

DESIGN^{AND} DELIVER

SECOND EDITION

Planning and Teaching
Using Universal Design for Learning

Loui Lord Nelson

Foreword by David H. Rose

Design and Deliver

Planning and Teaching Using Universal Design for Learning

Second Edition

by

Loui Lord Nelson, Ph.D.

The UDL Approach

Indianapolis, Indiana

· P A U L · H ·
BROOKES
PUBLISHING CO[®]

Baltimore • London • Sydney



Paul H. Brookes Publishing Co.

Post Office Box 10624
Baltimore, Maryland 21285-0624
USA

www.brookespublishing.com

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Typeset by Absolute Services Inc., Towson, Maryland.
Manufactured in the United States of America by
Sheridan Books, Chelsea, Michigan.

Illustrations by Allison Posey.

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Library of Congress Cataloging-in-Publication Data

Names: Nelson, Loui Lord, author.

Title: Design and deliver : planning and teaching using universal design
for learning / Loui Lord Nelson, Ph.D. ; [foreword by David Rose ;
illustrations by Allison Posey].

Description: Second Edition. | Baltimore : Paul H. Brookes Publishing Co.,
[2021] | “Previous edition copyright © 2014”--T.p. verso. | Includes
bibliographical references and index.

Identifiers: LCCN 2020046297 (print) | LCCN 2020046298 (ebook) | ISBN
9781681254098 (Paperback) | ISBN 9781681254104 (ePub) | ISBN
9781681254111 (PDF)

Subjects: LCSH: Individualized instruction. | Cognitive styles. |
Educational technology. | Children with disabilities—Education. |
Universal design.

Classification: LCC LB1031 .N365 2021 (print) | LCC LB1031 (ebook) | DDC
371.39/4—dc23

LC record available at <https://lcn.loc.gov/2020046297>

LC ebook record available at <https://lcn.loc.gov/2020046298>

British Library Cataloguing in Publication data are available from the British Library.

2025 2024 2023 2022 2021

10 9 8 7 6 5 4 3 2 1

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Loui Lord Nelson is an internationally recognized leader in universal design for learning (UDL) implementation. A former special education teacher, she held the first known school district-based UDL coordinator position, completed her UDL postdoctoral fellowship at CAST (the creators of UDL), is a member of the CAST Cadre, and is part of the UDL-Implementation and Research Network (IRN) leadership council. She has worked with educators across the United States, Canada, Europe, Asia, Africa, and Australia. Her publications include *Design and Deliver: Planning and Teaching Using Universal Design for Learning* (Paul H. Brookes Publishing, 2014), “The Role of Technology in Implementing Universal Design for Learning” (Routledge, 2017), *Culturally Responsive Design for English Learners: The UDL Approach*, and *A Tree for All: Your Coloring Book of UDL Principles and Practice* (CAST Professional Publishing, 2019). She also hosts the popular UDL in 15 Minutes podcast, heard in over 47 countries, and a new podcast, UDL Research in 15 Minutes.

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Introducing Universal Design for Learning

Why use universal design for learning? Because teaching is all about diversity and it's all about so many multiple approaches. Diversity is what every school presents. There are a variety of learners and there's really no overlap between them. To be successful, there can't be any other approach but to be more diversified in whatever we're doing. I think the only hope of having everyone involved and learning is to offer those multiple choices and those multiple approaches.

—Robin Whited, English literature teacher, high school

Montgomery's class was an energetic group of seventh graders who came from several neighborhoods in a corner of Los Angeles. He started every class by greeting them at the door by name. When the students entered the classroom, they saw the class schedule up on the board along with a bell-ringer for them to finish before class started. He kept a canister of pencils at his desk for them to use if needed. Not having a pencil kept them from participating, and some of his students did not have easy access to school materials. With the rapport he built and the weekly conversations they had about being part of a learning community (with the students talking more than Montgomery), his need to replace pencils had gone down. The students were returning them more frequently.

Montgomery was beginning his journey with UDL and decided to build in options within his next math unit. He knew that his students groaned when it was time to take out their math books, so he decided to focus on two things from The UDL Guidelines for his lesson on percent of increase and decrease: relevance and giving them different ways to express their understanding. He knew that all of his students loved junk food, and he knew that they would go to the convenience stores near the school and their homes rather than the grocery stores. The grocery stores were sometimes too far to reach on foot, the bus did not go there, or they said they did not want to go to the grocery store. The previous week, he asked them to list their favorite foods and write down the prices when they went to the convenience store of their choice. He took that list with him to the grocery store and wrote down the prices for the same items. Because the lesson used the price of food they were interested in, they were much more interested in figuring out whether it was a percentage increase or decrease. It also opened up a number of conversations (e.g., food deserts, inequality, price gouging, healthier choices), but he had thought about those and was prepared.

UDL reminded Montgomery that these seemingly off-topic conversations were part of the design because he was helping his learners think beyond the goal of the lesson. He was helping them become expert learners who question things and want

to figure out something bigger than the percentage increase or decrease. Rather than seeing them as a distraction and cutting off those conversations or allowing the conversations to take over his lesson, Montgomery used the lesson goal to keep him focused.

To help maintain focus, Montgomery had the learners write out the steps for solving the mathematical formula during the classroom instruction, but then he left it up to them to decide how they would show their understanding for the assessment. They had to discover their best pathway. They could record themselves teaching a classmate how to calculate the percentage difference (he checked out the seventh-grade tablet [e.g., iPad] for the day), they could write out the steps on paper, or they could use the math flashcards with individual numbers and symbols written on them to build the problem. They had a rubric that told them what they needed to show or share so he knew they really understood the concept. It took a class period for everyone to show their work, but they assessed each other and followed the learning community rules they had determined. The lesson was not perfect and some personalities prevailed, but Montgomery saw something new in his learners. He watched them have a new level of engagement and pride in their learning. That was enough to make him move another step into UDL.

