

UNIVERSAL DESIGN FOR LEARNING

EMBRACING LEARNER VARIABILITY IN CHORAL ENSEMBLES

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Our choirs are composed of individuals with diverse experiences and a wide range of abilities, learning preferences, and interests. To best meet the needs of our students, choral educators must find creative ways to connect with students and engage them in learning. Universal Design for Learning (UDL) provides a research-based framework for creating flexible approaches that increase access and learning for *all* students, including students with disabilities, English Language Learners, and students who are motivated to learn in different ways. Proactively examining our teaching through the lens of UDL allows teachers to identify and remove barriers to student learning and to create inclusive learning environments that accommodate these individual differences. This article will provide an overview of the UDL framework and explore UDL-inspired strategies that can be used in any choral setting to increase engagement and to support access to curriculum and learning for students with diverse abilities and interests.

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Background

The concept of Universal Design originated in the field of architecture and was later applied to other fields, including education. In the 1990s, the nonprofit organization Center for Applied Special Technology (now CAST), began developing the UDL framework in response to the need for more inclusive education practices. UDL is rooted in the principles of Universal Design, which is an approach to design that works to ensure that products and environments are usable by all people, to the greatest extent possible, from the beginning and without the need for retroactive adaptation or specialized design. Similar to Universal Design, a primary goal of UDL is to proactively remove barriers and create inclusive learning environments that accommodate the needs of a broad spectrum of individuals. According to CAST, “UDL provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone—not a single, one-

size-fits-all solution, but rather flexible approaches that can be customized or adjusted for individual needs.”¹

Advances in cognitive neuroscience research have played a significant role in informing and supporting the principles of UDL. One key insight is that there is significant variability in learners’ brains and in the ways that individuals process information and learn. UDL acknowledges and embraces this variability, recognizing that each student enters the classroom with a unique collection of strengths, skills, needs, and interests related to learning. Having a broad understanding of the structure of the brain, as well as how it processes information and learns, can help educators design learning environments and instructional approaches that align with the way that the brain naturally functions. (Figure 1)

The three main principles of UDL and the UDL Guidelines² align with the organization of the brain and support the engagement of the affective, recog-

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



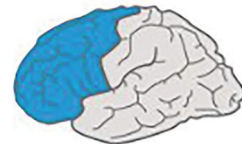
How we gather facts and categorize what we see, hear, and read. Identifying letters, words, or an author's style are recognition tasks.



