

Co-Teaching Training Series

Universal Design for Learning:

An Effective Instructional Strategies Mini-Module to Support Co-Teaching for Student Success



Georgia Learning Resources System



Richard Woods, Georgia's School Superintendent
"Educating Georgia's Future"

Credits

The Co-Teaching Series was created through the collaborative efforts of the Georgia Learning Resources System and the Georgia Department of Education. Historical elements are included from the original modules created in collaboration with Georgia State University and their partners.

The Georgia Department of Education would also like to thank the other state agencies that provided open access to their resources. These states include but are not limited to Maryland, Texas, and Virginia.

Co-teaching is more than a model. It's a partnership to provide substantially different instruction and outcomes for students with two teachers in the room. It is recommended that co-teaching teams participate in this professional learning together. Our hope is that it will impact your district and schools co-teaching practices and improve student outcomes for all students not just students with disabilities.

These modules can be utilized as independent learning units or as Professional Learning modules. Best practice is that they be completed in a facilitated session with co-teaching teams working and learning together.

IDEA Federal Fund Disclaimer

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Universal Design for Learning Guidelines

I. Provide Multiple Means of Representation

1. Provide options for perception

- Options that customize the display of information
- Options that provide alternatives for auditory information
- Options that provide alternatives for visual information

2. Provide options for language and symbols

- Options that define vocabulary and symbols
- Options that clarify syntax and structure
- Options for decoding text or mathematical notation
- Options that promote cross-linguistic understanding
- Options that illustrate key concepts non-linguistically

3. Provide options for comprehension

- Options that provide or activate background knowledge
- Options that highlight critical features, big ideas, and relationships
- Options that guide information processing
- Options that support memory and transfer

II. Provide Multiple Means of Action and Expression

4. Provide options for physical action

- Options in the mode of physical response
- Options in the means of navigation
- Options for accessing tools and assistive technologies

5. Provide options for expressive skills and fluency

- Options in the media for communication
- Options in the tools for composition and problem solving
- Options in the scaffolds for practice and performance

6. Provide options for executive functions

- Options that guide effective goal-setting
- Options that support planning and strategy development
- Options that facilitate managing information and resources
- Options that enhance capacity for monitoring progress

III. Provide Multiple Means of Engagement

7. Provide options for recruiting interest

- Options that increase individual choice and autonomy
- Options that enhance relevance, value, and authenticity
- Options that reduce threats and distractions

8. Provide options for sustaining effort and persistence

- Options that heighten salience of goals and objectives
- Options that vary levels of challenge and support
- Options that foster collaboration and communication
- Options that increase mastery-oriented feedback

9. Provide options for self-regulation

- Options that guide personal goal-setting and expectations
- Options that scaffold coping skills and strategies
- Options that develop self-assessment and reflection

Figure A

Universal Design for Learning DIY Template

1. Cut out figure A
2. Cut out figure B
3. Fasten figure A on top of figure B with a mini round safety pin

Universal Design for Learning Guidelines

These UDL Guidelines and checkpoints can assist educators in designing flexible lessons and curricula that reduce barriers to learning and provide innovative and supportive learning to meet the needs of all learners. They can also help educators evaluate existing curricula goals, materials, methods and assessments.

Principle I: Provide Multiple Means of Representation - the "WHAT" of learning - Learners differ in the ways that they perceive and comprehend information that is presented to them. **There is no one means of representation that will be optimal for all learners; but providing multiple options for representation is essential.*

Principle II: Provide Multiple Means of Expression - the "HOW" of learning - Learners differ in the ways that they can navigate a learning environment and express what they know. **There is no one means of expression that will be optimal for all learners; but providing multiple options for action and expression is essential.*

Principle III: Provide Multiple Means of Engagement - the "WHY" of learning - Learners differ markedly in the ways in which they can be engaged or motivated to learn. Some learners are highly engaged by spontaneity and novelty while other are disengaged, even frightened, by those aspects, preferring strict routine. **Learners have different preferences for what is engaging and motivating so providing multiple options for engagement is essential.*

Diversity is the norm, not the exception, in schools today. When curricula are designed only to meet the needs of a few, those with different preferences, abilities, learning styles, or backgrounds, may fall behind. 21st century teaching and learning focuses efforts on ensuring that all individuals have opportunities to learn.

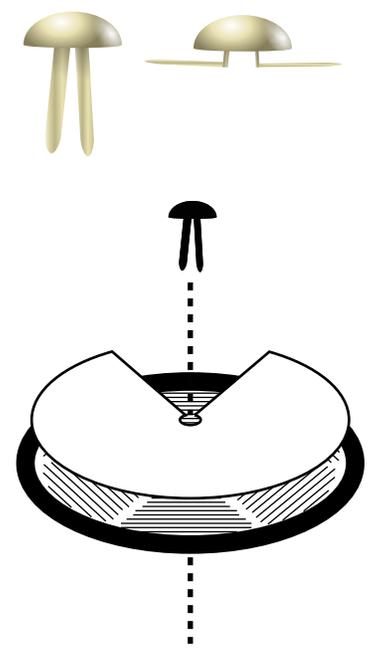
Universal Design for Learning (UDL) is a research-based framework that addresses learner diversity at the beginning of the design or planning effort. Using UDL to design academic goals and curriculum has the potential to dramatically change how we teach, how learners engage in learning, and how we measure what learners learn. Using UDL principles allows us to embed flexibility into all aspects of instruction from the beginning, rather than trying to retro-fit a rigid curriculum, set of instructional materials, or test for each student who happens to learn a different way. Educators should provide multiple ways to access resources and content so learners are given the opportunity to take charge of their engagement in learning.