ANALYZING MONTGOMERY'S LESSON

Use the questions to apply what you learned about UDL in the section introduction.

1. What barriers do you think Montgomery's students face?
2. In what ways was Montgomery intentional in his design?
3. How did he apply the concept of learning environment versus classroom to his math lesson?
4. In what ways did Montgomery's lesson recognize and respond to the cultures represented in his classroom?

Our classrooms are nothing but diverse. For example, Montgomery's class was ethnically and socioeconomically diverse, but even if all of the learners come from the same small community and are of the same ethnic, social, and economic backgrounds, we know that each learner has a unique way of learning, and that way of learning changes with context and time (Rose & Meyer, 2002; Rose et al., 2013). So, how do we design lessons and learning environments that can support all of those differences? Just as Jordan suggests in the quote that opens this book, the best way is to use the UDL framework. Once you understand how the framework is organized, become familiar with the vocabulary, and think through some processes for how to use that framework, putting UDL into action can become automatic.

I've been using the principles for so long, it's automatic. When I'm planning, I'll go back and check, but I always include those things because it's become second nature to me.

—Dana Calfee, science teacher, middle school

There is no denying that teachers are searching for ideas and strategies that will help them teach all of the learners in their class while remaining in line with local, state, and federal educational guidelines. Whether they are in a face-to-face setting or online, teachers have a prescribed amount of time to deliver the content and assess whether the learners are successfully meeting the specific standards. When learners' outcomes are not aligned with the selected lesson standards, teachers have to make choices about additional supports, resources, and strategies, including how and when they will put them into action, and figure out whether they are helping the learners. This is exactly what the UDL framework supports.

The remainder of this chapter lays out four big things about UDL that will influence how you think about your use of the framework. After that, you are introduced to the organization of The UDL Guidelines and the concept of expert learners.

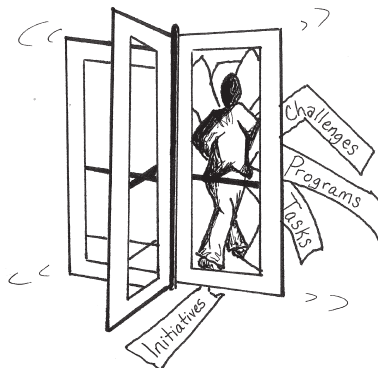
FOUR BIG THINGS

Think about what you want the end result to be. What do you really want them to learn? How are you going to represent it different ways? What choices are you going to offer? And with a teacher new to this, I would say, do not take on this whole thing. Take it in small steps. It's a matter of slowly integrating. Don't overwhelm yourself.

—Patrice Goble, fifth-grade teacher

Begin Slowly

As teachers, we are used to taking on multiple tasks, challenges, initiatives, and programs. Sometimes, it can feel as if we are stuck in a revolving door. So, considering something as big and flexible as UDL can be overwhelming. It can easily feel like “one more thing,” and as you begin to learn more about the framework throughout this book, you could easily get caught up in the seemingly unending options suggested. Rather than becoming overwhelmed by these suggestions, however, consider identifying which of these options you are already touching. Get excited by the ways in which you can enhance your teaching space and lessons. Identify the parts of UDL that make sense to you. Dissect it. Pull the framework apart to find suggestions that enhance your learners' learning; if that seems time consuming and overwhelming, consider other ways to approach your new relationship with UDL:



- Focus on one of the guidelines and select tools, resources, or strategies based on that guideline (see more in Chapters 3, 4, and 5).
- Focus on one of the principles to begin a general examination of your lessons and classroom/environment (see more in Chapters 3, 4, and 5).
- Begin your lesson development by asking, “How does this activity connect back to my lesson goal?” (see more in Chapter 7).
- Review yesterday's lesson using the information you learn about the principles (see more in Chapters 3, 4, and 5).

- List the different tools and resources to which you already have access. Remember to think about things and people. Now, consider how those tools and resources can help you put one or more of the principles into action (see more in Chapter 6).
- Talk with fellow teachers about the principles and guidelines and how they approach UDL.
- Do the same activities, but use that same list of tools and resources to think about one or more of the guidelines.



PONDER THIS: Which of those strategies do you anticipate will support you and your learning needs?

We vary in our learning needs just as much as our learners do. Coming up, you will learn about our brain networks and how they affect our learning. Those brain networks exist in children and adults alike. I suggest that you see how you fit into the framework as a learner. Look for options that fit your learning preferences and needs. It is likely that those preferences and needs guided your initial lesson development practices. Maybe they still do.

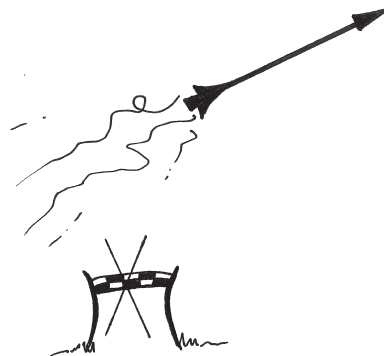
As this book unfolds, you will have the opportunity to consider all of the different ways learners can be brought into a lesson and how you can maintain their attention and steer them toward self-guidance. You will examine the ways our brains take in information, organize it, and comprehend it. You will reflect on the ways your learners take that same information and demonstrate what they know about it. More than that, however, you will think about your learners as strategically minded, goal-setting individuals who can grow in their capacity to examine their own learning needs. It is a lot, isn't it? That is why you must choose your own entry point into UDL and start small.

