Designing Accessible Online & Technology-Enhanced Learning Activities:

Challenges, Opportunities and a Plan

#NercompPDO2
Online Evaluation bit.ly/nercomp_designingsp17
• Workshop Facilitators:
  • Kirsten Behling, Director of Accessibility Services,
    Tufts University
  • Linda Bruenjes, Acting Director, Center for Teaching & Scholarly Excellence
    Suffolk University

Distinguished Presenters
  • Andrew Cioffi, Director of Disability Services
    Suffolk University
  • Brandon Drake, Assistant Director for Assistive Technology in Disability Services
    University of Massachusetts Lowell
  • Ella Epshteyn, Instructional Designer
    Wentworth Institute of Technology
  • Jody Goldstein, Director of Disability Services
    University of Massachusetts Lowell
  • Bridget McNamee, Assistant Director for Wellness and Disability Services
    Wentworth Institute of Technology
  • Mac Wishart, Instructional Technologist
    University of Massachusetts Lowell
Attendees

Positions
• Director of Teaching Center
• Instructional/Learning Designers

Institutions
• 2-year public
• 4-year public
• 4-year private

Types of Technology-Enhanced Courses
• Online
• Hybrid
• F2F

LMS
• Blackboard
• Moodle
• D2L
• Canvas
Faculty Training Requirement

Type of FD
• Online self-paced course; encouraged to use QM
• 6-week online course focusing on best practices
• 5 module training workshop that includes consultation with IT team
• Requirement coming into place for new online courses
Products and Services Used

- JAWS/NVDA 7
- Built-in Operating System Accessibility Tools 5
- Closed Captioning 4
- Echo 360/Panopto or other instructional video tool 4
- Screen Magnifiers 4
- Literacy Software such as Read&Write 2
- Echo Pens 2
- Kurzweil 2
- Dragon Dictation 2
Universal Design for Learning

- Part of course design
- Slowly introducing UDL
- Not using, but familiar with term
- Unfamiliar with term
# Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>Introductions and Ice Breaker</td>
</tr>
<tr>
<td>9:15 AM</td>
<td><strong>Keynote:</strong> How Accessibility Has Created a Pathway to Learning for All Students</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>BREAK</td>
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<tr>
<td>10:15 AM</td>
<td><strong>Workshop:</strong> Identifying Opportunities and Challenges for Creating an Inclusive Learning Environment at Your Institution</td>
</tr>
<tr>
<td>10:45 AM</td>
<td>10-Minute Lightening Round Presentations and <strong>Q &amp; A Session</strong></td>
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<tr>
<td>11:45 AM</td>
<td>LUNCH</td>
</tr>
<tr>
<td>12:45 PM</td>
<td>Case Study Problem-Solving <strong>Round Tables</strong></td>
</tr>
<tr>
<td>1:30 PM</td>
<td>BREAK</td>
</tr>
<tr>
<td>1:45 PM</td>
<td><strong>Workshop:</strong> Rubric-Based Plan for Incorporating Universal Design into Your Institution</td>
</tr>
<tr>
<td>2:45 PM</td>
<td>Next Steps and <strong>Evaluations</strong></td>
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</table>
How Accessibility Has Created a Pathway to Learning for All Students

Kirsten Behling
Tufts University
A Few Reminders About the Conference Today


• Conference hashtag: #NercompPDO2
Two questions to consider as we go through today’s agenda

Who are our learners today?

What does “college” look like?
Today’s learners verses yesterday’s learners

• More likely to need remediation courses
• More first generation college learners
• More likely to need executive functioning support
• Less likely to have significant time to study outside of school
• More women (57% compared to 43% of men)
• More adult learners (75% are older than 25 yrs.)
• More likely to have a job
• Tethered to their technology devices (87% have a smart phone)
• Have a diagnosed disability
The Americans with Disabilities Act (ADA) defines a disability as:

“a physical or mental impairment that substantially limits one or more major life activities; a record (or past history) of such an impairment; or being regarded as having a disability.”

