We understand that keeping students engaged digitally can be challenging, which is why we have curated an extensive collection of resources to assist you!

The information in this document highlights the lessons from our STEM curriculum that can be easily adapted for virtual and at-home learning. Each of our chapters/lessons include background information, activities with instructions, materials lists, reflection questions, videos and digital extras.

NOTE: Each chapter title and lesson title is linked to our online curriculum for easy sharing capabilities.

Follow OOGEEP on social media and share how you’re using our materials to keep students engaged!
1 FORMATION
How did crude oil and natural gas form?
What forces of nature created reservoir and source rocks?

1.1 IT’S A GAS
How does biotic material form natural gas?

Click here to view the reflection question answers.

1.2 BIOTIC MATERIALS
Could the decomposition of living matter produce crude oil?

1.3 LISTEN AND DRAW GEOLOGIC TIME
When was crude oil and natural gas formed?

Check out this GeologicTime Video, also listed under Digital Extras online, for an example.

1.4 GEOLOGIC PUZZLE
Can you show the process of formation?
2 MIGRATION AND TRAPPING
Are there lakes of crude oil and natural gas underground? Where is it stored?

2.1 BAKING ROCKS
Do all types of rocks hold the same amount of water?

Students will need a scale, and to find their own rocks to measure, but can compare what they find by taking photos of the rocks before soaking if they need help with identification.

2.2 POROSITY AND PERMEABILITY
How can you use models to show porosity and permeability?

Students can use different types of sponges they have around their house.

2.3 CREATE ROCK MODELS
How can you show porosity and permeability in a 2D or 3D model?

Students may use whatever different types of sponges they have at home to show porosity and permeability.

3 EXPLORATION
How do you know where crude oil and natural gas can be found?

3.2 SKEWER CONTOUR MAPPING
How can you map what you cannot see?

Click here to view the reflection question answers.
4 DRILLING AND WELL STIMULATION
How do you get crude oil and natural gas out of the ground?

4.1 SWEET EXPLORATIONS
How does horizontal drilling access more crude oil and natural gas?

Click here to view the reflection question answers.

4.2 BUILD A MODEL OIL WELL
How can crude oil be most efficiently removed from a model oil well?

4.3 WEIGHTY PROBLEMS
What is the best design for a derrick to support the stress and weight of drilling?

DIGITAL EXTRAS
Click here to view American Petroleum Institute’s (API) comprehensive description of many aspects of crude oil and natural gas technology and production.

5 PRODUCING AND TRANSPORTING
What happens to crude oil and natural gas once it is produced? How is it transported?

5.1 TRANSPORTING NATURAL GAS
How do engineers develop pipeline systems to transport crude oil, water, natural gas and other materials over long distances?

To complete this activity at home, students can get creative with things around the house, like hot wheels tracks, pool noodles, paper towel rolls, etc. to create their own pipelines.

5.2 PIPELINE PIGGING
How can you be sure the pipeline is operating efficiently?
6 REFINING AND PROCESSING
How are crude oil and natural gas liquids transformed into useful products?

6.2 REFINERY CARD SORT
How does a refinery work?

Click here to view the reflection question answers.

7 PETROCHEMICALS AND PRODUCTS
What other products besides transportation fuels are made from crude oil and natural gas?
How do these products impact your everyday life?

7.2 MATERIALS AND THEIR PROPERTIES
How could you design a test for a petrochemical product?

Students need to be cautioned to use safety goggles, or get parent permission or parent supervision of any tests they perform.

Why is materials testing important? Click here find out why.

As you look at this photo of a school room, identify the products made from petroleum.