

Universal Design for Learning: Increasing Inclusive Teaching for Graduate Students

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OVERVIEW

This workshop seeks to equip Graduate Teaching Assistants (GTAs) with the Universal Design for Learning (UDL) framework, a set of standardized and widely accepted practices that enable Master's, Ph.D., and post-doctoral students to create a more inclusive teaching environment. This workshop is an updated and improved version of a previously conducted event. Participants will engage with the UDL framework, apply its principles in practical examples, and develop a learning activity tailored to their unique teaching practice. By integrating the UDL framework, GTAs will be equipped to create more inclusive learning environments for their students. This workshop will provide an opportunity to strengthen their teaching abilities.

Topics: Graduate Students, Professional Development, Teaching, Universal Design for Learning (UDL)

Time: 75 min

MATERIALS

- [UDL Presentation](#)
- Video: [The myth of average](#) (10 min; TEDx Talks, 2013)
- [UDL Guideline Checklist](#)-Use this for the UDL Guidelines Table (Center for Applied Special Technology [CAST], 2018)
- [Activity Development Worksheet](#)

CONTEXT-AT-A-GLANCE

Setting

This learning unit is an updated and extended version of a previously implemented face-to-face workshop for graduate students in the United States.

Modality

In-person face-to-face workshop.

Class Structure

This 75-minute workshop is student-centered and tailored for graduate students.

Organizational Norms

This workshop is part of a teaching resource series sponsored by the Office of Professional Development and is free to all graduate students. In the workshop, participants develop an activity that they can transfer into their own classes.

Learner Characteristics

The initial workshop was conducted for six graduate student teaching assistants who taught undergraduate classes. The proposed workshop can accommodate 15-20 participants. Participants should have some prior teaching experience and be willing to share their classroom experiences during the workshop.

Instructor Characteristics

The instructor is a Ph.D. candidate in teacher education.

Development Rationale

The lack of system-wide teaching support among Graduate Teaching Assistants (GTAs) has prompted the development of this workshop, which seeks to raise awareness and promote inclusive teaching practices.

Design Framework

Universal Design for Learning (UDL)

SETUP

To conduct this activity, a classroom or conference room equipped with a projector and laptop is sufficient. The instructor should arrive at the venue at least 10-15 minutes prior to the scheduled workshop time to test the internet connection and ensure that the projector is functioning properly. It is recommended that the instructor print out the Activity Development Worksheets in advance to facilitate the session.

STANDARDS (HIGHER EDUCATION)

The Center for the Integration of Research, Teaching, and Learning (n.d.) provides standards and core values to improve STEM education. This study utilizes these standards. Based on this framework, faculty members are encouraged to do the following to increase their students' experiences:

- Know the diverse backgrounds of their students and implications for learning.
- Identify curricular, teaching, and assessment practices that promote learning for all.
- Draw upon the diversity of their students to enhance and enrich the learning of all.
- Recognize existing inequities, and promote an equitable, inclusive, and respectful climate for learning.

CONTEXT AND SETTING

The Office of Professional Development organized a workshop as part of a teaching series to provide six graduate teaching assistants (GTAs) with a space to learn about inclusive teaching practices using the Universal Design for Learning (UDL) framework. The workshop aimed to equip the GTAs with the knowledge and skills necessary to apply the UDL framework in their teaching practices and promote more inclusive and effective teaching practices.

The author facilitated the 50-minute workshop in person, which focused on the philosophy and principles of the UDL framework and included a group activity developed collaboratively by the participants. The format of the workshop combined lecture and discussion-based sessions and took place at a working space in the graduate school of

the university. The author used a projector and presentation materials to visually illustrate the content while providing worksheets with extensive details about the UDL framework. The workshop was attended by six participants, including four teaching assistants, one teaching associate, and one graduate student without any prior teaching experience, from diverse fields in natural science and social science. The author used a combination of lectures and small group discussions to introduce the basics of UDL and the tools that could help participants improve their teaching practices.

