Data Nugget Professional Development Workshop

Scientific Data in Schools: Measuring the efficacy of an innovative approach to integrating quantitative reasoning in secondary science

July 10-11, 2017
Terrace Room, Kellogg Biological Station

http://datanuggets.org/study

Monday, July 10th

8:30-9:00 Participants arrive, breakfast and coffee served

9:00-9:30 Introductions, review agenda, and discuss goals for the workshop

9:30-10:45 Quantitative practices in the biology classroom
   ● Activity 1: Review definition and importance of quantitative reasoning
   ● Activity 2: Case study analysis and discussion

10:45 - 11:00 15 minute break

11:00-12:15 What are Data Nuggets?
   ● Activity 3: Complete a Data Nugget
   ● Anatomy of a Data Nugget
   ● Pedagogical themes in Data Nuggets

12:15-1:30 Lunch and time to walk by Gull Lake

1:30-2:30 The process of science
   ● Activity 4: Mapping the process of science in a Data Nugget
   ● Modeling the process of science

2:30-2:45 Coffee and snack break

2:45-3:30 Information on Data Nugget study
   ● Review the website and the “20 pack” of Data Nuggets
   ● Study design and schedule

3:30-4:15 Treatment and comparison classrooms
   ● Discussion – how to handle the treatment and comparison classroom
   ● Review “authentic alternatives” collected before PD

4:15-4:30 Final thoughts for the day
Tuesday, July 11th

8:30-9:00  Breakfast and coffee served

9:00-9:30  Hypotheses
          ● Address student misconceptions surrounding hypotheses and predictions.
          ● Discuss importance of the hypothesis in the process of science.

9:30-10:15 Exploring data with statistics and graphing
          ● Central tendency and variation in data
          ● Performing calculations - rates, percentages, and models/equations
          ● Independent vs. dependent variables
          ● Choosing a graphical representation and constructing a graph
          ● BSCS Identify and Interpret (I²) strategy
          ● Observational vs. experimental studies (correlation vs. causation)

10:15-10:30 15 minute break

10:30-12:00 Supporting claims using scientific data as evidence
          ● Discuss the CER method of constructing scientific explanations
          ● Teaching CER intentionally with the scaffolding tool
          ● *Activity 5*: Evaluating student explanations
          ● Using the CER tool in the context of a Data Nugget

12:00-1:00 Lunch

1:00-2:00 Asking good questions
          ● *Activity 6*: Make just one change
          ● Making connections to the process of science
          ● Helping students to think like scientists and develop their own questions

2:00-3:00 Getting the most out of Data Nuggets

3:00-3:15 Coffee and snack break

3:15-4:00 Planning for Data Nuggets in your classroom

4:00-4:30 Information on Data Nugget study (cont.)
          ● Submitting logs, student responses, and other materials
          ● Scheduling classroom visits

4:30-4:45 Final thoughts
          ● Review goals and time for final teacher questions
          ● Post survey