



# Digital Resource Use by K-12 Teachers: Robert Noyce Scholars and the NSDL

*Building Locally, Linking Globally*  
*NSDL – Noyce Project*  
*In the California State University System*



NSF DUE 07-335011

# Overview of NSDL Project

- CSU system: 23 campuses, 430,000 students
- Partners & Leadership Team
- Project Goals
- Components of the project
  - Development of a Noyce Teaching Commons
  - Building Micro-learning communities for Scholars
  - MERLOT and NSDL
  - Virtual courseware
  - E-portfolios
  - Dissemination
  - Sustainability

# Leadership Team

- California State University led project
  - CSU Chancellor's Office (Elizabeth Ambos - PI, Gerry Hanley)
  - CSU Fresno (David Andrews – Co-PI, Jaime Arvizu)
  - CSU Monterey Bay (John Ittelson, George Station)
  - CSU Los Angeles (Bob Desharnais, Paul Narguizian)
  - CSU Long Beach (Laura Henriques)
  - Cal Poly Pomona (Jodye Selco)
  - CSU San Bernardino (Davida Fischman)
  - CSU Bakersfield (Ron Hughes)

# PROJECT GOALS

Noyce Scholars and their faculty mentors will develop the capability to:

# GOAL 1

Build a select collection of outstanding online science and mathematics learning content and curriculum that is successful in high needs schools, particularly in middle and high schools.

# GOAL 2

Disseminate among peers content-specific instructional applications of NSDL resources including such effective and engaging tools as “Virtual Courseware”, PHET physics simulations and other science lab simulations, designed to solve instructional problems in schools lacking science or math equipment, and supplies.

# GOAL 3

Link the CSU Noyce Scholars Teaching Commons to local school district user communities, enabling Noyce Scholars to share NSDL teaching resources and pedagogy with teacher colleagues.

# GOAL 4

Use a powerful e-Portfolio tool designed to enhance Scholars' organization and communication of applications of NSDL resources in addressing the challenges of enhancing STEM learning of under-achieving students, including English Learners, in high needs schools.



- Free and lifelong membership
- Online teaching and learning materials can be found quickly and easily
- Growing catalog of online teaching tools and support resources – Pedagogy Portal
- Access to experts and peers –Member Directory
- Open Educational Services
  - MERLOT Voices academic networking tool
  - MERLOT Content Builder for authoring content
  - MERLOT YouTube Channel for professional development



Putting Educational Innovations into Practice

[Main](#) [Invite](#) [My Page](#) [Members](#) [Discussion Forums](#) **Community Conversations** [Videos](#) [Chat](#)

[All Groups](#) [My Communities](#)

**+ Invite More People**

**Gerry Hanley**



## Noyce Voices

Created by [Gerry Hanley](#)

[View Communities](#)

[Sign Out](#)

[Inbox \(1 new\)](#)

[Alerts](#)

[Friends - Invite](#)

[Settings](#)

Quick Add...

**Community  
Conversations**

[Literary  
Theory](#)

### Information



This Web 2.0 service is for CSU Noyce Scholars and faculty to support each others efforts in improving science education in high need schools

Website:

<http://teachingcommons.cdl.edu/noyce/index.html>

Members: **25**

### Admin Options

[Edit Group](#)

[Manage Group](#)

[Members](#)

[Delete Group](#)

### Replies to This Discussion



Reply by [Vanessa Tucker](#) on June 16, 2010 at 1:18pm x

This is my professional digital portfolio link:

<http://contentbuilder.merlot.org/toolkit/html/stitch.php?s=12731501...>

Vanessa Tucker

[▶ Reply to This](#)



Reply by [Sharon Matsuoka](#) on June 16, 2010 at 1:18pm x

<http://contentbuilder.merlot.org/toolkit/users/ssmatsu/msmmath>

-Sharon Matsuoka

[▶ Reply to This](#)



[Engineering  
Editorial Bo...](#)

6 members



[Merlot  
Content  
Builder U...](#)

11 members



[Sociology  
Taskforce](#)

12 members



[A Community  
of Experts t...](#)

5 members

# Developing a Noyce Teaching Commons

- **Making visible the resources and advice** targeted to new Noyce Scholars Teaching and Learning Community –
  - “Recommend the Best and Links to the Rest”
  - MERLOT provides a template for the “Carnegie-Style” Teaching Commons and support in v1.0
- The **Noyce Teaching Commons** is specific to CSU Programs but is open to all  
<http://teachingcommons.cdl.edu/noyce>
- **Mathematics teaching community** for Noyce Scholars is developing.  
<http://teachingcommons.cdl.edu/mec>

