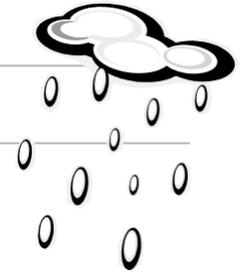# Performance Task: RAIN GARDENS

## PART 1: RESEARCH
## Student Directions:

**Your assignment:**

Your neighborhood council is researching the benefits of installing rain gardens in your community. You will read two articles and watch one video describing what rain gardens are and how they benefit the environment. You will also visit your school's rain garden, taking photos to document its benefits. You will compose and deliver a speech explaining how rain gardens improve the environment, incorporating photos from your school's rain garden in your speech.

**Steps you will be following:**

To plan and compose your speech, you will do all the following:

1. Read two articles and watch one video.
2. Visit your school's rain garden and take pictures
3. Answer three questions about the sources.
4. Compose and deliver your speech

**Directions for beginning:**

You will now watch a video and read two articles about rain gardens, taking notes with the templates provided. You may want to refer to your notes when composing your speech. You may refer to any of the sources as often as you like.
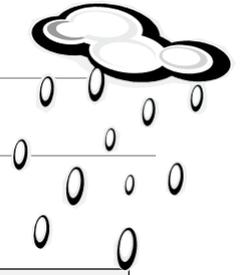
## Source Information:

**Source #1:**    *Make a Rain Garden!* (4:20)
Video    https://youtu.be/rZDeIzWDDlY

**Source #2:**    ***Introduction to Rain Gardens***
Article #1

**Source #3**    *4 Steps to Building a Rain Garden*
Article #2

| Source | What a Rain Garden Is | How Rain Gardens Benefit the Environment |
|---|---|---|
| *Make a Rain Garden!* <br><br> Video | | |
| *Introduction to Rain Gardens* <br><br> Article | | |
| *4 Steps to Building a Rain Garden* <br><br> Article | | |

# INTRODUCTION TO RAINGARDENS

## NATIVE SOILS AND FORESTS

of Western Washington store, filter, and slowly release cool, clean water to streams, wetlands, and the largest estuary on the west coast—Puget Sound. The rich diversity of life in marine and fresh water, as well as on land, depends on clean water to thrive.

As the region grows, native forests and soils are replaced with roads, rooftops and other hard surfaces. When it rains or snows, more water flows from these surfaces than undisturbed areas, carrying oil, fertilizers, pesticides, sediment and other pollutants downstream. In fact, much of the pollution in streams, wetlands and Puget Sound now comes from stormwater (water flowing off developed areas). The added volume of water and associated contaminants from developed land are damaging water resources and harming aquatic life in western Washington.

*You can make an important contribution to reduce the amount of stormwater and pollutants coming from your property by incorporating rain gardens into your yard.*

Rain garden, City of Maplewood MN

## What is a rain garden?

**A** rain garden acts like a native forest by collecting, absorbing, and filtering stormwater runoff from roof tops, driveways, patios, and other areas that don't allow water to soak in. Rain gardens are simply shallow depressions that:

- ◆ Can be shaped and sized to fit your yard.
- ◆ Are constructed with soil mixes that allow water to soak in rapidly and support healthy plant growth.
- ◆ Can be landscaped with a variety of plants to fit the surroundings.

## THE BIG PICTURE

**R**ain gardens are one of the most versatile and effective tools in a new approach to managing stormwater called low impact development (LID). A LID project may incorporate several tools to soak up rain water, reduce stormwater runoff, and filter pollutants. Some examples of these tools include permeable paving, compost-amended soils, vegetated roofs, rainwater collection systems, and rain gardens.



Seattle rain gardens

*Photo by Seattle Public Utilities*

## Rain gardens provide multiple benefits, including:

Reduce flooding on neighboring property, overflow in sewers, and erosion in streams by absorbing water from impervious surfaces.

Provide habitat for beneficial insects and birds.

Filter oil and grease from driveways, pesticides and fertilizers from lawns, and other pollutants before they reach the storm drain and eventually streams, wetlands, lakes and marine waters.