Make It a Continual Process

UDL is a process. A process is a series of actions that lead to a particular result. In the case of UDL, the series of actions includes the design of the space in which you teach the lessons you lead. The particular result you are seeking is improved learner outcomes. Because the particular result is learner outcomes, this becomes a continual process.

Take, for example, professional musicians. These talented people participate in the process of performance. They practice a certain piece for weeks or months, knowing that they will perform it for a particular audience on a particular date. The result they are seeking, however, is not to play for that audience. Rather, it is a performance that matches their standards and desires. Critics will sit in the audience and proclaim whether the performance was a success, but the musicians know that the process is bigger than that single performance. The process is their continual desire to improve the outcomes of their performance.

As you learn more about UDL, you will realize that there is no defined finish line or point of completion. The arrow just keeps flying. UDL is designed to guide you and allow for flexibility within the space you teach and within your lessons. A popular question is “When will I know I am doing UDL?” I suggest that we shift that question. UDL is not something you necessarily do; UDL is something you use to design. The question becomes “When will I know I have used UDL to its fullest?” The answer is, when you have made conscious decisions to design your teaching space and lessons using tools, resources, and strategies that align with the options suggested within the framework. When you clearly identify the goal for your lesson and connect the subsequent activities with that goal. When you realize that by using the options suggested within the UDL framework, you are opening the doors to learners who are not typically included in traditional designs. Because you have opened those doors, you are truly reaching all learners (CAST, 2012b).



Include All Learners

This book does not delineate among learner groups. UDL is based on the science of our brains and the knowledge that how we learn is as individualized as each snowflake that falls. CAST's now-retired chief education officer and cofounder, David Rose, pointed out that there is no such thing as an “average learner” (CAST, 2012c; Hall, Meyer, & Rose, 2012). Instead, we are not only unique in comparison to one another but we also uniquely approach learning, depending on our own response to the environment and the activity. How you learn is dependent on the context, but many educational settings are designed differently, and that reflects how our overall system categorizes learners.

As a way to define what and how additional supports and resources are provided to some learners, our educational system has grouped them. UDL is not blind to the fact that some learners require significant support to participate, gain knowledge, and demonstrate their own knowledge. Acknowledging this, UDL asks you to design the learning environment in which you teach and the lessons you provide upfront, using the variety of options suggested within the framework with the goal of including all learners. You incorporate options upfront, knowing support will be needed by some, but all learners will benefit. In addition, those options are provided to your learners in a such a way that they are all required to make choices and investigate their own learning needs, patterns, and growth. The assumption is that all learners can and should make choices and investigate their own learning needs. Remember, the barrier is not within the learner. The barrier is how the learning environment is designed. There is no question that we must think differently and more broadly about how to achieve this with some learners, but if you are still asking how to know whether you are implementing UDL, this is one of your clues. Are you consciously and ardently working to ensure that all learners have the opportunity to make choices and investigate their own learning?

Finally, you also reflect on your learners' participation and outcomes. Using that information, you move forward with the same or other options suggested within the framework. The non-UDL design is purely educator-directed and facilitated. The UDL design is a collaborative partnership between the educator and the learners. You will explore this collaborative relationship more in Chapter 7.

At its heart, UDL is about providing consciously selected and researched options to all learners so they can ultimately learn to guide their own learning. The term *lifelong learner* describes this kind of desired outcome and is a popular phrase in education. UDL operationalizes that phrase, but it is up to us to provide structured environments and lessons that strategically support our learners in their movement toward that outcome, or many will not get there.

Use Universal Design for Learning Across All Subjects

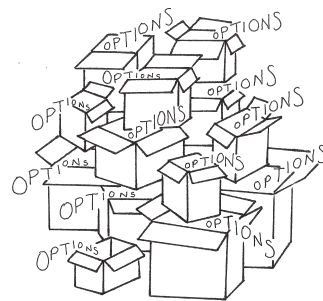
The design of UDL is such that it can be applied in any instructional setting. No matter your subject area, you make instructional decisions. The UDL framework's connection to how we learn versus a connection to a specific set of theories or types of practice allows it to be used in all settings. Throughout this book you will read about the use of UDL to design a variety of lessons and settings. The danger here is that these examples can narrow your exploration of UDL. Written with the intent to provide something concrete, the examples also require you to generalize the information to see how it fits with your current teaching assignment and experiences. I have worked with teachers across K–12 subject areas, including teachers within career preparation courses (e.g., certified nursing assistant training programs, radio and television training programs, law enforcement studies); teachers of high school science, technology, engineering, and mathematics (also known as STEM) courses; middle school media specialists; elementary music and art teachers; and teachers who provide instruction via online environments, all who used the UDL framework to design their space and their lessons.



PONDER THIS: In our world that praises hyper-productivity and speed, where do you find value in slowly acquiring a new skill like those found in UDL? What supports can you place around you to support this slow and deliberate learning?

INTRODUCING THE GUIDELINES

UDL is a framework, which means it is an organized collection of big ideas that lead to providing options. CAST provides a graphic organizer that they call The Guidelines to communicate the actions that we use in the design process and in teaching. I will use this graphic throughout this book to organize how I share information about UDL. While The Guidelines are defined, and you should strive to work within them, there are a multitude of options within The Guidelines. This is very different from structures that ask



you to perform from a specific list of tasks or tell you to design lessons within a narrow scope. The ideas within The UDL Guidelines came from educational research, educational psychology research, neuropsychological research, and brain research. By making classroom and lesson-based decisions that correspond with the organized ideas within the framework, you know you are meeting the varied needs of each learner.