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

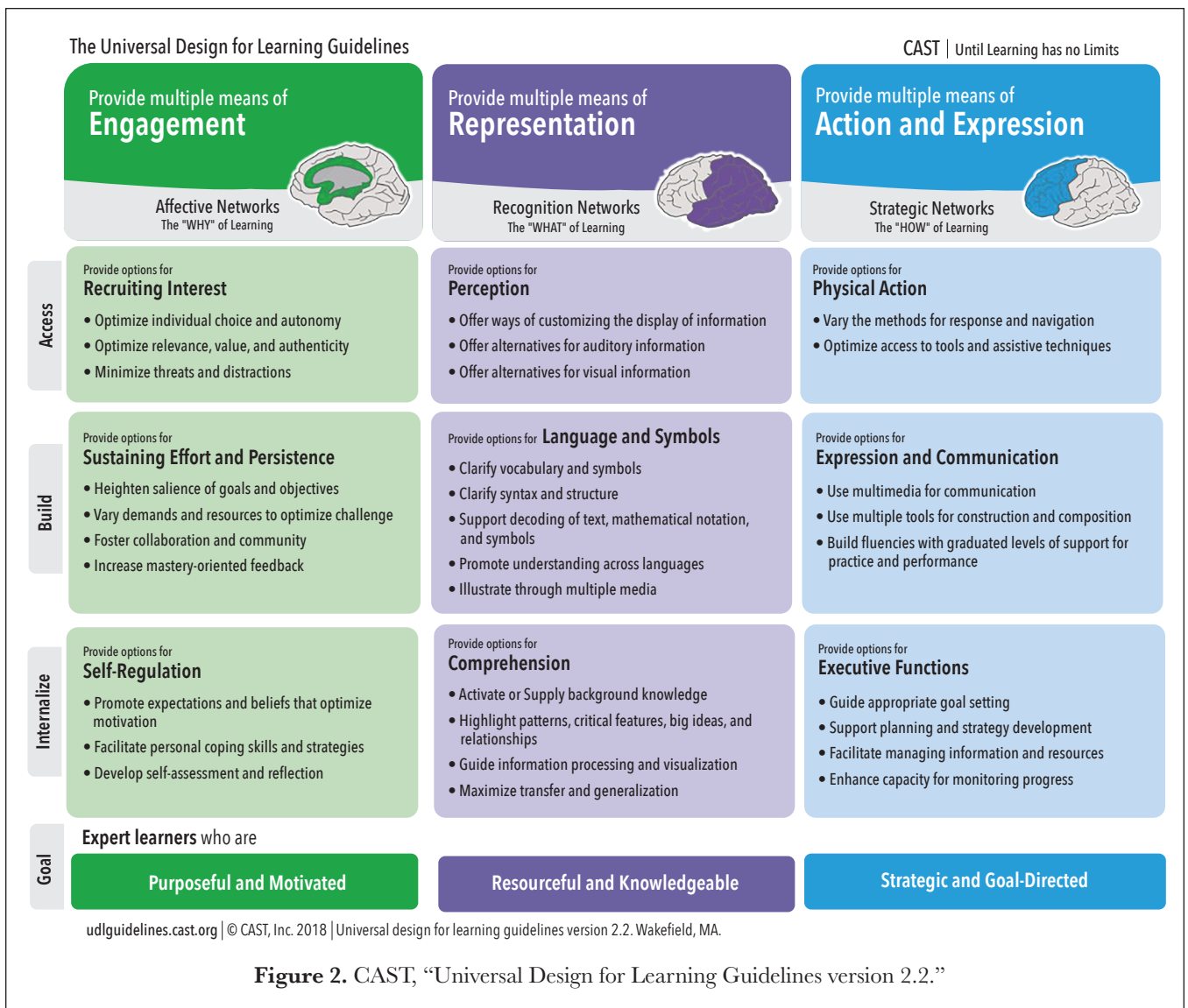
Figure 1. The Brain Networks, Universal Design for Learning. Image included in Anne Meyer, David H. Rose, & David Gordon in *Universal design for learning: Theory and Practice* (Wakefield, MA: CAST Professional Publishing, 2014). https://clusive.cast.org/res_reader/UDLTP



nition, and strategic networks of learning. The UDL framework is organized in columns and rows to provide a structure that helps educators intentionally and proactively address learner variability. The three columns highlight the overarching principles of UDL, providing multiple options for 1) engagement, 2) representation, and 3) action and expression. These principles and related guidelines “offer a set of concrete suggestions that can be applied to any discipline or domain to ensure that all learners can access and participate in meaningful, challenging learning opportunities.”³

The guidelines are also organized in rows to provide strategies that help students to access, build, and inter-

nalize learning. The “access” row of guidelines includes recruiting interest and offering options for perception and physical action to remove barriers and increase students’ access to learning. The “build” row contains strategies to develop effort and persistence, and provides options for language and symbols and for expression and communication. The “internalize” row includes guidelines that support empowering learners through self-regulation, comprehension, and executive functions. These guidelines all coalesce to support the ultimate goal of UDL: developing “‘expert learners’ who are purposeful and motivated, resourceful and knowledgeable, and strategic and goal-directed.”⁴ (Figure 2)



Multiple Means of Engagement

The first UDL principle, providing Multiple Means of Engagement, is connected to the affective network of the brain and addresses the “why” of learning. This provides options to stimulate interest and motivation for learning. Neuroscience research has shown that emotions and motivation are closely linked to learning and memory. Positive emotions and motivation enhance learning, while negative emotions can inhibit learning.⁵ CAST states that affect “represents a crucial element to learning, and learners differ markedly in the ways in which they can be engaged or motivated to learn.”⁶ UDL emphasizes providing multiple means of engagement to foster positive emotional experiences and sustained motivation. By offering choices, relevance, and personalization, UDL promotes an encouraging learning environment that supports learners’ emotional well-being and engagement and supports the overarching goal of creating expert learners who are purposeful and motivated.

Create a Welcoming Environment

To keep singers engaged in their own learning, choral teachers must provide students with meaningful opportunities to connect with the repertoire, with other content, and with each other. There are many ways to engage students in a choral classroom using the three guidelines of providing options for recruiting interest, sustaining effort and persistence, and self-regulation.