The principles of Universal Design for Learning (UDL) can help us refine how we approach who we teach, what we teach and how we teach. Universal Design for Learning (UDL) is all about "how" we define goals, teaching methods, instructional materials and assessments. Innovative technologies and online resources can assist teachers when they modify instruction to better meet student needs. The UDL framework encourages creating flexible designs from the start that have customizable options, which allow all learners to progress from where they are and not where we would have imagined them to be. The options for accomplishing this are varied and robust enough to provide effective instruction to all learners

Through the use of the framework of Universal Design for Learning, educators can plan and deliver flexible and meaningful lessons that emphasize problem solving, project based learning, and student choice. Exposing novice learners to innovative content acquisition and application supports their development as expert learners. Expert learners are individuals who know how to learn, who want to learn, and who, in their own highly individual ways, are well prepared for a lifetime of learning.

The pedagogical, neuroscientific, and practical underpinnings of UDL are also discussed at greater length in books such as Teaching Every Student in the Digital Age by Rose & Meyer (ASCD, 2002), The Universally Designed Classroom (Rose, Meyer, & Hitchcock, Eds.; Harvard Education Press, 2005), and A Practical Reader in Universal Design for Learning (Rose & Meyer, Eds.; Harvard Education Press, 2006).





Center for Applied Special Technology (CAST)
Universal Design for Learning Guidelines

Center for Applied Special Technology (CAST).
Universal Design for Learning Guidelines

A Co-Teaching Conversation: Using Universal Design for Learning (UDL) to Plan Lessons Together for the Inclusive Classroom

by

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Guiding Questions

- How can general and special education teachers use UDL when they co-teach?
- How can UDL and co-teaching approaches be considered during the lesson planning process?
- How can co-teachers use UDL to ensure that students with and without disabilities can meaningfully engage and learn core knowledge and skills in standards-based lessons?

The purpose of this chapter is to illustrate how co-teaching teams of general and special education teachers can use UDL for their inclusive classrooms. Using UDL, co-teachers can proactively design inclusive instructional environments and lessons that support students with and without disabilities. We describe how co-teachers can apply UDL to goals, assessments, methods, and materials and provide an example of a “co-teaching conversation” that illustrates how a general education and special education teacher can incorporate UDL for a standards-based lesson.

Introduction

Ms. Reese and Ms. Kim are co-teachers in an inclusive 8th grade classroom. In the year they have worked together, they have tried using several of the co-teaching models they learned about in a series of in-service trainings offered by their school. Currently, when they plan lessons, Ms. Reese, the general education teacher, develops the lesson plan and emails it to Ms. Kim, the special education teacher. Ms. Kim adds modifications to address the needs of the students with disabilities in the class. They usually chat briefly before class and then launch into their roles- teaching and supporting students. For the upcoming school year, Ms. Reese and Ms. Kim want to use strategies they learned in a professional development workshop about collaboratively planning and integrating strategies that can support all learners, with and without disabilities. They decide to use a portion of their prep time to work together to develop lessons using the Universal Design for Learning (UDL) framework to have collaborative planning conversations.

Co-teaching Approaches

Many schools use inclusion models to ensure that students with disabilities can be placed in least restrictive and inclusive environments appropriate for their needs. Co-teaching plays a key part in an inclusion model, providing a structure for general and special educators to pool their skills and expertise in order to create lessons that support all learners. Co-teaching leverages the expertise that both teachers bring to the classroom. Thus, an essential element of co-teaching is parity between teachers. Both the general and special education teachers are equals who work together to ensure that all students have access to instruction. Sharing their expertise, co-teaching teams can bring together their knowledge about content and instructional strategies to plan lessons that address the needs of all learners.

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Murawski & Lochner (2010) describe how co-teachers can work together during the instructional planning and implementation process. They suggest *co-planning*, *co-instructing*, and *co-assessing*, in order to ensure that both teachers are able to take responsibility for planning and implementing instruction. As part of this collaboration, the special education teacher can provide expertise on providing differentiated strategies, accommodations, modifications for students receiving special education services. However, both teachers should share the responsibility for planning lessons that include scaffolds and supports for all students.

Friend and Cook (2012) describe six approaches to co-teaching: 1) teaming, 2) parallel teaching, 3) station teaching, 4) one teaching, one assisting, 5) alternative teaching, and 6) one teaching, one observing (Insert Sidebar on Co-teaching Approaches). Co-teachers can use these approaches, as appropriate, while implementing lessons. Within one lesson, teachers may use more than one approach, for example, starting a lesson by teaming and then moving to station teaching to work with small groups. The choices of which of these approaches to use can be made during the co-planning process; for a particular lessons, teachers can select the approaches that support the implementation of instructional activities they have planned during each lesson.

Co-teaching Approaches

Friend & Cook (2012) describe six co-teaching approaches:

1. Teaming – Both teachers share delivery of instruction to all students.
2. Parallel Teaching – Teachers divide the class and teach the same information.
3. Station Teaching – Teachers divide the content and students circulate to stations to work with each teacher on specific areas.
4. One Teach, One Assist – One teacher takes primary responsibility for teaching while another circulates to assist students as needed.
5. Alternative Teaching – One teacher works with a large group, while another focuses on a small group.
6. One Teach, One Observe – One teacher observes students and collects data during instruction and both teachers discuss and analyze the data.

For more information, see Coteaching Connection website: www.marilynfriend.com

Precursors for Successful Co-Teaching Collaborations

For co-teachers to have the knowledge and skills to co-plan, co-instruct and co-assess, there are some foundational precursors and contextual factors that must be in place. It is essential for administrators to help set the stage for schoolwide adoption of co-teaching. To create foundations for successful collaboration between general and special education teachers, all teachers benefit from professional development on what co-teaching is, what the co-teaching approaches are, and how they are expected to work collaboratively to plan and teach together. Professional development about co-teaching should provide teachers with information on establishing co-teaching relationships and practicing the collaboration and communication skills required to co-plan, co-instruct, and co-assess.

Administrators can also support the logistical needs of co-teaching teams by ensuring that co-teaching pairs have the time to work together. Teachers require shared planning and preparation periods to successfully co-plan lesson. It is impossible for special education teachers to establish successful co-teaching relationships if their time is divided among too many general education teachers. Ideally, a special education teacher will be assigned to no more than two co-teaching

collaborations and all teaching pairs will have the time to plan together. This can help ensure that the special education teacher does not get relegated to the role of an assistant who only assists in carrying out a lesson plan already designed by the general education teacher.

