

Earth Science Resource Package

Arts Integration Activity Ideas and Lesson Plans

Area 1: Activity Ideas

This is a sampling of ideas; additional activity ideas are available with the teacher tools included with individual videos in this resource package.

- ❖ Turn your class into a Greek Chorus when studying otherwise mundane objects like rock formations or water cycles. Have a small group of students read the text as a performance, then pause the action and have the rest of the class call out comments, clarifications, and/or advice before the reading continues.
- ❖ Create a ‘Wonder Shelf’ to hold found treasures such as crystals, feathers, etc. and give students time to explore it. Encourage them to represent the findings in unusual ways – a model of the structure of the crystal using Legos, or a watercolor representing the vein structure of a leaf.
- ❖ Set topics such as animal classifications or plant taxonomy to music. Encourage students to create Raps, or poetry or any other form of creative expression to show their learning.
- ❖ Encourage students to create poetic metaphors when learning about science topics. They can read or act them out. For example: “A shiny raindrop is like a rocket plummeting toward the earth”.
- ❖ Introduce abstract concepts through a role-playing exercise. For example, use small props to represent characters, settings and plot and pose a concept such as water conservation for a group of animals in a savannah or plains environment. Encourage them to explore cause and effect, problem solving, prevention, or other areas that affect the concept.
- ❖ Students can explore the earth’s layers with printmaking by exploring the various textures in printmaking and then choosing textures to represent the earth’s layers.

Area 2: Lesson Plans

This is a sampling of lesson plans; additional activity lesson plans are available with the teacher tools included with individual videos in this resource package.

Sample Lesson 1: Explore Archaeology

Type of Teacher Tool: Small Group Activity

Targeted Grade Level(s): 5-8, 9-12

Targeted Curriculum Areas: Science, Social Studies, Music

Learning Objectives:

The learner will:

1. engage in critical and creative thinking.
2. build on their current understanding of, and develop new insights into, archaeology and how it helps us understand our past.
3. be able to identify and explain the use of different methods, tools, and equipment used in an archaeological dig.
4. create an original rap song

National Standards:

1. Common Core Standards for English/Language Arts and Literacy in History/Social Studies, Science and Technical Subjects

Grades 3-6 College and Career Readiness Anchor Standards for Speaking and Listening

1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally

2. Science MS-ESS3-4 Earth and Human Activity Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

3. Music Anchor Standard 1: Generate and conceptualize artistic ideas and work
MU:Cr1.1.5a—Improvise rhythmic, melodic, and harmonic ideas, and explain connection to specific purpose and context (such as social, cultural, and historical).

Resources/Materials Needed:

Archaeology 3: Working at an Archaeological Dig 1

Archaeology 4: Finding and Recording Artifacts

Archaeology 5: Working at an Archaeological Dig 2

Archaeology 6: Tools and Equipment Used at an Archaeological Dig

Archaeology 7: Work Conditions at an Archaeological Dig

Archaeology 8: How do you spot a place to dig?

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- Archaeology 9: Tools Used at a Dig
- Archaeology 10: Setting Up and Using the Grid to Record Artifacts
- Archaeology 11: How Rain Can Affect a Dig Site
- Archaeology 12: Chain of Evidence for Artifacts from a Dig Site
- Archaeology 13: How careful do you have to be when digging?
- Archaeology 14: Is there a sequence to how a dig is explored?
- Archaeology 15: Why be an archaeologist?
- Archaeology 16: The Interdisciplinary Nature of Being an Archaeologist
- Archaeology 17: Does the process or tools used for a dig change depending on where the dig is located?
- Archaeology 18: What an Artifact Can Tell You—An Example of Finding a Medieval Coin
- Archaeology 19: What is the process for recording a found artifact?
- Archaeology 20: What is the process for closing a dig site appropriately?

Teacher Instructions:

1. Assign the groups to watch the videos listed in the **Resources/Materials Needed**.
2. Divide the class into five groups.
3. Each group draws from a bowl to determine which of the un-narrated videos (3-7) they will watch and from a second bowl to determine which two of the narrated videos (8-20) they will also watch.
4. Students will use what they have observed and learned from watching their videos to create a verse of a rap song about Archaeology.
5. Give the groups time to brainstorm ideas and then create the rap.
6. Have each group perform their verse of the rap for the other groups.

Extension Activity:

1. Invite another class and have all groups perform their complete rap.
2. For students interested in learning more about archaeology, have them view either of two archived programs available on the Educate.Today website:
 - Archaeology 1: Explore! Archaeology (grades 3-6)
 - Archaeology 2: The Science Behind Archaeology (grades 7-12)

Assessment/Evaluation Option

1. Have the class discuss how well the objectives of the assignment were met.
2. Have the class list the archaeological vocabulary used in each verse.
3. Have the class discuss the musical value of the rap lyrics

Sample Lesson 2: Explosions Music Video

Type of Teacher Tool: Whole Class

Targeted Grade Level(s): 5-8, 9-12

Targeted Curriculum Areas: Visual Arts, Media Arts, Science

Learning Objectives:

The learner will:

1. explore the essential elements needed to safely and successfully create a quarry explosion.
2. gain knowledge about static and kinetic energy..
3. create a music video incorporating explosions and knowledge learned.