For example, when planning a choral rehearsal, educators should consider not only the content to be covered, but also the procedures, sequencing, pacing, and atmosphere of the rehearsal. Greeting students by name at the door allows you to set the tone for the day, and this routine can contribute to creating a safe and supportive classroom environment. Teachers can help students to sustain effort and persistence by providing a roadmap for rehearsal to clarify expectations. This could include sharing an agenda for the day, reviewing learning objectives with the choir, revisiting goals periodically throughout the class, and providing chances for students to give and receive feedback throughout the lesson.

Engaging Strategies for Warm-Ups and Music Literacy

Most rehearsals include group vocal warm-ups and often include time to work on sightreading and music literacy skills. To maintain student interest, teachers can increase the authenticity and relevance of these activities by ensuring that students know the purpose of each exercise and by intentionally planning and creating exercises that connect to long-term skills or tie directly in to their repertoire.

For example, the song “Path to the Moon” by Eric Thiman begins with an octave leap on the words “I long.” Students may have trouble singing the octave leap on a pitched consonant, as they tend to slide up on the “L” of “long” rather than starting the “L” sound on the top pitch. Because the teacher can anticipate this potential mistake through score study (and possibly from past experience), they can proactively address the issue during the warm-up process by including an exercise that isolates that skill, then help students make that connection to the skill when learning the repertoire.

When working on building sightreading and music literacy skills, educators can support internalization of engagement by providing students with options for self-regulation. It is important to teach and model coping skills and strategies to help students manage frustration when they struggle with something.

For example, when reading a sightreading exercise, do students know strategies to recover and keep singing if they make a mistake? If they sing a pitch incorrectly or start to lose tonality, do they know to listen for an anchor pitch (do, mi, or so in major keys) so that they can jump back in?

Other ways to foster student engagement include varying the materials used and providing different levels of challenge in learning activities. Consider offering students options when possible, such as choosing to work on a task in pairs or alone, or allowing retesting for mastery to increase motivation. Assigning “sightreading buddies” allows more experienced singers to mentor and assist students who may need extra help, which encourages peer support and collaboration within the ensemble.

Increase Engagement through Student Ownership

There are also opportunities to increase student en-



agement when preparing for performances. For example, students will feel a sense of ownership in their learning if they are involved in the selection of repertoire, with direction from their teacher. One way to do this is to provide students with a “menu” of 2-3 pieces that focus on similar pedagogical goals and ask them to choose, as an ensemble, the piece that will be performed. This allows the teacher to present options that are developmentally appropriate and fit the theme of the concert program and can also lead to thoughtful student discussions about the music.

Another strategy to provide choice is to have students work alone or in small groups to create a proposed order of performance for their concert music. The students must use musical terminology to describe each piece, think critically about how unity and variety create interest in a concert program, and then synthesize this information to solve an authentic challenge. It is a fun way to encourage higher order thinking and to increase engagement by giving the singers a voice in the music that they perform.

While all three UDL principles are important, providing support and options for engagement is arguably the most essential. The primary goal of this principle is to develop learners who are purposeful and motivated to be involved in their own learning. Students who are engaged and inspired to learn are more likely to benefit from strategies related to the other UDL principles of providing multiple means of representation and multiple means of action and expression.

Multiple Means of Representation

A second principle of UDL, providing Multiple Means of Representation, focuses on the “what” of learning and provides multiple ways for learners to perceive and comprehend information. The brain has several recognition networks that process information through numerous sensory modalities.⁷ UDL capitalizes on this by presenting information in various formats to accommodate learners with diverse sensory preferences and strengths. Teachers can ensure that all students are able to access learning by presenting content in several ways using a variety of materials, such as visual aids, auditory explanations, and hands-

on activities, to engage multiple recognition networks and enhance learning. Providing students who possess varied learning preferences with choices in how they engage with and comprehend instructional material encourages them to develop into expert learners who are resourceful and knowledgeable.

Use Flexible Formats to Remove Barriers to Learning

Choral educators can implement the principle of Multiple Means of Representation in their classrooms by using the guidelines of providing options for perception, for language and symbols, and for comprehension as they plan instruction. To increase access and reduce barriers to learning, essential information should be perceptible to all learners. This can be accomplished in many ways, including providing information in a flexible format so that perceptual features, such as the font, size of text, and contrast between the background and text or notation, can be displayed to students in multiple ways.

For example, music students with dyslexia often experience greater difficulty reading music notation clearly and fluently because they struggle to codify what they see on the page. While every student learns differently and every student with dyslexia experiences it differently, it is generally recommended to use sans serif fonts and to use pastel paper when printing text or notation.⁸ Printing materials on colored paper for the entire class or using a pastel background on projected slide presentations may benefit students who have not been as clearly struggling and also avoids singling out the students who need this accommodation.

