From Principles to Practice

Learner Variability and Universal Design for Learning

Elizabethtown College, 2017

Learning Objectives

1. Define UDL as it applies to higher education learning environments
2. Explore syllabus design according to UDL principles
3. Evaluate and transform learning goals, assessment, and supports for executive functioning
4. Identify and problem solve barriers to implementation

Universal Design for Learning in Higher Education

Overview of UDL

set of principles for curriculum development that give all individuals equal opportunities to learn

a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone

not a single, one-size-fits-all solution

flexible approaches that can be customized and adjusted for individual needs.

The Higher Education Opportunity Act of 2008

“scientifically valid framework for guiding educational practice that

(A) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and

(B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient.”


DESIGN

Why UDL?

Students with disabilities

21st century learner

Improve retention rates of marginalized, at risk students

“Simply doing more of what has been done in the past will not lead to gains in completion of low income youth to which we aspire…” (Tinto, 2014, p.4)

Based on the three-network model of learning that takes into account the variability of all learners—including learners who were formerly relegated to “the margins” of our educational systems but now are recognized as part of the predictable spectrum of variation

Guide design of learning environments with a deep understanding and appreciation for individual variability.

Universal Design for Learning Guidelines

Provide Multiple Means of

Engagement

Purposeful, motivated learners

Provide options for self-regulation
- Promote expectations and beliefs that optimize motivation
- Facilitate personal coping skills and strategies
- Develop self-assessment and reflection

Provide options for sustaining effort and persistence
- Heighten salience of goals and objectives
- Vary demands and resources to optimize challenge
- Foster collaboration and community
- Increase mastery-oriented feedback

Provide options for recruiting interest
- Optimize individual choice and autonomy
- Optimize relevance, value, and authenticity
- Minimize threats and distractions

Provide Multiple Means of

Representation

Resourceful, knowledgeable learners

Provide options for comprehension
- Activate or supply background knowledge
- Highlight patterns, critical features, big ideas, and relationships
- Guide information processing, visualization, and manipulation
- Maximize transfer and generalization

Provide options for language, mathematical expressions, and symbols
- Clarify vocabulary and symbols
- Clarify syntax and structure
- Support decoding of text, mathematical notation, and symbols
- Promote understanding across languages
- Illustrate through multiple media

Provide options for perception
- Offer ways of customizing the display of information
- Offer alternatives for auditory information
- Offer alternatives for visual information

Provide Multiple Means of

Action & Expression

Strategic, goal-directed learners

Provide options for executive functions
- Guide appropriate goal-setting
- Support planning and strategy development
- Enhance capacity for monitoring progress

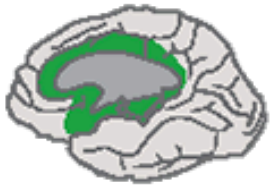
Provide options for expression and communication
- Use multiple media for communication
- Use multiple tools for construction and composition
- Build fluencies with graduated levels of support for practice and performance

Provide options for physical action
- Vary the methods for response and navigation
- Optimize access to tools and assistive technologies

Universal Design for Learning

Affective networks:

THE **WHY** OF LEARNING



How learners get engaged and stay motivated. How they are challenged, excited, or interested. These are affective dimensions.

Stimulate interest and motivation for learning

Recognition networks:

THE **WHAT** OF LEARNING

How we gather facts and categorize what we see, hear, and read. Identifying letters, words, or an author's style are recognition tasks.

Present information and content in different ways

Strategic networks:

THE **HOW** OF LEARNING

Planning and performing tasks. How we organize and express our ideas. Writing an essay or solving a math problem are strategic tasks.

Differentiate the ways that students can express what they know

Advice from faculty

Start with small steps and select a specific challenge or issue.

You don't need to start with sweeping changes all at once. Think about each lesson and make small changes.

Start with tight learning goals for your students and then provide multiple ways for them to access content materials.

