Data Portfolio Update

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Stated Purpose

- to improve student scientific literacy by providing access to primary source data and technology for use in addressing questions and solving problems

Conceptual Framework

- Common Thread: Use of data and data analysis

- Construct knowledge through guided inquiry

- Provide support material and resources

Standards Based

- Next Generation Science Standards (NGSS)

- Common Core Literacy

- Common Core Mathematics

- International Baccalaureate (IB)

Goals of the Framework

- Provide ways to address NGCC and Common Core through access to "real data"

- Provide a learning sequence from simple to complex to collect, organize and analyze data

- Students (Teachers in workshops) gradually accumulate knowledge while progressing through the sequence

- Address underlying sub-questions when students may not meet the required pre-requisite knowledge (The new Level 0)

Sequence of Complexity

Activity	Lvl	Data Use	Data Analysis	SM Conceptual Learning
Mass of Pennies	1	One variable - measured	Organize data into a histogram; seek a pattern	A variable can be examined through measurement
Rolling with Rutherford	1	One variable - measured	Organize data into a chart; interpret histogram	Indirect evidence
Quark Workbench	1	Addressing a question using design technology	Develop rules for developing a model	Combining fundamental particles; standard model as a theoretical framework
Masterclass Calculation	2	Two variables/event display	Pattern Recognition; confounding variables	Event displays show products of collisions
Independent e-Lab Investigations	3	Several variables/ Students explore relationships; do research – ask a question	Correlation (possible); calibration; transform data	Conditions that effect number of comic rays; characteristics of cosmic rays

Activity Review

- Show Review Flowchart

Criteria for Evaluating Instructional Design

Macro Design:

- In line with the standards

- A Big Idea – or Enduring Understanding

- Students learn by doing science

- Guided inquiry

- Organized into Levels 0, **1**, **2**, **3**, 4

Criteria for Evaluating Instructional Design

Micro Design

- Behavioral objectives

- Leads to an understanding of how science is done

- Analyze data

- Assessment directly related to the objectives

Template for Lesson Creation

- Show the template

Goals of Lesson Review

- Some existing lessons do not meet all of the guidelines as stated in the framework; therefore,

- Review all posted lessons

- Design new lessons that will allow more workshop threads for other topics, such as neutrino physics, standard model physics, etc

Updated Lessons

- Plotting LHC Discovery

- Rolling With Rutherford

- Dice, Histograms and Probability

- CMS Data Express

Thank you for your time