

| OVERVIEW | | |
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| Lesson Title or Topic: Data Analysis with Data Nuggets | Unit: DataAnalysis | Lesson date(s) & duration: 3 class periods (90 minutes each) |
| Brief Lesson Description: This lesson focuses on the skill of creating and analysing data from authentic scientific research | | |
| CONTENT | | |
| NGSS Performance Expectation(s): SCI.CC1.h Students observe patterns in systems at different scales and cite patterns as empirical evidence for causality in supporting their explanations of phenomena. They recognize classifications or explanations used at one scale may not be useful or need revision using a different scale, thus requiring improved investigations and experiments. They use mathematical representations to identify and analyze patterns of performance in order to reengineer a designed system. | | |
| Essential Question (Phenomena): Depends on specific data nugget being used; each data nugget has its own specific essential question. Overall: Can you create and analyse a graph given an authentic scientific research event using raw data? | | |
| Learning Intention(s): We are learning to create and evaluate graphs based on raw data from authentic research | Success Criteria: We know we are successful when we can create and analyse graphs based on authentic scientific research. | |
| Materials and Equipment: Data Nuggets on computers, OR preprinted stories Data Nuggets Poster board Rulers Markers | | |
| POST-LESSON REFLECTION | | |
| GLOWS – What worked well? Students had a productive struggle in graph creation with a level 3 data nugget. The fact that they had choice, | GROWS – Where can this lesson be improved for next time? | |

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| and that we scaffolded to level 3 helped immensely. They were proud of themselves when they could complete a level 3 on their own, with very little teacher guidance. | Conducting our own investigation with data collection would improve student buy in, as did giving the students choice when selecting the data nugget they were working with. We do plan to take a field trip in the spring to collect data of some undetermined sort. (We will figure that out together) |
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Learning and Instructional Sequence

| 5E Stage | Time Required What the Teacher Does... What the Students Do... | EVALUATE* What is the evidence of learning? |
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| ENGAGE | <p>Day 1 The teacher shows a video of urchin righting behavior Students- should be engaged in their observations and taking notes about what they are seeing. After they write down their observations, they should (upon prompting) discuss their observations with their group.</p> <p>Day 2 Students observe a different species of sea urchin, in our classroom salt water tank, and attempt to flip and time the sea urchin to observe the behavior first hand. We have not had luck in keeping multiple sea urchins alive, and so will NOT be collecting the raw data ourselves.</p> | <p>Written Observations</p> <p>Student Engagement</p> |
| EXPLORE | <p>Day 1 Students work in groups on the same data nugget. This teacher helped write, "Do Urchins Flip Out in Hot Water" and so we will be working on this together. Previous knowledge has already been activated through use of warm ups (Dependent, Independent variables, basic graph construction)</p> <p>Day 2 and 3 Students CHOOSE their own level 2 or 3 Data Nugget with their group. This involves them creating the graph without an outline first, directly from the raw data.</p> | |
| EXPLAIN | | |

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| | <p>Day 1 Students create a graph given the graph outline</p> <p>Day 2 and 3 Students create and analyse a graph (s) from their chosen data nugget</p> | |
| ELABORATE | <p>Day 1, 2 Students answer analysis questions based on their interpretation of the graph (s)</p> <p>Day 3 Students present what they have learned, including the background information, their graph(s) and the analysis questions</p> | |

* Evaluation may or may not occur at any of the instructional stages. Teachers diagnose student learning through an ongoing process. Assessment can be both formative (ongoing and dynamic) and summative (end-of-lesson final test or product).