
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** (**S**cience, **T**echnology, **E**ngineering, and **M**athematics) 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.)

Uses of CSERD

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: **V**erification, **V**alidation, and **A**ccreditation (**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

Uses of CSERD

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:
<http://www.shodor.org/refdesk/Resources/Activities/OhmsLaw/index.php>
 - 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

CSERD

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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