

Nanotechnology 5-E Lesson Plan Template

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Topic: nanotechnology	
Title: How Big is big (Bubbles)	Grade Level: 3, 4, 5 and 6 RESOURCE
Lesson Summary: The students will be challenged to describe the words big and little. When given bubbles the students will graph the bubbles according to size, both by bubble diameter and by thickness of the bubble determined by its color.	

Arkansas Math and Science Frameworks SLEs:

NS 1.3.2 The learner will be able to develop questions that guide scientific inquiry.

NS 1.3.6 The learner will be able to collect and analyze measurable empirical evidence as a team/and or an individuals

PS 5.3.1 The learner will be able to develop questions that guide scientific inquiry

DAP 14.5.2 The learner will be able to collect numerical and categorical data using surveys, observations, and experiments that would result in bar graphs, line graphs, line plots, and stem-and-leaf plots.

DAP 15.5.1 The learner will be able to interpret graphs such as line graphs, double bar graphs, and circle graphs.

DAP 14.5.3 The learner will be able to construct and interpret frequency tables, charts line plots, stem-and-leaf plots, and bar graphs.

DAP 16.5.1 The learner will be able to make predictions and justify conclusions based on data.

DAP 14.6.1 The learner will be able to formulate questions, design studies, and collect data about a characteristic shared by two populations or different characteristics within one population.

DAP 14.6.2 The learner will be able to collect data and select appropriate graphical representations to display the data including Venn Diagrams.

DAP 15.6.1 The learner will be able to interpret graphs such as double line graphs and circle graphs.

DAP 16.6.1 The learner will be able to use observations about differences in data to make justifiable inferences.

NS 1.5.1 The learner will be able to make accurate observations

NS 1.5.4 The learner will be able to interpret scientific data using (1) data tables and charts, (2) bar graphs, (3) circle graphs, (4) line graphs, (5) stem and leaf plots, and (6) Venn Diagrams

NS 1.5.5 The learner will be able to communicate results and conclusions from scientific inquiry.

NS 1.5.6 The learner will be able to develop and implement strategies for long-term accurate data collection.

NS 1.6.4 The learner will be able to construct and interpret scientific data using (1) data tables/charts, (2) bar and double bar graphs, (3) line graphs, (4) stem and leaf plots

NS 1.6.5 The learner will be able to communicate results and conclusions from scientific inquiry,

Main SLE covered in this activity:

DAP 14.6.1 The learner will be able to formulate questions, design studies, and collect data about a

PROCEDURE

Engage:

Teacher will blow bubbles and ask the students how they can compare and describe the bubbles.

Explore:

The students will brainstorm ways of comparing the bubbles. The teacher will blow the bubbles. The students will tally the bubbles according to the characteristic that is asked for.

Explain:

The students will use their tally marks and then go to the website www.graphsforkids.com where they will develop a graph to compare the characteristics.

Elaborate:

The teacher will question the students about the terms of measurement and discuss how scientists measure to get accurate data. The students will keep their tally marks in their science notebook to develop more charts and graphs.

Evaluate:

The students' graphs can be printed and scored using a rubric.

characteristic shared by two populations or different characteristics within one population.

Objectives: The learner will:

1) be able to collect data and prepare graphs to display the findings

Essential Question:

Compare the bubbles based on their size (See options)

BACKGROUND INFORMATION

Timeline: 1 or 2 class periods (45 min. each)

Materials:

Bubbles, a white background (screen, wall, Whiteboard, etc), rulers

Teacher Preparation:

Collect materials.

The teacher will copy the tally sheet for the students.

The teacher will secure the appropriate technology equipment to make graphs.

CROSS CURRICULAR CONNECTIONS

Math: data collection, data analysis, graphs

Language Arts: terms, vocabulary, descriptive words

Social Studies: graphs

Other:

Parental Involvement: Parents can be surveyed for their use of nanotechnology in their careers, and invited to speak to the class about their nano application.

Technology Connections:

Internet

Resources:

Computer with Internet

Notes:

The bubbles can be compared by diameter size, or color. They can be videoed and the results put on the smart board and this can introduce colors and light spectrum

Credits:

This lesson: X_is original ___was adapted from _____'s original lesson.