Co-teaching with a UDL Lens

A typical inclusion classroom is made up of general education students, students receiving special education services, students with Section 504 accommodations, and culturally and linguistically diverse students. Often it is seen as the domain of the special education teacher to focus on instruction for the students receiving special education services. Typically, the special education teacher is responsible for ensuring that students with disabilities receive necessary modifications and accommodations.

Although some students are identified for services, the reality is that all learners have varying abilities, backgrounds, interests, and challenges. Learner variability is not just limited to students who receive special educational services, and everyone can benefit when lessons are designed to support a range of learners. Universal Design for Learning (UDL) provides a structure for designing lessons that include flexible options that can benefit all learners. By considering UDL guidelines while co-planning, teachers can integrate flexible supports and scaffolds from the outset, reducing the need to make individual modifications for some. Although UDL-based lessons can reduce the need for individual modifications, it is important to note that some students may still need specific modifications and accommodations to address their IEP objectives. For example, for a student who has a visual impairment or a specific behavioral strategy on their IEP, the special education teacher will need to ensure that the student is provided with the specific tools or strategies required.

UDL has three main principles: 1. Providing Multiple Means of Representation 2. Multiple Means of Action and Expression and 3. Multiple Means of Engagement (Meyer, Rose, & Gordon, 2014). There are nine UDL guidelines and 31 checkpoints that provide definition on how to apply the three principles to instruction (see Figure 1). The interactive graphic on the National Center on Universal Design for Learning (2014) website (<http://www.udlcenter.org/aboutudl/udlguidelines>) provides detailed information on the UDL guidelines and checkpoints, including examples of how they can be applied to lessons.

UDL provides an organizational framework for integrating flexible and differentiated practices into a lesson. Teachers can refer to the UDL guidelines while planning and select the ones they would like to use in any given lesson (Hall, Meyer, & Rose, 2012). These guidelines provide a shared language for general and special educators to consider as they discuss their goals for lesson and plan the assessments, methods, and materials to teach the skills and content within the lesson. The UDL guidelines essentially provide a “menu of options” that help teachers design instruction that is flexible, provides choices and options, and engages student (Meyer, Rose, & Gordon, 2014). Teachers can select the checkpoints that they find most relevant and useful for a lesson, including whichever ones they choose in order to build in flexible options into their lessons.

Teachers can refer to the UDL guidelines during planning conversations. Co-teaching with this UDL approach includes consideration of (a) barriers in the lesson, (b) clear goals for the lesson that are

inclusive for all students, (c) how assessments, methods and materials can be designed to provide supports and scaffolds for all and (d) how to meet IEP goals for specific students. In this article, we provide examples of ways in which co-teachers can use a UDL approach while they co-plan.

The Learning Environment through a UDL Lens

When co-planning with a UDL lens, the first consideration is the design of the learning environment. Prior to planning lessons, co-teachers can benefit from discussing the learning environment of their shared classroom. This is ideally done at the start of the year or the co-teaching relationship, allowing teachers to discuss ideas and set shared expectations for themselves and their learners.

The learning environment includes the actual physical layout of the classroom as well as classroom culture and expectations. Co-teachers can discuss how to set up a classroom in a way that allows them to use various co-teaching approaches during lessons. In traditional settings, students are taught by one teacher who is at the front of the classroom. Students often sit side-by-side in rows of desks. In the co-taught classroom, teachers can leverage on the fact that there are two people who can manage and guide instruction and arrange classroom spaces that align with the co-teaching approaches they will use.

Below, we provide an example of how co-teachers can design their learning environment through a UDL lens, using the example of Ms. Reese and Ms. Kim's co-teaching collaboration. Early in the year, Ms. Reese and Ms. Kim decide to create various sections in their classroom. They move a set of desks together in tables to encourage collaboration, place a small number of desks in rows for direct instruction, and move a medium size conference table to the side of the room with chairs around the table for small group teacher work sessions. They also place bean bag chairs and carpet squares in a corner of the room to encourage individuals to find a quiet space. They organize the three classroom laptops against one wall to provide students with independent work stations. By designing the classroom in this way, the front and back of the room become indistinguishable. This change in physical structure lays the foundations for using a variety of co-teaching methods. The flexible layout addresses the UDL by providing options for physical action and optimizing individual choice.

In addition to making decisions about the physical structure of the classroom, Ms. Reese and Ms. Kim discuss their ideas about classroom culture and expectations. They discuss their individual orientations to classroom expectations and come to an agreement on what they will present and discuss with the students. They agree that it important to start the year by having a conversation with their students. During this whole class discussion, they share their expectations and allow students to give their input in order to create a classroom culture that the teachers and students have developed and agreed on together.

They set up structures to encourage students interact with both teachers. For example, on one wall, they place colored bins in which students turn in their completed work. Beside the colored bins, they place a notebook with each of their schedule. Students have the opportunity to sign up for additional help with either teacher, and they have the choice to select a date and time. On another wall, they place a basket of sticky notes, pens and a laminated "Ask Me" poster. The directions posted beside the basket state: "If you have a question for Ms. Reese or Ms. Kim, write it down and place it on the

poster." Each day, the teachers take turns answering student questions. Ms. Reese and Ms. Kim also discuss how they give feedback to students. They come up with shared feedback phrases using similar language. They place these phrases on their classroom bulletin board, so students see that teachers have a system for providing consistent feedback. These strategies for setting up a classroom culture are consistent with UDL checkpoints of providing multiple options for communication, facilitating management of information and resources, providing options for sustaining persistence and effort, and providing mastery-oriented feedback.