Although there was low attendance due to a busy time in the semester, and the limited teaching experience of the author and some of the participants presented challenges, the workshop was successful in raising awareness about the importance of UDL and providing a foundation for further exploration and implementation of inclusive teaching practices. The participants were able to gain a better understanding of the UDL framework and its potential for promoting inclusive and effective teaching practices. The activity development part of the workshop was included, but the allotted time was insufficient for participants to create detailed plans for their future classes.

UDL is a philosophical approach that aims to create an inclusive learning environment for individuals with disabilities and diverse learning needs (Center for Applied Special Technology [CAST], n.d.c). However, UDL should not be viewed as a one-size-fits-all solution for all educational contexts. Extensive research has demonstrated that each learning environment has unique constraints and dynamics. Thus, the educator's role is crucial, and UDL can be used as an approach to ensure an inclusive teaching environment. UDL consists of a set of principles that focus on students' needs. The principles are categorized into three domains: engagement, representation, and action and expression (CAST, 2018). Educators are encouraged to concentrate on these domains and provide multiple means for students to engage with each of the three domains, addressing diverse student needs.

UDL has additional benefits beyond promoting inclusive teaching. For instance, it can facilitate social justice learning by addressing the needs of historically underrepresented, disempowered, and oppressed students within educational institutions (Pliner & Johnson, 2004, p. 108).

GTAs play a crucial role in higher education institutions in North America (Douglas et al., 2016). According to the Trends in The Academic Labor Force, 1975-2015 (American Association of University Professors, 2017) report, GTAs constitute 14% of the academic labor force, almost double the number of tenure-track faculty (8%). However, GTAs often have limited teaching opportunities.

Feldon et al. (2011) compared 95 early-career GTAs' written research proposals and found that those with teaching and research experience demonstrated significantly better research skills than those with only research experience. This finding highlights the importance of teaching as an asset in STEM fields that typically prioritize research skills. Participating in a UDL-based workshop can enhance GTAs' teaching repertoire and help them improve their teaching practices.

Empirical studies have shown that systemic teaching training for GTAs has positive effects on their teaching practices. Well-designed and guided teaching training programs to improve GTAs' self-efficacy and the quality of their teaching (Boman, 2013), and help them develop a student-centered approach (Wan et al., 2020). In a detailed analysis of GTAs who served as the sole instructor of a course, Bettinger et al. (2016) found that students who took these classes from GTAs were twice as likely to follow that major compared to their peers who took the same course from a full-time faculty member.

GTAs play a critical role in higher education, and teaching opportunities can enhance their teaching practices, confidence, and students' interests. To support GTAs across US institutions and worldwide, the workshop presented in this article invites participants to explore the benefits of UDL, reexamine their classroom practices, and explore potential strategies to make their teaching inclusive and effective.

This learning activity centers on the experiences of GTAs and creates a dynamic learning environment through various materials that provide different representations (e.g., Tedx Talks, activity development, lecture), different engagement strategies (e.g., small group activities, think-pair-share), and expression options (e.g., verbal, or written sharing of a learning activity) based on the UDL principles (CAST, 2018).

How UDL INFORMS THIS WORKSHOP

The workshop presents the UDL framework and is informed by its three principles. The first principle, engagement, is addressed by incorporating free writing as a tool to activate prior knowledge and engage participants in the learning process. By reflecting on their prior learning experiences, participants can identify their roles and preferences as learners, which helps them understand the characteristics of their learning moments and provides a blueprint for the activity development activity at the end.

The second principle, representation, emphasizes the importance of providing multiple means of representation to make learning accessible to all. To address this principle, various UDL-informed strategies are incorporated in the workshop, such as using a TEDx Talk to demonstrate the importance of learning designs, providing closed-captioning for English language speakers, offering electronic versions of materials for participants with visual disabilities, and sharing personal experiences of the instructor. These strategies help ensure that all participants have equitable access to the learning materials and activities.