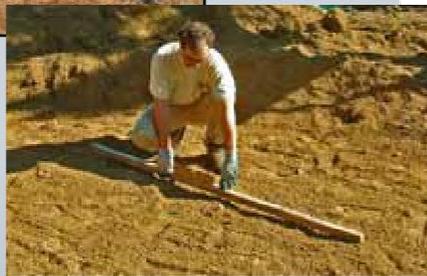Increase the amount of water that soaks into the ground to recharge local groundwater.

# 4 STEPS TO BUILDING A RAIN GARDEN

### 1 LOCATE

- Identify areas draining to the rain garden.
- Identify the best location for the rain garden.
- Test the soil.

### 2 DESIGN & BUILD

- Determine the size and shape of the rain garden.
- Excavate soil (18-30 inches typical).
- Level bottom of rain garden **(do not compact).**
- Mix compost with soil.
- Place soil mix and leave at least 6 inches below edge of rain garden for ponding.
- Level surface of soil.
- Create an entry for water (swale, pipe or landscape area) into rain garden.
- Provide a rock-lined overflow.

### 3 PLANT

- Use a variety of small trees, shrubs, herbs, or grasses.
- Select plants that enhance the area and have appropriate water needs (native plants and hardy cultivars are preferred).
- Cover exposed soil with 2-3 inches of mulch.
- Water to establish plants.

### 4 MAINTAIN

- Mulch as needed to prevent erosion and weeds.
- Keep inlet and outlet clear of debris and well protected with rock.
- Do not fertilize or use pesticides.
- Water as needed.

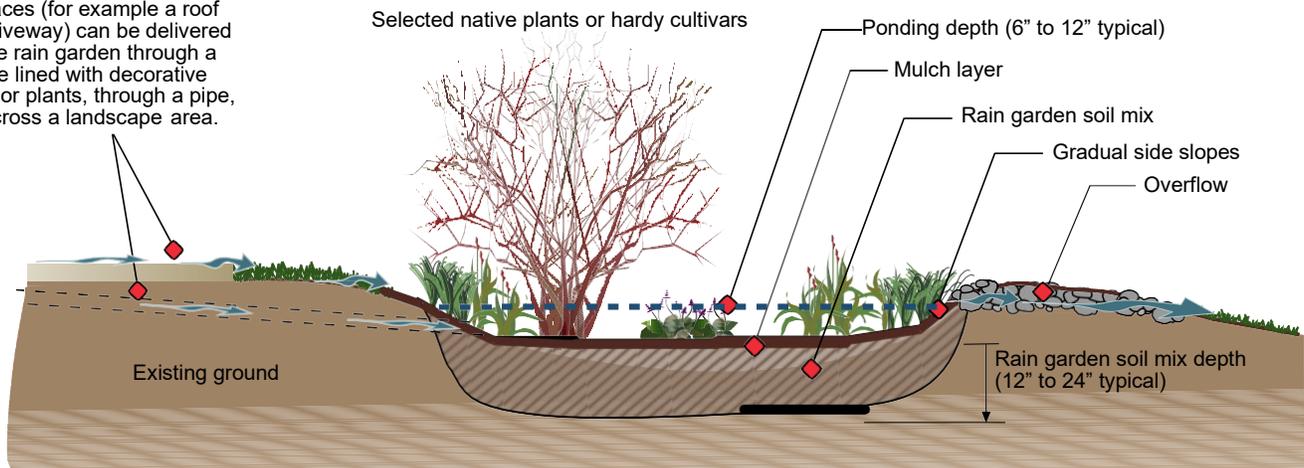**Rain garden, City of Maplewood MN**

*Steps* 3

# ANATOMY OF A RAIN GARDEN



Newly planted Seattle rain garden
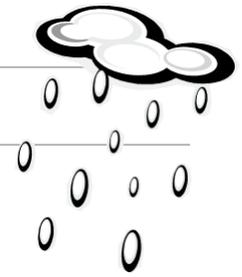
*Photo by Seattle Public Utilities*



Water flowing off impervious surfaces (for example a roof or driveway) can be delivered to the rain garden through a swale lined with decorative rock or plants, through a pipe, or across a landscape area.

