Universal Design for Learning (UDL), Differentiating Instruction (DI) and Responding to Intervention (RTI) in Early Childhood

http://cstl-coe.semo.edu/naguinaga/

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Session Overview

The possibilities and responsibilities of Education
What is Universal Design for Learning?
UDL and the relationship to brain research
UDL Guidelines
What Is Differentiation?
Planning for Academic Diversity
How DI coordinates with UDL theory
Where does RTI fit in?
UDL in Early Childhood
Resources
Objectives

- Gain an overview of Universal Design for Learning and the relationship with Differentiated Instruction and Response to Intervention
- Be able to implement several strategies
- Identify things to consider when implementing UDL, DI and RTI
Education Yesterday, Today and Tomorrow

http://www.youtube.com/watch?v=Fnh9q_cQcUE&feature=related
If the goal is to educate every student to the highest potential, schools need to move away from this monolithic classroom model and toward a student-centric model with a modular design that enables mass customization.

Clayton M. Christensen, Michael B. Horn, and Curtis W. Johnson are the authors of *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns* (McGraw-Hill, June 2008).
Universal Design Origin

Movement in architecture

Consider the needs of the broadest possible range of users from the beginning” Architect, Ron Mace

Activity: Pair up and brainstorm for 1 minute examples of Universal Design.

◦ Share

Primary barrier to making expert learners of all students

- Inflexible, one-size-fits-all curricula
  - raise unintentional barriers to learning

  Learners with disabilities are the most vulnerable to such barriers, but many students without disabilities also find that curricula are poorly designed to meet their learning needs.

Unforeseen benefits for all
Diversity is the norm, not the exception

When curricula are designed to meet the needs of the broad middle to the exclusion of those with different abilities, learning styles, backgrounds, and even preferences, they fail to provide all individuals with fair and equal opportunities to learn.
The goal of education

- Not simply the mastery of knowledge
- It is the mastery of *learning*
- Education should help turn novice learners into expert learners
- Develop individuals who know how to learn, who want to learn, and who, in their own highly individual ways, are well prepared for a *lifetime of learning.*
21st Century Skills

- P___________________ S_____________________
- C___________________ T_____________________
- L ___________ L__________
  L_______________
Universal Design for Learning

- A curriculum framework
- Flexible and supportive for all
- Decreases the barriers that limit access
- Based on brain research
CAST believes that

“barriers to learning are not, in fact, inherent in the capacities of learners, but instead arise in learners' interactions with inflexible educational goals, materials, methods, and assessments.”

*Teaching Every Student in the Digital Age, p. vi*
“Disability is defined in the interaction between the vulnerabilities of an individual and the limitations of their environment”

Jon Mundorf
UDL and the Learning Brain

UDL and the Learning Brain

- Recognition network
- Strategic network
- Affective network
Recognition networks: “the what of learning”

identify and interpret patterns of sound, light, taste, smell, and touch
UDL and the Learning Brain

Strategic networks: “the how of learning”

plan, execute, and monitor actions and skills
UDL and the Learning Brain

Affective networks: “the why of learning”
evaluate and set priorities

Affective networks – located at core of brain
UDL and the Learning Brain

One must recognize information, ideas, and concepts

One must be able to apply strategies to process the information

One must be engaged

Vygotisky
UDL and the Learning Brain

Task is too difficult for learner

ZONE OF PROXIMAL DEVELOPMENT

Task is too easy for learner
UDL and the Learning Brain
## Network-Appropriate Teaching Methods

### To support diverse recognition networks:
- Provide multiple examples
- Highlight critical features
- Provide multiple media and formats
- Support background context

### To support diverse strategic networks:
- Provide flexible models of skilled performance
- Provide opportunities to practice with supports
- Provide ongoing, relevant feedback
- Offer flexible opportunities for demonstrating skill

### To support diverse affective networks:
- Offer choices of content and tools
- Offer adjustable levels of challenge
- Offer choices of rewards
- Offer choices of learning context
**PRINCIPLES OF THE UNIVERSAL DESIGN FOR LEARNING FRAMEWORK**