The UDL Guidelines are organized by three areas: 1) the principles, 2) the guidelines, and 3) the checkpoints. To clarify, when we reference the graphic organizer all together, we call it The Guidelines (with a capital *G*); you will also learn about the nine guidelines (small *g*) as you move through Chapters 3, 4, and 5.

Like an outline, the principles of Engagement, Representation, and Action & Expression name the three overarching groups and would be listed with Roman numerals I, II, and III. Under each of those three overarching groups are three guidelines, so each Roman numeral would have an A, B, and C under it. The checkpoints fill out the outline, placing anywhere from three to five points under each of the capital letters (see Figure 1.1). Another way to think about the organization of the UDL framework is the way CAST shows the information organized into three columns (see Figure 1.2; a full-size, downloadable and photocopyable version is available with the downloadable resources for this book). Figure 1.3 shows this same framework with the words *principle*, *guideline*, and *checkpoint* added to aid your understanding. These three examples provide you with a visual representation of the entire framework, but on what is it based?

THE PRINCIPLES AND THE BRAIN NETWORKS

As mentioned previously, the framework comes from research about our brain networks and how we respond, learn, and create. When the brain is viewed using specific technology (i.e., brain imaging), scientists know that certain connections or networks light up when stimulated. Researchers are now identifying which networks coincide with learning versus those that do not. UDL pulls together guiding ideas so teachers can create learning opportunities that activate those different learning networks. The UDL framework helps teachers determine which tools, resources, and strategies will activate their learners' brain networks. Right now, we will focus on The Guidelines. Later in this chapter, I describe how the principles are framed and defined by the

- I. Principle
 - A. Guideline
 - Checkpoint
 - Checkpoint
 - Checkpoint
 - B. Guideline
 - Checkpoint
 - Checkpoint
 - Checkpoint
 - Checkpoint
 - C. Guideline
 - Checkpoint
 - Checkpoint
 - Checkpoint
- II. Principle
 - A. Guideline
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- III. Principle
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 - B. Guideline
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 - C. Guideline
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Figure 1.1. Outline example.




	Provide multiple means of Engagement	Provide multiple means of Representation	Provide multiple means of Action & Expression
			
	Affective Networks The “WHY” of Learning	Recognition Networks The “WHAT” of Learning	Strategic Networks The “HOW” of Learning
Access	Provide options for Recruiting Interest <ul style="list-style-type: none"> • Optimize individual choice and autonomy • Optimize relevance, value, and authenticity • Minimize threats and distractions 	Provide options for Perception <ul style="list-style-type: none"> • Offer ways of customizing the display of information • Offer alternatives for auditory information • Offer alternatives for visual information 	Provide options for Physical Action <ul style="list-style-type: none"> • Vary the methods for response and navigation • Optimize access to tools and assistive technologies
Build	Provide options for Sustaining Effort & Persistence <ul style="list-style-type: none"> • Heighten salience of goals and objectives • Vary demands and resources to optimize challenge • Foster collaboration and community • Increase mastery-oriented feedback 	Provide options for Language & Symbols <ul style="list-style-type: none"> • 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 Expression & Communication <ul style="list-style-type: none"> • Use multiple media for communication • Use multiple tools for construction and composition • Build fluencies with graduated levels of support for practice and performance
Internalize	Provide options for Self Regulation <ul style="list-style-type: none"> • Promote expectations and beliefs that optimize motivation • Facilitate personal coping skills and strategies • Develop self-assessment and reflection 	Provide options for Comprehension <ul style="list-style-type: none"> • Activate or supply background knowledge • Highlight patterns, critical features, big ideas, and relationships • Guide information processing and visualization • Maximize transfer and generalization 	Provide options for Executive Functions <ul style="list-style-type: none"> • Guide appropriate goal-setting • Support planning and strategy development • Facilitate managing information and resources • Enhance capacity for monitoring progress
Goal	Expert learners who are...		
	Purposeful & Motivated	Resourceful & Knowledgeable	Strategic & Goal-Directed

Figure 1.2. Universal design for learning guidelines. (From CAST, Inc. [2018]. Universal design for learning guidelines [Version 2.2] [Graphic organizer]. Wakefield, MA: Author; reprinted by permission.)




Principle	Provide multiple means of Engagement	Provide multiple means of Representation	Provide multiple means of Action & Expression
	 Affective Networks The “WHY” of Learning	 Recognition Networks The “WHAT” of Learning	 Strategic Networks The “HOW” of Learning
Guideline	Access Provide options for Recruiting Interest <ul style="list-style-type: none"> Optimize individual choice and autonomy Optimize relevance, value, and authenticity Minimize threats and distractions 	Access Provide options for Perception <ul style="list-style-type: none"> Offer ways of customizing the display of information Offer alternatives for auditory information Offer alternatives for visual information 	Access Provide options for Physical Action <ul style="list-style-type: none"> Vary the methods for response and navigation Optimize access to tools and assistive technologies
	Build Provide options for Sustaining Effort & Persistence <ul style="list-style-type: none"> Heighten salience of goals and objectives Vary demands and resources to optimize challenge Foster collaboration and community Increase mastery-oriented feedback 	Build Provide options for Language & Symbols <ul style="list-style-type: none"> Clarify vocabulary and symbols Clarify syntax and structure Support decoding of text, mathematical notation, and symbols Promote understanding across languages Illustrate through multiple media 	Build Provide options for Expression & Communication <ul style="list-style-type: none"> Use multiple media for communication Use multiple tools for construction and composition Build fluencies with graduated levels of support for practice and performance
Checkpoint	Internalize Provide options for Self Regulation <ul style="list-style-type: none"> Promote expectations and beliefs that optimize motivation Facilitate personal coping skills and strategies Develop self-assessment and reflection 	Internalize Provide options for Comprehension <ul style="list-style-type: none"> Activate or supply background knowledge Highlight patterns, critical features, big ideas, and relationships Guide information processing and visualization Maximize transfer and generalization 	Internalize Provide options for Executive Functions <ul style="list-style-type: none"> Guide appropriate goal-setting Support planning and strategy development Facilitate managing information and resources Enhance capacity for monitoring progress
	Goal Expert learners who are... Purposeful & Motivated	Goal Expert learners who are... Resourceful & Knowledgeable	Goal Expert learners who are... Strategic & Goal-Directed

