Computational Science Education Reference Desk

http://www.shodor.org/refdesk/

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What is NSDL?

- **CSERD** is a Pathways project (DUE-0435187) of the **National Science Digital Library (NSDL)**

- **NSDL** – Created by NSF
  - Digital library of resource collections
  - Organized in support of science education at all levels
  - Supports innovations in teaching and learning in **STEM (Science, Technology, Engineering, and Mathematics)** areas
What is CSERD?

• Focuses on the computational science content of NSDL

• Aims of CSERD:
  – Help students learn about computational science
  – Help faculty incorporate computational science into the classroom

• Chemistry portion of CSERD
  – Currently ~200 links to various materials
How Does CSERD Work?

- CSERD attempts to:

  1. Provide a *collection* of quality resources from the Internet

  2. Provide a forum for the *review* of catalog items by both users and expert reviewers

  3. *Create* original computational science resources for use in education

     - Users can submit items for inclusion in the collection
Uses of CSERD

1. **General User**: No login required
   - Place to find educational resources in **computational chemistry**
     - Includes molecular modeling, but also much more
   - Can browse catalog by:
     - Subject (Chemistry, Physics, etc.)
     - Keyword (Spectroscopy, Ideal Gas law, etc.)
     - Audience (Student, Educator, etc.)
     - Education level (K-16)
     - Resource Type (Software, text, applet, etc.)
2. **Reviewer**: Account creation/login required
   - Performs reviews of catalog items
     - Both **free-form** and **structured** reviews possible
     - **Free-form Review**:
       - Paragraph form posted in the forum
       - Usually opinions about a given site
     - **Structured Review**:
       - Three types: Verification, Validation, and Accreditation (VV&A)
       - Provides in depth look at the usability of an item
Structured Reviews

Types:

1. **Verification**: Does the model run correctly on your system (OS and browser)?

2. **Validation**: How does the model compare with the real world? Can experimental data be reproduced?

3. **Accreditation**: Is the educational purpose of the model or simulation achieved?

→ Online review guides are provided to help you perform these reviews
3. **Contributor:** Login required

- Contribution could take several forms
  - Submit *new* models/simulations for others to use
  - Provide materials *to accompany an existing catalog item*:
    - Publish a Lesson Plan or Module
    - See a good reference example at:
- Online criteria are available for contributors
CSERD: Examples

• Demonstration of:

  1. Catalog searching (by various means)
     – Show examples of a few sites
     – Look at metadata provided

  2. Method of submitting reviews
     – VV&A instructions, etc.

  3. Place to contribute new materials
     – How items are submitted
Conclusions

• CSERD is for YOU to use!
  – Review catalog items that you find useful
    • Reviews make the materials more useful for us all
  – Submit lesson plans for use with catalog items
    • Let others benefit from your hard work
  – Submit new models and simulations
  → Submit new items you find on the Internet

→ For those who review several items and/or submit new materials, we will send a letter to the administrator of your choice informing them of your academic contribution to CSERD!
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