<table>
<thead>
<tr>
<th>Principle 1:</th>
<th>To support recognition learning, provide multiple, <strong>flexible methods</strong> of presentation/representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle 2:</td>
<td>To support strategic learning, provide multiple, <strong>flexible methods</strong> of <strong>expression</strong> and apprenticeship.</td>
</tr>
<tr>
<td>Principle 3:</td>
<td>To support affective learning, provide multiple, <strong>flexible options</strong> for engagement.</td>
</tr>
</tbody>
</table>

UDL and the Learning Brain

All learners are unique and universal does not mean “one size fits all”
Technology and print and the move to digital literacy can be summarized in the following video "Introducing the Book,"

http://www.youtube.com/watch?v=xFAWR6hzZek&feature=player_embedded
UDL and Digital Media

Transformable
Text, Images, Sound, TTS, STT
UDL and Digital Media

Predict, Summarize, Question, Visualize
A universally designed curriculum is shaped from the outset to meet the needs of the greatest number of users, making costly, time-consuming, and after-the-fact changes to the curriculum unnecessary.
Planning for Academic Diversity

- Receptive Language
  - Background Knowledge
- Expressive Language
  - Written Expression
- Memory
  - Persistence
- Reading
  - Decoding
  - Comprehension
- Ambulate
  - Gross Motor Skills
  - Fine Motor Skills
- Hard of Hearing
  - Deaf
- Low Vision
  - Blind

Diversity Blueprint

Dave Edyburn, 2008
Planning for Academic Diversity

- Google
  [http://www.google.com](http://www.google.com)
- 42Explore: Thematic Pathfinders
  [http://42explore.com/](http://42explore.com/)
- 4 Teachers
  [http://4teachers.org/](http://4teachers.org/)
- Blue Web’n
- Eduscapes
Planning for Academic Diversity

- Internet4Classrooms
  http://www.internet4classrooms.com/
- Kathy Schrock’s Guide for Educators
  http://school.discovery.com/schrockguide/
- Marco Polo/Thinkfinity
  http://www.marcopolo-education.org/
- netTrekker d.i.
  http://www.nettrekker.com
- TrackStar
  http://trackstar.4teachers.org/
Common Academic Tasks and Instructional Challenges

- Read a chapter in a science textbook
  - Deficits in background knowledge
  - Below grade level reading skills
  - Poor fluency and comprehension skills
  - Difficulty with new vocabulary
Planning for Academic Diversity

- Read a chapter in a science textbook
  - Scan textbook
  - Locate/create materials with audio support
    - StarChild
  - Search for alternative text source materials
    - How Things Work, Wikipedia, E-textbooks
  - Search for alternative media materials
    - BrainPop
Planning for Academic Diversity

- Solve multi-step math problems

- Traditional chalkboard/paper/pencil
  - Calculation Support
    - WebMath
  - Conceptual Support
    - Virtual Math Manipulatives
  - Visual Support
    - iKnowThat Leon Math Movies
Designing Challenge & Engagement

The flexibility of digital curriculum makes it easier than ever to adjust the challenge level of academic tasks. The concept of a volume control slider is a useful metaphor for describing the supports available in a universally designed learning environment. Tomlinson (1999) uses the term “equalizer” to discuss the concept of a slider.
One practical application of a slider is a cognitive rescaling intervention utilizing the AutoSummary feature in Microsoft Word (Edyburn, 2002).

**Mission:**
Accessibility makes it easier for anyone to see, hear, and use a computer, and to customize their computing environment according to their own preferences, needs, and abilities. For many people, accessibility is what makes computer use possible.

Downloadable information, research, tutorials, fact sheets, and more about accessibility in Microsoft products.

http://www.microsoft.com/enable/

Microsoft Accessibility CD Set Materials Available Online

http://www.microsoft.com/enable/cd/online.asp

X
Operating System
then
Microsoft Office
Windows XP

Accessibility Wizard & Utilities

Introduction
[Brief musical Introduction]

Welcome to the Microsoft Windows XP Accessibility Wizard & Accessibility Utilities Demo.

In this demonstration, you'll learn about Microsoft Windows XP Accessibility Wizard & Accessibility Utilities settings and options.

Microsoft Windows XP Accessibility Demonstrations

Accessibility Wizard & Utilities

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Accessibility Wizard

The Accessibility Wizard and all of the Accessibility Utilities are located on the Accessibility menu.