# NOYCE SCHOLARS

IN THE CSU



[advanced search materials](#) | [advanced search members](#)

MERLOT [Browse Materials](#) [Contribute Materials](#) [Member Directory](#) [Noyce Voices](#)

[Join MERLOT/](#) [Login to MERLOT](#)

Home

Biology Resources

Chemistry Resources

Physics Resources

Earth Systems Resources

Math Resources

Classroom Management

e-Portfolios

Connect with Other Noyce Scholars

News & Events

## Welcome to

NOYCE SCHOLARS IN THE CSU



## Introducing New Noyce Scholars to MERLOT and the NSDL

### What You'll Find Here

1. Exciting online learning materials in MERLOT and the National Science Digital Library (NSDL).
2. Recommended Science and Math teaching resources, lesson plans, classroom management strategies, and advice with links to a wide range of additional Science and Math resources and materials.
3. A variety of ways to [connect with other Noyce Scholars](#) and to teachers and university faculty who share your goals, challenges, and passions for Science and Math education.
4. Information on how others are using virtual labs in their classrooms to:
  - Achieve curriculum objectives
  - Create exciting learning experiences for students
  - Reflect on effective classroom management strategies

### [Join Noyce Voices Online Community](#)

Noyce Voices is a FREE online communications network for Noyce Scholars in the CSU that provides opportunities to connect with other members 24/7:

Contribute to online discussion, blogs, or chats.

Post, share, exchange, and comment on documents and videos that can help you be a more successful teacher.

Get advice and information about Science and Math education in high need schools. Share successes, ask questions, and pose problems and have Noyce colleagues respond.

### [Connect with Other Noyce Scholars](#)



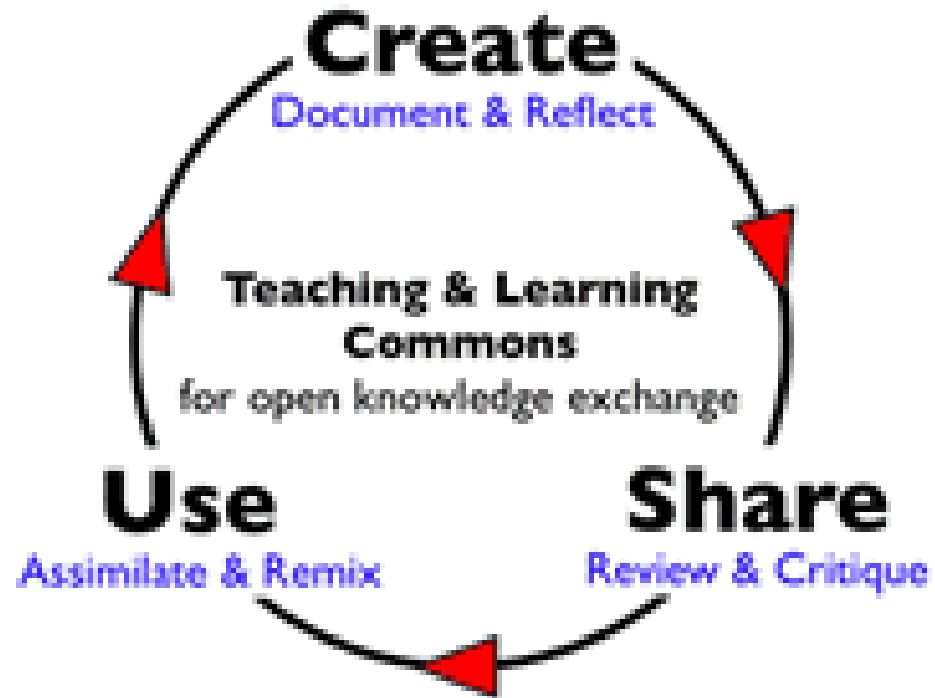
- MERLOT's Federated Search with NSDL and 16 other OER collections including NSDL-ComPADRE provides easy access to content.
- Many of the resources that are available through the NSDL are promoted among local and state-wide Noyce Scholars via websites, professional development workshops, the MERLOT digital library, and our social networks within MERLOT "Voices."