The third principle, action and expression, reminds us that there are multiple ways for students to demonstrate their understanding. In higher education, assessment strategies often heavily emphasize writing, such as exams, presentations, and quizzes. However, the Activity Development Worksheet in this workshop allows participants to express their understanding in various formats, including podcasts, slides, and papers.

Overall, this workshop integrates the principles of UDL to promote inclusive and effective teaching practices, including engagement, representation, and action and expression. By providing multiple means of representation and expression, the workshop fosters an inclusive environment that values the perspectives and experiences of all participants.

LEARNING REPRESENTATION

During this lesson, italic text identifies questions, prompts, or directions for the participants. Regular text indicates instructor notes and information.

At the beginning, it is recommended to request each participant to introduce themselves to the group, which serves as a good icebreaker and helps everyone get to know each other. Participants can briefly share their name, academic program, or field of study, and one aspect they enjoy about their research. Afterward, each participant can be asked to briefly describe their motivation for teaching or why they decided to become a GTA. This activity not only helps establish a rapport between the participants, but it can also provide valuable insight into their backgrounds and interests, which can help tailor the workshop activities to their needs. It is important to note that this activity can be modified as needed to suit the size and dynamics of the group.

INTRODUCTION (FREE WRITING)

Thank you for participating in this workshop. To start, let's reflect on our own learning experiences. Take a few minutes to think about a moment when you learned something important. This can be from a formal or informal setting. You will have five minutes to answer the following questions:

1. *What did you learn?*
2. *What helped you learn?*
3. *Why was it a valuable learning experience?*

Please note that we are not looking for how you teach, but rather your own experience as a learner. These prompts are provided on the UDL Presentation slide 3.

Play some instrumental music as an option to promote a relaxed atmosphere during this activity. Afterward, ask for a few volunteers to share their experiences and use these examples to identify patterns and themes that can be applied to teaching practices later in the workshop. Highlight these common patterns on a whiteboard or text editor on the screen for participants to see.

CONTENT PRESENTATION

The next step is to introduce the importance of designing educational experiences for diverse learners. Start by explaining the central idea of UDL as a framework for creating inclusive learning environments that meet the diverse needs of all learners (Figure 1; UDL Presentation slides 4-5). Then,

show a TEDx Talks (2013) video titled "[The Myth of Average](#)" and ask the participants to reflect on its argument (UDL Presentation slides 6-8).

Discussion Prompt: *Think about your own learning and teaching experiences and respond to the argument in the TEDx Talks. Do you agree or disagree with the author? How does this relate to the idea of inclusive teaching?*

After the TEDx Talks (2013) video, ask participants to share their thoughts in pairs or small groups, and then invite a few volunteers to share their insights with the larger group. As they share, take note of any patterns or themes that emerge and revisit these ideas later in the workshop.

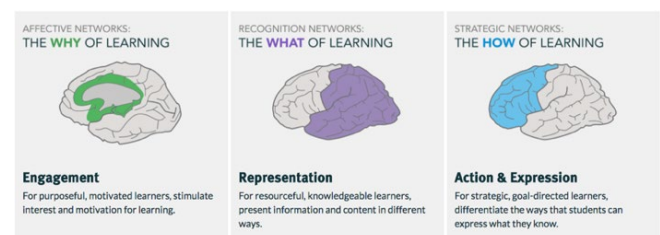


Figure 1 UDL Guidelines.

Note. From "Universal Design for Learning: Teacher Planning for Technology Integration" by E. Michela, in (2020) A. Ottenbreit-Leftwich & R. Kimmons (Eds.), *The K-12 Educational Technology Handbook*, 2020, EdTech Books (https://edtechbooks.org/k12handbook/universal_design_for_learning).

PRINCIPLE 1: ENGAGEMENT

The engagement principle asks instructors to provide options for recruiting interest, sustaining effort and persistence, and self-regulation (CAST, n.d.a; UDL Presentation slides 9-10).