To get to the Accessibility Wizard:

- Select the Start button
- Point to All Programs
- Point to Accessories
- Point to Accessibility

First let's look at the Accessibility Wizard.

- Select Accessibility Wizard
Keyboard

Accessibility Wizard

Select the checkbox: I have difficulty using the keyboard or mouse, to adjust keyboard and mouse options for mobility needs:

- **StickyKeys**—to press one key at a time for keyboard combinations
- **BounceKeys**—to ignore repeated keystrokes
- **ToggleKeys**—to play a sound when toggle keys such as CAPS LOCK are pressed
Magnifier

Accessibility Utilities

First on the Accessibility menu, is Magnifier.

Magnifier creates a separate window that magnifies a portion of the screen to make it more readable.

Here's an example of Magnifier enlarging a portion of this screen.
Accessibility Utilities

Next on the Accessibility menu is Narrator.

Narrator is a text-to-speech utility that reads aloud text that is displayed on the screen. For example, the contents of the active window, menu options, or text that has been typed.

Here's an example of Narrator reading a dialog box.

[Synthesized voice reading contents of Microsoft Narrator dialog box]
On-Screen Keyboard

Accessibility Utilities

Also on the Accessibility menu is On-Screen Keyboard—a utility that displays a virtual keyboard on the computer screen that allows individuals to type using a pointing device or joystick.

Here’s an example of On-Screen keyboard being used to type within a document.
 Sounds & Speech

**Introduction**

This demonstration shows how to choose:

- **Sound Volume**
- **Sound Schemes**
- **ShowSounds** to display captions for speech and sounds
- **SoundSentry** to display visual warnings for system sounds
- **Notification** by sound or visual cues when accessibility features are turned on or off
- **Text-to-Speech** options

**In this demonstration:**

- **Sound Volume**
- **Sound Schemes**
- **ShowSounds**
- **Sound Sentry**
- **Notification**
- **Text-to-Speech**

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Sound Sentry

Accessibility Options Icon

On the Sound tab, select the checkbox to turn on Sound Sentry.

With Sound Sentry on, you get a visual warning—such as a blinking title bar or a screen flash—whenever the computer you are using generates a sound.
Text-to-Speech

Speech Icon

On the **Speech** icon **Text-to-Speech tab**, under **Voice Selection**, you can choose a voice from the list.

Different voices are easier for different people to hear and understand.

Additional voices are available from the Windows XP Web site.
Keyboard

On the **Speed** tab, you can adjust **character repeat rate** which includes both:

- **Repeat delay**—the amount of time that elapses before a character repeats when you hold down a key, and
- **Repeat rate**—the speed at which a character repeats when you hold down a key.
Also on the **Keyboard** tab you'll find **ToggleKeys**. When this option is turned on, your computer will provide sound cues when the locking keys (CAPS LOCK, NUM LOCK, or SCROLL LOCK) are pressed.

This is useful for individuals who may inadvertently turn on keys such as CAPS LOCK.
Alternative Input

You'll also notice on the **General tab in Accessibility Options**, that you can select **SerialKeys**.

**SerialKeys** provides serial port support for alternative input devices such as specialized keyboards, trackballs and pointing devices.
Display

**Introduction**

This demonstration shows how to choose:

- Font style, color, and size of items on the desktop
- Large icons and shortcut keys
- Screen resolution and high contrast schemes
- Cursor width and blink rate

**In this demonstration:**

- Font style, color, and size of items on the desktop
- Large icons and shortcut keys
- Screen resolution and high contrast schemes
- Cursor width and blink rate
Mouse

On the **Mouse** icon you can adjust mouse options including selecting:

- **pointer schemes**
- **pointer speed** and **visibility** options, and turning on options such as:
- **SnapTo**, and **ClickLock**

**Mouse Options:**

- Pointer schemes
- Pointer speed
- Visibility options
- SnapTo
- ClickLock
Shortcut Keys

Display & Appearance

Display Icon

Also in the Effects dialog box, you can choose to either show or hide the underlined letters in menus and dialog boxes that tell you which keyboard letter to use with the ALT key to initiate a command.