Co-Planning Lessons with UDL

After making some key decisions about how to structure the learning environment, co-teachers have the ongoing and daily tasks of designing and delivering lessons together. Using UDL as part of their co-planning sessions, teachers can design lessons that build in flexibility and scaffolds for students. The UDL design cycle includes a four-step process that addresses four key lesson components: goals, assessments, methods, and materials. For each lesson component, teachers can refer to the UDL guidelines to consider where and how they can provide flexible options (Ralabate, 2016). As teachers consider each lesson component, they can also make decisions about how to co-instruct and which of the six co-teaching approaches to use to support the teaching and learning activities taking place in the classroom.

Table 1 illustrates the four-step process, highlighting the questions that co-teachers can discuss as they develop inclusive and accessible lessons. By considering UDL guidelines during this discussion, teachers can build in flexible options, scaffolds, and supports for all learners, including students with and without disabilities.

An important part of planning with UDL is to identify existing barriers for students. The formats of instructional delivery and assessment are common barriers. For example, expecting students to write in order to demonstrate what they know or to read text to learn content can pose barriers for some students. Barriers also exist when students do not have the existing background information required to learn new concepts or when students are disengaged for various reasons. Teachers can refer to the UDL guidelines and checkpoints to consider what and how they currently teach and to reflect on where the barriers may lie for their students. Instead of modifying after-the-fact, teachers can consider barriers from the outset and design instructional activities that address the barriers by providing flexibility, choice, and options for engagement as defined by the UDL guidelines.

Table 1
The UDL Design Cycle

Steps	Questions for Discussion	Considering UDL
1. State clear goals	<ul style="list-style-type: none"> • What standards does this lesson address? • What are the lesson objectives? • What are the barriers in our goals/objectives? 	State clear goals for the lesson plan in relation to the standards and overall objectives.
2. Use flexible assessments	<ul style="list-style-type: none"> • How can we use formative assessments that allow students to demonstrate knowledge in various ways? • How can we incorporate scaffolds that help students learn the content or skills for the summative assessments? • How can we design assessments that reduce barriers to demonstrating knowledge/skills? 	<p>Integrate formative assessments that give students varied ways to express what they know. Ensure that the format of expression is not a barrier.</p> <p>When summative assessments are required to be in one format (e.g., a written assessment), provide opportunities for students to practice in that format; when possible, include scaffolds as they practice, strategies they can use when they take the summative assessment.</p>
3. Design Flexible Methods	<ul style="list-style-type: none"> • How and when can we provide flexible options during instruction that all learners can benefit from? • What options should we include to ensure that students with IEPs have the necessary modifications/accommodations? Should we provide any of these options to all students? • Which co-teaching approaches should we use as we co-instruct this lesson? Which approach best supports the teaching and learning activities for this lesson? 	<p>Use the UDL guidelines as a menu and pick a few relevant checkpoints you can address in this lesson.</p> <p>The UDL checkpoints delineate various scaffolds that can be included during instruction and highlight strategies that help students learn key content.</p> <p>Decide how you will co-instruct based on the activities you will include in this lesson. From the six co-teaching approaches (Friend, 2012), pick one or two to use, depending on the teaching and learning activities for that lesson.</p>
4. Select Flexible Materials	<ul style="list-style-type: none"> • Are there barriers for any students in the materials we are using? • What materials and media can we incorporate to give students options? 	Consider what materials, resources and tools can be integrated into the lesson to support and engage students. This can include low and high tech options (e.g. manipulatives, technology tools.)

In the next section, we present an example of a co-planning conversation that two teachers can have. Teachers can have these conversations in various ways and formats that suit their planning style; the conversation below highlights just one way to approach lesson planning with a UDL lens for one co-teaching team.

A Co-planning Conversation: “The Fault in Our Stars” Lesson

Earlier, we learned how Ms. Reese and Ms. Kim collaborated to set up their learning environment. On a daily basis, they work together to co-plan, co-instruct, and co-assess. Their shared goal is to ensure that all students in their classrooms are being held to high standards and receiving the supports they need. Ms. Reese and Ms. Kim also strive to engage their students by making lessons relevant and giving students choices as they learn.

Ms. Reese and Ms. Kim are designing a series of lessons that address English language arts standards related to analyzing a story. Their students read the book *The Fault in Our Stars* earlier in the month and watched the movie based on this book in class. Ms. Reese and Ms. Kim decide to plan a series of lessons for students to compare and contrast the book and the movie. In this example of a co-planning conversation, we illustrate how Ms. Reese and Ms. Kim plan the unit using the four-step UDL design cycle and integrate various co-teaching approaches.

Step One: State Clear Goals

Ms. Reese: The standard we are addressing for this unit is “Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.” This standard has several parts. Should we pick a few key skills to address within this standard and develop some clear goal statements?

Ms. Kim: Let’s create some “I can” goal statements that address key skills. One thing that jumps out with this standard is the word “analyze.” Let’s decide what level of analysis we expect from students and then guide students to compare and contrast the movie and book accordingly.

Ms. Reese: We can include two types of analysis in these lessons: (a) reflection on how the film stays true to or diverges from the book and (b) making inferences about why the director made choices to stay true to or diverge from the book. Our first goal statement could be: *I can compare and contrast the movie and text versions of “The Fault in Our Stars.”* Our second goal statement could be *“I can describe my opinions on why the director made choices to adapt the book version of “The Fault in Our Stars.”*

Ms. Kim: Okay, let’s think about how we can assess these two goals. Then, we can come up with our instructional activities in relation to the formative and summative assessments we will use as we teach.

Step Two: Develop Flexible Assessments

Ms. Reese: We also have two “I Can” goal statements, so we should design an assessment for each one.

Ms. Kim: For the first goal, we can assess students’ abilities to compare and contrast by giving them some options to express what they know. The usual assessment method is to let students write a brief constructed response describing similarities and differences. We can add the option of using a visual map to compare and contrast. How about giving students these options: (a) write a constructed response, (b) create a visual map on paper or (c) create a visual map using the digital graphic

organizer on the computer. I know some students love using the online graphic organizer software, and they can access that on the computers in the back of the classroom.

Ms. Reese: I like the idea of providing these three options to all the students. I know some will choose to just write a constructed response but several will enjoy showing us what they know on a visual map. And for the two students who have graphic organizers on their IEPs, this ensures that they receive the needed accommodation while it's a choice for all students.