National Center for Education Statistics, 2015
Types of Accommodations available - Broadly

- Exam Accommodations
- Peer Note Taking
- Extensions on Coursework
- Use of Assistive Technology
- Alternative Format of Materials
- Interpreters
- Early Registration

- Work with the Learning Specialist
- Reduced Course Load
- Foreign Language Substitution
- Housing Accommodations
- Emotional Support Animals
- Transportation Accommodations
- Meal Plan Accommodations
Today’s Instructors vs. Yesterday’s Instructors

1985 expectations for instructors
• Design course structure
• Create individual syllabi
• Pull together ancillary materials
• Teach courses
• Grade student work
• Hold office hours

2017 expectations for instructors
• All 1985 PLUS:
  • Meet with an instructional designer
  • Refer to a media specialist for advice
  • Have an online presence
  • Ask for help from IT to set up online aspects of the course
  • Offer multiple methods of meeting with the learners
  • Work with the disability services office
Teacher Centered ➔ Student Centered

- Meghan Grout, 2013
<table>
<thead>
<tr>
<th>Traditional (face-to-face)</th>
<th>Web-enhanced</th>
<th>Blended/ Hybrid</th>
<th>Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>0% of content delivered online</td>
<td>1-29% of content delivered online</td>
<td>30-70% of content delivered online</td>
<td>80% or more content delivered online</td>
</tr>
</tbody>
</table>

- Southern Illinois University Edwardsville, 2017
Today’s Courses – Defined by Credit Hour

1. **Classroom Course** – Course activity is organized around scheduled in-class meetings.
   *All classes meet in person and may use technology to support in-class instruction (simulation labs, videos, art software)*

2. **Synchronous Distributed Course**—Web-based technologies are used to extend classroom lectures and other activities to students at remote sites in real time.
   *Used my colleges with satellite campuses to allow students real-time access to a face-to-face course*

3. **Web-Enhanced Course** – Online course activity complements class sessions without reducing the number of required class meetings.
   *All classes meet in person but use a LMS to augment those meetings.*

4. **Blended (also called Hybrid) Classroom Course** – Online activity is mixed with classroom meetings, replacing a significant percentage, but not all required face-to-face instructional activities.
   *One of the three face-to-face meetings is replaced by an online session*

- Frank Mayadas and Gary Miller (2012)
Today’s Courses – Defined by Credit Hour

5. **Blended (also called Hybrid) Online Course** – Most course activity is done online but there are some required face-to-face instructional activities.

   The course is taught online but may require a few scheduled in-person meetings. This model is common in graduate degree courses that meet once a semester on a weekend.

6. **Online Course** – All course activity is done online; there are no required face-to-face sessions within the course and no requirements for on-campus activity.

   Colleges tend to choose this model to appeal to students who cannot travel to campus or tend to be better learners outside of the traditional classroom.

7. **Flexible Mode Course** – Offers multiple delivery modes so that students can choose which delivery mode(s) to use for instructional and other learning purposes.

   The HyFlex model from San Francisco State University has both classroom based and online options available for all or most learning activities, giving them the flexibility to choose when and where they study based on their own needs, desires, and preferences.

- Frank Mayadas and Gary Miller (2012)
Today’s courses in more detail

• Face-to-face augmented by an online presence to some degree
• 5.8 million learners took an online course in 2014
• Mobile learning is a way of life
• 77% of students report increased engagement with online course materials
• E-Portfolios measure success
• 80% of classrooms have WiFi
• Learners are bringing technology to class
Learners + Technology = ??

**Positives**
- Increased access and communication with instructors
- Learners can interact with the content at a time and place that is convenient
- It promotes interaction among learners who typically shy away from it

**Negatives**
- Not all learners are tech savvy or prepared for the online environment
- Some learners feel unsupported
- The flexibility with online courses does not always equal success
- Not all tech is usable
- Not all tech is accessible
Instructors + Technology = ??

<table>
<thead>
<tr>
<th>Positives</th>
<th>Negatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Learners report increased communication with instructors</td>
<td>• 85% of instructors have little experience with technology</td>
</tr>
<tr>
<td>• Better management of course activities</td>
<td>• Not all colleges have the support structures necessary for Instructor success</td>
</tr>
<tr>
<td>• Increased course discussions/participation</td>
<td>• Cutting and pasting does not equal good teaching</td>
</tr>
<tr>
<td>• 71% of Instructors want to go digital</td>
<td>• Not all tech is usable</td>
</tr>
<tr>
<td>• Technology can lead to innovation</td>
<td>• Not all tech is accessible</td>
</tr>
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</table>
Key Words to Consider in Tech-Enhanced Courses

- Usable
- Accessible
- Inclusive
- Universally Designed

How do you use these terms in your day-to-day profession?
What does it mean to be Usable?