Engagement starts with recruiting interest, and educators should try providing different access points for their students (CAST, n.d.a). Access points can be a piece of interesting recent news, a virtual museum tour, or a relevant conversation for a TV show/movie. The idea here is to get their attention.

Sustaining effort and persistence, and self-regulation are part of the engagement that we need to consider. Asking learners to develop learning goals in your class, find achievable goals, and assess their own or

another classmate's assignments will help students to develop self-regulation. It is also critical to provide feedback about their work that helps them to see the common patterns and suggestions to make them better. The instructors' role here is to increase their awareness about their learning process, which academics define as self-regulation.

Note for the presenter: As the presenter, emphasize the importance of engagement in making the subject more accessible to students. Explain that as instructors, we are in a unique position to understand our students and provide multiple entry points to our subject matter. Consider suggesting a pre-course survey to collect data about students at the beginning of the semester. For example, in the author's media literacy course for first-year students, a pre-course survey asks about students' favorite movies and TV shows, along with reasons for liking them, as well as their preferred learning styles and any anticipated challenges. This information provides valuable insights that can help tailor the teaching approach to better meet the needs of students. View the UDL Presentation (slide 10) for some suggested tools for engagement.

PRINCIPLE 2: REPRESENTATION

The second principle of UDL, representation, focuses on presenting content in different ways to accommodate diverse learners (see UDL Presentation slides 11-14). This principle involves providing options for perception, language, mathematical expression and symbols, and comprehension (CAST, 2018). Learners may have more experience with these concepts or find it easier to integrate them into their teaching practices, so more time in this principle may support more inclusion of UDL in their classes. To implement the perception principle, use various strategies such as incorporating images, making text legible, adding closed captioning to videos, providing alternative texts for images, and making documents accessible for screen readers.

The second principle of UDL, representation, focuses on presenting content in multiple ways to enhance accessibility for diverse learners (CAST, 2018). The Language, mathematical expressions, and symbols sub-principle suggest providing explicit guidance for learners regarding the terms, concepts, and ideas being taught. This can be achieved through various

strategies, such as providing a glossary of terms, using visual aids like word clouds to illustrate patterns in speech, or using interactive tools like 3D geometry models to enhance comprehension of abstract concepts. The comprehension sub-principle encourages students to make cross-curricular connections, recognize the real-world relevance of concepts, and apply their new knowledge to new situations.

Note to the presenter: Emphasize that students have diverse needs and that the representation principle of UDL calls on instructors to be flexible and provide multiple means of representation to accommodate those needs and promote learning. While many college courses rely heavily on reading, this approach does not work for all students. Consider providing alternative means of representation that are relevant to course topics, such as a segment from a movie or TV show, a newspaper article, a tweet, or other visual or auditory materials that can help convey key ideas. Be mindful of students who may need language or other types of support and try to provide explicit guidance and definitions to help them understand the concepts being taught. Finally, be aware that some students may experience anxiety around certain topics and consider ways to make the learning experience more engaging and supportive for these learners.

PRINCIPLE 3: ACTION AND EXPRESSION

The third principle of UDL, Action, and Expression, emphasizes the importance of providing multiple ways for students to demonstrate their understanding (CAST, 2018). Educators should consider options for physical action, expression and communication, and executive functions (see UDL Presentation slides 15-18).

This principle is often overlooked, but it can be essential for ensuring that all students can participate and engage with the material. For example, some learners may require assistive technologies such as text-to-speech tools or screen readers, so it's important to make sure that any tech tools used in the course are accessible. This could include video games, websites, or tutorials.

Another key sub-principle is Expression and Communication, which encourages instructors to offer alternative ways for students to share their

understanding (CAST, 2018). Traditional college assignments such as tests or papers can be limiting for some learners, while other students may feel more comfortable expressing themselves in different ways. For instance, instead of a written paper, allow students to create an audio journal, podcast, or video that incorporates images or quotes. This can help students to feel more empowered and engaged in their learning.

