

WRITTEN ARGUMENT RUBRIC

EVALUATE LESSON 25



Part 2 Task Rubric

INFO-H5: Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (including orally, graphically, textually, and mathematically).

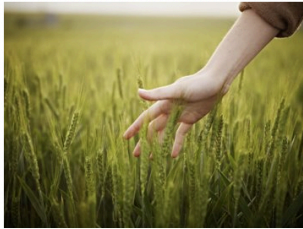

ESS3.A-H2: All forms of energy production and other resource extraction have associated economic, social, environmental, and geopolitical costs and risks as well as benefits. New technologies and social regulations can change the balance of these factors.

ESS3.C-H1: The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources.

SYS-H1: Systems can be designed to do specific tasks.

	Emerging	Developing	Proficient
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<p>Sample Student Response</p>	<p>Problem:</p> <p>Cow burps contribute to GHG emissions and high levels of methane in the atmosphere.</p> <p>This can lead to climate change through the greenhouse effect.</p> <p>Solution: The solution to this is to use rotational grazing.</p>	<p>Problem: Cow burps contribute to GHG emissions and high levels of methane in the atmosphere. This can lead to climate change through the greenhouse effect.</p> <p>Solution: The solution to this is to use rotational grazing. A rotational grazing strategy for cattle can help offset the negative effects on biodiversity and may lead to more carbon sequestration in soils. This strategy can allow us to still produce milk for consumers and improve on some of the costs and risks of the current system design.</p>	<p>Problem: Fertilizers pollute nearby waterways</p> <p>Potential Solution: Using plants that require less fertilizer</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>This solution reduces the amount of synthetic fertilizer required for crops which means less fertilizer will pollute nearby waterways. This solution also increases soil fertility.</p>  </div> <div style="width: 45%;">  <p>The solution tradeoffs are that it requires farmers to grow specific crops that are nitrogen fixing. This however seemed to be a small tradeoff because some of the nitrogen fixing plants are ones that are already used as dairy cattle feed. Another tradeoff is that these plants may lack some of the desirable traits such as drought tolerance. This is something that should be taken into account if a farmer lives in a drought tolerant area.</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="width: 45%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #4a7ebb; color: white;"> <th style="padding: 5px;">Benefits</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"> <ul style="list-style-type: none"> Crops require less fertilizer Reduce the amount of synthetic fertilizer that is used Enhance soil fertility Reduces fertilizer pollution in nearby waterways </td> </tr> </tbody> </table> </div> <div style="width: 45%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #4a7ebb; color: white;"> <th style="padding: 5px;">Costs and Risks</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"> <ul style="list-style-type: none"> Requires farmers to grow specific crops that sequester nitrogen into the soil like soybeans or alfalfa Higher initial costs for some of these nitrogen fixing plants. Tradeoffs for other desirable plant traits such as drought tolerance or yield. </td> </tr> </tbody> </table> </div> </div>	Benefits	<ul style="list-style-type: none"> Crops require less fertilizer Reduce the amount of synthetic fertilizer that is used Enhance soil fertility Reduces fertilizer pollution in nearby waterways 	Costs and Risks	<ul style="list-style-type: none"> Requires farmers to grow specific crops that sequester nitrogen into the soil like soybeans or alfalfa Higher initial costs for some of these nitrogen fixing plants. Tradeoffs for other desirable plant traits such as drought tolerance or yield.
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Criteria	Explanation
Environmental	Requires less synthetic inputs, reduces runoff
Economic	Lower economic input for fertilizer Potential higher economic input for cost of seeds
Social	Common crops grow for cattle feed also sequester nitrogen like soybeans
Scientific	Meets standards in the industry

How to Achieve This Level	Student completes 0-2 out of 5 Look Fors	Student completes 3-4 out of 5 Look Fors	Student completes 5 out of 5 Look Fors
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Part 2 Look Fors	Prompts to Support Students in Improving on Look Fors
Student identifies a dairy production system cost or risk as a problem. The identification of the problem is backed up by evidence that explains the problem in full.	What problem did you identify? What evidence do you have that this is a problem?
Student names the new task that the solution is intended to accomplish and describes how the solution accomplishes it.	What is the goal of the solution you chose? How does this solution function? How does it improve the unintended effects of the dairy system?
Student describes how the solution chosen maintains the benefits of the dairy system and helps improve on its costs and risks. Student names these as economic, social, environmental, and/or geopolitical costs / risks / benefits.	What benefits of the system is the solution maintaining or improving on? What costs or risks is the solution improving on? Are these economic, social, environmental, or geopolitical costs, risks, or benefits?
Student describes how the solution proposed will more responsibly manage natural resources.	What does the solution do? What natural resources are involved? How does this solution differ in its use of natural resources compared to the original dairy system?
Student presentation includes multiple formats of communication, including: <ul style="list-style-type: none"> ● Oral/verbal/speaking ● Graphics/media ● Writing/text 	Which formats of presentation did you choose to use? Did you use at least two different formats of communication?

To Support Students in Revising Their Tasks Based on Peer or Teacher Feedback

- Prior to submitting their work, hold a peer-feedback session using a protocol such as [Tell-Ask-Give](#) or with norms such as [SPARK](#). Then have students revise their work based on the peer feedback.
- After submitting their work and receiving feedback and a grade, hold a session for students to norm on the features of high-quality work. Choose three samples of student work (one Emerging, one Developing, and one Proficient), anonymize them, and distribute them to students. Ask students to analyze the three samples of work and annotate what features of the work are high-quality examples of the Look Fors and what features are not. Share out the features of high-quality work that students identified and ask them to point to specific examples in the work samples. Build a class list of features of high-quality work. Then, allow students time to revise their work based on the list they generated and resubmit it for a revised grade.