*Usability* is the "effectiveness, efficiency, and satisfaction with which a specified set of users can achieve a specified set of tasks in a particular environment."

- International Organization for Standardization

Consider the **ease** at which learners can learn
What does it mean to be accessible?

Accessible refers to a site, facility, work environment, service, or program that is easy to approach, enter, operate, participate in, and/or use safely and with dignity by a person with a disability.

- The ADA Glossary of Terms, Job Accommodation Network
Which is better? Usability or Accessibility?

- Accessible course content and design would benefit all learners, not just those who have disabilities
- Accessibility is a subset of usability
- Course content should not be considered usable unless it is accessible
- Usability does not mean accessibility and visa versa
- Still both are not perfect
What is Universal Design?

CAST defines UDL as "a research-based set of principles that together form a practical framework for using technology to maximize learning opportunities for every student" (Rose & Meyer, 2002, Preface).

When UDL is applied, instructors and curriculum designers create courses to meet the needs of learners with a wide range of abilities, learning styles, and preferences.
Universal design addresses the scope of accessibility and suggests making all course elements accessible to and usable by all people to the greatest extent possible.

Benefits of UD:

• User preference – reflects the needs of diverse learners
• An intent to design usable and accessible courses from the start
Quick Inquiry

• Who is the number one user of closed captioning?

• Who uses curb cuts?

• What is the purpose of serrated shampoo bottles?
History of UD
Universal Design in Architecture

• Architectural Barriers Act (ABA) of 1968
• Ron Mace, Architect at North Carolina State University
• Retrofitting for physical access remains a design afterthought
• Lowering barriers for people with disabilities and the elderly
### Universal Design applied to Education

<table>
<thead>
<tr>
<th>UD in Architecture</th>
<th>UD in Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical barriers may exist in our architectural</td>
<td>Learning barriers may exist in our curricular environment</td>
</tr>
<tr>
<td>environment</td>
<td></td>
</tr>
<tr>
<td>Proactive design of physical space</td>
<td>Proactive design of curriculum, instruction, and the space we teach in</td>
</tr>
<tr>
<td>Physical retrofitting can be costly and is often</td>
<td>Instructional accommodations can be time consuming and difficult to implement</td>
</tr>
<tr>
<td>inelegant</td>
<td></td>
</tr>
<tr>
<td>Accommodations are not always welcoming</td>
<td>Accommodations only solve access issues for one learner</td>
</tr>
</tbody>
</table>
Universal Design in K – 12 education

CAST – 1990’s

Universal Design for Learning - based in neuroscience research

- UD of Representation
- UD of Engagement
- UD of Expression

"As we start a new school year, Mr. Smith, I just want you to know that I'm an Abstract-Sequential learner and trust that you'll conduct yourself accordingly!"
Brain Imaging Showing Individual Differences

These three functional magnetic resonance images show brain activity patterns of three different people performing the same simple, finger tapping task. The level of brain activity during performance of this task is designated using color. Blue indicates a low to moderate level of activity, red indicates a high level of activity, and yellow indicates an extremely high level of activity.
Universal Design and Representation

How learners make sense of presented information

• Everyone perceives information differently (auditory, visual, kinetics, a mixture).

• Presenting information differently allows learners’ brains to make connections within and between different concepts more easily.

• Information presented in both non-tech and tech methods increases the likelihood that a learner can perceive it.

• New Phone Example
Universal Design and Engagement

How motivation & participation impacts learning

• Learners are engaged and motivated to learn differently.

• The diversity of learners, their life experiences and desires for their education can impact how they engage with the course content.

• Some learners will engage with technology very well, others will struggle.

• Statistics Example
Universal Design and Expression

How we demonstrate our learning or mastery

• Every learner expresses what they learned differently.
• Learners may even express what they learned differently across subjects.
• Using a common rubric helps to set guidelines of what is expected and what is not.

• College Examples
Universal Design specific to Higher Education

Higher Education Opportunity Act (2008) mirrors the work of UDL and encourages the adoption of it.

