

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 (I^2) 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