GENERATIONGENIUS
ALWAYS QUESTION. ALWAYS WONDER.

LESSON PLAN

TIMESCALE OF EARTH'S EVENTS
GRADES K-2

SUMMARY

Students observe a model of a flash flood to see that some processes that shape the Earth happen very quickly. Duration: 45 minutes.

NEXT GENERATION SCIENCE STANDARDS CORRELATION

2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

Science & Engineering Practices	Connections to Classroom Activity
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomenon and designing solutions. Make observations from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1)	• Students will create a model of a flash flood using soil and different amounts of water. They will make observations and construct explanations as to why the land changed.

Disciplinary Core Ideas	Connections to Classroom Activity
ESS1.C: The History of Planet Earth Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)	• Students will observe that flash floods change the Earth very quickly. In the video, they will see many more examples of ways the Earth can change fast and slow.

Crosscutting Concepts	Connections to Classroom Activity
Stability and Change Things may change slowly or rapidly. (2- ESS1-1), (2-ESS2-1)	• Students will see from their models that rain can change the Earth very quickly.

ENGAGE

Show students an image of a flooded street (attached). Ask your students to consider this question and discuss with the person next to them, "How could this have happened?" Allow students a minute to discuss possibilities, then give the students an opportunity to share their ideas. Most likely, they will come up with ideas such as "a hurricane", "the river overflowed", "lots of rain", etc. Some children may come up with the answer "a flash flood", but many may not be familiar with this term. Segue to the lesson by telling students they will be creating models of a flash flood and how it can affect an area of land.

MATERIALS

Per Group of 4:

- Large shallow tub
- Gallon bag of potting soil
- 6 Small cubes (to represent houses)
- 3-4 Plastic trees
- 2 Pipettes or droppers
- Small watering can

DIY Activity

- 2 Textbooks
- 4 Marbles
- 2 Large rubber bands
- 30 Sugar cubes

EXPLORE

Place students into groups of four and hand out the materials. Direct the students to build a hill with the soil and place cubes (houses) in various locations on the hill. Students will begin the simulation by using pipettes or droppers to rain lightly on the hill. Students should record observations in a science notebook. Remind students to pay particular attention to how the "rain" is affecting the land. Does it pool anywhere? Do some drops combine with others? How is it affecting the houses and trees? After they have "rained" using the pipettes, have them use the watering cans to simulate a heavier downpour. Again, have them record their observations.

EXPLAIN

Once the students have completed the activity, discuss some follow up questions: "How was the rain different than the downpour?" "How did the land change?" "Was this a quick or slow change?"

Explain that flash floods can be caused by a dam breaking or a mudslide, but they are usually caused by really heavy rains from a thunderstorm. Flash floods happen so quickly, that many people don't know that it is happening until the water is already very high. Flash floods change the Earth very quickly.

ELABORATE

WATCH THE GENERATION GENIUS TIMESCALE OF EARTH'S EVENTS VIDEO AS A GROUP

Facilitate a conversation using the Discussion Questions.

Optional: Students can do online research on different ways the land can be changed such as an earthquake, volcano, landslide, water erosion, wind erosion and glacier movement. One of those ways can be assigned to each group. Have students share their findings with the class.

EVALUATE

Students can turn in their science notebooks for grading. Students can also play the online Kahoot! quiz game located below the video which provides downloadable scores at the end of the quiz game. Alternatively, you can use the paper quiz or the exit ticket questions. All these resources are located below the video in the Assessment section.

EXTENSION

Older students could be introduced to topographic maps. Topographic maps help identify potential flash flood risk areas. Areas of lower lying land or areas where creeks or small streams form could be potential flash flood areas. Share a topographic map of your area with your students and see if they can identify potential flash flood risk areas.