HASTI – 2014
The Indiana Science Modeling Curriculum

Today: Our Modeling curriculum workshops in ICP and biology

Northern Indiana Science, Mathematics and Engineering Collaborative

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Status for Professional Development in Modeling in Indiana
in Physics, Chemistry, ICP and Biology

Summer 2013: at Hammond – 1 week each workshop
introduction to Modeling, ICP modeling, Biology Modeling
at Notre Dame – 1 week each workshop
Biology modeling, ICP modeling
at Carmel, University High School – 2 week workshop
Chemistry modeling

Funding support:

Results:
The ICP and Biology Modeling Curricula are now available on the NISMEC website
http://www3.nd.edu/~nismec/nismec11.htm
(Password required)

What do we mean by “Models”?
Symbolic Representations

MULTIPLE!

Verbal

Concept

Picture

Mental

Model

Diagrammatic

Graphical

*Modeling in physics & Chemistry as developed at Arizona State University
The American Modeling Association – AMTA
http://modelinginstruction.org/

Why Models?
- Models are basic units of knowledge
- In all Science Research:
  - A few basic models are used again and again with only minor modifications.
  - Models help students connect
    - Macroscopic observations
    - Sub-microscopic representations
    - Symbolic representations

The students become SCIENTISTS – learning by DOING
Why modeling?!

- To help students see science as a way of viewing the world rather than as a collection of facts.
- To make the coherence of scientific knowledge more evident to students by making it more explicit (quantitative).
- Models and Systems are explicitly recognized as major unifying ideas for all the sciences by the AAAS Project 2061 and the NGSS for the reform of US science education.

Modeling Experiment
With Bob and Lynda

Collecting data
Analyzing data
Discussing data

(Listening to everybody)

Modeling Workshops
in the coming year

1. Northwest Indiana – 3 weeks at Hammond
   16-20 June Introductory Modeling
   23-27 June ICP Modeling
   7 – 11 July Biology Modeling (at Hammond or Notre Dame)

2. Indianapolis area – at University High School, Carmel
   7 -15 July (not the weekend) Intro + ICP Modeling

3. Evansville area – at a Vandenburgh high school
   7 -15 July (not the weekend) Intro + ICP Modeling

Sign up sheets at the NISMEC booth (##00) or the NISMEC website.
http://www3.nd.edu/~nismec/nismec11.htm
Contact: hgberry@nd.edu

Reflecting on today’s session

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

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

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