Many materials are now shared with students electronically through a learning management system, but some individuals may prefer hard copies of materials so that they can take notes or highlight material. At the start of the semester, I ask students if they want hard copies or digital materials so that content can be provided to each person in a format that works well for them. I upload materials into our learning management system for students who want digital access and provide hard copies for the students who request them. This may seem cumbersome at first, but once I make a note of how many students want hard copies for each class, it actually takes very little time! The students who

prefer hard copies practice the procedure and know that they need to pick up hard copies of readings or handouts from a designated spot in my classroom before class starts.

If choral practice tracks or video demonstrations are recorded, consider uploading them to YouTube (with the privacy set as unlisted) so that students can customize the display of information with the option to adjust the playback speed. YouTube also includes an option for automatic captions in the subtitle menu, which students may find beneficial.

Using Chrome as their internet browser, singers can also use the Transpose extension⁹ to personalize their practice sessions using rehearsal tracks. With this extension, a singer can maximize the effectiveness of their practice session in several ways, including 1) changing the tempo of a practice track on YouTube without impacting the pitch, which allows them to set a tempo that fits their skills and comfort level, and 2) setting personal markers at challenging sections of the practice track to jump directly to or loop those tricky spots for focused, individualized practice.

Use Multiple Modalities to Process Information

When processing auditory information, it is helpful to use visual diagrams or to use exercises in which stu-

dents can see or feel a direct impact to help them build connections between theory and practice. Using manipulatives is often a fun and engaging way to do this! For example, one could use different manipulatives, such as straws or balloons, when working on breath support. Students use scarves to show the melodic contour or stretchy rainbow bands (see Image 1) to demonstrate phrasing while singing an excerpt of their music. They could practice aligning final consonants on releases by having students sing a word, such as “hot,” while the teacher and/or students gently toss a tennis ball in the air and then place the consonant exactly when the tennis ball touches the palm of their hand.

Teachers can maximize the transfer and generalization of information and aid comprehension by having students experience a musical skill or concept using various modalities during a warm-up exercise and then apply it to a similar situation in the context of their repertoire. Using a tactile equivalent to represent a key visual for a concept can also be beneficial for students. For example, a Hoberman sphere (see Image 2) could be used to model breathing or to visualize dynamics and phrasing during warm-ups and while rehearsing choral music. These representation strategies can aid comprehension by helping students to activate background knowledge and make explicit connections to previously learned concepts.



Image 1. Stretchy Rainbow Band
(Photo provided by author)

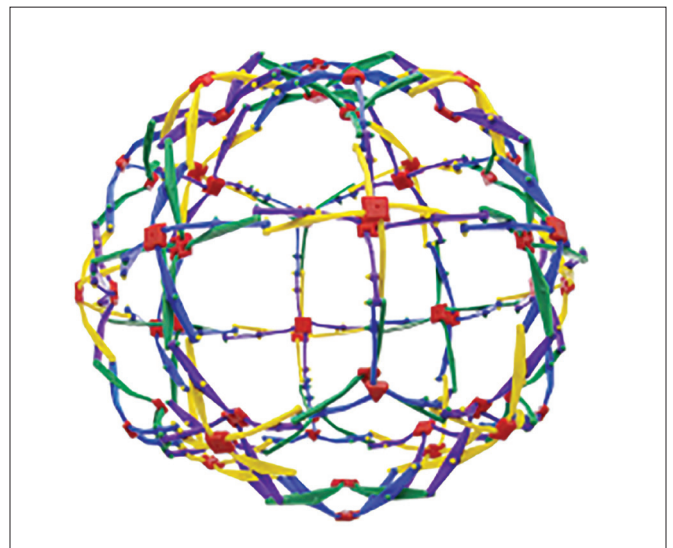


Image 2. Hoberman Sphere



Teachers can also model this UDL principle by providing options for comprehension and for ways in which language and symbols are represented in materials. Musical notation is a series of symbols and markings that inform musicians how to perform a piece of music. One way to model Multiple Means of Representation is to offer alternate ways to decode symbols, such as using Curwen hand signs and solfège to represent notation. When practicing Curwen hand signs, I noticed that the music education students in my under-

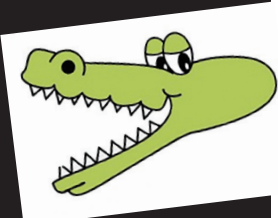
graduate choral methods class typically performed the diatonic hand signs correctly but struggled to remember the chromatic hand signs. I asked students to look at the hand signs and pointed out that most chromatic hand signs simply tip upwards for ascending hand signs or downwards for descending hand signs. I then asked students to identify the hand signs that did *not* follow that pattern and how they were different. They identified the three hand signs circled on the hand sign chart (see Image 3), and I then added the visual of an alliga-

Representation Options for Comprehension

What is the pattern ascending and descending for accidentals?

