NGSS Content Standards with Related GAISE II Concepts

Elementary

NGSS K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Collect Data/ Consider Data II.A.1 Understand that data are information; recognize that to answer a statistical investigative question, a person may collect data themselves specifically for that purpose, or a person may use data that have been collected by other people for another purpose
- Analyze the Data III.A.2 Represent the variability of categorical variables or quantitative variables using appropriate displays (e.g., tables, picture graphs, dotplots, bar graphs)

NGSS K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Formulate Statistical Investigative Questions I.A.2 Pose statistical investigative questions of interest to students where the context is such that students can collect or have access to all required data

NGSS K-PS3-1 Make observations to determine the effect of sunlight on Earth's surface.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Formulate Statistical Investigative Questions I.A.3 Pose summary (or descriptive) statistical investigative questions about one variable regarding small, well-defined groups (e.g., subset of a classroom, classroom, school, town) and extend these to include comparison and association statistical investigative questions between variables
- Collect Data/ Consider Data II.A.1 Understand that data are information; recognize that to answer a statistical investigative question, a person may collect data themselves specifically for that purpose, or a person may use data that have been collected by other people for another purpose
- Interpret Results IV.A.3 Describe the difference between two groups with different conditions

NGSS K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Collect Data/ Consider Data II.A.2 Understand how to collect and record information from the group of interest using surveys and measurements collected from observations and simple experiments
- Analyze the Data III.A.2 Represent the variability of categorical variables or quantitative variables using appropriate displays (e.g., tables, picture graphs, dotplots, bar graphs)

NGSS K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Formulate Statistical Investigative Questions I.A.2 Pose statistical investigative questions of interest to students where the context is such that students can collect or have access to all required data

NGSS 1-PS4-1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Collect Data/ Consider Data II.A.2 Understand how to collect and record information from the group of interest using surveys and measurements collected from observations and simple experiments

NGSS 1-PS4-3.Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Formulate Statistical Investigative Questions I.A.2 Pose statistical investigative questions of interest to students where the context is such that students can collect or have access to all required data
- Collect Data/ Consider Data II.A.2 Understand how to collect and record information from the group of interest using surveys and measurements collected from observations and simple experiments

NGSS 1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Collect Data/ Consider Data II.A.1 Understand that data are information; recognize that to answer a statistical investigative question, a person may collect data themselves specifically for that purpose, or a person may use data that have been collected by other people for another purpose
- Interpret Results IV.A.3 Describe the difference between two groups with different conditions

NGSS 2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Formulate Statistical Investigative Questions I.A.2 Pose statistical investigative questions of interest to students where the context is such that students can collect or have access to all required data
- Formulate Statistical Investigative Questions I.A.3 Pose summary (or descriptive) statistical investigative questions about one variable regarding small, well-defined groups (e.g., subset of a classroom, classroom, school, town) and extend these to include comparison and association statistical investigative questions between variables
- Formulate Statistical Investigative Questions I.A.4 Experience different types of questions in statistics: those used to frame an investigation, those used to collect data, and those used to guide analysis and interpretation
- Collect Data/ Consider Data II.A.2 Understand how to collect and record information from the group of interest using surveys and measurements collected from observations and simple experiments

NGSS 2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. Organizing data a Using graphical displays (e.g., pictures, charts, grade-appropriate graphs), students use the given data from tests of different materials to organize those materials by their properties (e.g., strength, flexibility, hardness, texture, ability to absorb).

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Analyze the Data III.A.2 Represent the variability of categorical variables or quantitative variables using appropriate displays (e.g., tables, picture graphs, dotplots, bar graphs)

NGSS 2-PS1-4. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Interpret Results IV.A.2 Make statements about the group or population from which the data were collected, recognizing that conclusions are limited to these groups and cannot be generalized to other groups

NGSS For 3-LS4-1

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Analyze the Data III.A.4 Recognize distributions can be used to compare two groups

NGSS 3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. I think 3-ESS2-1 and 3-LS3-1 could be good fits for this GAISE II standard IF the students are looking at a distribution of data values, rather than just describing differences among the groups with qualitative information or single numbers. Based on the lessons I have seen for 3-LS4-1 most would not be a good fit for this GAISE II standard but there are some (see next column).

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Collect Data/ Consider Data II.A.5 Interrogate the data set to understand the context of the variables as they may relate to statistical investigative questions
- Analyze the Data III.A.4 Recognize distributions can be used to compare two groups

NGSS 3-5-ETS1 Plan and carry out fair tests in which variables are controlled and failure points are considered to 3. identify aspects of a model or prototype that can be improved.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Formulate Statistical Investigative Questions I.A.2 Pose statistical investigative questions of interest to students where the context is such that students can collect or have access to all required data
- Collect Data/ Consider Data II.A.5 Interrogate the data set to understand the context of the variables as they may relate to statistical investigative questions

NGSS 5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Collect Data/ Consider Data II.A.2 Understand how to collect and record information from the group of interest using surveys and measurements collected from observations and simple experiments
- Analyze the Data III.A.5 Observe whether there appears to be an association between two variables

NGSS 5-PS1-3 Make observations and measurements to identify materials based on their properties.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Formulate Statistical Investigative Questions I.A.3 Pose summary (or descriptive) statistical investigative questions about one variable regarding small, well-defined groups (e.g., subset of a classroom, classroom, school, town) and extend these to include comparison and association statistical investigative questions between variables
- Collect Data/ Consider Data II.A.2 Understand how to collect and record information from the group of interest using surveys and measurements collected from observations and simple experiments

NGSS 5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Collect Data/ Consider Data II.A.3 Understand that a variable measures the same characteristic on several individuals or objects and results in data values that may fluctuate
- Collect Data/ Consider Data II.A.4 Understand that within a data set there can be different types of variables (e.g., categorical or quantitative)
- Analyze the Data III.A.1 Understand that the distribution of a categorical variable or quantitative variable describes the number of times a particular outcome occurs

NGSS 5-ESS1-2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Collect Data/ Consider Data II.A.5 Interrogate the data set to understand the context of the variables as they may relate to statistical investigative questions
- Analyze the Data III.A.2 Represent the variability of categorical variables or quantitative variables using appropriate displays (e.g., tables, picture graphs, dotplots, bar graphs)

NGSS 5-ESS2-2. Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

Related GAISE II concepts that can be addressed while focused on this NGSS standard:

- Collect Data/ Consider Data II.A.1 Understand that data are information; recognize that to answer a statistical investigative question, a person may collect data themselves specifically for that purpose, or a person may use data that have been collected by other people for another purpose