If you want to see the letters, leave the hide underlined letters for keyboard navigation until I press the ALT key checkbox unselected.
Tutorials

Accessibility Wizard & Utilities

Link to Web Site

[Brief audio tone]

You can find free step by step tutorials on how to use all of these options, and more on how to use the Accessibility Wizard, on the Microsoft Accessibility Web site at www.microsoft.com/enable.
To configure the Spelling Checker:
**Tools** >>> **Options** >>> **Spelling & Grammar**

To configure the Grammar Checker:
**Tools** >>> **Options** >>> **Spelling & Grammar** >>> **Options**

To show readability statistics:
**Tools** >>> **Options** >>> **Spelling & Grammar**

It is useful as an approximation of the level of reading skills needed to read any particular text, and it is certainly imperfect.
Highlighting portions of text in color
  ◦ View >>> Toolbars >>> Formatting toolbar

Tracking Changes
This feature can be used to correct or make suggested changes to a document that can be accepted or rejected by subsequent readers.

To turn tracking changes on for any individual document:
Tools >>> Track Changes >>> Track changes while editing
Choose if you want these to show on screen, and/or in printed versions of the document by checking or un-checking these boxes in Tools >>> Options >>> Track Changes

To review, accept, or reject changes:
Insure that the reviewing toolbar is visible.
View >>> Toolbars >>> Reviewing Toolbar
Inserting Comments

- Inserting comments is useful for many learning situations
  - To ask students to reflect on a passage
  - To add content questions
  - To help students edit their work.
Inserting Text Comments and Voice Comments

To insert a **text comment**, click on the **Insert** menu and select **Comment**. A text box will appear in the right hand margin. Insert your cursor in the box and type your comment.

To insert a **voice comment**, click on the **Insert** menu and select **Object**. A dialogue box with a list will appear. Scroll down to **Wave Sound** and select that item. A recording box will appear on the screen. Click on the little red box to record your message. (THIS DOES NOT WORK ON THE MAC)

When you are finished, a small audio image will appear in your word document. Double click on this to hear your recording.
2007 Word

- To insert a **text comment** place cursor within text or highlight text
  - go to the menu ribbon and select “Review.”
  - Then from the **Review** ribbon click on “**New Comment.**”
    - enter text in that area
    - when you are done typing in the comment box click on the document and your cursor will be moved back into the document
AutoSummarize

This feature automatically creates a summary of any on-screen document. Because the summary is created by a computer, and not a person, it is important for teachers to review summaries and original texts prior to relying upon any summary.

To create an AutoSummary:
Open the file to be summarized

**Tools**>>>AutoSummarize. A window will open
Select the options you want from this window, and click OK.
In Word, immediately after you type a URL (e.g. http://www.cast.org) and press enter, a hyperlink will automatically be created for you.

Sometimes it is better to make a hyperlink using a word or phrase that will identify where the link is taking you to. Alternatively, you can link to web pages, sound files (you can record your own), video files, other Word documents, spreadsheets --- in fact, any other type of file. In addition, you can link to a bookmark, which allows you to create custom glossaries of word definitions.
To turn a word or a phrase into hyperlink follow these steps:

- Highlight the text you want. Right click your mouse and choose the option "Hyperlink".
- Complete the steps in the dialog box that appears. You can type a web address (URL) or click the Browse button and link to another file of any type.
- Once you have created the link, click OK. In your Word document, the selected text, shape or image is now hyperlinked to the designated file. As you move you mouse button over the text, shape or image, the mouse pointer will change to a finger (indicating a hyperlink). When you click on it, the designated file will open.
A bookmark is a named location in a file. To create a bookmark highlight the text and then choose “Insert, Bookmark”. A dialog box appears. Give the bookmark a name (no spaces are allowed in the name for the bookmark) and click OK. Once you have a bookmark you can hyperlink to that particular location in a file using the “Insert Hyperlink” feature.
In Word, go to the Tools and select Speech. One of three things will happen:

- The speech menu bar will appear at the top of your screen.
- The dialogue box will appear for speech recognition, cancel this. The menu bar should now appear at the top of your screen.
- You may need to install the speech tools. If this is true, the installation dialogue box will appear. Just follow directions.
A menu bar will appear at the top of your document.

