Welcome to the Computer Science Collaboration Project Webinar:

Universal Design in Education: Philosophy, Research, and Application

We will begin at 10:00 AM Pacific/1:00 PM Eastern
Webinar Agenda

• Computer Science Collaboration Project Overview
• Dr. Sheryl Burgstahler, Director, DO-IT Center and University of Washington Access Technology Center
• Questions & Answers
Project Overview

The Computer Science Collaboration Project aims to efficiently increase participation of underrepresented groups in computer science opportunities by effectively building collaborations between K-12, community-based organizations, higher education, and industry.

www.cscproject.org
Project Goals

- **Build collaborations** between CSCP participants from K-12 settings, community-based organizations, higher education, and industry.
- **Maximize access to shared resources** among representatives from K-12 settings, community-based organizations, higher education, and industry that are interested in expanding and broadening participation in computer science.
- **Strengthen the capacity** of existing and evolving K-12 formal and informal programs in computer science by supporting the use of exemplary practices.
Project Activities

- Project Web Site: www.cscproject.org
- Program Directory
- Webinars
- Quarterly E-Newsletter
- In-person Events
- National Leadership Team
- Capacity Building Grants
## Mini-Grant Projects

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Lead Organization</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Science Fun Day</td>
<td>Alabama Computer Science Camps - Auburn University</td>
<td>AL</td>
</tr>
<tr>
<td>Engaging Youth with Disabilities with Microsoft KODU, Basic Computer Game</td>
<td>Boys &amp; Girls Club of Fitchburg and Leominster</td>
<td>MA</td>
</tr>
<tr>
<td>Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School/High Tech Internships</td>
<td>Florida High School/High Tech</td>
<td>FL</td>
</tr>
<tr>
<td>North Central Florida High School/High Tech Computer Science Exploration</td>
<td>Center for Independent Living of North Central Florida – High School/High Tech</td>
<td>FL</td>
</tr>
<tr>
<td>Project S.T.E.A.D.Y (Science, Technology, Engineering Academy for Disabled Youth)</td>
<td>WizKidz Science and Technology Centers, Inc.</td>
<td>GA</td>
</tr>
<tr>
<td>SMARTer Board: Girls Resolve Accessibility Issues</td>
<td>The New Look Project at Illinois Center for Specialized Professional Support (Illinois State University)</td>
<td>IL</td>
</tr>
<tr>
<td>Teaching Science through Robotics</td>
<td>Florida Crown Workforce Board</td>
<td>FL</td>
</tr>
<tr>
<td>Tech Vision Quest</td>
<td>C++ Game Programming</td>
<td>IL</td>
</tr>
</tbody>
</table>
Universal Design in Education: Philosophy, Research, and Application

Sheryl Burgstahler, Ph.D.

University of Washington
Seattle
U.S.A.
Two UW Centers

Access Technology Center (ATC)
- Founded 1984 for UW faculty, students, staff
- Funded by UW

DO-IT Center
- Founded 1992 for outreach
- Supported with federal, state, corporate, private funds
- Expanded to DO-IT Japan in 2007
References

• Universal Design in Higher Education: From Principles to Practice, Harvard Education Press

• Center for Universal Design in Education
  www.uw.edu/doit/CUDE/
Ability on a Continuum

see
hear
walk
read print
write with pen or pencil
communicate verbally
tune out distraction
learn
manage physical/mental health
Evolution of access:

Exclusion
Segregation
Rehabilitation & accommodation
Social justice & universal design
Approaches to access:

1. Accommodations
2. Universal design
Accommodation = Alternate format, service, &/or adjustment for a specific individual
"Coffeepot for Masochists", Catalog of Unfindable Objects by Jacques Carelman; in Donald Norman’s *The Psychology of Everyday Things*, 1988
Universal design =

“the design of products & environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.”

The Center for Universal Design
www.design.ncsu.edu/cut
Apply universal design to:

Student services
Instruction
Technology
Physical spaces
UD of Technology & Physical spaces...
Inaccessible → Accommodation → UD

Video w/o captioning & audio description → Interpreter for deaf & audio describer for blind students → Captioned & audio-described video
Universally-designed Video

- Address multiple audiences in design
- Videotape with captions in mind
- Large, clear captions
- Searchable captions
- Design so that key content is spoken as well as visually presented
- Audio-described version available
UD on a Continuum

All materials in printed form → Materials on website, some as PDFs → Materials on website, in a rich variety of accessible formats
Universally-Designed Website

- Perceivable
- Operable
- Understandable
- Robust

- World Wide Web
- Consortium (W3C)
Accessible Website Design

- Standard HTML
- Alternative text for images
- Simple backgrounds
- Appropriate color schemes & contrast
- Descriptive link text
- Avoid reliance on mouse-only input
- ...

DO·IT
Test a Web Page for Accessibility

- Turn off graphics
- Turn off sound
- Use only keyboard
- Use accessibility checker tools (e.g., SiteChecker)
Example: UD in iPhone

- speech output
- speech input
- screen/text enlargement
- variable colors/contrast
- audible, visible, vibrating alerts
- assignable ringtones
- Bluetooth connectivity for keyboard, refreshable Braille display, ...
Pop Quiz

Let’s Take a Poll
UD of Instruction & Student Services...
UD is:

- an attitude that values diversity, equity, & inclusion.
- a goal.
- a process.
- practices that make learning products & environments welcoming, accessible, & usable for everyone.
UD for Learning (UDL) promotes curriculum with multiple means of:

- representation
- expression
- engagement
Apply UD to:

- Overall design of instruction
- Specific teaching techniques (e.g., lectures, large- & small-group discussions, video presentations, online instruction, case studies, role playing)
- Choice of course content (e.g., include UD/disability content)
Examples of UDI practices:

- Arrange **seating** so that everyone has a clear line of sight.
- **Welcome students** by name.
- **Use large, bold fonts** with high contrast on uncluttered overhead displays & speak aloud all content.
- **Repeat questions** students ask.
- **Provide multiple ways** to gain & demonstrate knowledge, using multiple senses.
Examples of UDI practices:

- Select materials early.
- Provide materials in accessible electronic formats.
- Avoid unnecessary jargon; define terms.
- Provide multiple, diverse examples.
- Provide scaffolding tools (e.g., outline).
- Provide corrective opportunities.
- Test in same manner in which you teach.
- Know how to arrange for accommodations.
Good teaching is good teaching.
Poll
UD – know it when you see it:

...at “skateboard park”
Visit

Center for Universal Design in Education

www.uw.edu/doit/CUDE/
Questions?
Additional Project Resources

- Visit the CSC Project Website:
  www.cscproject.org
- Register in the Program Directory:
  www.cscproject.org/index.php?q=pd
- Sign up for the Quarterly Newsletter:
  http://www.cscproject.org/index.php?q=node/14
- View Archived Webinars:
  http://www.cscproject.org/index.php?q=node/75
Additional Project Resources

Upcoming Webinars

*Engaging Youth with Disabilities in Computer Science: Mini-Grantee Showcase*

December 10, 2012, 10:00 AM -11:00 AM Pacific
Register: [http://www.cscproject.org/?q=node/620](http://www.cscproject.org/?q=node/620)

*Engaging Hispanic/Latino(a) Youth in Computer Science: Mini-Grantee Showcase*

December 12, 2012, 10:00am-11:00am Pacific
Register: [http://www.cscproject.org/?q=node/621](http://www.cscproject.org/?q=node/621)