Ms. Kim: Later, we can ask students to use their visual maps to generate sentences for a constructed response. So, the visual map option not only serves as a formative assessment for this lesson, but can become a scaffold for helping students generate a constructed text for an assignment later.

Ms. Reese: For our second assessment, we need to evaluate whether students are able to state their opinions about why the director made certain choices. Should we incorporate some oral presentation skills for this assessment? We can ask students to select one area where the director made a change and present their opinions of why.

Ms. Kim: I like that idea, but I think that might pose barriers for some students. If the assessment is in an oral presentation format, the students who are less comfortable with public speaking may be at a disadvantage. That can also be intimidating to our two English language learners who feel shy when they are put on the spot to speak. Since the goal of this lesson is not about public speaking, let's make the oral presentation one option. They could do a short oral presentation, create a poster on which they draw a scene and write down why it was different, or work in pairs to do a mock interview where the "director" explains to the "interviewer" why he/she adapted the movie.

Ms. Reese: How are we going to grade these three different formats? I want to be sure that we are assessing the students fairly no matter which format they choose.

Ms. Kim: Let's create a checklist that defines the core information that needs to be there in all three formats. Our core criteria could be something like your presentation includes (a) information about one scene from the movie that is not similar to the book, (b) an explanation of how the director modified this scene, and (c) your opinion of why the director changed this scene. We can encourage students to state which version they liked better to let them make a personal connection and have a context for this sort of analysis.

Ms. Reese: Great, I think we have included some good options to assess whether the students are mastering the goals. Now, let's figure out the activities for the lessons within this unit. I think it will take about five class periods to develop this concept so let's consider how to structure instruction during that time.

Step Three: Design Flexible Methods

Ms. Reese: I'd like to make this whole unit more relevant for them by getting them interested in the idea of comparing movies and book. What's a real life connection we can make in the first class session when we introduce this lesson?

Ms. Kim: Why don't you ask me a question about a movie I have watched and I can share an example of a time that I read a book and then was disappointed after watching the movie version. I can explain the choices the director made, why I was disappointed by the changes, and why I preferred the book.

Ms. Reese: Great idea. I think hearing you describe how you felt about a movie adapted from a book will be a great hook to draw them into this concept of comparing movies and books.

Ms. Kim: After you give an example, let's have them throw out their opinions on what they liked about the book and the movie as a warm up. We'll ask them to quietly write down some ideas on their dry erase boards and then ask volunteers to share ideas. This way, everyone gets the chance to think first and then those who want to share can speak up.

Ms. Reese: For this warm up activity, we can use one teach, one assist approach. I will explain what we want them to do and you can circulate around the room to provide assistance and feedback as they write on their dry-erase boards.

Ms. Kim: After this warm up, we can start working toward our first goal of comparing and contrasting. Let's use a team teaching approach to model this skill. I will read a short passage from the book and show the corresponding scene from the movie. We will ask students to describe how the scene was similar and different in the two formats. You can lead the discussion, and I will create a visual map on the whiteboard, using different colors to write up the similarities and differences. This will provide a model for what a visual map of this information looks like.

Ms. Reese: Good. This approach will help those students who need a refresher on what compare/contrast is and also will provide clear guidance on our expectations for all students. This will also serve as formative assessment for us, to see if we need to reteach any areas related to comparing and contrasting. If students seem ready to compare and contrast on their own after we do one example together, we can read another passage together and show the corresponding scene from the movie. Then we can let them try the activity on their own using the three assessment options we discussed before (constructed response, graphic organizer or digital graphic organizers). If we find that they can use more guidance after we do the first example together, I think we should be prepared to do a second example together as a class.

Ms. Kim: Sounds like a plan.

Ms. Reese: As they do the independent practice, we can both circulate around the room to check in on all students. I'd like to be sure we check in on the students who struggle with these concepts and give them feedback as they work so that they can be successful with the activity too.

Ms. Kim: Okay, we can split up the room. I will check on the students who are making digital graphic organizers and on the students in the tables nearest the computers if you will work with the other side of the room.

Let's plan to do these activities over two periods. To end this part of the lesson, we will ask students to turn in their work by putting it in the colored boxes in the back or emailing their work to us if they used the digital graphic organizer. We should remind students to sign up for a meeting with either of us if they have more questions or to post a question on the Ask Me board.

Ms. Reese: After we are done with the first goal, the lessons for the next three class periods can be focused on the second goal: providing their opinions about why the director made certain decisions in the movie. I think this is a more challenging skill. To develop these skills, should we use a parallel teaching approach where we split the class in half and work with two groups separately? That may make it easier to manage a discussion and ensure that all students understand what we expect in regards to "providing an opinion."

Ms. Kim: Good idea. In the small group format, we can each discuss our own opinions about one scene from the movie and ask students to give their opinions. Once they practice this skill, they can each select another scene and work on formulating an opinion. We can each explain that they will present this opinion in one of three ways we discussed earlier (a short oral presentation, a poster, or a mock interview).

Ms. Reese: Sounds good. For the fourth lesson, we can use a station teaching approach so they can develop their independent work. Let's have a "Create", "Practice" and "Self-Reflect" station. At the Create station, they can work on their presentations. At the Practice station, they can practice their presentation and get feedback from the teacher. At the Self-Reflect station, we can have copies of the checklist available so that students can evaluate whether their presentations meet all criteria. You and I can be at the first two stations and the students can self-evaluate independently at the checklist station.

Step Four: Select Materials and Media

Ms. Reese: What materials and media do we need to gather to ensure this lesson runs smoothly?

Ms. Kim: We need to select the book passages and related video excerpts from the movie that we'll use for the compare/contrast activities. We should pick at least three so that we have a couple to use for guided practice, if needed, and one for independent activity. We should also print out some paper graphic organizers and put a short cut to the digital ones on the computers. We need to have a sign up sheet and timer for the computer use if a lot of students choose the digital option.

