones like those...” (page opposite illustration of Adam & Grandfather) to page ending with, “and Adam himself” (page opposite book cover illustration). Key points in text are clarified and discussed; examples are as follows:
 - Discuss the appearance of rocks.
 - Why do things burn in the sky as they fall to the earth?
 - Discuss the “burning baby” illustration and what it represents.
- Teacher dispenses worksheet #7 and reads questions aloud. Students complete worksheet #7 and glue it into their stonewall journal.
- Teacher explains the need for students to experiment to help students “see” what is happening in the text. (Teacher should not expect students to fully understand all science concepts in text).
- Teacher demonstrates how the earth is constantly spinning around while “space rocks” float around in the atmosphere. These “space rocks” sometimes hits the earth, sending up tons of dust into the atmosphere, which creates cold, stormy and cloudy weather because dust prevents the heat from the suns’ rays from reaching earth. Teacher asks whether any students know what these “space rocks” are called and a discussion differentiating asteroids from meteoroids entails.
- Teacher explains that meteorites are found all over the earth and asks additional questions such as, “Why do you think Grandfather won’t sell his meteorites?”
- Experiment: Each group receives three rocks of various sizes and a plastic container filled with flour and cocoa powder (see materials section for proper layering methods). Teacher explains that the cocoa and flour represent different layers of rock in the earth. Teacher discusses that scientist spend most of their time “watching closely,” as must students during this experiment.

- From approximately 10” distance, students are to drop the smallest rock into the plastic container and note what happens to the “earth,” as well as the surrounding air.
 - Students repeat this procedure with the medium sized rock and then the largest rock, recording their observations after each.
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- Whole Class Science Talk: Students discuss what they observed and teacher adds more information such as, “yes, everyone noticed that the larger rock left a crater in the land; it really changed the landscape.”

Closure

- Students are asked to think about what their decision would be if they were Adam while the teacher reads the last page of the book aloud.
- Worksheet #8 is handed out for students to individually complete at their own pace and include as the last page in their stone wall journal. Students may use this time to make finishing touches on their journals.
- Class discussion follows for remainder of class. Students are able to share their decisions pertaining to worksheet #8.