Have students help drive the changes. Have them be partners in the learning. They can be a great help to understanding what they need to be more successful.

Think about how each assignment can be influenced by the guidelines, provide multiple ways to access the information, multiple ways that students can demonstrate their understanding and multiple ways to engage with the curriculum.

Enlist the help of other faculty, talk with each other about your experiences implementing UDL.

Change Process

Reflect on the needs of your students. *"What are my students struggling with?"*

Identify a principle or checkpoint that addresses that need. *“How might I use this checkpoint to meet the needs of my learners?”*

Investigate and create new methods or strategies. *“What brings this principle or checkpoint to life?”*

Teach a lesson using the new method or strategy. *“What does this principle or checkpoint look like in my teaching environment?”*

Assess the new method or strategy. *“In what ways did my students demonstrate knowledge or skills?”*

Reflect on how the new method or strategy worked. *“How did the principle or checkpoint*

Syllabus

First impression about what to expect from the upcoming learning environment

Sets the class climate, idetifies specific learning expectations, and discussion options and accessibility

UDL CONNECTION

Provide multiple means of engagement: Outline the learning goals and objectives, the relevance of the content, and any opportunities for choice within the course.

Provide multiple means of action and expression: Use the syllabus to communicate regular routines to establish expectations, outline the timing and format of assessments, and offer resources for the management of information.

Provide multiple means of representation: Be explicit about the ways in which students can access content (e.g., textbook, slides, course website, videos) where to find background information and multiple examples.

UDL Considerations for Syllabus - Instructor Introduction

Engage students by making this first introduction personal. Include a photo and a video to introduce yourself, the course, and your expectations

If teaching online, add a video “tour” of critical features in the course including supports, communication, and progress monitoring.

Add several options for communication, including social media that you may use professionally.

Syllabus - student resources and accommodations

Consider placing information about support systems, including accessibility, at the top of your syllabus.

This ensures that students see the supports available and sets the tone that you want them to succeed.

Syllabus - course descriptions

Highlight the goal(s) of the course and include a note from the instructor about why the course material is relevant to students.

Syllabus - course objectives

State in your syllabus that objectives will be connected directly to assignments each week to increase understanding of the purpose. These can be outlined further in a separate learning guide or on the course web site.

Break up objectives by topic to help students see the structure of course material. You could also include a graphic organizer to display how the objectives relate to each other.

Include an objective that asks students to identify features of UDL within the course to increase awareness of their own learning preferences.

Example course objectives

The following objectives will be connected directly to the assignments on a weekly basis to increase your awareness of the purpose and intention behind assignments.

Algebra Techniques and Properties

I understand and can use a variety of techniques and properties.

I can use techniques and properties to solve specific types of equations and change the form of expressions.

Families of Functions

I can use characteristics of several families of functions and can use multiple representations of functions to answer real life questions.

Learning Process

I can identify multiple ways in which the material has been represented, multiple ways in which I have expressed my understanding of the material, and specific activities and assessments that have been most engaging to me as a learner.

Course Materials

Include a variety of materials, beyond printed text, to increase the options of representation and increase engagement. Invite students to contribute to the collection of the materials to increase ownership of the course. Be sure that any materials included in the course are accessible to all learners, including links to outside resources and tools.

YouTube videos for extension activities

Blogs

Accessible slide presentations

Accessible and downloadable PDFs

Web sites that feature real-world applications of content

Course Materials Examples

There are a variety of materials for the course, each designed to meet the objectives and increase awareness of algebra in the environment around us:

Textbook

Foundations of Algebra, 3rd Ed. (2010)

by Ross, Messier, & Kram

If you need an accessible version of this text, please contact the Disability Support Services office.

Course Web Site

All students must log onto the course web site several times each week. Here you will be able to engage in online discussions with classmates, submit assignments, and view your grades and progress.

Accessible PDFs

This is a collection of hand-outs that are related to course material and study guides.