Which hand signs are trickier because they don't follow the pattern?

RA-WR!















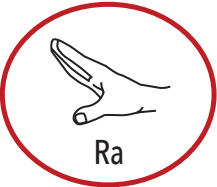





Flats		Sharps
♭		♯
		
Te	Do	Li
		
Le	Ti	La
		
Se	Sol	Si
		
Me	Fa	Fi
		
Ra	Mi	Ri
		
	Re	Di
		
	Do	

Image 3. Chromatic Curwen Hand Signs

tor saying “Rawr!” to help them remember the hand sign for “ra.”

Musical notation has its own unique system of organization, which can be confusing to students. Another strategy to provide options for representation is to color-code pitches according to solfège or to use iconic notation in place of standard five-line staff notation. When building music literacy skills, using Kodály stick notation (see Image 4) or providing students with modified solfège note heads in place of standard pitch notation can assist in scaffolding decoding of symbols.

Before reading rhythmic exercises with standard notation, consider having students echo body percussion patterns and then perform body percussion from iconic notation using play-along videos to popular music that they enjoy.¹⁰ Teachers can help students to clarify the syntax and structure of a choral octavo in various ways, including having students use their finger to track their vocal line on the page, using a highlighter to trace their specific vocal part, or even providing a simplified page of music that contains only the singer’s voice part to help them focus attention and read their own vocal part. These strategies can help students who need accommodations to read written notation, but are beneficial for all students learning to navigate reading a choral octavo, including adolescents with changing voices who may need to switch back and forth between two voice parts to fit their current vocal range.

In addition to providing content to students in varied formats, it is essential to also offer alternatives in the ways they may express their understanding.



Image 4. Kodály Stick Notation

The following section provides suggestions for UDL-inspired strategies to reduce barriers to action and expression.

Multiple Means of Action and Expression

Finally, the principle of Multiple Means of Action and Expression connects to the strategic network, or the “how” of learning, and emphasizes providing learners with diverse ways to demonstrate their understanding and skills. It encourages the use of different tools, technologies, and strategies to support individual preferences and abilities. For example, learners might have options to express themselves through writing, speaking, creating multimedia presentations, or engaging in hands-on activities. For educators and learners, having a clear understanding of the intended goal is essential to any learning experience:

Recognizing that our brains are goal-driven is important for educators, because if we don’t make learning goals explicit to our learners, they have no way of knowing what the target is, how to reach it, or when they’ve achieved it.¹¹

Offering options for physical action, expression and communication, and executive functions enables learners to showcase their knowledge and skills in ways that are most comfortable and effective for them and supports students’ growth as strategic and goal-directed learners.¹² Executive functions are cognitive processes that enable goal-directed behavior, such as planning, organizing, and self-regulation. UDL supports the development of executive functions by providing options for students to demonstrate their understanding and knowledge through various means of action and expression. This flexibility allows students to choose strategies that align with their executive functioning skills, promoting metacognition and self-regulated learning.

Reduce Barriers to Action and Expression through Student Choice

The guidelines of providing options for physical action, expression and communication, and executive functions provide support for students’ growth as stra-



tegic and goal-directed learners. Students often have different preferences and comfort levels concerning the ways in which they demonstrate content and skill mastery. Fortunately, there are many ways to offer students choices for action and expression. Choral educators can encourage students to participate and increase access to learning by intentionally allowing them to practice and demonstrate musical skills and knowledge in multiple ways when possible. According to CAST:

It is important to provide alternative modalities for expression, both to the level the playing field among learners and to allow the learner to appropriately (or easily) express knowledge, ideas, and concepts in the learning environment.¹³

There is not a singular medium of expression that serves all learners equally. A performance task that works well for one student may provide a barrier to learning for another student.