- Free membership
- Collection of interactive, online simulations
- Inquiry-based activities
- Online assessment quiz
- Templates for constructing a lab report and a grading rubric
- Aligns to the U.S. National Science Education Standards and your state's standards.
- [www.ScienceCourseware.org](http://www.ScienceCourseware.org)
- Test drive of Virtual Fly, relative dating, evolution and earth quake

# MERLOT Content Builder for Creating e-Portfolios

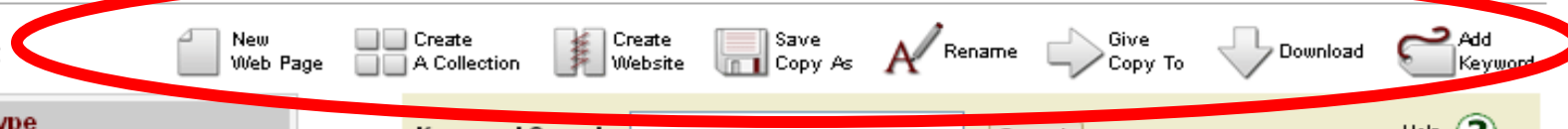
- It's Free and MERLOT has YouTube How-To instructions
- Select and organize teaching and learning materials.
- Transform materials and reflections into visually appealing and intellectually engaging representations.
- Share ideas for peer-review, assessment, and collective knowledge building.
- User friendly format that facilitates the exchange of ideas and knowledge.





## Content Builder

### My Toolkit



#### Sort by Type

- [Web Pages](#)
- [Websites](#)
- [Collections](#)
- [Public](#)
- [Contributed](#)

#### Default Sort

#### Sort by Keyword

*The MERLOT Content Builder is an adaptation of the KEEP (Knowledge, Exchange, Exhibition, Presentation) Toolkit originally developed by The Carnegie Foundation for the Advancement of Teaching.*

#### Keyword Search:

Help

Items 1-3 shown of 3 results

- |  |   |
|--|---|
| <p><b>Minimalism</b><br/>URL: currently not public<br/><input type="checkbox"/> Date Created: Apr 27, 2010<br/>Last Updated: Apr 27, 2010<br/>Keywords:<br/>License: not specified</p>     | <p><a href="#">Edit Web Page</a><br/><a href="#">Delete Web Page</a><br/><a href="#">Make Public</a><br/>Contribute to MERLOT</p> |
| <p><b>Postminimalism</b><br/>URL: currently not public<br/><input type="checkbox"/> Date Created: Apr 27, 2010<br/>Last Updated: May 25, 2010<br/>Keywords:<br/>License: not specified</p> | <p><a href="#">Edit Web Page</a><br/><a href="#">Delete Web Page</a><br/><a href="#">Make Public</a><br/>Contribute to MERLOT</p> |
| <p><b>Totalism</b><br/>URL: currently not public<br/><input type="checkbox"/> Date Created: Apr 27, 2010<br/>Last Updated: Apr 27, 2010<br/>Keywords:<br/>License: not specified</p>       | <p><a href="#">Edit Web Page</a><br/><a href="#">Delete Web Page</a><br/><a href="#">Make Public</a><br/>Contribute to MERLOT</p> |

Results page 1 of 1





Home Page

Home Page

NASA Tools

Miscellaneous Resources

Noyce Institute Lesson

Algebra I

Geometry

Algebra II/Trigonometry

Precalculus

AP Calculus

AP Statistics



Welcome to my page! My name is Sharon Matsuoka. I earned my single subject teaching credential in mathematics from CSUSM. I also graduated with a B.S. in mathematics cum laude from the same school. I am a math teacher in California and I love what I do. I also enjoy coaching cross-country and track and field. When I'm not at school, I enjoy being active, reading, or playing the piano. I hope you are able to find helpful information on my page. A shortened version of my teaching philosophy is this: My philosophy is that everyone can learn math. Many students have a mental block when it comes to math, but I want to penetrate and shatter that block. I want students to be able to find that math is useful, that it's more than memorizing formulas; it's solving problems and really thinking about the world around us.

Teaching Philosophy



# User-Friendly Web Authoring Tools To Enable Personal & Custom Context For Learning Content

# Professional Development



Noyce Scholars have learned use of digital learning technologies through a combination of face-to-face and on-line workshops.