If the dictation voice command buttons are showing (dictation, voice command, and listening), click on the microphone button to make them disappear. (When these show, voice recognition is on and your computer may begin to “type” funny text as it hears your speak).
If the Speak command does not appear, click on the small arrow on the far right hand side of the menu bar to access a pull down menu and select Speak Text. Then it will appear.

Select the text that you want to read in the Word document, then click on the Speak Text button at the top of your screen.

Remember, you can change the voices by going to the Start, Control Panel, Speech, click on the Text-to-Speech tab to change the voices.

Close this bar by clicking on the small little rectangle at the far right of the menu strip.
Supported Reading Software

- [http://www.cast.org/pd/resources/index.htm](http://www.cast.org/pd/resources/index.htm)

Other:
Listing of supported reading software (doc); this listing is not an endorsement of these programs, but rather a non-exhaustive overview of software that supports reading of digital text.
More effective flexible technologies

- Wikis
- Podcasting
- Google Docs
- Mimio (Smartboard)
- Inspiration
- Time for Kids
- Brain Pop and United Streaming
- Microsoft PowerPoint
- Blog (http://jmundorf.edublogs.org)
- Talking Text (WYNN)
Using Technology to Support Diverse Learners

http://www.wested.org/tdl/
CAST is a nonprofit education R&D group best known for defining and promoting the innovative concepts of Universal Design for Learning (UDL).

Free online tools to make education more engaging and accessible for all.

1) **UDL BookBuilder** ([http://bookbuilder.cast.org](http://bookbuilder.cast.org)) is a free resource to help teachers and parents develop their own digital books to support reading instruction for children ages 3 and up. Enables users to create, edit, and save their own online books. [http://bookbuilder.cast.org/model.php](http://bookbuilder.cast.org/model.php)

2) **UDL Editions by CAST** ([http://udleditions.cast.org/](http://udleditions.cast.org/)) offers classics from world literature like you’ve never seen them before -- in a flexible online interface that supports and engages novice and expert readers alike.

3) **CAST Strategy Tutor** ([http://cst.cast.org/](http://cst.cast.org/)) offers adolescent readers and their teachers customizable mentoring and support as they conduct Internet research and read websites.

4) **UDL Lesson Builder** ([http://lessonbuilder.cast.org](http://lessonbuilder.cast.org)) is a free online tool that helps educators build options and supports into their lessons to reach and engage all students.

5) **UDL Curriculum Self–Check** ([http://udlselfcheck.cast.org/](http://udlselfcheck.cast.org/)) provides an interactive tool to help educators identify areas of the curriculum where barriers may exist or more supports for diverse learners are needed.
Using a curriculum that is rooted in the 3 UDL principles, students have:

1. Options for how they learn
2. Choices which will engage their interest
3. Choices for how they demonstrate their learning

Teachers provide:

1. Flexible ways of presenting lesson content
2. Flexible options for student engagement
3. Flexible methods of expression and assessment

Separate the goals from the means
What Is Differentiation?

- A teacher’s response to learner needs
- The recognition of students’ varying background knowledge and preferences
- Instruction that appeals to students’ differences
- Gives students multiple options for taking in information and making sense of ideas
In a differentiated classroom, teachers begin where their students are, not where they feel she should be or as the curriculum dictates.

Instruction methodologies vary and are adapted to meet the needs of individual and diverse learners.
Teachers Can Differentiate

According to Students’

Adapted from *The Differentiated Classroom: Responding to the Needs of All Learners* (Tomlinson, 1999).
Guidelines that make Differentiation possible for teachers to attain

- Clarify key concepts and generalizations
- Use assessment as a teaching tool to extend rather than merely measure instruction
- Emphasize critical and creative thinking as a goal in lesson design
- Engaging all learners is essential
- Provide a balance between teacher-assigned and student-selected tasks
Examples of Differentiation Strategies

- Choice Boards
- Tiered Activities
- Learning Contracts
Diner Menu – Photosynthesis

Appetizer (Everyone Shares)
• Write the chemical equation for photosynthesis.

Entrée (Select One)
• Draw a picture that shows what happens during photosynthesis.
• Write two paragraphs about what happens during photosynthesis.
• Create a rap that explains what happens during photosynthesis.