Figure 1.3. Universal design for learning guidelines with captions. (From CAST, Inc. [2018]. Universal design for learning guidelines [Version 2.2] [Graphic organizer]. Wakefield, MA: Author; reprinted by permission.)

brain networks. Additional information about the brain networks can be found at the beginning of Chapters 3, 4, and 5.

Engagement

The principle of Engagement brings together the affective networks. These networks regulate our interactions with anyone and anything outside of ourselves. Your affective networks are active in all situations and affect how you view any situation, and because no two people are alike, how one person's affective network responds to a situation or setting will vary from how another person's affective network will respond to the same situation or setting. How we interpret any person or situation significantly affects our ability to learn, remember, and respond (Rose & Meyer, 2002). The affective networks are described more in Chapter 3.

Representation

The principle of Representation brings together the recognition networks. These networks allow us to identify and interpret what comes to us through our senses (e.g., sight, sound, touch, smell, taste). They help us find meaning in the concrete and the abstract, the simple and the complex. When we recognize an apple, interpret a painting by Picasso, smell pipe tobacco that reminds us of our grandfather, or make a single recipe 10 different times hoping to taste the same dish our mother made, we are using our recognition networks. The recognition networks are complex and are spread throughout the brain. Finally, how our brains and bodies interact with any sensory input affects how we learn (Rose & Meyer, 2002). The recognition networks are described more in Chapter 4.

Action & Expression

The principle of Action & Expression brings together the strategic networks. These networks help us strategize every physical and mental process we perform. This is where we think about what we are going to do, do what we thought about doing, and keep track of what we are doing. These are three things we do all day, ranging from brushing our teeth to planning lessons to deciding which pair of jeans to wear on the weekend. Our ability to strategize and the strategies we choose affect how we communicate to others what we know and understand (Rose & Meyer, 2002). The strategic networks are discussed more in Chapter 5.

THE GUIDELINES

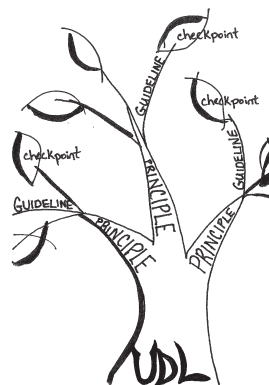
The guidelines (small *g*) are the next level below the principles. There are three guidelines listed under each of the principles. The guidelines support teachers' understanding of what tools, resources, and strategies to choose when designing a learning space and lessons. The guidelines give further meaning to the principles and are briefly introduced below and were designed to take into account the way the brain responds to the environment and information. They are discussed in more depth in Chapters 3, 4, and 5.

Under the principle of Engagement. These guidelines suggest how you can prime the learners to learn, hook them into the learning environment and lesson, and provide structures so the learners become self-managed learners.

Under the principle of Representation. These guidelines broadly communicate what learners need to learn by defining and explaining language, syntax, and numbers and by giving learners opportunities to absorb knowledge in their own way.

Under the principle of Action & Expression. These guidelines suggest how learners can fully communicate what they know through action, include the use of no-tech, low-tech, and high-tech materials, and allow learners to practice how to plan, retain attention, problem-solve, reason, initiate, and monitor their own activities.

Another way to graphically demonstrate the principles, guidelines, and checkpoints is a limbed tree. The trunk represents UDL as a whole. Out of that trunk grows three limbs. These limbs represent the three principles. Out of those limbs grow branches, which are the guidelines. The twigs, which are supported by the branches, represent the checkpoints (Nelson, 2019). These guide the multitude of ideas that go into the lessons you create.



EXPERT LEARNERS

When you look at the CAST UDL Guidelines graphic (see Figure 1.2), you notice that at the bottom left is a tab that reads, *Goal*. To the right is a sentence starter reading, “Expert learners who are...” followed by blocks with the word groups: *Purposeful & Motivated*, *Resourceful & Knowledgeable*, and *Strategic & Goal-Directed*. At the beginning of this section, I talked about learning barriers and how those barriers get in the way of learners growing beyond the lesson goal. Although we know that the lesson goal should be tied to the academic standard, educators know that a well-rounded student needs to learn skills that reach beyond those standards. This is why The Guidelines are organized the way they are. As we move through the three columns, throughout the nine boxes, and dig deeply within each of those boxes, we discover that we are providing our learners the necessary opportunities to practice and adopt the skills that align with the expert learning descriptors.

This table has some examples from the classroom and from the community of how learners might apply the skills of being an expert learner. You will have an opportunity to think more deeply about expert learning at the end of Chapters 3, 4, and 5.



PONDER THIS: How is the concept of a 21st century learner aligned with the skills aligned with expert learning?

