Lesson C: Using Hydrophones for Research

Assignment Option One: Make a Written Piece

Throughout this lesson you have explored how hydrophones work and what data they provide scientists. Using what you know, or additional information from a variety of sources, create a written piece *(*such as an essay, report, or speech) that explores the following:

Compare and contrast a hydrophone and a deep-sea camera. Why is a hydrophone an important piece of ocean monitoring equipment? What are the advantages over a camera? What are the disadvantages?

Be sure to answer the following questions in your assignment:

What is a hydrophone and how is it different from a deep-sea camera?
How does a hydrophone record data?
What are the advantages of using a hydrophone?
What are the disadvantages of using a hydrophone?
Which do YOU think is the more valuable tool and why?

Criteria:	4	3	2	1
Stance on issue is clear and defined.	Opinion and ideas express a well-rounded view while keeping focus and reader engagement.	Opinion and ideas are mostly well-rounded while keeping focus and reader engagement.	Opinions and ideas need refining; some ideas well expressed.	Opinions not well discussed or expressed.
Clearly explains the difference between a hydrophone and a camera.	Covers key components of both technologies, showing a basic understanding of how they collect data.	Mostly covers key components and has key, but not all, features of how data is collected.	Some key elements of each technology are missing, including how data is collected.	Major elements are missing, and how data is collected is not explained.
Accurately discusses advantages and disadvantages.	Clearly defines and addresses advantages and disadvantages of both technologies.	Touches on most advantages and disadvantages of both technologies.	Touches on some but not all advantages and disadvantages, or focuses on one technology.	Misses key features of the discussion and technology.
Piece has been proofread for spelling, grammar, and accuracy, and includes name, date, and title.	No mistakes.	1-2 mistakes.	2-4 mistakes.	Many mistakes are evident.

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Assignment Option Two: Make a Media Presentation

Throughout this lesson you have explored how hydrophones work and what data they provide scientist. Using what you know, or additional information from a variety of sources, create a media piece (such as a poster, Prezi, PowerPoint, Glogster or other) that explores the following issue:

Using graphic data, how would you explain how a hydrophone collects data? How would you demonstrate what can be learned from hydrophone data?

Your presentation, should answer the following questions:

What is a hydrophone and how does it record data?
What have we learned using hydrophones?
What are the advantages to using a hydrophone in a marine environment?
What are some possible disadvantages?

Criteria:	4	3	2	1
Explains or demonstrates a hydrophone and how it collects data.	Covers key components of the technology showing a basic understanding of how data is collected.	Mostly covers key components and has key, but not all features of how data is collected.	Some key elements of the technology are missing, including how data is collected.	Major elements are missing, and how data is collected is not explained.
Clearly explains what we have learned using hydrophones including at least three relevant examples.	Mentions three or more relevant, clear examples that lead the reader to a better understanding of hydrophones.	Mentions less than three relevant examples that help the reader shape a better understanding of hydrophones.	Provides one example that might help the reader understand the hydrophone.	Does not provide examples or examples are irrelevant and or confusing.
Accurately discusses advantages and disadvantages.	Clearly defines and addresses advantages and disadvantages of hydrophones.	Touches on most advantages and disadvantages of hydrophones.	Touches on some but not all advantages and disadvantages.	Misses key features of the discussion and technology.
Project has been proofread for spelling, grammar, and accuracy, and includes name, date, and title.	No mistakes.	1-2 mistakes.	2-4 mistakes.	Many mistakes are evident.

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Assignment Option Three: Take on a Role

Throughout this lesson you have explored how hydrophones work and what data they provide scientists. Using what you know, or additional information from a variety of sources, create a presentation (speech, character role, PowerPoint, debate or discussion) of the following:

Take on the role of a scientist. You need to make a pitch to a company of group to receive funding to support your research. You must interest and engage the company by explaining what you want to study using hydrophones. Your presentation can include information you know you will collect on a hydrophone and information you suspect you will collect on a hydrophone.

Be sure to include the following in your presentation:

>An introduction as to who you are, and what you hope to learn. <u>Note to students</u>: You may not know the answer to your question, but you must indicate how you will learn the answer.
>How does a hydrophone collect data and why is useful in a marine environment?
>How would a hydrophone array help you better understand your research question?
>Include relevant examples of other things learned using hydrophones.

Criteria:	4	3	2	1
Student introduces her or himself and explains what she or he hopes to learn.	Role is defined, and learning questions are well presented.	Role is mostly defined and questions are mostly clear.	Role or question is not clear, though it is implied.	Role and question are not clear.
Explains or demonstrates a hydrophone and how it collects data.	Covers key components of the technology, showing a basic understanding of how data is collected.	Mostly covers key components and has key, but not all features of how data is collected.	Some key elements of the technology are missing, including how data is collected.	Major elements are missing, and how data is collected is not explained.
Clearly explains what we have learned using hydrophones including at least three relevant examples.	Mentions three or more relevant, clear examples that lead the audience to a better understanding of hydrophones.	Mentions less than three relevant examples that help the audience shape a better understanding of hydrophones.	Provides one example that might help the audience understand the hydrophone.	Does not provide examples or examples are irrelevant and or confusing.