Side Dishes (Select at Least Two)
• Define respiration, in writing.
• Compare photosynthesis to respiration using a Venn Diagram.
• Write a journal entry from the point of view of a green plant.
• With a partner, create and perform a skit that shows the differences between photosynthesis and respiration.

Dessert (Optional)
• Create a test to assess the teacher’s knowledge of photosynthesis.
**THINK–TAC–TOE**

**Book Report**

<table>
<thead>
<tr>
<th><strong>Draw a picture of the main character.</strong></th>
<th><strong>Perform a play that shows the conclusion of a story.</strong></th>
<th><strong>Write a song about one of the main events.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Write a poem about two main events in the story.</strong></td>
<td><strong>Make a poster that shows the order of events in the story.</strong></td>
<td><strong>Dress up as your favorite character and perform a speech telling who you are.</strong></td>
</tr>
<tr>
<td><strong>Create a Venn diagram comparing and contrasting the introduction to the closing.</strong></td>
<td><strong>Write two paragraphs about the main character.</strong></td>
<td><strong>Write two paragraphs about the setting.</strong></td>
</tr>
</tbody>
</table>
Learning Contract

Name _______________________

My question or topic is: ❓

To find out about my question or topic...

I will read: 📚  I will look at and listen to: 📸  I will write: ✒️

I will draw: 🎨  I will need: 🆓

Here’s how I will share what I know:

I will finish by this date: 📅
Learning Contract

To demonstrate what I have learned about ________________, I want to

- Write a report
- Put on a demonstration
- Set up an experiment
- Develop a computer presentation
- Build a model
- Design a mural
- Write a song
- Make a movie
- Create a graphic organizer or diagram
- Other __________________

This will be a good way to demonstrate understanding of this concept because ________________________________________________________________

To do this project, I will need help with
______________________________________________________________

My Action Plan is __________________________________________________

The criteria/rubric which will be used to assess my final product is ________
______________________________________________________________

My project will be completed by this date _____________________________

Student signature: ____________________________________________ Date ___/___/___
Teacher signature: ____________________________________________ Date ___/___/___
Assessment in the Differentiated Classroom

- Ongoing
- Instruction-dependent
- Student-dependent
- Informative for continued instruction
How Differentiated Instruction coordinates with UDL theory

Each of the three key elements of DI
  • Content ; Recognition
  • Process
  • Product

supports an important UDL teaching method for individualized instruction of pattern recognition.
Recognition learning

- The content guidelines for differentiated instruction supports the first UDL Teaching Method for recognition networks, *provide multiple examples*, in that they encourage the use of several elements and materials to support instructional content.
- *provide multiple media and formats*
- *highlight critical features*
- *support background knowledge*
Strategic learning

- People find for themselves the most desirable method of learning strategies.
- Teaching methodologies need to be varied.
- Differentiated instruction can support these teaching methods in valuable ways.
  - flexible models of skilled performance
  - supported practice
  - flexible opportunities for demonstrating skill
Affective learning

- Engagement is a vital component of effective classroom management, organization, and instruction.
  - Offer choices of tools
  - Adjust the level of difficulty of the material
  - Offer a choice of learning context

http://www.biertijd.com/mediaplayer/?itemid=16297
### UDL Elements in a Differentiated Instruction Mathematics Lesson

<table>
<thead>
<tr>
<th>UDL Teaching Method</th>
<th>Differentiated Instruction Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide multiple examples.</td>
<td>The teacher provides multiple examples through the story of <em>The King’s Chessboard</em> and other math problems.</td>
</tr>
<tr>
<td>Highlight critical features.</td>
<td>The teacher highlights critical features of the mathematics in the story by stopping and calculating the amount of rice accumulating and using a t-table to do so.</td>
</tr>
<tr>
<td>Provide multiple media and formats.</td>
<td>The teacher reads the story aloud and students have the story to read. The numbers are represented in the story and on the t-table.</td>
</tr>
<tr>
<td>Support background context.</td>
<td>Teachers analyze or pretest students for key preskills and background knowledge.</td>
</tr>
<tr>
<td>Provide ongoing, relevant feedback.</td>
<td>In cooperative groups, students may receive feedback from the teacher and from peers.</td>
</tr>
</tbody>
</table>

**Offer choices of content and tools.** Students are assigned to one of three groups tiered by difficulty; all students are working on the same task but with varying supports.