DESIGNING, ACTING, AND REFLECTING

So far, you have looked at the organization of the framework and learned a little about the terms *principle*, *guideline*, and *checkpoint*. Now let’s look at three

steps; they should take place in any teaching environment, but we are going to see how those steps relate to UDL.

Sometimes I'll go right to an online product or approach or software or some strategy that I know is available, and then I'll work back from that. Okay, here's something that I know learners have found engaging in the past, or it really demonstrated something well. How can I reuse it? Redirect it? Because I've created a menu of choices over the years, I can go back to that and make choices and selections knowing what the UDL principles ask.

—Dana Calfee, science teacher, middle school

Designing: The Thought Process

UDL is the answer to what we already know—one size does not fit all. Sometimes, we think we are creating lessons that will definitely reach all of our learners. We might design a lesson that might sound UDL-ish. Maybe we let our students choose which color marker they are going to use on a worksheet. Or, we are not just doing a lecture, so we must be using UDL.

Consider this scenario: Anthony's lesson was about adding integers. Because this was the first day of the topic, he found a short cartoon video in which the characters were numbers and talked about what it meant to be an integer. It showed them sitting on a number line and how they combined through addition. He gave each learner a number line to use and keep in his or her folder and then followed up with a worksheet. Learners worked independently, and he went to their desks if they had questions.

This sounds like a UDL lesson, doesn't it? Anthony had a cartoon video, so the learners must have been engaged. Add to that the use of the number lines at their desks, and he must have been representing the information to them. Then they worked on a worksheet. That's expression, right? This must be a UDL lesson!

Let's interview Anthony about this lesson.

Loui: "Hi, Anthony. Thanks for answering some questions about your lesson."

Anthony: "Sure thing!"

Loui: "I'm curious why you chose that video."

Anthony: "We all know kids love the cartoon videos, and I thought the cartoon did a great job of introducing integers."

Loui: "It did look like they enjoyed it. Now, you followed that up with some additional instruction, and then the learners worked on their worksheets. Can you tell me why you chose those activities?"

Anthony: "Well, I always follow a video with some lecture. Otherwise, I'm not teaching, right? The learners have to hear and see me teach or else I'm not doing my job. Then I wanted to see if they were getting it, so I gave them the worksheets. I needed some more scores for the grade book, and those need to be individual scores. This way, I can show where they started and then how much growth they have achieved in the next two days as we work on integers. I can't get those scores from group work because that's not fair to all of the learners."

Anthony's answers demonstrate traditional thinking around lesson planning. Anthony went with what he understood to do (remember the difference between planning and designing?). There are teachers who, like Anthony, recognize the need to hook learners into a lesson. After that, the decisions are based on their own tools, resources, and strategies but not *why* they used those tools, resources, and strategies. Ultimately, Anthony did not link the design of his lesson to a goal, nor did he allow that goal to guide what tools, resources, and strategies he chose.

In another interview, Anthony might point to his video as a form of Engagement, and he would be correct that he touched on that principle. He did not, however, start with a goal or continue the use of Engagement. He did not seek ways to round out his lesson with additional connections to that principle or to the other two. To use the UDL framework means to use it as a planning tool. A UDL-based lesson is intentionally designed and brings to life the principles and guidelines. Anthony's story will show up in Section II to help illustrate the difference between traditional lesson development and lessons designed using the UDL framework.

Maybe you have experienced the following in your teaching: A core group of learners do well, but these are the learners who usually do well. Another group always works ahead. When they are done, they get to choose a book from the shelf, they work on another project, or they bug the other learners. Then, there are those learners who always struggle. Some of these learners have individualized education programs (IEPs) and others struggle for other reasons. Even though you have seen outcomes like this multiple times, why do you want to change the way you design your lessons? Likely, there are a variety of reasons.

- Maybe you need to reach more of your learners. The UDL framework is designed to address this wide variety of learners.
- You have plenty of tools, resources, strategies, and tips, but which ones do you choose? The UDL framework becomes a guide for decision making. It helps you choose the best tools, resources, strategies, and tips from your collection and helps identify where there are holes in your lessons.
- You are overwhelmed by varying needs and strengths of your learners. The UDL framework allows you to design a classroom or learning location that fluidly meets those needs and builds on those strengths.
- You are overwhelmed with the amount of time it takes to design lessons. The UDL framework takes time to learn and adjust to. However, those teachers interviewed for this book report that they are no longer spending time choosing between tools, resources, and strategies. Instead, they make confident choices, implement with a critical eye, and reflect on the lesson.

You can read more about lesson development in Chapter 7.

If you can't shift and get to where the kids are while you're teaching, you're going to miss some kids. Because we've done our planning using UDL, we have a better idea of where to go and what to do if we need to bring kids back on track during the class.

—Libby Arthur, retired world history and sociology teacher,
high school; social studies department chair

The Act of Teaching

Now that you have considered the purpose of design, let's look at the act of teaching. This sounds very straightforward, especially if you are an experienced teacher. You have your lesson plan; you have your tools, resources, and strategies in mind; and so you teach. UDL prompts you to do more than that. UDL asks you to be watchful of your learners during the lesson and be flexible so you can meet their learning needs. In the following scenario, you will read how one teacher used the UDL framework to quickly and spontaneously check on her learners' understanding of a concept.

Rhonda, a seventh-grade science teacher, was out of the classroom on Monday and had a substitute teach her lesson on diffusion. When she came back on Tuesday, she needed to quickly assess her learners' understanding of the concept. She asked, "What is diffusion?" to which her learners unenthusiastically responded, "When something moves from an area of higher concentration to an area of lower concentration." Although the answer was correct, she was not satisfied that they had truly taken hold of the information.