One example of providing options for physical action might involve giving students the choice to sing solfège while using either Curwen hand signs or a manipulative, such as a solfège texting stick tone ladder (see Image 5).¹⁴ Using a craft stick tone ladder can provide an accommodation for a student with a physical disability, but it also benefits students who prefer tactile modalities and shy students who prefer not to draw attention to themselves by using Curwen hand signs, which they may perceive as large physical gestures. Digital tools and technology also provide students with options for physical action to facilitate demonstration of their skills and understanding. When notating dictation, the web-based tool Nearpod can increase access and eliminate the barriers for students by offering options to draw stick notation on screen or providing additional scaffolding for students by using a teacher-made answer bank with Nearpod matching (see Image 6). Using technology increases student engagement by allowing students to choose their mode of response. It

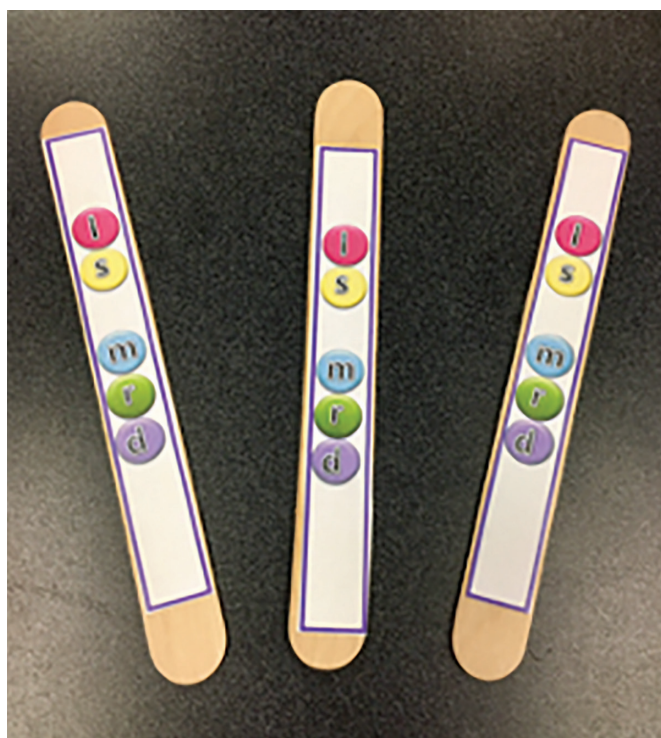


Image 5. Solfège texting stick tone ladder

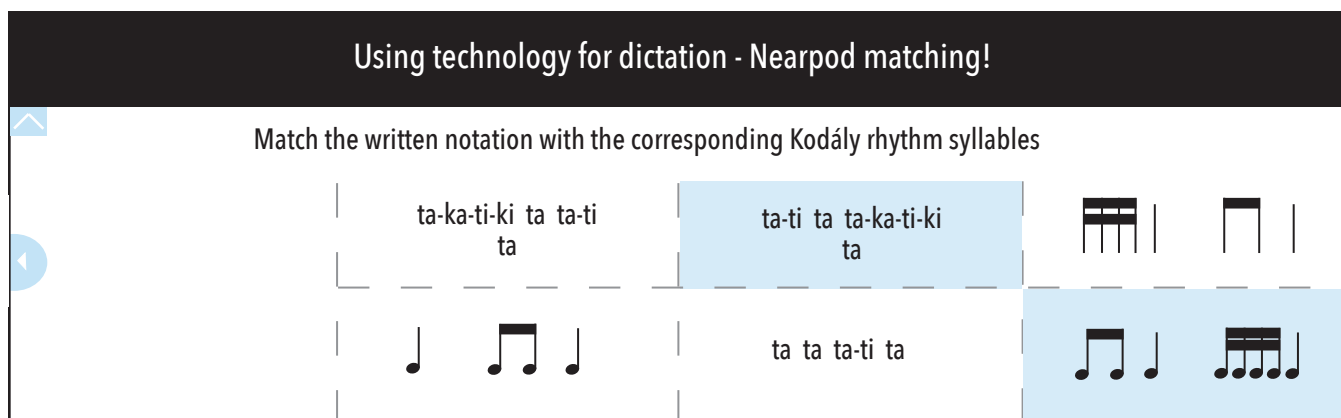


Image 6. Nearpod Matching for dictation

also allows the teacher to assess students and provide feedback in real time, as they can see an image of each students' screen in their teacher view when using Nearpod.

The guideline of providing options for expression and communication can be used to help students build fluency with graduated levels of support. Practical strategies include permitting students to write in the solfège or counts in their music if they find it helpful, providing options for alternate notation, allowing students the choice to work alone or with a partner, and encouraging retesting if a student does not initially demonstrate mastery of a skill or concept.