**Offer adjustable levels of challenge.** Varied supports in the working groups alter the level of independence and difficulty in solving the task.
**UDL Strategies to Further Minimize Lesson Barriers in a Differentiated Instruction Lesson Plan for Mathematics**

<table>
<thead>
<tr>
<th>Barrier</th>
<th>UDL Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deducting/constructing numeric functions.</td>
<td>Provide different demonstrations or models of how to use the tools employed in the lesson. Scaffold how to use the t-table and visualize the chessboard.</td>
</tr>
<tr>
<td>Students write an exit card to explain the mathematical story.</td>
<td>Provide alternative formats for students to express their interpretation of the story and the mathematical implications. For example, speaking, creating a diagram, numerical representations.</td>
</tr>
<tr>
<td>The Locker Problem.</td>
<td>Consider background knowledge for students entering this mathematical problem. What range of supports could be made available to provide the informational knowledge so that students can focus on the problem solving component?</td>
</tr>
</tbody>
</table>
Implementing UDL and Differentiated Instruction

- Look for existing resources/infrastructure.
- Start with one or two strategies.
- Try it and be willing to alter and extend.

http://www.udlcenter.org/aboutudl/udlguidelines/examples
Where does Response to Intervention fit in?

- A multi-tier approach to the early identification and support of students with learning and behavior needs.
- Begins with high-quality instruction and universal screening of all children in the general education classroom.
- Struggling learners are provided with interventions at increasing levels of intensity to accelerate their rate of learning.

**UDL HAS SUPPORTS BUILT IN**
RTI Continued

For RTI implementation to work well, the following essential components must be implemented with fidelity and in a rigorous manner:

- High quality, scientifically based classroom instruction
- Ongoing student assessment
- Tiered instruction
- Parent Involvement
Tier 2: Targeted Interventions

- Students not making adequate progress in the regular classroom in Tier 1 are provided with increasingly intensive instruction matched to their needs.
- Intensity varies across group size, frequency and duration of intervention, and level of training of the professionals providing instruction or intervention.

Again, UDL plans for built in accommodations and modifications
PLAN a change or action
DO the change or action (on a small scale at first)
STUDY the results to learn what did and did not work
ACT by refining the idea or by implementing it on a broader scale
## Pulling it all together

<table>
<thead>
<tr>
<th></th>
<th>UDL</th>
<th>DI</th>
<th>RTI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What</strong></td>
<td>Recognition network—Multiple means of representation</td>
<td>Content</td>
<td>Curriculum</td>
</tr>
<tr>
<td><strong>How</strong></td>
<td>Strategic network—Multiple means of expression</td>
<td>Process</td>
<td>Instruction</td>
</tr>
<tr>
<td><strong>Why</strong></td>
<td>Affective network—Multiple means of engagement</td>
<td>Product</td>
<td>Learning</td>
</tr>
</tbody>
</table>
NECTAC
Nat’l Early Childhood Technical Assistance Center

http://www.nectac.org/topics/atech/udl.asp
UDL in Early Childhood video

Checklist
"UDL is really a merging of general education and special education, a sharing of responsibility, resources and ownership. It gets away from the "their kids/our kids" divide between general ed. and special ed." –

David Rose
A Practical Reader in Universal Design for Learning
Learning to Change—Changing to Learn

http://www.youtube.com/watch?v=tahTKdEUAPk
Where Do I Go From Here?
Resources

CAST – Center for Applied Special Technology
www.cast.org

Assessment:
◦ Curriculum–based measurement
  www.studentprogress.org

National Center on Accessing the General Curriculum (NCAC):
  www.cast.org/ncac/

Access Center:
www.k8accesscenter.org
Links to Learn More About UDL & DI

UDL Toolkit

IRIS Center at http://iris.peabody.vanderbilt.edu

http://www.ascd.org/pdi/demo/diffinstr/differentiated1.html

http://ericir.syr.edu/plweb-cgi/obtain.pl


RTI Action Network
Maxwell Maltz, author of Psycho-cybernetics

“It takes 21 days to form a habit.”

Thank you