Slide Presentations

Accessible slide presentations will be posted on the course web site and will be used to highlight critical lessons for the week.

Multimedia Resources

On the course web site there is a collection of YouTube videos, instructor-created videos, audiorecordings of interviews of people in the field, and other related material.

Related Web Sites

This collection of web sites (many found by former students) feature real-world applications of algebra and other math concepts.

Is Algebra Necessary? (NY Times) Get the Math (Videos)

Student Contributions

Some of the best materials come from students.Send the instructor any blogs, web site URLs, books, videos, etc., that

UDL Considerations: Assignments and Assessments

Provide assignments and assessments that provide choices for physical actions, expression and communication, and executive functions. In planning assignments and assessments, consider possible barriers and construct irrelevant factors.

UDL CONNECTION

Provide multiple means of engagement: Stimulate interest, motivation, and persistence in learning. Just as students learn more effectively when they are engaged and motivated, their performance on assessments can be enhanced by increasing engagement.

Provide multiple means of action and expression: Offer different methods for students to demonstrate what they are learning such as through writing, multimedia, or demonstration.

Provide multiple means of representation: Consider the ways in which the items are presented (e.g.,text, graphs, charts, images, videos, demonstrations, objects to manipulate) and if they create barriers for students.

Math assessment that includes word problems to assess students' understanding of math concepts.

Essay exam in a Biology class that is both timed and closed book.

The ability to read fluently is construct irrelevant. Even though it is an important skill, it is not part of the construct being measured. Learners who have difficulty with reading may miss certain items even though they may have a good grasp of the underlying math concepts.

Construct-irrelevant factors include motor coordination (handwriting or typing skills), short-term and working memory, organization and time management, attention, and the ability to work under pressure. The additional measurement of these many factors can prevent gaining an accurate picture of a student's Biology content knowledge.

UDL Considerations: Timing and Scheduling

Dependable routines and expectations within the course help students plan and prioritize. Establish a schedule that explicitly states when assignments are routinely due and when students can expect to get feedback.

A syllabus may be the best place to address the general routine and cover any additional communications such as the week-by-week content topics, the material to be covered and how the assignments connect to the course objectives.

UDL Considerations: Timing and Scheduling

Explain in detail expectations for learners at the beginning of the course and frequently throughout different points in the course.

In your introduction video, include an overview of your expectations and their responsibilities.

Come to every class. Be on time and be present.

The beginning of class is a great time to review previous material and build new concepts. Being present means being an active student. Take notes, try problems, write down questions, and ask them when you don't quite get it. Your goal during class should be to think actively and make connections so that the concepts make sense to you. My goal is to help you make these connections.

Take advantage of all the course materials.

Read the textbook, but also use it to test your knowledge by practicing the author's problem sets.Think about homework as a practice tool, not just an assignment to complete. Write down your process so that you can see where errors occurred and refer to it as a guide for future assignments.

Communicate.

Use office hours, email, Skype, Twitter to communicate with your classmates and me. Don't wait until you're struggling with a problem. Address any issues well before assignments are due and assessments take place. Reach out when you need help developing a strategy either for a problem or for managing the course. I will ask you throughout the course what is going well and what needs improvement.

UDL Considerations: Learning Goals

Scenario

The following sample curricular goal is articulated as: “Write a paragraph about how the circulatory system works.” What are the barriers this goal might pose for students?

Scenario Possible Solution

Writing a paragraph is an additional task layered over mastery of the content knowledge that you want your students to attain.

“Describe a complete cycle in the circulatory system”

more explicit about what students should be able to explain, and allows flexibility in terms of how students convey their knowledge (create a diagram, label an image, write out the steps in the process, make a short video explaining an image, etc.).

more of a learning goal than a performance goal in that it invites students to demonstrate the fullest extent of their understanding – rather than asking them to prove that they can write a paragraph.

