HASTI – 2014
ISI - Science in 5th through 8th grades

Today: How we apply the NGSS Practice Standards

ASK QUESTIONS AND DEFINE PROBLEMS
- I formulate empirically answerable questions
- I establish what is already known
- I determine what questions have yet to be answered
- I define constraints and specifications for a solution

NGSS-practice 1

DEVELOP AND USE MODELS
- I construct mental and conceptual models to represent and understand phenomena
- I use models to explain and predict behaviors of systems, or test a design
- I refine my models in light of new empirical evidence

NGSS-practice 2

PLAN AND CARRY OUT INVESTIGATIONS
- I identify questions to be investigated
- I identify variables and controls
- I design and perform experiments to test my hypotheses
- I decide what data will be collected and how much, and what tools are needed

NGSS-practice 3

ANALYZE AND INTERPRET DATA
- I use tables, graphs, spreadsheets, etc. to display and analyze data
- I recognize patterns in data and see relationships between variables
- I revise my initial hypothesis when the data doesn’t support it
- I analyze performance of a design under a range of conditions

NGSS-practice 4
Experiments

Collecting data
Analyzing data
Discussing data

(Listening to everybody)
Experiment #1 – Introduction to the possibilities

Question: What is different or the same about your shoes?

[around the room, alternating...]

Experiment #2: Data Collection

- Make a list of all the footwear you own.
- Categorize/sort the different types in a way that make sense to you.
- Include a count of how many in each category.

[Sheet of paper]

Discussing/analyzing the data

- You sorted and counted your shoes in a way that made sense to you
- Form a group of 3-4 people
- Look at and discuss how others in your group sorted their shoes.
- Decide on one focus question about your group’s shoes

[Each group - 32” x 24” whiteboard, markers, eraser]

Analyzing/presenting the data

- Prepare a “whiteboard” to present your focus (and data) to the whole class
- Try to include several different “REPRESENTATIONS” of the focus/data
  (By “REPRESENTATIONS” we mean – pictures, graphs, equations, diagrams, verbal descriptions)

Presentations

Reflecting on today’s session

Who is doing the thinking and learning?
Who is making connections?
Did you use all 8 practice standards?

The SIP process:
Satisfying, Intentional Problem-solving

The ABCs of learning (Mary Hynes-Berry)
Always Be Connecting
Always Be Communicating
Always Build Confidence

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