She made an instant decision to take them outside, put them into groups of six, and have them stand within the six-foot by six-foot squares created by the sidewalk seams. They then physically demonstrated for her their understanding of displacement by clumping together and pretending to be the solution added to the liquid. She then asked them to physically represent what it would look like during the process of diffusion. What she was looking for was an equal distribution of their bodies within the designated areas. Learners provided each other with redirection and clarification to make sure they all understood the concept. This 10-minute attention-getting assessment introduced the lesson, reconnected the learners with what they had learned about displacement, and gave Rhonda the information she needed to build on their current knowledge.

This brief activity actually gave time back to her learners. She provided all of them the opportunity to

- Activate their brains, collaborate, and self-assess their knowledge (Engagement)
- Perceive displacement through physical movement, work with the language, and use what they had learned the previous day to participate in the activity (Representation)
- Learn about displacement through physical movement, participate in an activity to build vocabulary, and use that information within scenarios (Action & Expression).

When they went back into the classroom, the learners transitioned into the next activity easily. They were comfortable with what they had learned and could focus on the next task. Rhonda's learners were ready to take in additional information because they had comfortably connected to the topic (Fredrickson & Branigan, 2005).

A significant piece to this scenario is the teacher. Rhonda knew the goal of the lesson; she is an experienced teacher with multiple tools, resources, and strategies in her mental and physical collection. In addition, she also knows the UDL framework so well that she can organize those tools, resources, and strategies at a moment's notice to develop an instant minilesson grounded by UDL. She knows why she needs to create that on-the-spot minilesson (i.e., hit the different brain

networks) and has a mental checklist of what she needs to do to make sure all of the learners gain from the experience. The learners respond well because they are used to an interactive, collaborative environment in which everyone's participation is important and necessary to everyone else's learning. Most important, Rhonda understands and demonstrates that every learner needs to feel that they are a valuable and integral part of the learning process. She sees an undeniable link between emotion and cognitive processing during learning (Storbeck & Clore, 2012).

Reflecting

I knew that I had created a space with high expectations and with student choice, but as I planned the unit, I reflected a lot on how I could strengthen that for 100% of my students. So, in doing that I really thought about how could I create an entry point for every single student and then after that entry point a real hook? Like how could I keep them hooked so that they would develop their poetry skills and also develop their own voice, their own storytelling voice?

—Rachael Barillari, humanities, middle school

Hear more on Episode 5 of the UDL in 15 Minutes podcast series, accessible at <https://theudlapproach.com/media/episode-5-rachel-barillari/>.

The third component is reflecting and redesigning the space and lesson based on the outcomes. Teaching should be a reflective practice. Reflection can be an independent activity, just as Rachael mentions. She is a teacher who not only uses the UDL framework to plan all of her lessons but also uses it for her reflections at the end of the day. I'm sure you are like me and have always known in your gut when a lesson has gone well or when it has not, but have you been able to figure out why? Have you had any kind of guide or framework you can use to help you answer that question? Rachael turns back to the UDL framework and asks, "What was the goal of my lesson?" and "What did I use to get that across to my learners?" She then reviews what tools, resources, and strategies she made available to the learners and identifies where the holes were that she can fill next time.

Another reflective strategy I find to be valuable is the collaborative method. As an individual, you can think through why you made certain decisions while planning and teaching, but the subsequent answers and ideas come from your knowledge and experiences. When you add even one more person, you can exponentially add to your knowledge and experience base. The discussions, questions, and even disagreements with colleagues create many more opportunities for growth, change, and success in your classroom (Schmoker, 2004). One collaborative structure is professional learning communities (PLCs).

It's really important to plan together, but it's just as important to go back and talk about what worked and what didn't work.

—Tracy Wise, learning resource teacher, middle school

PLCs have become a popular collaborative structure within schools. These are groups of educators, created formally or casually, who come together to enrich their own practice through discussion and action. Sometimes, an administrator is involved and other times not. A PLC is an organized group of professionals who come together for professional learning and to participate in data-driven inquiry.

The intent behind PLCs is organizational learning; the danger of PLCs is that they become too focused on accountability (Hargreaves, 2007). To help keep educators focused on the original intent of PLCs, Richard and Rebecca DuFour and Robert Eaker (n.d.) have established what they call The 3 Big Ideas of a PLC, or what PLCs should do:

1. Focus on learning
2. Build a collaborative culture
3. Focus on results

Their six essential characteristics for a PLC include the following:

1. Shared mission, vision, values, goals
2. Collaborative teams focused on learning
3. Collective inquiry
4. Action, orientation, and experimentation
5. Commitment to continuous improvement
6. Results orientation

Because PLCs are a combination of individuals, there are recognized complexities. Where some teachers stand in their use of data, what those data demonstrate, and how to effectively use those data can vary from the other individuals in the PLC. In addition, the PLC sits within the larger context of a school and community (Nelson, Slavit, & Deuel, 2012). Although these dynamics cannot be ignored, a PLC can become a strong unit of discussion and decision making that can improve learner learning and outcomes.

Nelson et al. (2012) discovered that linking the data-discussion process to 1) the content and learning goals, 2) instructional practices, and 3) learner understanding provided PLCs with a framework within which to gird their discussions. Furthermore, when PLCs experienced conversations grounded in inquiry, they continuously sought to find a common meaning and were explicit when expressing their statements of wonder or uncertainty. The entire group used methods to probe, clarify, and question professional assumptions and their own beliefs and practices. A trust developed within the group that allowed them to analyze deeply and come to that common meaning.

