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| **Facilitation Guide**  **Educational Service District 123 and Pacific Northwest National Laboratory**  **Exploring Climate Science with Virtual Reality Follow-up #1**  Phenomena  Attitudes about Climate Change  Argument Drive Inquiry | | |
| Slide 1 |  | **Slide 1 Welcome and Introductions (all teachers and all facilitators)**   * Restrooms / Evacuation Site / Escorted Badges |
| Slide 2 |  | **Slide 2-3 30 minutes**  **Welcome to Exploring Climate Science Follow-up**   * Our norms * Just a reminder of these two documents and an invitation to revisit them as needed |
| Slide 3 |  | **Slide 2-3 30 minutes**  **Report Out**  25 minutes   * Report out on what you have been doing (planning, research, teaching, use of resources) |
| Slide 4 |  | **Slides 4-7**  **90 min**   * Grounding: Qualities of a Good Phenomena * Hand out of one-pager of Phenomena Graphic * To brainstorm a phenomena, read through each of the elements on the handout * Move to your wall chart and continue brainstorming |
| Slide 5 |  | **Slides 4-7**  **90 min**   * Grounding: Qualities of a Good Phenomena * Hand out of one-pager of Phenomena Graphic * To brainstorm a phenomena, read through each of the elements on the handout * Move to your wall chart and continue brainstorming |
| Slide 6 |  | **Slides 4-7**  **90 min**   * Grounding: Qualities of a Good Phenomena * Hand out of one-pager of Phenomena Graphic * To brainstorm a phenomena, read through each of the elements on the handout * Move to your wall chart and continue brainstorming |
| Slide 7 |  | **Slides 4-7**  **90 minutes**   * Share out of initial thinking: choice of phenomena * How to introduce it to your students * Activities you might do with students |
| Slide 8 |  | **Slide 8**  **. Page Keeley Card Sort “What are the Signs of Global Warming?”**  **30 minutes**   * Regroup and hand out card sets * The purpose of this assessment probe, made into a card sort, is to elicit students’ ideas about the signs of global warming. * The probe is designed to determine whether students think a statement is: * Accurate or complete enough to see direct patterns or draw inferences from data that can be used to support the claim that our planet is warming, 0r * Whether more long-term data is needed to decide whether the effect is a sign of global warming. * First sort: Using the above criteria, sort the cards into those that could be considered signs of global warming and those that are not clear signs of global warming * Second sort: Sort the cards into direct measurement of global warming of the earth and inferences from data (over long period of time, types of data) * Debrief the facilitation: Supportive of English Language Learners? How would you facilitate this with your students? * Share NOAA’s Ten Signs of a Warming World |
| Slide 9 |  | **Slides 9-11**  **Probing for Understanding Part 2 (Peggy)**  **45 minutes**   * Show map from Yale with 2016 data. This is the situation two years ago, * Individually squirrel down as many rabbit holes as you can. * What do you predict things would look like now? |
| Slide 10 |  | **Slides 9-11**  **Probing for Understanding Part 2 (Peggy)**  **45 minutes**   * Handout article: How to engage students in controversial topics. * Read and React to Four Tips to Teaching Climate Science * How would you use this to engage in student discourse? * Get up, find someone in the room you do not work with. Share out your answer to this question. |
| Slide 11 |  | **Slides 9-11**  **Probing for Understanding Part 2 (Peggy)**  **45 minutes**   * Handout article: How to engage students in controversial topics. * Read and React to Four Tips to Teaching Climate Science * How would you use this to engage in student discourse? * Get up, find someone in the room you do not work with. Share out your answer to this question. |
| Slide 12 |  | **Slides 12-22 Claims, Evidence, and Reasoning – Argument Driven Inquiry Resource**  **75 minutes**   * We will be engaging in an activity from a Victor Sampson resource called Argument - Driven Inquiry in Earth and Space Science. * I am choosing to share one on Carbon Dioxide Levels in the Atmosphere as it directly ties to our Climate Science work. |
| Slide 13 |  | **Slides 12-22 Claims, Evidence, and Reasoning – Argument Driven Inquiry Resource**  **75 minutes**   * How has the concentration of atmospheric carbon dioxide changed over time? * Quick write your initial thinking * Share with a neighbor |
| Slide 14 |  | **Slides 12-22 Claims, Evidence, and Reasoning – Argument Driven Inquiry Resource**  **75 minutes**   * Examine the handout. Note the text features * Predict what you think the text will be about * Read pages 439-440 with a partner - the Introduction and Getting Started |
| Slide 15 |  | **Slides 12-22 Claims, Evidence, and Reasoning – Argument Driven Inquiry Resource**  **75 minutes**   * Let’s engage in a strategy to look at data * Highlights, Comments, and Captions * HIGHLIGHT: what I see * Look for changes, trends or differences * Write what you see - a different description for each observation * Be concise - write on the essence, or highlights of what you see |
| Slide 16 |  | **Slides 12-22 Claims, Evidence, and Reasoning – Argument Driven Inquiry Resource**  **75 minutes**   * For Comments: comment on what it means * Interpret what you see. * Write what each observation means. * Don’t tackle all the data at once - just one observation at a time. |
| Slide 17 |  | **Slides 12-22 Claims, Evidence, and Reasoning – Argument Driven Inquiry Resource**  **75 minutes**   * For Create a Caption: * Think of the caption as a summary. * Begin your caption with a topic sentence describing the overview of the figure. * Join each “What I see” to its “What it means” to form a sentence. * Build a coherent description in 2-3 sentences. |
| Slide 18 |  | **Slides 12-22 Claims, Evidence, and Reasoning – Argument Driven Inquiry Resource**  **75 minutes**   * Using evidence, talk through your best argument for answering the question: How has the concentration of Atmospheric carbon dioxide changed over time? * Be sure to: * State the claim you are trying to support * Include genuine evidence (data + analysis + interpretation) * Provide a justification of your evidence that explains why the evidence is relevant and why it supports the claim * Organize your argument in a way that enhances listener understanding * Use a broad range of words including science vocabulary you have now learned. |
| Slide 19 |  | **Slides 12-22 Claims, Evidence, and Reasoning – Argument Driven Inquiry Resource**  **75 minutes**   * Construct an Explanation - Prepare to Argue from Your Evidence * How has the concentration of atmospheric carbon dioxide changed over time? * Summarize your evidence to construct an explanation * Analyze the evidence * Look for trends and patterns * Think about your oral arguments. * Record your Claim, Evidence and Explanation/Justification to answer the question (see template on page 442) |
| Slide 20 |  | **Slides 12-22 Claims, Evidence, and Reasoning – Argument Driven Inquiry Resource**  **75 minutes**   * Report Out: * What question were you trying to answer and why? * What did you do to answer your question and why? * What is your argument? * Your report should answer these questions in two pages or less. |
| Slide 21 |  | **Slides 12-22 Claims, Evidence, and Reasoning – Argument Driven Inquiry Resource**  **75 minutes**   * Visit each team as a group. * Listen to their argument. * Give feedback and be ready to take back ideas to discuss with your group. |
| Slide 22 |  | **Slides 12-22 Claims, Evidence, and Reasoning – Argument Driven Inquiry Resource**  **75 minutes**   * What question were you trying to answer and why? * What did you do to answer your question and why? * What is your argument? |
| Slide 23 |  | **Slide 27**  **. Return to Phenomena Chart**  **30 minutes** |
| Slide 24 |  | * Creative Commons Licensing information |