Shown here is a group of Fresno Noyce Scholars learning how to use virtual Courseware and MERLOT Content Builder



# Voices from the Field

## CSU Noyce Teachers

- **Jennifer Bradford** – CSU Fresno Noyce Alumna, currently teaching chemistry and physics at Edison High School in Fresno, CA
- **Maelanie Galima** – CSU Long Beach Noyce Scholar, currently student teaching in biology and earth science in Whittier, CA

# Four Corners:

## Your Metacognitive Skills of Classroom Management & Lesson Design

**You're a Pro- you can give a great presentation on how teachers can teach with excellent NSDL materials**

**You're Fairly Confident on what goes on in a classroom and how to teach effectively**

**You've taught in and/or observed a classroom and you know about the resources but you're not sure how to make it work in a lesson**

**You have no idea about what goes on in a classroom and how you could use the materials in class**

# Jennifer Bradford

- My Teaching Strategies and Challenges: What I face everyday in my class
- How Noyce Scholars Program Helped
- [Jennifer's ePortfolio](#)
  - and for my students
- [Noyce Voices](#) – at Fresno
  - how we use Voices.MERLOT.org to continue conversations and create community



# Maelanie Galima

## Technology in the classroom

- Projector
- Document reader
- Internet
- MOBI Device
- Desktop Computers





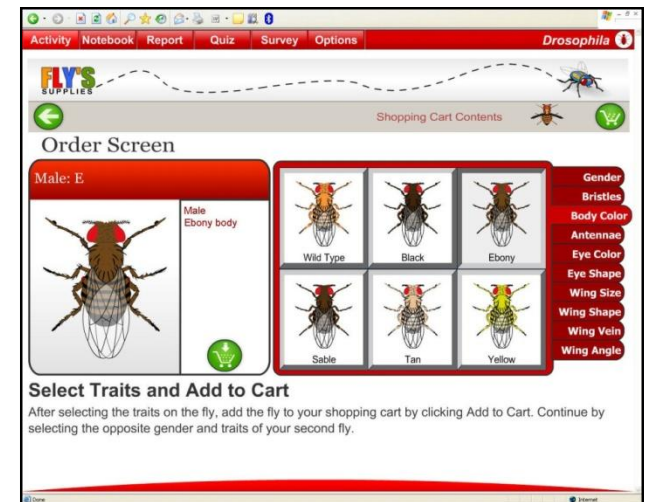
# Integrating Technology in the Classroom

- Videos
- Podcasts
- Current news and events
- Online Assessment
- Online Homework Assignments
- Games
- Simulations
- Social Networking



# E-Resources

- MERLOT Content Builder
- NSDL & MERLOT
- Podcasts and Images (NASA-JPL, Nat. Geo.)
- Videos
  - Brain Pop
  - YouTube
- Online Newspapers
  - Los Angeles Times
  - New York Times





# Challenges to Tech-Teaching

- Technology Infrastructure
  - Access to computers and upgrades
  - Access to other necessary peripherals and current software
  - Computer memory storage
  - High speed internet and firewalls
- Technological proficiency
- Students' attitudes, beliefs, and experience



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# Dissemination

- On-line tutorials
- Web-based synchronous and asynchronous trainings
- Building out the math teacher community  
<http://teachingcommons.cdl.edu/mec> to mirror the science teacher community  
<http://teachingcommons.cdl.edu/sec>
- Noyce Scholars posted material on open community websites
  - MERLOT.org
  - MERLOT Voices

# Dissemination

- **Noyce Scholars as dissemination leaders**  
(presenting to other Scholars at their home site, California Science Teachers Association, NSTA, ASTE, MERLOT, CENIC, AAPT meetings, Western Regional Noyce Scholars & Noyce PI meetings)
- **Over 26 campuses in the Noyce Scholars Program** Western Region (CA, ID, WA, UT, NM, AZ, OR) have been impacted
- Article in “**Science Teacher**”

**Noyce Scholars are our Rock Stars – and  
the faculty and institutional support are  
the Roadies**

# Evaluation

- **Productivity Metrics**
  - 141 Noyce Scholars making 515 contributions for sharing
  - 87 Noyce Scholars engaging in MERLOT Voices
  - 30+ ePortfolios for 1<sup>st</sup> semester
- **CSU Center for Usability in Design & Accessibility**
  - Expert and community usability evaluations of website to improve design & services of Teaching Commons
  - Ensure 508 compliance of website
- **External Program Reviewer**
  - High marks for engagement and outreach
  - Recommendations for continued improvements in sustaining engagement and outreach

# Acknowledgements

- We acknowledge and thank our partners on this project.
- We thank the NSF for their support of this project.

# THANK YOU

# QUESTIONS?