- UDI, UID, UDL, UCD
  - DO-IT
  - Merlot
  - National Center for Universal Design Learning
  - Universal Design for Instruction at UConn
Primary focal points of UD in Higher Education

Curriculum design
- Rubric design
- Text choices
- Syllabus design
Primary focal points of UD in Higher Education

Instructional design
- Vary delivery method every 20 mins
- Learning style surveys
- Use of paper/tech combination

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Challenges</th>
<th>UD Strategies</th>
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</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>Requires sustained concentration, retention of information, fluency in spoken</td>
<td>Create and post detailed notes on an accessible Website, provide periodic</td>
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<tr>
<td></td>
<td>language, and role-taking</td>
<td>breaks during long sessions, provide adequate space and lighting for</td>
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<tr>
<td></td>
<td></td>
<td>interpreters/captioners; allow time for questioning and clarification</td>
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<td></td>
<td></td>
<td>throughout presentation</td>
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<tr>
<td>Group Work</td>
<td>Often requires substantial, appropriate physical space; use of printed</td>
<td>Design group roles to ensure that individual differences are naturally</td>
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<tr>
<td></td>
<td>materials; sustained concentration; interpersonal, communication and</td>
<td>mediated through distribution of responsibilities; minimize the amount of</td>
</tr>
<tr>
<td></td>
<td>writing skills; may spark anxiety issues</td>
<td>printed materials and assure accessible formats when necessary; design</td>
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<tr>
<td></td>
<td></td>
<td>physical space to minimize noise level and distraction; provide periodic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>breaks.</td>
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<tr>
<td>PowerPoint/Overhead</td>
<td>Requires use of visual information (clarity, color, size, and density of</td>
<td>Create slides with a solid background (light text on dark background); use</td>
</tr>
<tr>
<td></td>
<td>slides); lighting may be an issue</td>
<td>at least a 24-point font (Arial, Times New Roman); describe slides orally;</td>
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<td></td>
<td></td>
<td>limit the number of slides; allow adequate time for the audience to read</td>
</tr>
<tr>
<td></td>
<td></td>
<td>each slide; use software to create accessible PowerPoint slides to post to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>an accessible Website</td>
</tr>
<tr>
<td>Videos/Films</td>
<td>Requires use of auditory and visual information; lighting may be an issue</td>
<td>Ensure videos are captioned; prepare a disk of descriptive narration or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>transcript for ready availability of alternative format.</td>
</tr>
<tr>
<td>Written Exercises</td>
<td>Requires reading, writing, access to print formats and English language</td>
<td>Present written exercises as group work OR allow for the use of assistive</td>
</tr>
<tr>
<td></td>
<td>fluency</td>
<td>technology, reader, scribe, or a dictated response; use at least 18-point</td>
</tr>
<tr>
<td></td>
<td></td>
<td>font on a solid-background using simple, intuitive language.</td>
</tr>
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Primary focal points of UD in Higher Education

Assessment design

- Provide a variety of ways for demonstrating knowledge.
- Create a strong set of learning goals and objectives.
- Provide a rubric to measure performance.
- Create opportunity for group projects in addition to individual testing.
- Allow additional exam time for all students.
- Scaffold larger assignments.
Primary focal points of UD in Higher Education

For example: Campus-Resource Brochure for Students

1. Identify what assistive technology is available on a college campus of your choice.
2. List out how students can borrow, purchase and where the technology is located.
3. Identify who might benefit from each type of AT available on campus.
4. Compile this information into a brochure for prospective students. Your brochure can be created in a format that works best for you. Formats might include a one-page flyer, a tri-fold brochure, a wiki, a website, etc.
# UD and the Tech-Enhanced Environment

## Why UD?
- Continuity of learning
- Flexibility to instructor and learner
- Decrease workload, after initial design
- K-12 learners expect it
- Greater access for all

## Types of Technology
- Lecture capture
- Captioning
- Smart podiums
- Online planners/course calendars
- Mobil apps
- LMS
- Open educational resources
- Online assessments/Eportfolios
- Electronic resources***
A reminder UD doesn’t always serve all

Examples:
• Publisher generated material
• Braille/Interpreters
• Instructor generated material
• Open Educational Resources (OER)
How do you bring UD to Higher Education?

How do you institute change? → To be discussed later
QUESTIONS?
Break
10 – 10:15 AM
Workshop Activity- SU

Identifying Opportunities and Challenges for Creating an Inclusive Learning Environment at Your Institution
Lightning Round

10:45 AM – 11:45 AM
Creating Inclusive Environments: How to Foster Invested Stakeholders

University of Massachusetts Lowell
Office of Disability Services and Information Technology
What We Learned - UML

• We quickly learned a comprehensive approach to accessibility was needed at UMass Lowell, secondary to the organizational structure of Continuing Ed (CE) as a separate entity from the day school.