Ms. Reese: Let's use the captioned version of the movie when we show excerpts. That will ensure that our student with a hearing impairment has full access and it will actually benefit the whole class to give them an option to read the text that goes along with the movie.

Ms. Kim: Okay, I will pull out excerpts from the captioned version. Could you prepare the computers with the shortcuts to the digital graphic organizer and print out paper copies as well?

Ms. Reese: Yes, I will. It is so helpful to have two of us to think through this lesson and to organize the materials.

Conclusion

The co-teaching conversation between Ms. Reese and Ms. Kim highlights some of the major areas of planning that can be approached together by a co-teaching team. Table 2 illustrates which UDL guidelines are addressed by their choices and denotes the co-teaching approaches they while instructing. Like all collaborations, co-teaching conversations will be shaped by the personalities and working styles of the teachers involved. The UDL guidelines can provide a shared structure and approach for planning together to ensure that both teachers are considering ways to design and deliver flexible and engaging lessons for all the students in their inclusive classrooms.

Table 2

Co-Teaching Conversation: Connections to UDL Guidelines

Instructional Decisions	Connections to UDL Guidelines
State clear goals: Teachers created clear "I Can" goal statements based on the standard	Identifying clear goals is a key premise of UDL based design. Having a clear goals allows teachers to focus on creating activities and assessments that address the goal.
Develop flexible assessments: Students had choices to write a constructed response, create a paper graphic organizer or a digital graphic organizer. Students had options to do an oral presentation, create a poster, or do a mock interview in pairs	UDL Guideline 5. Provide options for expression and communication 5.1 Use multiple media for communication 5.2 Use multiple tools for construction and composition UDL Guideline 7. Provide options for recruiting interest 7.1 Optimize individual choice and autonomy
Use Flexible Methods: <ul style="list-style-type: none"> Teachers modeled compare/contrast activity with whole class (provided modeling and guided practice through team teaching) Students worked in two smaller groups to discuss their opinions on the scenes that were changed (provided guided practice in parallel teaching) 	UDL Guideline 3. Provide options for comprehension 3.1 Activate or supply background knowledge 3.2 Highlight patterns, critical features, big ideas, and relationships UDL Guideline 6. Provide options for executive functions 6.1 Guide appropriate goal-setting 6.2 Support planning and strategy development 6.3 Facilitate managing information and resources 6.4 Enhance capacity for monitoring progress UDL Guideline 7. Provide options for recruiting interest 7.1 Optimize individual choice and autonomy 7.2 Optimize relevance, value, and authenticity UDL Guideline 8. Provide options for sustaining effort and persistence 8.1 Heighten salience of goals and objectives 8.2 Vary demands and resources to optimize challenge 8.3 Foster collaboration and community 8.4 Increase mastery-oriented feedback
Use Flexible Materials: <ul style="list-style-type: none"> Captioned version of movie Read aloud/text to speech options for excerpts of the book Options to create graphic organizers and posters 	UDL Guideline 1. Provide options for perception 1.2 Offer alternatives for auditory information 1.3 Offer alternatives for visual information UDL Guideline 4. Provide options for physical action 4.1 Vary the methods for response and navigation 4.2 Optimize access to tools and assistive technologies UDL Guideline 5. Provide options for expression and communication 5.1 Use multiple media for communication 5.2 Use multiple tools for construction and composition

References

Friend M. & Cook, L. (2012). *Interactions: Collaboration skills for school professionals*. 7th edition. New York: Pearson.

Hall, T., Meyer, A., & Rose, D. (2012) *Universal design for learning in the classroom: Practical applications*. New York: Guilford Press.

Meyer, A., Rose, D.H., & Gordon, D. (2014). *Universal Design for Learning: Theory and practice*. Wakefield, MA: Center for Applied Special Technology. Retrieved from <http://udltheorypractice.cast.org/login>

Murawski, W. W., & Lochner, W. W. (2010). Observing co-teaching: What to ask for, look for, and listen for. *Intervention in School and Clinic*, 46(3), 174-183. doi: 10.1177/1053451210378165

National Center on Universal Design for Learning. (2014). *UDL guidelines—Version 2.0*. Retrieved from <http://www.udlcenter.org/aboutudl/udlguidelines>

Ralabate, P. K. (2016). *Your UDL lesson planner: The step-by-step guide for teaching all learners*. Maryland: Brookes Publishing.

