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**Alternative Assessment and Rubric
4th Grade Integrated Science Project**

[Intro to Project Based Learning \(PBL\) Process](#)

[BIE Site Examples](#)

“Local Issue: In the past 2 years, over 1,000 Mylar balloons have been collected, partially or completely deflated, mostly in the backcountry of Joshua Tree National Park (JTNP). One estimation by park officials indicates that there may be over 71,000 littered balloons within the 3,247 square kilometer Park boundaries. Why? Students will work together in “Resource Management Teams” to investigate the causes of this Mylar Mayhem Mystery. Teams will develop an action plan to address this environmental challenge and answer the Driving Question. Individually, students will write memos to the JTNP Superintendent briefing him/her on the scientific and geological causes of the problem, as well as their recommendations for action.”

Video Introduction	Your Example
<p>1. Launch Project</p> <p><i>-Entry Event</i> Examples: video, discussion, speaker, field trip</p> <p><i>-Driving Question</i> Definition: The driving question sums up challenge & gives purpose</p>	<p>1. Launch Project</p> <p><i>-Entry Event</i></p> <ul style="list-style-type: none"> ● Take the students to the site of the “Mylar Mayhem Mystery” and have a park official explain the scenario. It will be assumed that the students live in the Joshua Tree National Park area (Southern California). If the students did not live in the area, then the teacher could provide information about the park through video and photographs. The students could video chat with a park official from the area. <p><i>-Driving Question</i></p>

	<ul style="list-style-type: none"> • How can we solve the “Mylar Mayhem Mystery”? (“Why are there over 71,000 littered balloons within the 3,247 square kilometer Park boundaries?”)
<p>2. Building Knowledge, Understanding & Skills to Answer Driving Question</p> <p>- <i>Significant Content</i> Example: Plan and conduct investigation; analyze data</p> <p>- <i>Need to Know</i> Definition: Teacher will facilitate and lead students</p> <p>- <i>In-Depth Inquiry</i> Examples: Questions, resources, develop solutions, lessons, mini-tasks</p>	<p>2. Building Knowledge, Understanding & Skills to Answer Driving Question</p> <p>- <i>Significant Content</i></p> <ul style="list-style-type: none"> • Take the students to the site of the “Mylar Mayhem Mystery” and have a park official explain the scenario. It will be assumed that the students live in the Joshua Tree National Park area (Southern California). If the students did not live in the area, then the teacher could provide information about the park through video and photographs. The students could video chat with a park official from the area. <p>- <i>Need to Know</i></p> <ul style="list-style-type: none"> • The students will need to know: <ul style="list-style-type: none"> ○ The scenario at hand ○ Some basic background information about the park ○ What steps they will need to take to develop an action plan ○ Why this scenario could be an “environmental challenge” ○ That they will be working together in “Resource Management Teams” to identify causes of the “Mylar Mayhem Mystery.” ○ That they will be working independently to write memos to the JTNP Superintendent briefing him/her on the scientific and geological causes of the problem, as well as their recommendations for action. ○ What a properly written memo looks like ○ How to properly present information to the JTNP Superintendent and their fellow peers

	<ul style="list-style-type: none"> ○ Credible research options <p><i>-In-Depth Inquiry</i></p> <ul style="list-style-type: none"> ● The students will do research using the internet, books, interviews, and other means to answer the driving question.
<p>3. Develop and Revise Products & Answers to Driving Question</p> <p><i>-Voice & Choice</i> Definition: Type of product, using time, process</p> <p><i>-Critique & Revision</i> Definition: Feedback from teachers or peers</p> <p><i>-21st Century Skills</i> Example: Problem solving, critical thinking, authenticity</p>	<p>3. Develop and Revise Products & Answers to Driving Question</p> <p><i>-Voice & Choice</i></p> <ul style="list-style-type: none"> ● The students will discuss their research findings with other classmates. <p><i>-Critique & Revision</i></p> <ul style="list-style-type: none"> ● The students will edit their memos several times before presenting their final memo. <p><i>-21st Century Skills</i></p> <ul style="list-style-type: none"> ● The students will be able to effectively communicate with their peers and other individuals involved in this project.
<p>4. Present Products that Answer the Driving Question</p> <p>Examples: Fairs, exhibitions, poster session</p>	<p>4. Present Products that Answer the Driving Question</p> <ul style="list-style-type: none"> ● The students will write and mail memos to the JTNP superintendent that effectively and clearly describe the potential causes of the “Mylar Mayhem Mystery” and potential solutions. The students will also present their memos and other findings to their classmates.