• We also learned that there were other stakeholders in other departments on campus with the same mandates, goals, and visions for universal design.

• Forming a committee with these stakeholders, we could increase collaborative efforts in working toward common goals to create universal design on campus.
Challenges - UML

- There were varying degrees of buy-in from different partners on campus
  - Because CE was a separate entity, communication and collaboration was a challenge
  - Many of the stakeholders agreed on moving forward, but there were concerns regarding financing endeavors
- Progress was slow because stakeholders had different obligations involved in the process
  - Blackboard was entirely housed in CE
- Areas of the university website were not accessibility compliant
Successes - UML

• Blackboard day school instances are controlled by IT
  • IT and SDS work together to train faculty on accessibility
  • Faculty have a greater understanding of the barriers students face and how to address them
  • CE Blackboard instances still offer great accessibility working on their own

• Universally Designed access to assistive technology for all students.
• Hired Assistive Technology position in SDS.
Successes - UML (cont)

• Website compliance was started immediately.

• We were prepared to address the web accessibility proposed regulations (WCAG 2.0) when they were released in May 2016

• We now offer in-house captioning and a captioning policy

• Increased awareness on campus about the concepts of universal design within our campus community
Developing a Framework for Successful Implementation of Continuous Accessibility Improvement

Wentworth Institute of Technology
Center for Wellness and Disability Services
and Learning Innovation and Technology
Getting Started - WIT

- Universal Design for Learning (UDL) Committee formed at Wentworth in response to several high profile accessibility lawsuits in higher education
- Proposal by UDL Committee to President’s Advisory Council (PAC) to fund a proactive accessibility audit of digital spaces at Wentworth. Goal of the proposal – to create a roadmap for accessibility improvement.
- Approval and funding of the audit by PAC
- Carroll Center for the Blind selected to perform the audit
  - Student perspective
  - Logical progression of student involvement
  - Qualified user testers – visual, motor and cognitive impairments
- Functional areas to test – participatory approach
What We Tested (Selected) - WIT

• Public-facing website (templates only)
• Applications for admission
• Financial aid process
• Checking out a laptop
• Application for residence/meal plan
• Alcohol assessment
• Reporting suspicious activities
• Resolving issues (Advocate)

• Career services
• Course registration/schedule
• Placement tests
• Degree progress /transcripts
• Adding money to student account
• Paying the tuition bill
• Blackboard – login and navigation
• 5 courses – navigation, content, 3d party resources
What We Learned

Issues discovered could be described in terms of levels of control and ability to remediate, such as

- Platform-related
- Set-up related
- Content related
Successes and the Next Steps - WIT

• The stand alone Universal Design for Learning Committee became an official subcommittee of the ADA Compliance Committee

• Funding

• Increased awareness of accessibility issues throughout the institute

• Improved connections with shared stakeholders

• A roadmap for digital accessibility including policy and procedure development
Influencing a Campus Culture of Inclusiveness through Persistence, Partnerships, and Opportunities

Suffolk University
Andrew Cioffi and Linda Bruenjes
What We Learned - SU

• Perspective makes allies
  • CIO – Security
  • Provost – Opportunity
  • President – Compliance
  • Faculty – Learning outcomes

• Strategic Partnerships are the vehicle for change
  • Persistence is key
  • Center for Teaching
  • Instructional Technology Services
  • Online Learning Community
Challenges - SU

- Initial shock/lack of understanding about what is involved, then...
  1) getting the word out to all the key players
  2) getting everyone moving in the same direction

- Work load and need for dedicated staffing

- Vendor road blocks

- Legacy Campus ITS infrastructure

- $$
Successes - SU

• Procurement of EIT policy and associated “top down” approach

• Limited the adoption of some inaccessible product features

• Invited to the table – vendors & publishers

• Embedding accessibility into the culture of faculty development

• Division of Student Success
Questions
Lunch
11:45 AM – 12:45 PM
Case Study Problem Solving Round Tables
Break
10 – 10:15 AM
Workshop Activity: WIT

Rubric-Based Plan for Incorporating Universal Design (UDL) into Your Institution
Next Steps

Conference Evaluation:
bit.ly/nercomp_designingsp17