Selected native plants or hardy cultivars

Ponding depth (6" to 12" typical)

Mulch layer

Rain garden soil mix

Gradual side slopes

Overflow

Existing ground

Rain garden soil mix depth (12" to 24" typical)

When properly designed and constructed, rain gardens drain rapidly with surface water present for only 1-2 days. Mosquitos take a minimum of about 4 days (many types of mosquitos take several days longer) to become adults after eggs are deposited in water.

## Questions

Use your remaining time to answer the questions below. Your answers to these questions will be scored. Also, they will help you think about the sources you have read and viewed, which should help you to compose your speech. You may refer to the sources and your notes to answer the questions.

1.  Define what a rain garden is using information from the articles and video. *Cite your sources. Claim 4, Target 2)*

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2. Which source is best for learning how to construct a rain garden, the articles, or the video? Explain your answer using evidence from the sources. *(Claim 4, Target 3)*

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3. Explain how a rain garden improves the environment. Use information from the readings and the video in your answer. Cite your sources. *(Claim 4, Target 4)*

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     Revised Nov 2020

# Task: **RAIN GARDENS**

## PART 2: FIELD INVESTIGATION

### Student Directions:

**Today, you will visit your school's rain garden! Make observations about the construction of the rain garden including its location, plants, and depth. Take pictures of the rain garden to illustrate its characteristics for use in your speech. Remember that your task is to explain why installing a rain garden improves the environment.**
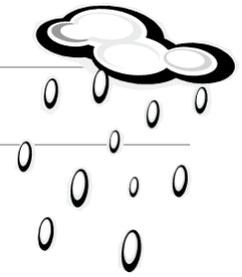
| Characteristics | My Observations |
|---|---|
| Location | |
| Plants | |
| Depth | |

### Questions for Discussion:
1. What observations supported the information from the video and articles?
2. What additional information did you gain from visiting a real rain garden?
3. What pictures did you decide to take and why?
4. What do you think are the most important benefits of a rain garden?

**PART 3: SPEECH**
**Student Directions:**

You will now have time to compose and deliver your speech. While you may use your notes and refer to your sources, you must work on your own. You may also refer to the answers you wrote to earlier questions, but you cannot change those answers. Now read your assignment and the information about how your speech will be scored and then begin your work.

**Your assignment:**

Compose and deliver a 2-3-minute speech for your neighborhood council explaining how rain gardens will improve the environment. Include details about the construction and benefits of rain gardens from the video and articles as well as photographs from your school's rain garden to support your ideas.

**How your speech will be scored:**

*The people scoring your speech will be assigning scores for*

1. **Focus** --- how well your speech clearly introduces and communicates your ideas

2. **Organization** – how well your ideas flow from the opening to the conclusion and how well you stay on topic throughout the speech

3. **Elaboration of Evidence**– how well you use sources, facts, pictures, and details as evidence

4. **Language and Vocabulary** – how well you effectively express ideas using precise language that is appropriate for your audience and purpose

5. **Presentation** – how well your speech is presented, including eye contact, pronunciation, and awareness of audience and the use of visual/graphics/audio enhancements appropriate to your message
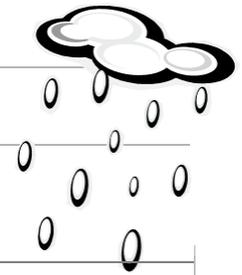
## Outlining My Speech

| | |
|---|---|
| Attention grabber: | Picture: |
| What rain gardens are and how they are constructed: | Picture(s): |
| Benefits of a rain garden for the environment: | Picture(s): |
| Closing: | Picture: |