Scaffold Executive Functioning Skills

Finally, choir teachers can use the guideline of providing options for executive functions to support student development of a set of mental skills that include working memory, flexible thinking, and self-control. Executive function capabilities allow students “to set long-term goals, plan effective strategies for reaching those goals, monitor their progress, and modify strategies as needed.”¹⁵ Many students struggle to organize their time and materials. Posting a daily agenda that contains the order of activities and pieces to be rehearsed is beneficial for all students and assists with classroom management by reducing down time in class.

Providing a visual schedule with pictures can be especially useful for helping students on the autism spectrum to navigate smoother transitions between activities. Teachers can make or purchase pre-made cards with common activities to include in their daily agenda, such as a bell ringer activity or daily drill, sightreading, warm-ups, sectional work, and other rehearsal activities. When laminated, these cards can be reused daily using magnets on a white board to quickly adjust the agenda as needed for each class.

Another way to support executive functioning is to provide students with tools to support planning and strategy development and strategies to facilitate managing information and resources. Classroomscreen.com is a useful website that provides one convenient location for a variety of free tools, including a timer, work symbols, sound level monitor, random name generator, a polling widget, and a simple way for teach-

ers to quickly create QR codes for students to scan to complete in-class activities. Student learning objectives, bell ringer prompts, and a daily agenda could also be displayed using this website. Many of these tools can be used to help students develop skills to monitor their own progress and to budget their time during in-class activities.

Educators can also foster student independence by teaching students to assess their own progress by asking questions to guide self-monitoring and reflecting on their own learning. They can help students demonstrate progress by reviewing past goals, listening to recordings of the ensemble singing over time, or using checklists to track skills and competencies that have been mastered. Providing various models of self-assessment strategies, such as video or peer feedback, is also beneficial in developing executive function skills and the ability to assess personal progress and growth. Flip is a free video discussion and sharing app where teachers can create “safe, online groups for students to express their ideas asynchronously in short video, text, and audio messages.”¹⁶

Embracing the UDL Approach

In my current role as a music teacher educator, I make a conscious effort to infuse and model UDL principles in my own teaching. However, that was not always the case. Several years ago, I was challenged to reconsider my instructional approach when a student with low vision enrolled in my introduction to conducting course. In my experience, conducting instruction had relied heavily upon sight as students practiced gestures that were visually modeled for them by the teacher, reflected on their own conducting using mirrors or video recordings, and analyzed choral scores to prepare to teach each piece of music. A sense of panic led me to my institution's office of Accessibility and Disability Services seeking assistance in determining how I could best meet the needs of this student in my conducting class. Thanks to incredibly fortunate timing, I was also introduced to the UDL Framework at a university professional development session, and it immediately caught my interest! I had tried many different strategies to meet the needs of my students in the past. However,



this research-based framework provided both the structure and flexibility that I needed to proactively consider students' needs and to intentionally craft lessons that ensured *all* students had the opportunity to succeed.

At first, using the UDL framework seemed overwhelming. I started the process by making small changes in the way that information was presented, as that seemed the least intimidating. I provided more opportunities for individual choice and increased student autonomy by removing some of the formatting requirements of assignments to focus on assessing students' understanding of the content. With UDL principles in mind, I changed my instructional focus from using primarily visual aspects to intentionally include more of the other senses in the process of learning how to conduct music. Students danced with silk scarves to feel and see musical phrasing, played hand drums to hear different types of rebound gestures, held rattles to hear subdivision in their gestures, and conducted on a trampoline to feel balanced weight placement and proper alignment. Using different physical motions to teach these concepts helped all of my students to better understand the materials and increased their engagement during early-morning classes!

I also taught my students about UDL principles as I explored the framework with them, and they expressed appreciation for the UDL approach both in class and through their course evaluations. One student stated:

As a kinesthetic learner, the experiential approach was crucial in allowing me to integrate concepts much more quickly and accurately. Each of the manipulatives used in class were successful in demonstrating specific concepts within conducting and were helpful in bringing a physical awareness beyond the intellectual awareness of the specific concept. Furthermore, many of the experiential approaches have successfully transitioned into other areas of my musical growth and development. (MUSC 327: Introduction to Choral Conducting Course Evaluation)

Another student wrote:

This was one of the most enjoyable classes I have

had. It pushed me, I learned a lot, and I succeeded as well. I can get a traditional conducting education anywhere, but I don't know of many other places that would be able to offer such an in-depth and inclusive education for all. It was so neat to see all of my classmates, including myself, grow using these methods. Loved it! Absolutely loved it! (MUSC 327: Introduction to Choral Conducting Course Evaluation)