National Standards:

Visual Art MA:Cr2.38A

Select, organize, and design images and words to make visually clear and compelling presentations.

Media Arts MA:Cr3.1.5

- a. Create content and combine components to convey expression, purpose, and meaning in a variety of media arts productions, utilizing sets of associated principles, such as emphasis and exaggeration.

Science: Physical Science

MSPS 3: Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.

HSPS 3: Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.

Resources/Materials Needed:

1. The following Educate.Today videos: STEM-9, STEM-10, STEM-11
2. You Tube <https://www.youtube.com/watch?v=u2W1Wi2U9sQ> starting at 3:01 minutes
3. Video editing software

Teacher Instructions:

1. Have students watch any of the three videos listed above to learn about the process to safely create quarry explosions.
2. As students view the video, they should take notes on important information learned about any or all of the following topics:
 - a. Operation of a quarry
 - b. Geology and its affects on an explosion
 - c. Uses of rock obtained from a quarry explosion
 - d. Steps taken to set up a quarry explosion

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- e. Safety procedures involved in a quarry explosion
- f. Execution of quarry explosion
3. After viewing the video and completing their notes, students should create a script for a video they will create. The script should include information from their notes that will help other students understand what happens at a quarry explosion and static and kinetic energy associated with such explosions. Students can determine length of the script or you can provide them a minimum length.
4. Once their script is complete, have students view the You Tube video of the William Tell Overture listening to the finale music that starts at the 03:01 mark.
5. To create their finished video, students should:
 - a. decide if they want to show themselves on screen saying their script or choose images and video from the video they watched or other sources to accompany the narration.
 - b. record their script
 - c. edit scenes of the quarry explosion from the video they watched and lay in music from the William Tell Overture video as they see fit to accompany their video.
 - d. edit in the captured explosions in such a way that actual moments of explosion replace the cymbal crashes in the music.

Assessment/Evaluation Options:

1. Videos can be evaluated on the accuracy and clarity of information presented as well as on the execution of the editing and how well the timing of the explosions in the video match the music as they go from static to kinetic energy.

Extension Assignment:

1. Play videos for other students in the class or with students in another class.
2. Share videos with a music teacher or music professional and have them offer evaluation of how well the timing of the explosion videos captured the music.

Sample Lesson 3: Expressing Understanding Through Drama

Type of Teacher Tool: Small Group

Targeted Grade Level(s): Can be modified for grades 3-12 as needed

Targeted Curriculum Areas: Language Arts, Drama, curriculum area of chosen video

Learning Objectives:

The learner will:

1. engage in critical and creative thinking.
2. engage in interactive activities and discussion about the subject of the video(s) chosen for this activity
3. develop an answer for themselves to the question: “How can we better understand...? (the subject of the video(s) chosen for this activity)

National Standards:

National Core Arts Standards Theatre

THCr2-6 b Contribute ideas and accept and incorporate the ideas of others in preparing or devising drama/theatre work.

Select, organize, create characters, and scenes in a clear and compelling presentation

Additional applicable standards from other curriculum areas can be determined by the video(s) chosen for this activity. Those additional State and National Standards related to the content of our videos listed below for this lesson are provided on the Educate.Today page where you find the video.

Resources/Materials Needed:

1. Any video from the Community Resource Package

Teacher Instructions:

1. Have the group watch and discuss the video from the Educate.Today web page where this Teacher Tool was found and any additional videos from the site you find applicable and appropriate to include in their study.
2. As they watch the video(s), have the group take notes on:
 - a. interesting and/or important information they learn in the video.
 - b. people or objects in the videos that could become characters in a play scene.
 - c. themes or conflicts they identify.
3. After viewing the video, the group should share notes and begin to write a play scene that expresses what they learned:
 - a. Characters could be individuals and/or objects seen in the video or people created specifically for the play
 - b. Location for the scene could be the location in the video, a location referred to in the video, or another appropriate location of the group’s choice.
 - c. Dialogue the characters speak should include information learned in the video(s) that

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the group believes is vital to making sure others, who watch their scene but have not watched the video(s), understand the important concepts, ideas, themes, etc. the students learned while watching the video(s).

- d. Conflict in the scene could be related to the important ideas/concepts/themes of the video(s) or added by the group as they write their play.
- e. The tone and style of the scene could be realistic, fantasy, historical, humorous, serious, musical, or whatever the group believes is best to make sure the audience understands the important and interesting information they want to share from the video(s).
- f. The length of each group's scene will vary depending on the video(s) selected and information shared.

Assessment/Evaluation Options:

1. Evaluate the scenes both in terms of meeting the criteria of an effective dramatic scene as well as their depiction of student understanding of the subject matter content discussed in the video(s) they watched.
2. Have students develop a list of criteria for evaluating their own scene on any or all of the following:
 - a. clarity of information presented
 - b. accuracy of information
 - c. dramatic execution of their scene
 - d. the ideas that best explain the ideas/concepts/themes learned in the video
 - e. other criteria of their own
3. Read the scenes yourself and/or have the scenes read by other groups in the class using the criteria created by the group that wrote the scene.
4. Read the scenes yourself and evaluate how well the scene reflected the information presented in the video(s) viewed by each group.

Extension Activity:

1. Have groups perform or read aloud their scenes for the rest of the class or another audience.
2. Have the audience discuss the content of the scenes performed and select which ideas were best represented.