



# Unit Assessment Evaluation – Air Quality Inquiry

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# The Unit

- Air Quality Inquiry, grades 9-12
- One day of lessons, 5 Days of Activities
- Factors that affect air quality
- Importance of air quality
- How engineers work to improve air quality



# The Assessment

## Analytic Rubric



### Current Event Article

Characterizing and understanding vehicle emissions is important to minimize air pollution, improving public health and reducing impacts to the global climate. The article below discusses an air quality issue in Paris, France, and demonstrates how air quality can affect daily routines.

Note that the pollutant mentioned in the article is “PM,” or particulate matter. Using the air quality monitoring Pods in class, we will be studying gas-phase pollutants. Do you remember the difference between the two? Both types of air pollution are important and relevant to monitoring vehicle emissions.

***Answer the following questions in a paragraph:***

- Why would French government officials choose to target vehicles to lower emissions?
- Are there other sources they could have chosen instead?
- As a citizen, how would you react?

# Rubric

Item	Not Observed	It's a Start	Getting There	Understood
Question 1	Question not answered	Response contained no facts or logical reasoning	Fair response with some facts and/or logical reasoning	Well written response supported by facts and logical reasoning
Question 2	Question not answered	One or two references included but from non-academic or non-reputable sources with limited relevance	Fair response with some facts and/or logical reasoning	Several references included, all are from academic and/or reputable sources and relevant to the topic
Question 3	Question not answered	Response limited in facts or explanation	Response fairly written, some facts or explanation	Response is relevant and includes reasons supported with explanations and facts
Writing level, grammar, and references	Question not answered	Response limited in facts or explanation	Fairly written, few grammar errors, references included but not properly cited	Well written, free of grammar errors, references cited properly
Overall Feedback:				



# The Purpose and Justification

Articulate a response to a supplied article

Opportunity to conduct their own research

Analytic Rubric without grading since this activity was a formative assessment

Focus is on feedback and developing research skills

# The Feedback

Guidance on constructing a well-reasoned argument

Includes grammar, reasoning, and resource quality

Focus is on positive growth





# Resources

- Boaler, J. (2016). Chapter 8: Assessment for a growth mindset In *Mathematical mindsets: Unleashing Students' Potential through Creative Math, Inspiring Messages and Innovative Teaching* (pp. 141-169). San Francisco, CA: Jossey-Bass.
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- DePaul (n.d.). Types of *Rubrics*. Teaching Commons. <https://resources.depaul.edu/teaching-commons/teaching-guides/feedback-grading/rubrics/Pages/types-of-rubrics.aspx>
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- McTighe, J., & Ferrara, S. (1994). *Performance-based assessment in the classroom*. Pennsylvania Educational Leadership, 4-16.
- Regents of the University of Colorado (2013). *Air Quality Inquiry (AQ-IQ)*. Teach Engineering. [https://www.teachengineering.org/curricularunits/view/cub\\_airquality\\_unit](https://www.teachengineering.org/curricularunits/view/cub_airquality_unit)
- Regents of the University of Colorado (2013). *Combustion and Air Quality: Emissions Monitoring*. Teach Engineering. [https://www.teachengineering.org/activities/view/cub\\_airquality\\_lesson01\\_activity2](https://www.teachengineering.org/activities/view/cub_airquality_lesson01_activity2)