UDL CONNECTION

Provide multiple means of engagement: Offer choice when possible and allow for students to select varying degrees of difficulty within an activity to find the right balance of demands and resources.

Provide multiple means of action and expression: Support learners to cope with challenging activities by modeling specific learning strategies and providing mastery-oriented feedback.

Provide multiple means of representation: Offer choice when possible and allow for students to select varying degrees of difficulty within an activity to find the right balance of demands and resources. This is something about providing multiple means of representation.

Emotion and Learning: Designing Activ

MULTIPLE MEANS OF REPRESENTATION

This principle focuses on the ways in which learners gather facts and categorize what they see, hear, and read (CAST, 2011). Addressing variability in perception encourages engagement and supports comprehension.

Adjust the activity/task	Offer alternative forms of information such as diagrams, photographs, storyboards, and multimedia. For content presented in digital text, allow for tools such as text-to-speech to minimize cognitive demands on decoding, especially for students with dyslexia and English language learners.
Support the learner to cope with challenges within the activity/task	Introduce information progressively with temporary assisstive components or scaffolds to help students manage the content at a reasonable pace. Pre-teach critical information and emphasize relationships between concepts through multiple representations. Model ways to solve new problems with previously learned skills and guide generalization of student learning to new contexts by providing supported opportunities.

MULTIPLE MEANS OF ACTION AND EXPRESSION

This principle is connected to strategic actions, including planning and performing tasks, organizing and expressing ideas, writing essays, and solving math problems (CAST, 2011). Providing options for how students demonstrate comprehension helps sustain engagement and encourage persistence.

Adjust the activity/task

Provide access to assistive technologies for expression.

Adjust activity so that students can express their knowledge effectively and efficiently by including multiple tools for composition (e.g., written expression, voice recordings, multimedia).

Support the learner to cope with challenges within the activity/task

Support executive functioning by modeling goal-setting, selecting learning strategies, and monitoring progress.

Use prompts to promote reflection about work and process.

Guide students through sequences and prioritization.

Model organization strategies and offer solutions to manage information

To monitor progress, embed frequent formative and low-stakes assessments to collect actionable information to guide instructional decision-making.

Give specific targeted and timely feedback about strengths and weaknesses that encourage student persistence and suggests next steps. Make clear that assessment informs instruction, as well.

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MULTIPLE MEANS OF ENGAGEMENT

This principle focuses on how learners can become engaged and stay motivated and whether they feel challenged, excited, and interested in what they are learning (CAST, 2011). Without engagement, learners will struggle to attend to content and make deep learning connections.

Adjust the activity/task	Add choice in the selection of activities when possible. Offer scaffolded challenges that vary in degree of difficulty. Create learning communities that connect content to interdisciplinary topics and personal interests.
Support the learner to cope with challenges within the activity/task	Set the tone by making it clear that student emotional engagement and motivation matters. Embed self-checks in task and ask students to rate the difficulty of a task. Support relevance and persistence through tasks by making the purpose explicit. Offer clear expectations that support motivation.

Executive Funtioning

Executive functioning (EF) is a term used to describe a set of cognitive capabilities that influence behaviors including the following:

setting appropriate goals

planning and organizing

developing steps to achieve a goal

using strategies for problem-solving

remembering, attending

prioritizing and self-discipline (e.g., avoiding distractions and inhibiting unsuccessful impulses)

monitoring progress

UDL CONNECTION

Provide multiple means of action and expression: Support students to become strategic, goal-directed learners by teaching them effective ways to set goals, plan, reflect, and monitor their progress.

Provide multiple means of representation: Present course material so that it is well organized and easy to navigate. Provide models for how to collect and synthesize information with the use of various note taking methods and graphic organizers.

Summary.

UDL is a design approach to curriculum design that is based on the 3 principles of representation, action/expression, and engagement.

All aspects of course design can be aligned with UDL principles to more effectively teach all learners.

UDL guides actionable steps to improve accessibility across the curriculum.

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