Conclusion: Three Core Beliefs

The principles of Universal Design for Learning provide teachers with a research-based framework to support students as they learn new information and skills, demonstrate their understanding of content, set goals and monitor their own progress, and create connections to motivate and engage students' interest in learning. Every student who enters the choir classroom brings with them a unique combination of strengths, challenges, preferences, and prior experiences related to learning. It is the responsibility of every teacher to create a welcoming environment that encourages all students to take risks and grow as musicians. It is crucial that choral educators take the time to understand and proactively consider students' needs to increase access and reduce barriers to learning when designing instruction. By intentionally embracing learner variability, teachers create opportunities for all students to be successful in their choral ensembles and classrooms.

Take a moment to consider three core beliefs of UDL below:

- Variability is the rule, not the exception.
- All students can work toward the same firm goals and academic standards *with flexible means*.
- All students can become expert learners if barriers are removed and they are deeply engaged.

Perhaps some, or all, of these core UDL beliefs resonate with you. Maybe a statement above chal-

lenges your mindset about what teaching and learning looks like in a choir classroom. Think about your own beliefs. How are they reflected in your classroom and daily practice? What changes would you like to make? With intentional planning and creativity, implementing UDL can energize teaching and learning by enabling all singers, regardless of their abilities or backgrounds, to actively participate, learn, and excel in choir. Embracing UDL and examining instruction through the lens of learner variability can help choral music educators move toward more equitable and inclusive practices, and to cultivate a learning environment that empowers all learners to reach their full potential. 

NOTES

- ¹ CAST, “About UDL,” UDL on Campus: Universal Design for Learning in Higher Education, accessed November 15, 2022, http://udloncampus.cast.org/page/udl_about
- ² CAST, “Universal Design for Learning Guidelines version 2.2,” UDL Guidelines, accessed November 14, 2022, <http://udlguidelines.cast.org>
- ³ CAST, “The UDL Guidelines,” accessed November 15, 2022.
- ⁴ CAST, “Universal Design for Learning Guidelines version 2.2.”
- ⁵ R. Khairudin, et. al., “Effects of Emotional Contents on Explicit Memory Process,” *Pertanika Journal of Social Sciences & Humanities* 19 (October 2011): 17–26, accessed August 23, 2023; Um, Eunjoon “Rachel,” et. al., “Emotional Design in Multimedia Learning.” *Journal of Educational Psychology* 104, no. 2 (2012): 485–98. <https://doi.org/10.1037/a0026609>
- ⁶ CAST, “Principle: Provide Multiple Means of Engagement,” UDL Guidelines Engagement, accessed December 1, 2022, <https://udlguidelines.cast.org/engagement>
- ⁷ CAST, *UDL and the Learning Brain* (Wakefield, MA: CAST, 2018), accessed October 24, 2023, <http://www.cast.org/products-services/resources/2018/udl-learning-brain-neuroscience>
- ⁸ British Dyslexia Association, “Dyslexia Friendly Style Guide,” Creating a Dyslexia Friendly Workplace
- ⁹ “Chrome Web Store, Transpose Extension,” accessed October 28, 2023 at <https://transpose.video/>
- ¹⁰ One example of a play-along video can be found here: https://www.youtube.com/watch?v=D_19GzQ8q7M
- ¹¹ CAST, *UDL and the Learning Brain* (Wakefield, MA: CAST, 2018), accessed April 17, 2023.
- ¹² David Rose and Katherine Rose, “Executive function processes: A curriculum-based intervention,” in *Executive Function in Education*, ed. Lynn Meltzer (New York: Guilford Press, 2007): 287-308.
- ¹³ CAST, “Provide Options for Expression and Communication,” UDL Guidelines Action and Expression, accessed April 17, 2023, <https://udlguidelines.cast.org/action-expression/expression-communication>
- ¹⁴ *Mrs. Mangusso’s Music Class (blog)*, accessed January 3, 2023, <http://www.ariosostudio.com/manipulatives.html>.
- ¹⁵ CAST, “Provide Options for Executive Functions,” UDL Guidelines Action and Expression, accessed April 17, 2023, <https://udlguidelines.cast.org/action-expression/executive-functions/executive-functions>
- ¹⁶ Flip. (n.d.). *Flip home page*. Accessed February 12, 2023. <https://info.flip.com/en-us.html>