Standards:**Primary**

- 4.RI.5 Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.
- 4.W.2.d Use precise language and domain-specific vocabulary to inform about or explain the topic.
- 4.W.5 With guidance and support from peers and adults, develop and strengthen writing

as needed by planning, revising, and editing.

- 4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale

Secondary

- 4.RI.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- 4.W.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- 4.W.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- 4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. ([SOURCE](#))

Explanation of Activity:

The students will first work together in their “Resource Management Teams” to investigate the causes of the “Mylar Mayhem Mystery.” The students will be given some background information regarding the “Mylar Mayhem Mystery.” However, the students will do most of the learning and discovering. First, the students will be given some credible sources that they can refer to throughout this project and use for their in-depth research. Next, the students will brainstorm with their group members and come up with at least three potential scientific and geological causes of this “Mylar Mayhem Mystery” (“Why are there over 71,000 littered balloons within the 3,247 square kilometer Park boundaries?”). After doing their research and coming up with at least three potential scientific and geological causes, the students will work together in their “Resource Management Teams” to develop an action plan of at least five steps to address this environmental challenge and answer the driving question (“How can we solve the ‘Mylar Mayhem Mystery’?”). After developing an action plan to address the environmental challenge with their “Resource Management Teams”, the students will work independently to write memos to the Joshua Tree National Park (JTNP) superintendent. Prior to writing the memos, the students will be given a lesson on memos and how to write them properly. The memos

will include the potential causes and the steps for action. Prior to writing their memos, the students will develop a plan for how their memos will be structured. The students will draft and edit their memos several times before sending them to the superintendent. The students will work with their peers to edit their memos. Prior to sending their memos, the students will present their findings, in their “Resource Management Teams”, to their classmates. The rubric below will describe the requirements for the the students’ individual memos and their group presentation to the class. The students will be graded primarily on their individual memos, but the rubric will also include several presentation components.

Explain why you selected specific criteria for assessment:

The criteria that was selected for the assessment will measure the students’ overall understanding of the topic. The criteria selected for the assessment fits with the standards.

Explain how the use of the rubric may influence student motivation and attitude:

The teacher will hand out the rubric to the students prior to beginning the project. The teacher will also explain each section of the rubric in detail and answer any questions the students may have. The students will know exactly what is expected for this assessment. The students will be motivated knowing that if they do everything on the rubric, they will finish with excellent projects. The students will also be encouraged to “think outside the box” during this project. Therefore, they will find comfort in knowing that they can be creative while still meeting the requirements on the rubric.

Explain how the standard, question, activity, instruction, and assessment have alignment:

Overall, the standards for this project involve the students being able to write effectively, conduct research, and create and solve mathematical, scientific, and geographical problems. The question, activity, instruction, and assessment all align with the standards. Please see the section titled “Explanation of Project”. The driving question of the project that the students will be working to answer also allows the students to conduct research and apply it to a real-life situation. The standard, question, activity, instruction, and assessment all align effectively.

Explain how you will use the results to evaluate your teaching:

After the students complete their projects and the teacher has evaluated each project using the rubric, the teacher will be able to see exactly where students are doing well and also where students need to improve. The teacher can adjust his or her schedule to re-teach certain concepts based on the scores from the categories on the rubric. For example, if the teacher is noticing that many of her students are scoring ones or zeros in a particular category on the rubric, she may

choose to re-teach that topic and possibly even re-assess that category as well to make sure the students have fully mastered the project requirements.

Discuss your rationale for using that particular alternative assessment:

The project-based learning assessment was used in order to allow students to explore real-world situations in a hands-on way. The students would not have gotten the same benefits out of this project if a test were given at the end.

Explain how the results will be used and reported:

The results of the project will depend on whether or not the JTNP will actually use the suggestions. If the students produce excellent projects and score well on the rubric, then the JTNP might use the students suggestions to solve the local problem. If the students score poorly on the rubric, then the JTNP will most likely not use the suggestions made by the students.