Executive functions are the final sub-principle of action and expression. According to CAST (n.d.b), “the UDL framework typically involves efforts to expand executive capacity in two ways: 1) by scaffolding lower-level skills so that they require less executive processing, and 2) by scaffolding higher-level executive skills and strategies so that they are more effective and developed” (para. 1). To address this principle, instructors can use mind-map tools to show the connections between terms, create working models, help students break long-term goals into reachable short-term objectives, provide checklists and templates for big projects, and offer graphic organizers to organize information. Additionally, instructors can encourage reflection and ask questions to support students' learning, framing the learning process as more important than the final product.

On slide 19 of the UDL Presentation is a list of more resources to support participants in more accessibility tools and resources they can use in their classrooms.

PRACTICE (ACTIVITY DEVELOPMENT)

After the presentation of content, the participants will engage in the Activity Development Worksheet. The directions are on slide of the UDL Presentation.

Let's apply the UDL principles with the Activity Development Worksheet. You already have a basic understanding of UDL principles. Think of a class you are teaching and provide a brief context for it. Then, using the UDL principles we have covered today, revise an activity or lesson plan that you have recently facilitated. Consider the potential barriers that your students may face and how UDL principles can address them.

You have 20 minutes to brainstorm and develop a plan. In the first 10 minutes, brainstorm 1-2 decisions

you made with the help of UDL. Then, in the remaining 10 minutes, create a presentation to showcase your ideas in different formats. You can choose a written format, visual aids such as a mind map or infographic, or an audio format such as a 5-minute recording. Select the medium that best suits your learning style and communication preferences.

Finally, we will have a whole group discussion where you can share your ideas and learn from others. As the presenter, I will capture the examples and demonstrate how UDL principles can make learning inclusive. Be prepared to answer questions and engage in the conversation.

ASSESSMENT

Allocate at least 5 min for assessment at the end of the workshop (see slide 21 of the UDL Presentation). The aim is to check how things went for the students in the class and get some suggestions to improve it. The prompt for this is:

- *Share one thing that helped you to revise your teaching.*
- *Provide one suggestion to make this learning experience better or more efficient.*

Thank everyone for their time and willingness to share. If there is any feedback on the shared ideas, feel free to address them.

CRITICAL REFLECTION

Upon reflection on the previous implementation of the UDL workshop, it is evident that while the workshop was informative for the participants, there is room for improvement.

Firstly, a limitation was the small group size, which may have hindered the diversity of perspectives and experiences in the workshop. To address this, future iterations could aim to recruit a larger, more diverse group of participants from various academic disciplines and levels of teaching experience.

Secondly, the insufficient time allocated for activity development and discussion could have impeded participants from sharing their experiences and perspectives on UDL. To combat this, future

iterations could allocate more time for the Activity Development Worksheet, group work, and discussion, and provide structured activities to encourage participants to share their own ideas and experiences. It is worth noting that the Activity Development Worksheet is an extended version of the one conducted in person, and the introduction of multiple ways to express understanding is a new feature added after the first implementation.

Thirdly, an introductory survey for participants to gauge their understanding of inclusive learning and to share 1-2 examples from their teaching could be provided. This will allow the instructor to have more context about the participants and their specific challenges, which could be addressed during the workshop.

Lastly, feedback from participants could be incorporated into future iterations to enhance the content and structure of the workshop. Presenters could use a short feedback survey to assess how participants perceive the workshop with questions such as what aspects are most helpful, and what suggestions participants have for improving future iterations.

Overall, the first version of the workshop showed promise but also revealed some challenges that need to be addressed in future iterations. The improved version would assist GTAs in revisiting and revising their practices from an inclusion perspective. However, it is important to recognize that this is not a one-size-fits-all solution to make teaching accessible for all. There needs to be more opportunities for GTAs to explore inclusive teaching, learn how to pay more attention to the needs and preferences of their students, and learn how to address them effectively.

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