Why are PLCs helpful when putting UDL into action? It is because we all have questions and concerns about our teaching. UDL requires us to broaden our knowledge and our use of tools, resources, and strategies we may have never heard of before. If we are really going to design lessons to support the brain networks, we need to be able to reflect on our own understanding of those brain networks, how our own brain networks respond, and how we see our learners reacting to our teaching.

Universal design for learning helps me take all of those good ideas I've learned over the years and organize them into lessons that I know will be successful, that my students will enjoy, and that lead to improved outcomes.

—Julie Hult, English teacher, high school

The four big things	Where are you on the continuum?
Begin slowly	I like to take time learning things ----- I always jump in with both feet Where do you think you'll start?
A continual process	I am okay that there is no end point to learning ----- I need to know when I'm done learning How do you think your mindset will affect your relationship with UDL?
All learners	UDL will help me design for all learners ----- Even with UDL, I'm not sure how to design for all learners What supports do you need to help you gain the skills and knowledge you think you need?
All subjects	I see how UDL will align with the topic I teach ----- I'm not sure UDL will align with the topic I teach Knowing that UDL is based on how our brain learns, why or why doesn't UDL align with the topic you teach?

Figure 1.4. Check in: Chapter 1.

CHECK-IN

This chapter began with four big things you should know before beginning with UDL, but it is important that you reflect on those. Use the continuum exercise in Figure 1.4 to think about how you align with the four big things you should know about UDL.

SUMMARY: THE UNIVERSAL DESIGN FOR LEARNING FRAMEWORK

The UDL framework is powerful, so it is good to know the four big things before you get started:

- **Begin slowly.** As you step into the framework, find that one thing that feels right and go with it first. You can add to that one thing over time.
- **It is a continual process.** There is no end to learning about UDL. It is a framework that continues to change because the research in education, psychology, and educational psychology all continues to change. If you enter your experience with UDL knowing that you will always be learning more, you will have the flexible mindset that is also necessary to meet the needs of your variable learners.
- **It is for all learners.** UDL has emerged as a framework that supports all learners. If you are fully implementing UDL, then be prepared to be amazed at what your students will produce. When you lower those barriers and give them the latitude to create, what they generate is astounding.
- **It can be used to design for all subjects.** UDL is not subject dependent. First, literacy and composition are at the base of all subjects, and UDL supports both of those. But UDL goes further in how it aligns with the needs of students' learning, including science, technology, engineering, arts, and mathematics (STEAM).

The organization of the UDL Guidelines and how they are influenced by the learning networks of the brain provided the background for the introduction of expert learners, the goal of UDL. Finally, while the cycle of designing, acting, and reflecting is familiar in our field, the examples of Anthony and Rhonda demonstrated the influence of designing and action. The powerful process of professional learning communities can support the confident implementation of UDL.

REFLECTION

1. Montgomery was purposeful in his choice of junk food prices to act as the numbers his learners would use in their math problems. What did he know about his learners that informed that lesson? What did he likely do to gain that knowledge and apply it to his lesson?
2. Which of the four big things (beginning slowly, making it a continual process, including all students, and using UDL across all subjects) resonated with you the most? Why?
3. This chapter emphasized the inclusion of all learners. The history of the framework guides its intent. Consider where you are in your own journey toward the inclusion of all learners.
4. Think about your K–12 experience. Did you have options as a student? How do you think your experiences with or without options will affect how you design your classroom? How do you think those experiences will affect your understanding and use of the UDL framework?
5. If you are developing an online learning environment, what resources do you turn to so you can support all learners?

"An excellent tool...The practical strategies presented provide the reader with an opportunity to see what using UDL as the design framework looks like in practice."

—George Van Horn, Ed.D., Director of Special Education,
Bartholomew Consolidated School Corporation

"Should be on the shelf of all new and experienced educators! Not only is it easy to read, it is organized and full of visuals that help drive home the information."

—Cynthia D. Collier, Ed.D., University of West Florida

UNIVERSAL DESIGN FOR LEARNING (UDL) is the best way to teach all students effectively and break down barriers to learning—but how can busy teachers get started with UDL right now? Find the answers in the second edition of this bestselling, teacher-trusted primer, created by internationally recognized UDL expert Loui Lord Nelson.

Thoroughly updated to reflect current research and developments, this book gives K-12 teachers a reader-friendly UDL introduction *and* a practical framework for implementation, with guidelines and checkpoints for designing effective, barrier-free lesson plans and learning environments. You'll learn how to use the three core principles of UDL—Engagement, Representation, and Action & Expression—to present information in multiple ways and ensure access for all learners. Throughout the book, detailed examples, illustrations, teacher reflections, and activities reinforce UDL principles and help you put them into practice in both virtual and in-person settings.

Written in first person, like a face-to-face talk with a passionate educator, this research-based book will guide you in designing equitable, inclusive, and culturally responsive learning environments that meet the needs of diverse learners.

INCLUDES ONLINE MATERIALS: CAST UDL Guidelines; an Identifying Your Resources chart; a UDL design cycle graphic; a UDL lesson plan flowchart; and classroom resource mapping charts for elementary, middle, and high school teachers.

ABOUT THE AUTHOR: **Loui Lord Nelson, Ph.D.**, is an internationally recognized leader in universal design for learning (UDL) implementation. A former special education teacher, she held the first known school district-based UDL Coordinator position, completed her UDL postdoctoral fellowship at CAST (the creators of UDL), is a member of the CAST Cadre, and is part of the UDL-Implementation and Research Network (IRN) leadership council. Read more about her at www.theudlapproach.com.

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