Discuss the authenticity of the project and the assessment:

The project and assessment are very authentic. The students are seeing a real-world problem first hand and researching ways to solve it. The students are not only coming up with potential solutions to the problem, they are also given the opportunity to communicate their findings to JTNP superintendent through the writing of memos.

Rubric for scoring project:

	3	2	1	0
Proposed Causes	In his or her memo, the student identified at least three potential scientific and geological causes which answer the driving question through their research: Why are there over 71,000 littered balloons within the 3,247 square kilometer Park boundaries?	The his or her memo, the student identified two potential scientific and geological causes which answer the driving question through their research: Why are there over 71,000 littered balloons within the 3,247 square kilometer Park boundaries?	In his or her memo, the student identified one potential scientific and geological causes which answer the driving question through research: Why are there over 71,000 littered balloons within the 3,247 square kilometer Park boundaries?	In his or her memo, the student did not identify any potential scientific and geological causes which answer the driving question through research: Why are there over 71,000 littered balloons within the 3,247 square kilometer Park boundaries?
Accuracy of Proposed Causes	The three potential scientific and geological causes are reasonable.	Two out of the three potential scientific and geological causes are reasonable. One of the potential causes is not reasonable.	One out of the three potential scientific and geological causes is reasonable. Two of the potential causes are not reasonable.	None of the three potential scientific and geological causes are reasonable.
Credible Sources	At least three credible sources are used for the student's research.	At least two credible sources are used for the student's research.	At least one credible source is used for the student's research.	No credible sources are used for the student's research.
Action Plan	The student has written at least a five step action plan on how the issue can be resolved. The steps are specific and could be used by the JTNP.	The student has written a four step action plan on how the issue can be resolved. The steps are mostly specific and could maybe be used by the JTNP. They might need a little clarification as to what they need to do.	The student has written a three step action plan on how the issue can be resolved. The steps are not very specific and could maybe be used by the JTNP. They will need clarification as to what they need to do.	The student has written an action plan that is less than three steps. The student's action plan is not specific and could not be used effectively by the JTNP.
Reasonableness of Action Plan Steps	Each step of the student's action plan is reasonable.	Most of the steps of the student's action plan are reasonable.	Some of the steps of the student's action plan are reasonable.	None of the steps of the student's action plan are reasonable.
Writing Process: Planning	The student submitted a plan prior to writing his or her memo.			The student did not submit a plan prior to writing his or her memo.

Writing Process: Drafting and Editing	The student submitted two or more drafts of his or her memo (with improvements noted on each draft) before submitting the final draft.			The student did not submit two or more drafts (and/or improvements were not noted on each draft) of his or her memo before submitting the final draft..
Writing Process: Peer Review	The student had his or her memo reviewed by a classmate. The student also reviewed another classmate's memo.			The student did not have his or her memo reviewed by a classmate. The student did not review another classmate's memo.
Grammar	There are no grammatical errors in the student's memo.	There are three or less grammatical errors in the student's memo.	There are four or less grammatical errors in the student's memo.	There are more than four grammatical errors in the student's memo.
Spelling	There are no spelling errors.	There are three or less spelling errors in the student's memo.	There are four or less spelling errors in the student's memo.	There are more than four grammatical errors in the student's memo.
Sentence Structure	All the sentences are constructed correctly.	There are two or less sentences that are structured incorrectly.	There are three or less sentences that are structured incorrectly.	There are more than three sentences that are structured incorrectly .
Presentation	Using a presentation method of their choice, the "Resource Management Team" presented their project to the class and included all of their proposed causes and their action plan for solving the "Mylar Mayhem Mystery".	Using a presentation method of their choice, the "Resource Management Team" presented their project to the class and included most of their proposed causes and their action plan for solving the "Mylar Mayhem Mystery".	Using a presentation method of their choice, the "Resource Management Team" presented their project to the class and included some of their proposed causes and their action plan for solving the "Mylar Mayhem Mystery".	Using a presentation method of their choice, the "Resource Management Team" did not present their project to the class.

Feedback:

