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| **Facilitation Guide**  **Educational Service District 123**  **Earth Systems and Changes Session 2:**  Formative Assessment  Understanding Dimensions of NGSS  Models and Explanations  Planning Formative Assessment Classroom Tasks | | |
| Slide 1 |  | **Slides 1-4 30 min**  Welcome   * Activator: “I’m Sure of It...or Not probe and discuss * Norms of Collaboration * Goals * Agenda * Paperwork completed |
| Slide 2 |  | **Slides 1-4 30 min**  Welcome   * Activator: “I’m Sure of It...or Not probe and discuss * Norms of Collaboration * Goals * Agenda * Paperwork completed   ***ESC Follow-up 1 I’m Sure of it or not Doc #1*** |
| Slide 3 |  | **Slides 1-4 30 min**  Welcome   * Activator: “I’m Sure of It...or Not probe and discuss * Norms of Collaboration * Goals * Agenda * Paperwork completed |
| Slide 4 |  | **Slides 1-4 30 min**Welcome   * Activator: “I’m Sure of It...or Not probe and discuss * Norms of Collaboration * Goals * Agenda * Paperwork completed |
| Slide 5 |  | **Slides 5-7 30 min**  PART ONE: What is a Formative Classroom Task?   * Quick review of elements of FA * EL Minute by Minute article-read (15 minutes) * Slide to review the elements |
| Slide 6 |  | **Slides 5-7 30 min**   * **Read through the Key Elements for Formative Assessment from Dylan Willam** * Quick review of elements of FA * EL Minute by Minute article cards-read (**30 minutes total**) * Each participant reads one (5 min) and shares out to others the key elements of that element(18-20 minutes) * Slide to review the elements (2 min)   ***ESC Follow-up 1 Reading Cards from Educational Leadership article Minute by Minute, Day to Day Doc #2*** |
| Slide 7 |  | **Slides 5-7 30 min**  PART ONE: What is a Formative Classroom Task?   * Quick review of elements of FA * EL Minute by Minute article-read (15 minutes) * Slide to review the elements   ((Read Slide))  The 3D learning model in the NRC Framework comes from a synthesis of the research literature that studied how best to support equitable student learning in science (e.g., through powerful instruction), but educational assessments haven’t historically been developed for a 3D model of learning. New approaches are being developed and studied—like those that we will be exploring today. |
| Slide 8 |  | **Slides 8 and 10 30-35 min**  What is a Formative Classroom Task?   * 3 dimensional Formative Assessment (30) * Deep dive into the SEPs and CCs * Read through SEPS and jigsaw the info for note tool * Becky Cope video from Teaching Channel to spot use of SEPS   https://www.teachingchannel.org/video/claims-evidence-science-lesson-achieve  ***ESC Follow-up 1 Science and Engineering Practices/Crosscutting Concepts Recording Tool Doc 3*** |
| Slide 9 |  | **Slide 9 10 minutes** |
| Slide 10 |  | **Slides 8 and 10 30-35 min**  PART ONE: What is a Formative Classroom Task?   * 3 dimensional Formative Assessment (30) * Deep dive into the SEPs and CCs * Read through CCs doc * Deer Migration video is linked for examples of CCs   https://www.youtube.com/watch?v=BIAyb-1uwTg |
| Slide 11 |  | **Slides 11-12 5 minutes**  A review on this slide illustrates the performance expectation the PE serves as the larger learning goal for a unit but a formative assessment item should be of a much smaller learning performance than the whole PE  In order to identify a lesson level learning goal you must “unpack” the PE identify a lesson level learning performance in order to develop the assessment item. |
| Slide 12 |  | **Slides 11-12 5 minutes**  **Some of the Disciplinary Core Ideas we may address in our work to develop Formative Assessment Classroom tasks for earth science and climate science related standards** |
| Slide 13 |  | **Slides 13-15 10 minutes**  **A Quick review of our FACT last time and then look at rubric samples for that type of activity**  Just a review of the CER we did with our plate tectonic maps last time. We did a little gallery walk but I would do this in a classroom so that more students got a chance to orally explain their CER. |
| Slide 14 |  | **Slides 13-15 10 minutes**  **A Quick review of our FACT last time and then look at rubric samples for that type of activity** |
| Slide 15 |  | **Slides 13-15 10 minutes**  **A Quick review of our FACT last time and then look at rubric samples for that type of activity**  These were the DCIs we focused on |
| Slide 16 |  | **Slides 16-17 25 minutes**  **Pass out the CER sample rubrics and have them discuss how they might develop a rubric/refine one of the samples to be a guide and evaluation for a CER they might use in their FACT.**  Give some time to look at rubrics at various levels and decide  ***ESC Follow-up Evidence Based Writing in Science Doc #3***  ***ESC Follow-up Claims Evidence Rubric Doc #4*** |
| Slide 17 |  | **Slides 16-17 25 minutes**  **About 4-5 minutes**  **Reflecting and Sense-making in your science notebook respond to the two prompts**  What are your key takeaways about 3D Formative Assessment    How might you use Arguing from Evidence as a Formative Assessment Classroom Task? |
| Slide 18 |  | **Slides 19-23 11:15-11:40 (20 min)**  **Slide 19-3 min.**  Last time we worked on argument from evidence. That is a step toward constructing explanations. Models are an important thing we can do to construct those explanations around phenomena in CS or anything else.  Models and Explanations are at the heart of and the keystone for the other practices. Those practices contribute to the construction of a thorough or gapless explanation. |
| Slide 19 |  | **Slide 19-20-10 min.**  Do a 4 corners type activity using the Page Keeley probe statements  From **Uncovering Student Ideas in Earth and Environmental Science: 32 Formative Assessment Probes**  **By Page Keeley and Laura Tucker**  **Copyright 2016 by the National Science Teachers Association. All rights reserved. Printed in the United States of America** |
| Slide 20 |  | **Slide 19-20-10 min.**  Do a 4 corners type activity using the Page Keeley probe statements  From **Uncovering Student Ideas in Earth and Environmental Science: 32 Formative Assessment Probes**  **By Page Keeley and Laura Tucker**  **Copyright 2016 by the National Science Teachers Association. All rights reserved. Printed in the United States of America** |
| Slide 21 |  | **Slide 21-22. 20 minutes**  Read the Newsela article and briefly show the site: **Drought Seen Getting Worse in Washington** https://newsela.com/read/washington-drought/id/10737/  as an example of a possible phenomena.  Show the video  Weather extreme connection of drought to oceans http://www.climatecentral.org/videos/extreme-weather/weather-extremes-drought  Extra audio: NPR Washington Drought https://www.nwpb.org/2018/08/09/the-entire-northwest-is-abnormally-dry-with-severe-drought-in-parts-of-washington-and-oregon/ |
| Slide 22 |  | **Slide 21-22 20 minutes** |
| Slide 23 |  | Slide 23 Lunch 40 minutes |
| Slide 24 |  | **Slides 24-27 35 minutes**  **Convection current experiment-(20 minutes)**  **Have the convection current experiments set up or set up during lunch-participants** |
| Slide 25 |  | **Slides 24-27 35 minutes**  **Convection current experiment-(20 minutes)**  **Have the convection current experiments set up or set up during lunch-participants**  ***ESC Follow-up 1-Convection Current Lab Directions Doc #6*** |
| Slide 26 |  | **Slides 24-27 35 minutes**  NASA Video linked in satellite image 6 minutes |
| Slide 27 |  | **Slides 24-27 35 minutes**  **Readings 15 min**  **How Do Oceans Affect Climate? From Greentumble.com** https://greentumble.com/how-does-the-ocean-affect-climate/  **How Does the Ocean Affect Climate and Weather on Land?** https://oceanexplorer.noaa.gov/facts/climate.html  Revised May 21, 2018 by the NOAA Ocean Explorer Webmaster Office of Ocean Exploration and Research | National Oceanic and Atmospheric Administration |  U.S. Department of Commerce |
| Slide 28 |  | **Slides 28-30 50 minutes**  **Final models 25 min**  Have teams reconvene to sketch their final model, including labels, why features were included (science reasons as well as fun and safe reasons) and notes about what changes they made and why.  With young learners they might do the drawing and then orally discuss the written portions to the group. |
| Slide 29 |  | **Slides 28-30 50 minutes**  **(10 minute Break)** |
| Slide 30 |  | **Slides 28-30 50 minutes**  WHW rubric 15 min.  ***ESC Follow-up 1-What How Why Rubric Doc #7*** |
| Slide 31 |  | **Slide 31 5 minutes** |
| Slide 32 |  | **Slide 32-34 7 minutes**  review of phenomena and the resources the have The video link in the picture goes to NGSS EQuIP Rubric Using Phenomena  https://www.teachingchannel.org/video/using-phenomena-achieve  On Teaching Channel |
| Slide 33 |  | **Slide 32-34 7 minutes**  review of phenomena and the resources the have |
| Slide 34 |  | **Slide 32-34 7 minutes**  review of phenomena and the resources the have |
| Slide 35 |  | **Slides 35-38 50 minutes**  **1 minute for the 3 slides**  **Rest of time to work on FACT**  Reminder of our challenge |
| Slide 36 |  | **Slides 35-38 50 minutes**  **1 minute for the 3 slides**  **Rest of time to work on FACT**  Reminder of our challenge |
| Slide 37 |  | **Slides 36-38 1:55-2:50**  **1 minute for the 3 slides**  **Rest of time to work on FACT** |
| Slide 38 |  | **Slides 36-38 1:55-2:50**  **1 minute for the 3 slides**  **Rest of time to work on FACT** |