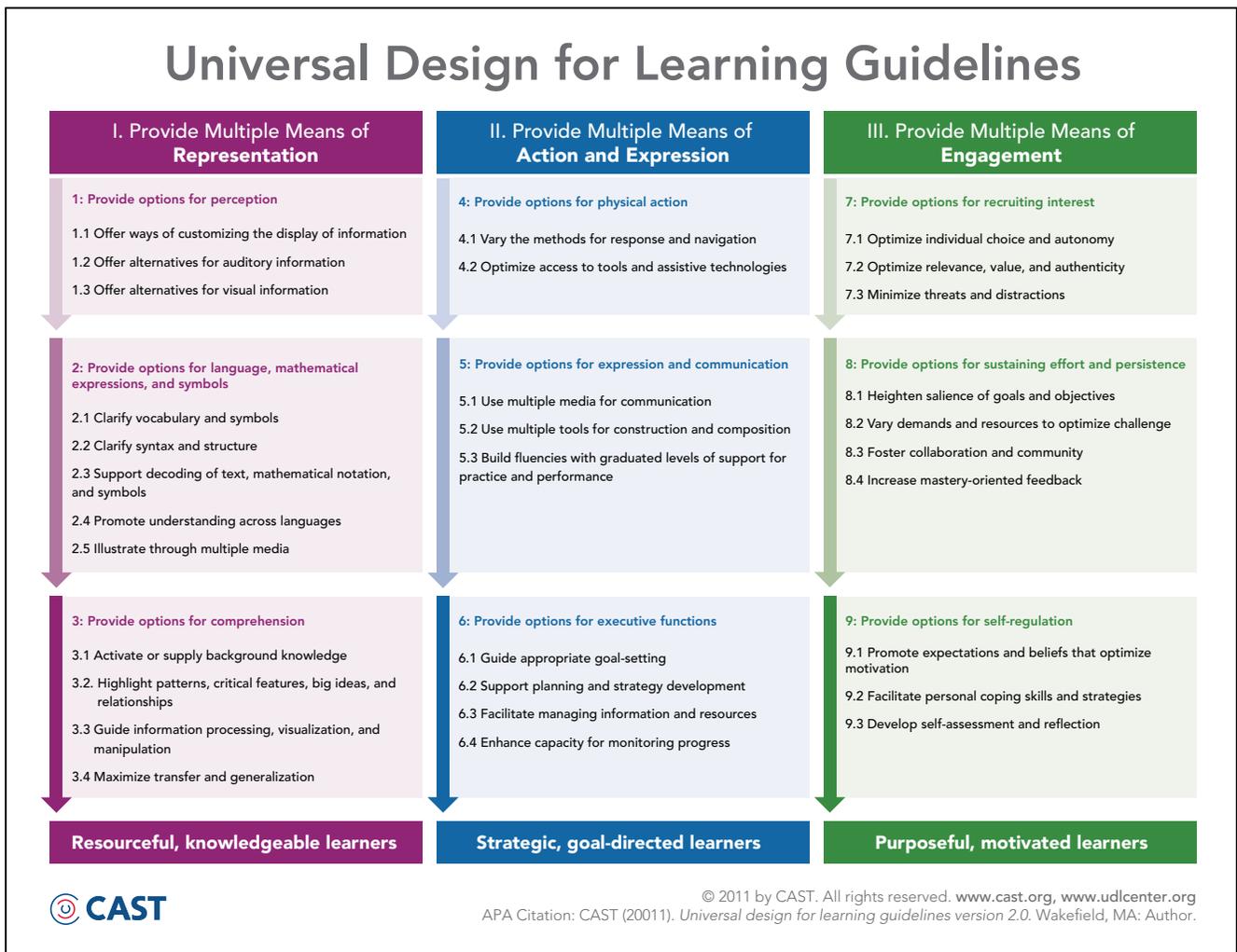


Figure 1: UDL Guidelines At a Glance

http://www.udlcenter.org/sites/udlcenter.org/files/updateguidelines2_0.pdf

The Brain Network	UDL Guidelines	Example of Co-Teaching Model
<p>The Recognition Network</p> <p>Strategies that support the <i>what</i> of learning, so learners may recognize the information being taught.</p>	<p>Provide multiple examples</p> <p>Outline and highlight key information including options for recognition through multimedia and other formats</p>	<p>Station teaching or parallel teaching allows options for each teacher to present information in diverse ways – while keeping the same objective and high standards.</p>
<p>The Strategic Network</p> <p>Strategies that support the learning process, so learners understand <i>how</i> to learn.</p>	<p>Provide options for strategic thinking and organizing of information</p> <p>Provide ongoing, immediate, and relevant feedback</p> <p>Provide flexible opportunities to practice skills</p>	<p>Station teaching or parallel teaching allows for both teachers to provide options for strategic thinking and ongoing feedback.</p> <p>The occasional, one-teach, one-assist, allows teachers to provide students with immediate, relevant feedback as one teacher focuses on instruction and the other assesses and evaluates students’ performance.</p> <p>Teaming can provide the option for one teacher to present the content while the other teacher focuses on the process of note taking.</p> <p>The occasional alternative teaching can focus on one teacher pulling a small group to review a concept while teaching a specific strategy to guide learners’ understanding.</p>
<p>The Affective Network</p> <p>Strategies that support engagement, so learners remain motivated and engaged throughout the learning process.</p>	<p>Provide options for levels of thinking and levels of challenge</p> <p>Provide options for choice</p> <p>Offer various options for the context of learning</p> <p>Provide supports to guide learners to self-regulate and monitor their performance</p>	<p>Station teaching may enable teachers to provide choice to students and provide time to guide self-monitoring and executive functioning skills.</p> <p>Teaming may provide the option for teachers to balance out the teaming of the content while ensuring the salience of high standards by supporting the process of thinking needed to master learning skills.</p>

UDL & the Learning Brain

In the past decade, there have been unprecedented ways to examine the living brain and to better understand what happens during learning. Universal Design for Learning (UDL) was inspired by such advances in cognitive neuroscience research and offers a framework that integrates what we know about the learning brain to inform the design of environments that support all learners.

First, let's talk about the geography of the brain. Generally, incoming sensory information, such as what we see and hear, is received in the back of the brain, including the occipital and temporal lobes of the brain (Recognition networks), processed and relayed for meaning in the center of the brain (Affective networks), and is organized in the frontal lobes for response or action (Strategic networks). While there is no linear progression for this process, this model for thinking about three broad learning networks can be helpful when we design learning experiences.

The [UDL Guidelines](#) and associated checkpoints align to this neurological organization and help educators address the predictable variability in learning that we know will be present in any environment. UDL recognizes variability in:

Engagement (the **why** of learning, which aligns with affective networks): interest, effort and persistence, and self regulation

Representation (the **what** of learning, which aligns with recognition networks): perception, language and symbols, and comprehension

Action & Expression (the **how** of learning, which aligns with strategic networks): physical action, expression and communication, and executive function

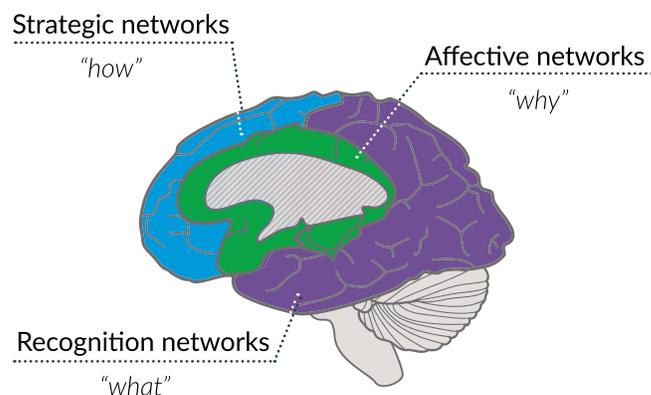
Knowing key facts about the brain can help inform learning design for the variability of learners.

