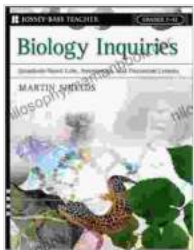


# Standards Based Labs: Assessments and Discussion Lessons for Deeper Learning

Science education is undergoing a major transformation, with a focus on deeper learning and the development of critical thinking skills. Standards-based labs are an essential part of this transformation, providing students with opportunities to engage in hands-on investigations and develop a deeper understanding of scientific concepts.



## Biology Inquiries: Standards-Based Labs, Assessments, and Discussion Lessons by Martin Shields

★★★★☆ 4.2 out of 5

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Screen Reader: Supported

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This article will provide an overview of standards-based labs, including their benefits, how to design and implement them, and how to use them to promote deeper learning and improve student outcomes.

## What are Standards-Based Labs?

Standards-based labs are laboratory activities that are aligned with specific learning standards. This means that the labs are designed to help students achieve the goals and objectives outlined in the standards.

Standards-based labs typically include the following components:

- \* A clear learning objective that is aligned with a specific standard
- \* A hands-on investigation that allows students to explore the concept being taught
- \* An assessment that measures student learning and provides feedback
- \* A discussion lesson that allows students to reflect on their learning and make connections to other concepts

## **Benefits of Standards-Based Labs**

Standards-based labs offer a number of benefits for students, including:

- \* Increased student engagement and motivation
- \* Improved student understanding of scientific concepts
- \* Development of critical thinking skills
- \* Preparation for standardized tests
- \* Alignment with curriculum and instructional goals

## **How to Design and Implement Standards-Based Labs**

To design and implement standards-based labs, follow these steps:

1. Identify the learning objective for the lab.
2. Select a hands-on investigation that will allow students to explore the concept being taught.
3. Develop an assessment that will measure student learning and provide feedback.
4. Plan a discussion lesson that will allow students to reflect on their learning and make connections to other concepts.
5. Implement the lab with your students.
6. Assess student learning and provide feedback.

## **Using Standards-Based Labs to Promote Deeper Learning**

Standards-based labs can be used to promote deeper learning in a number of ways. First, they provide students with opportunities to engage in hands-

on investigations, which helps them to develop a deeper understanding of scientific concepts. Second, the assessments that are included in standards-based labs help students to track their progress and identify areas where they need more support. Third, the discussion lessons that are included in standards-based labs allow students to reflect on their learning and make connections to other concepts, which helps them to develop a more comprehensive understanding of science.

Standards-based labs are an essential part of science education. They provide students with opportunities to engage in hands-on investigations, develop critical thinking skills, and prepare for standardized tests. By designing and implementing standards-based labs, teachers can help their students achieve the goals and objectives outlined in the standards and promote deeper learning.

## Additional Resources

\* [National Science Education Standards]

(<https://www.nap.edu/catalog/4962/national-science-education-standards>) \*

[Next Generation Science Standards](<https://www.nextgenscience.org/>) \*

[Science and Engineering Practices]

(<https://www.nextgenscience.org/practice>) \* [Crosscutting Concepts]

(<https://www.nextgenscience.org/crosscutting-concepts>)



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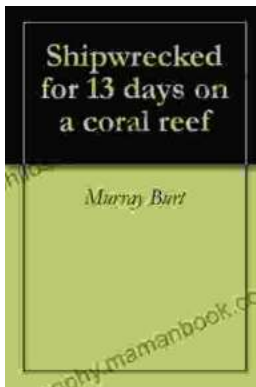
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