Grades 5-7 Revised Nov 2020

# Scoring Notes: Rain Gardens

1.  **Define what a rain garden is using information from the articles and video.  Cite your sources.**
    *(Claim 4, Target 2)*

| | Analyze/Integrate Information Rubric (Claim 4, Target 2) |
|---|---|
| **2** | • The response gives sufficient evidence of the ability to locate, select, interpret and integrate information within and among sources of information. |
| **1** | • The response gives limited evidence of the ability to locate, select, interpret and integrate information within and among sources of information. |
| **0** | A response gets no credit if it provides no evidence of the ability to locate, select, interpret and integrate information within and among sources of information. |

**Scoring Notes:**

**Article #1:**  Introduction to Rain Gardens:  A Rain Garden is a shallow depression that collects stormwater runoff and allows the water to soak rapidly into the ground.

**Article #2:**  4 Steps to Building a Rain Garden:  A Rain Garden is a depression that has native plants and rich soil to allow stormwater to soak rapidly into the ground.

**Video:**  Make a Rain Garden!  A Rain Garden is a depression that allows the stormwater to soak rapidly into the ground. It includes rich soil and native plants.
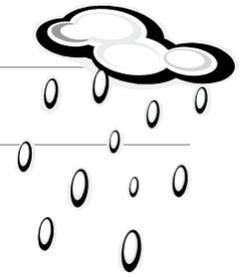
**2 Point Responses:**
- Accurately defines what a rain garden is:  A rain garden is a depression that allows stormwater to soak rapidly into the ground.
- Uses information from at least one of the two articles and the video.
- Cites the sources used.

**1 Point Response:**
- Accurately defines what a rain garden is:  A rain garden is a depression that allows stormwater to soak rapidly into the ground.
- Uses information from only one source.
- May or may not cite sources.

**0 Point Response:**
- Inaccurate or incomplete description of what a rain garden is.
- Off Topic.

**Sample 2 Point Responses:**

**Example #1:**
Rain Gardens are a small depression that collect, absorb, and filter stormwater runoff from nearby impervious surfaces that don't allow water to soak in. (*Introduction to Rain Gardens*). A rain garden is nothing more than "a little depression" that the water flows into and soaks into the ground. (Make *a Rain Garden).*

**Example #2:**
A rain garden is a type of garden that stops stormwater from going into streams, wetlands, and estuaries. It is filled with healthy soil and native plants. The rain garden collects, absorbs, and filters water that is filled with oil, grease, fertilizers, and other pollutants. Rain gardens also help prevent flooding in the sewers and erosion in the streams. It provides habitat for beneficial insects and small animals such as birds. My sources are *Introduction to Rain Gardens* article and *Make a Rain Garden* video.

**Example #3:**
According to the articles and the video, a rain garden is a small depression in the ground with layers of soil and mulch covered in plants. The purpose of a rain garden is to absorb stormwater into the earth, preventing more pollution and a decrease in the water supply.

**Sample 1 Point Responses:**

**Example #1:**
A depression in the ground that collects rainwater instead of it running into the storm drains carrying pollutants, which will pollute the rivers. It filters the pollutants out and recharges local ground water when it soaks into the ground. (Fails to cite sources)

**Example #2:**
A rain garden is a garden you can build to help filter runoff water from driveways, roof tops, etc. The stored water helps various types of plants grow. The clean, filtered water flows into the ground and then into the ocean. (Fails to cite sources)

**Sample 0 Point Responses:**
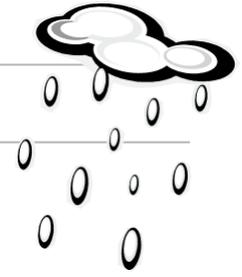
**Example #1:**
It is a water filter and helper. (incomplete description of what a rain garden is.)

**Example #2:**
A rain garden can "increase the amount of water that soaks into the ground to recharge local water." (Fails to describe what a rain garden is but rather tells what a rain garden does.)

# Scoring Notes: Rain Gardens

2.      Which source is best for learning how to construct a rain garden, the articles, or the video?  Explain your answer using evidence from the sources. Cite your sources. *(Claim 4, Target 3)*

| Use Evidence Rubric (Claim 4, Target 3) | |
|---|---|
| 2 | The response gives sufficient evidence of the ability to distinguish relevant from irrelevant information such as fact from opinion. |
| 1 | The response gives limited evidence of the ability to distinguish relevant from irrelevant information such as fact from opinion. |
| 0 | A response gets no credit if it provides no evidence of the ability to distinguish relevant from irrelevant information such as fact from opinion. |

**Scoring Notes:**

**Articles:**  The articles have more detail.  The article, Steps to Building a Rain Garden, includes a step by step list with pictures. It is organized by how to locate the rain garden, how to design and build the rain garden, how to plant the rain garden and how to maintain the rain garden.

**Video:**  The video shows you exactly what to do to build the rain garden.  It is easy to follow.  Children are modeling what to do to build the rain garden which makes it believable that anyone could build a rain garden.

**2 Point Response:**
- o   Names either the articles or the video as being the best in learning how to construct a rain garden.
- o   Provides at least one specific piece of evidence to support the selected source.
- o   References both sources to show which is best. (Compares and contrasts)
- o   Cites the sources.

**1 Point Response:**
- o   Names either the article or the video as being the best in learning how to construct a rain garden.
- o   Provides a vague reason for the choice.
- o   Only references one source. (Does not compare and contrast.)
- o   May or may not cite sources.

**0 Point Response:**
- o   No clear stand is taken.
- o   Takes a stand but provides no reasons.
- o   Off Topic Response.

## Scoring Notes: Rain Gardens

**Sample 2-point responses:**

**Example #1:**
The video. It uses visuals in a step-by-step tutorial.  It also tells you the benefits and why you are taking the effort to plant a rain garden.  It is also the better source because it uses vocabulary kids can understand while the articles use vocabulary that is hard to understand.

**Example #2:**
I think the article "5 Steps to Building Rain Garden" is the best source.  It's a step-by-step guide that breaks the steps into parts.  For example, "1. Locate: Identify areas draining into the rain garden." The video is the second most helpful. It gives good information on where to plant a plant in the garden.  "We put the plants that don't need as much water at the edges."  However, 5 Steps to Building a Rain Garden is still the best source and most detailed.

**Example #3:**
I think that the best source is the video because instead of reading complicated instructions, you watch people in the video show, explain, and tell the viewers examples.  It also shows you, if you want to make your garden pretty, how to plant the plants.

**Example #4:**
I like what I learn in the video about building a rain garden.  However, I think that the article "4 Steps to Building a Rain Garden," is best.  It gives you step by step instructions like,"1 Locate, 2 Design and Build, 3 Plant, 4 Maintain."  It also has captions with little pictures and notes describing what those steps mean and how you do them.  I also think it is extremely informational personally because it gives you measurements and your materials specifically.  That that's the reason I think the article was the most helpful.

**Sample 1-point responses:**

**Example #1:**
The Article on Building a Rain Garden:  There are more steps, and the steps are more detailed. (Vague response; no comparison with the video)

**Example #2:**
The articles are better because one of the articles tells all about how to start a rain garden at home.  It shows you about 20 great tips on how to start a perfect rain garden at your own home.  (Vague response; No comparison with video.)

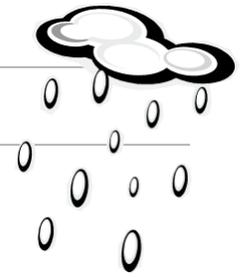**Sample 0-point responses:**

**Example #1:**
I say the articles would be good because they walk you through step by step, but the video gives you a visual too. (No clear stand is taken.)

**Example #2:**
4 Steps to building a rain garden is best because it gives you four steps. (No reason from the article is provided. The title is simply restated with no additional information.)

3.      **Explain how a rain garden improves the environment.  Use information from the readings and the video in your answer.  Cite your sources.**  *(Claim 4, Target 4)*

| Use Evidence Rubric (Claim 4, Target 4) | |
|---|---|
| **2** | The response gives sufficient evidence of the ability to cite evidence to support opinions and ideas. |
| **1** | The response gives limited evidence of the ability to cite evidence to support opinions and ideas. |
| **0** | A response gets no credit if it provides no evidence of the ability to support opinions and ideas. |

**Scoring Notes:**

**Article #1:**  Introduction to Rain Gardens:   Rain gardens capture the pollutants from stormwater runoff that harm our water resources and animal life.  A rain garden acts like a sponge soaking up the stormwater and filtering the pollutants.
**Article #2:**  4 Steps to Building a Rain Garden:   Rain gardens capture storm water and can drain this water rapidly.
**Video:**  Make a Rain Garden:  Rain gardens help to solve the problem of runoff.  Runoff carries pollutants.  These pollutants are trapped in the rain garden as the water soaks through the soil.   Rain gardens soak up more water than grass, trapping more pollutants.

**2 Point Response:**
- Accurately explains how a rain garden improves the environment.
- Uses information from both the articles and the video.
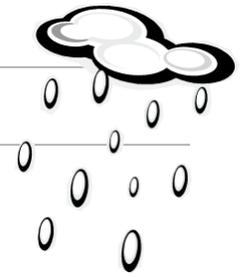- Cites the sources used.

**1 Point Response:**
- Accurately explains how a rain garden improves the environment.
- Uses information from either the articles or the video but not from both.
- May or may not cite sources.

**0 Point Response:**
- Fails to accurately explain how a rain garden improves the environment.
- Off topic response

**Sample 2-point responses:**

**Example #1:**
According to the article "Introduction to Rain Gardens," a rain garden improves the environment because it reduces the amount of stormwater and pollutants coming off roofs, sidewalks, driveways, roads, and even parking lots.  You might think: "But I thought the grass soaks up water.  We don't need a rain garden!" Well, you are partially correct. According to the video "Make A Rain Garden," the grass does soak up some, but there is usually a lot of water, so it cannot soak up the whole flood.  Also, under the rain garden it is shallow so water can seep through and be filtered.

**Example #2:**
Here are two ways that rain gardens improve the environment:  #1:  They help to filter pollutants out of the water by filtering the water in the rain garden.  It said this in the video.  #2: Rain gardens provide habitat for beneficial insects and birds.  It said this on page 2 of *Introduction to Rain Gardens*.

**Example #3:**
When you have a rain garden, you "also get the benefit of trapping pollutants." (Make a Rain Garden).  Rain gardens also "increase the amount of water that soaks into the ground to recharge local groundwater" states "Introduction to Rain Gardens."  Without groundwater, we would not have much fresh water to drink!

**Sample 1-point responses:**

**Example #1:**
Rain Gardens filter out pollutants from rainwater instead of the rainwater carrying pollutants into the rivers and streams.  They also reduce erosion in streams, keep mosquitoes away since it doesn't give them a place to lay eggs, provides a habitat to birds and helpful insects such as bees and butterflies and helps to refill local groundwater. (Fails to cite sources.)

**Example #2:**
The rain garden improves the environment in many ways.  One of them is that it prevents floods.  Here are some other ways.  It can become an ecosystem for animals and plants.  It will soak up oil and pollutants.  It will add to the amount of drinking water.  These are the reasons why it's better than grass. (Fails to cite sources.)

**Sample 0-point responses:**

**Example #1:**
Rain gardens improve the environment by not flooding streets. (Vague response: Fails to accurately explain how a rain garden improves the environment.)

**Example #2:**
Rain gardens are one of the most versatile and effective tools in a new approach to managing stormwater called low impact development. (LID) (Copied from the text.  Does not answer the question.)

# SCORING VERSION

## 4 – Point Speech Rubric (Grades 3-11)

| Score | 4 | 3 | 2 | 1 |
|---|---|---|---|---|
| **Focus** | The speech is consistently and purposefully focused:<br>• controlling idea, opinion, or claim is clearly stated and strongly maintained<br>• controlling idea, opinion or claim is introduced and communicated clearly within the context | The speech is adequately and generally focused:<br>• controlling idea, opinion, or claim is clear and for the most part maintained though some loosely related material may be present<br>• some context for the controlling idea, opinion, or claim | The speech is somewhat unclear and unfocused:<br>• controlling idea, opinion, or claim is for the most part maintained though there may be a minor drift<br>• controlling idea, opinion, or claim may be lacking an appropriate context | The speech is unclear and unfocused:<br>• controlling idea, opinion, or claim may have a major drift<br>• controlling idea, opinion, or claim may be confusing or ambiguous |
| **Organization** | The speech has a clear and effective organizational structure helping create unity and completeness:<br>• employs a strong opening and logical progression of ideas<br>• effective introduction and conclusion for audience and purpose | The speech has an evident organizational structure and a sense of completeness, though some ideas may be loosely connected:<br>• adequate use of transitional strategies with some variety<br>• ideas progress from beginning to end<br>• introduction and conclusion are adequate<br>• adequate, if slightly inconsistent, connection among ideas | The speech has an inconsistent organizational structure:<br>• inconsistent use of transitional strategies with little variety<br>• ideas progress unevenly from beginning to end<br>• introduction and conclusion, if present, any be weak<br>• weak connection among ideas | The speech has little or no discernible organizational structure:<br>• few or no transitional strategies are evident<br>• frequent extraneous ideas may intrude |
| **Elaboration of Evidence** | The speech provided thorough and convincing support/evidence for the writer's controlling idea, opinion, or claim that includes the effective use of sources, facts, and details:<br>• use of evidence from sources is smoothly integrated | The speech provides adequate support/evidence for the writer's controlling idea, opinion, or claim that includes the use of sources, facts, and details:<br>• some evidence from sources is smoothly integrated though may be general or imprecise | The response provides uneven, cursory support/evidence for the writer's controlling idea, opinion, or claim that includes partial or superficial use of sources, facts, and details:<br>• evidence from sources is weakly integrated | The speech provides minimal support/evidence for the writer's controlling idea, opinion, or claim that includes little or no use of sources, facts, or details,:<br>• use of evidence from the source material is minimal, absent, in error, or irrelevant |
| **Language and Vocabulary** | The speech clearly and effectively expresses ideas:<br>• use of precise language (including academic and domain-specific language)<br>• consistent use of syntax and discourse appropriate to the audience and purpose | The speech adequately expresses ideas employing a mix of precise with more general language:<br>• use of use of academic and domain-specific language is adequate<br>• use of syntax and discourse generally appropriate to the audience and purpose | The speech inconsistently expresses ideas employing simplistic language:<br>• use of domain-specific insufficient use of academic and domain-specific language<br>• use of syntax and discourse may at times be inappropriate to the audience and purpose | The speech expresses vague ideas, lacks clarity, or is confusing:<br>• uses limited language or domain-specific vocabulary<br>• rudimentary use of syntax and discourse inappropriate for the audience and purpose |
| **Presentation** | The speech is clearly and smoothly presented:<br>• use of effective eye contact and volume with clear pronunciation<br>• understandable pace adapted to the audience<br>• consistently aware of audience's engagement<br>• use of strong visual/ graphics/ audio enhancement, when appropriate, to effectively clarify message. | The speech is adequately presented with minor flaws::<br>• appropriate use of eye contact volume, and pronunciation<br>• generally understandable pace adapted to the audience<br>• sufficiently aware of audience's engagement<br>• sufficient use of visual/graphics/audio enhancements, when appropriate, to clarify message | The speech is unevenly presented with evident flaws:<br>• inconsistent use of eye contact, volume, and pronunciation<br>• pace partially adapted to the audience<br>• partially aware of audience's engagement<br>• sufficient use of visual/graphics/ audio enhancement, when appropriate, to clarify message | The speech is presented with serious flaws that obscure meaning:<br>• infrequent eye contact, and inappropriate volume and pronunciation<br>• pace not adapted to the audience<br>• little or no sense of audience's engagement |

Speech Rubric

Grades 5-7     Revised Nov 2020