There is no average brain.

Variability is the dominant feature of the nervous system. Like fingerprints, no two brains are alike. Each brain is a complex, interconnected web that is sculpted and influenced by genetics and interactions with the environment.

Variability can be overwhelming for educators who are planning for dozens of learners each day. Luckily, learner variability is predictable, and can be organized across three brain networks targeted by the UDL framework: affective, recognition, and strategic.

The concept of neuro-variability is important for educators, because it reminds us that learners do not have an isolated learning “style”, but instead rely on many parts of the brain working together to function within a given context. There is no single way a brain will perceive, engage with, or execute a task. Variability is not just an important consideration for thinking about differences between students, but also within students in different contexts.



When we design learning environments proactively for variability, we anticipate and value the incredible strengths and diversity of our learners.

The brain has incredible plasticity.

Each brain is made up of billions of interconnected neurons that wire together to form unique pathways. We are born with a foundation of brain structures. Over time, these structures change based on our experiences and interactions with our environment.

When we learn, some connections become stronger and faster. As Hebb's Law (1949) states, "neurons that fire together wire together." Connections that are not used are weakened and pruned away. In other words, "use it or lose it."

Understanding the plasticity of the brain is important for educators, because it helps us recognize that learning is a constant growth process constructed over time. Proactive design of flexible pathways toward learning goals supports learners by building on the strengths and connections that are already established. Frequent, formative feedback and opportunities for active learning create and strengthen the connections within our learning brains. Our brains are not fixed, but grow and change with use.

What you know really matters.

Previous experiences drive our interest and engagement, perception and attention, and goals and actions. The nervous system constantly makes predictions and anticipates how we will fare in a particular environment or towards a particular goal. For example, if a learner is asked to do a math problem, read aloud, or respond to a prompt, the brain will recall prior experiences in that context. That recall drives perception, action, and engagement. Based on previous experiences, the brain decides which goals are valuable — or not valuable — to pursue.

Acknowledging the variability in learner background knowledge and experience is important for educators, because each learner brings a unique blend of experiences and expectations to each learning event. When we design for variability using the UDL framework, clarifying the goals and integrating flexibility in engagement, representation, and action and expression, we acknowledge that learners do not learn in one linear pathway. This approach fosters learning environments that value the uniqueness of our learners and the variability each brings. This empowers learners to maximize their strengths, focus on areas of challenge, and drive their own learning processes. Ultimately, UDL helps foster expert learners who are purposeful and motivated, strategic and goal-directed, and resourceful and knowledgeable.

Goals drive the nervous system.

Essential to any learning experience is a clear goal. A clear goal enables the nervous system to direct energy purposefully to build relevance, perceive information, and act strategically. Ultimately, educators and learners need to be aware of the intended learning goals so that they can begin to build connections, connect to background knowledge, and practice for expertise.

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. Think about a GPS or navigation app. Without a destination, a GPS is simply a map with infinite possibilities and no directions. Once we input a destination, we can then decide whether we want a route without tolls, one that meanders through the countryside, or one that is the fastest or shortest distance. With a clear, explicit learning goal, learners are empowered to choose their best pathway to achieve that goal.

Our brains always have a goal, whether it's to avoid a task, sneak a cookie from the jar, or complete a task with the least amount of effort. The more explicit we are with our learners about the goals and incorporate their own goals, the more meaningful the learning experience will be, the more purposeful the options available will be, and the less likely our brains will focus on competing goals.

Understanding these key facts about the learning brain not only helps educators in designing challenging, high quality learning opportunities, but they're also incredibly important for our learners to understand, as well. The more we understand about our own learning and how it happens, the further we advance toward the ultimate goal: becoming expert learners.

Suggested Citation: CAST (2018). *UDL and the learning brain*. Wakefield, MA: Author.

Retrieved from <http://www.cast.org/our-work/publications/2018/udl-learning-brain-neuroscience.html>

Resources

[Human Connectome Project](#)

[Brain Facts](#)

[Neuroscience for Kids](#)

[UDL Theory and Practice, Chapter 3: Variability](#)

[Brain Matters, from Harvard Graduate School of Education's Dr. Todd Rose](#)

[Annenberg Learner: Neuroscience and the Classroom](#)

[Why learning styles don't exist, by Daniel Willingham](#)

[Daniel Willingham's Learning Styles FAQ](#)

[We Don't Need Learning Styles by Elizabeth Stein, MiddleWeb](#)

[Linking Research to Classrooms Blog from Kennedy Krieger Institute](#)

General Educator: _____

Special Educator: _____

Week of: _____

Subject: _____

* Ask: How is what we are doing together substantively different and better for students than what one teacher would do alone?

**completed by General Education Teacher or together*

Targeted Students:

Day/Date	Lesson Big Idea/Goals/Objectives	Evidence-Based Methods/Activities	Assessment	
			Standard	Modifications
Monday	All/Some			
Tuesday	All/Some			
Wednesday	All/Some			
Thursday	All/Some			
Friday	All/Some			

Co-Teaching Models:
 (TO) one teach, one observe
 (TA) one teach, one assist
 (S) station teaching
 (P) parallel teaching
 (TT) team teaching
 (A) Alternative teaching

Students with Disabilities:

Consideration for UDL:

Does your lesson meet the needs of students who cannot?

Walk Talk See Hear Behave
 Learn the way you traditionally teach?

** completed by Special Education Teacher or together*

Co-Teaching Model	Academic Adjustments (as needed for gifted & SWDs) – could include accommodations & SDI	Behavioral Considerations	Materials/Resources /Support Needed	Data & Notes

Adapted from: Dieker, Lisa A. *The Co-Planner: Two Professionals + One Plan for Co-Teaching*. Whitefish Bay, WI, 2015

