**Lesson 17**

Model Performance Task

## 180 minutes (4 days)

## Lesson Overview

This lesson models the Advanced Placement*®* Performance Task*®* process. Students collaborate on a writing prompt and then submit an individual reflection of the collaborative process. The language of the task mimics the language of the Performance Tasks students will submit to the College Board™ later in the year as a part of their AP™ assessment. The goal of this activity is to create an opportunity for students to practice writing and receive an assessment of their performance.

The topic for their writing is data compression. Students will select a compressed digital artifact and collaboratively explore and write about the positive and negative results of the compression of that artifact. For instance, the MP3 music format has made music widely available while fundamentally changing how we experience sound quality.

**Teaching Summary**

**Getting started:** ~10 mins

1. Journal entry: List as many examples of digital media as you can think of that are compressed files.

**Activity: Understanding the Performance Task** ~20 min

1. Read and rephrase the Performance Task directions

**Activity: Selecting and researching a topic** ~ 15 min

1. Select a topic

**Activity: Writing the first draft** ~30 min

1. Begin the writing process

**Activity: Peer Review** ~30 min

1. Feedback on the Collaborative Summary

**Activity: Writing the final summaries** ~30 min

1. Guide students to write their Performance Task Summaries

## Computer Science Principles Learning Objectives

1.1.3 Analyze computational artifacts.

2.1.2 Explain how binary sequences are used to represent digital data.

Teaching Guide

## Materials, Resources and Prep

**For the Student**

* *Student Activity Guide: Model Performance Task*
* *Student Activity Guide: Peer Review*
* Highlighters
* Stickable notes or a digital tool for collecting individual answers (i.e. Linoit.com)

**For the Teacher**

* Prepare copies of the Student Activity documents
* Gather highlighters and stickable notes

## Getting Started ~10 min

Teaching Tip *Before starting the Model Performance Task it is essential that students understand data compression and can cite several examples. Class time is allowed for much of the collaborative work in this activity, but it may be necessary to complete some portions outside of class. The process of writing the rough draft may require several class periods.*

1. Journal entry:

**Think**

List as many examples of digital media as you can think of that are compressed files.

Give the students ~3 minutes to complete their list.

**Pair**

Instruct students to discuss with an elbow partner:

* Compare notes and discuss your lists.
* Did you include the same things?

**Share**

Invite students to share examples of digitally compressed artifacts and for each discuss

* What type of digital compression was used?
* In general, what is digital compression?
* What problems does compression solve for this type of media?

**Activity: Understanding the Performance Task** ~20 min

NOTE: “Single digital artifact” means a particular song, book, poem, map, etc. The strategy is for the student to pick a particular item of personal meaning, and investigate the file type the particular item is representative of.

**2. Read and rephrase the Performance Task**

* **Distribute materials** (*Student Activity Guide: Model Performance Task*, highlighters and stickable notes).
* Instruct students to individually read the Student Activity Guide and to highlight words/phrases that are unclear.
* When students have finished reading and highlighting they should write the highlighted words on stickable notes or use a digital tool. Ask them to write one word/phrase per note.
* **Collect the sticky notes**
* Look for common phrases and themes and arrange the notes, putting common words/phrases together*.*
* **Define and clarify each of the words/phrases.**
* Involve the students in a discussion to clarify the terms on the stickable notes.
* Emphasize: What does ‘explain why’ mean?
  + Homework assignment: Using the definitions and clarifications from reading the *Model Performance Task*, rephrase the questions in the *Collaborative and Individual Summary* sections of the *Model Performance Task*.

**Activity: Selecting and researching a topic** ~15 min

**3. Select a topic**

* **Brainstorm potential research topics**

Assign the partners. Note: If you have an odd number of students there may be one group of three. Allow 5 minutes for students to brainstorm to create a list of things that use digital compression.

* **Select one item**

Ask students to select just one item from the list. Encourage them to be as specific as possible and to think about the various forms in which this item might also be available. (Example: If a group selects a particular song, they might recognize that it could be digital, analog, printed, etc.)

**Activity: Writing the first draft of the Collaborative Summary** ~30 min

**4. Research and begin the writing process**

* Instruct students to use online resources to learn about the compression used in the chosen artifact. At least one resource must be less than 12 months old. Students are required to address these questions in their research (listed on the *Student Activity Guide: Performance Task*):
  + Explain why your group selected the digital artifact used in your investigation.
  + What type of data is compressed?
  + Describe the steps used in the compression. Be sure to include why it is used and what problem it is solving.
  + Describe the beneficial effects of the digital compression used in the creation of the digital artifact.
  + Describe the limitations of the digital compression.
  + Compare and contrast the digitally compressed version to an analog version of the same artifact. How does the compression impact our experience with this artifact?
* This is also a good time to remind them to consider the source of the information. Is it reliable? Why do they think so?
* Students will use the notes from their research to produce a draft of the Collaborative Summary (described on the *Student Activity Guide: Performance Task*). Allow about 30 minutes for this activity. Circulate and ask questions about how they are answering the questions.

**Activity: Peer Review** ~30 min

**5. Give and receive feedback on the Collaborative Summary**

* Instruct students to print their Collaborative Summary and exchange with another group.
* Complete the *Student Activity Guide: Peer Review*
* For each of the prompts on the Collaborative Summary, answer these questions:
  + What are the strengths of the explanation?
  + What is missing from the explanation?

**Activity : Writing the final summaries** ~30 min

6. **Guide students to write their final draft of the Performance Task Summaries**

* When the Collaborative Summary is complete and turned in, each student should independently write their Individual Summary and turn in.

## Assessment Questions

An end-of-unit test or quiz may be appropriate at this time. Refer to the *Unit 1 Assessment Questions* in the Teaching Resource Collection.

Use the U1-L8 Rubric: Performance Task to assess the student’s Model Performance Task.

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