



WASHINGTON STATE
UNIVERSITY



INTERLIBRARY LOAN

Warning: this work may be protected by the copyright laws of the United States, Title 17, United States Code.

The WSU Libraries' goal is to provide excellent customer service. Let us know how we are doing by responding to this short survey:

https://libraries.wsu.edu/access_services_survey

Instructional design with UDL

Addressing learner variability in college courses

Kavita Rao

Case study

Elza teaches courses in a Masters of Social Work program at a large public university in the United States. Her department has developed several online and hybrid programs in addition to their existing on campus programs intended to appeal to diverse students who are seeking graduate degrees. The typical demographic of Elza's courses, both online and on campus, include culturally and linguistically diverse students, first generation learners, and adult learners who enroll in school part time while working. Elza is aware of the diversity and circumstances of her students and tries to be a responsive and supportive instructor.

In her end-of-course evaluations, students often comment that they feel overwhelmed by the reading assignments and amount of writing required. In addition, some students comment on the fact that course expectations are unclear to them. Over the years, Elza has reduced the number of articles she assigns. She feels reluctant to eliminate more because she wants to maintain high expectations and standards. She uses several short writing assignments as assessments, expecting students to be able to synthesize information and articulate their understanding and mastery of content. Elza notes that about one-third of the students enrolled in her courses have challenges with the writing assignments, in areas ranging from mechanics and clarity of writing to depth of expression.

Every semester, a couple of students drop out due to the inability to juggle the demands of the course with other obligations. Considering the common challenges and barriers she sees

semester-after-semester, Elza wonders how she can redesign her courses to facilitate her students' success. She considers using an instructional design process to systematically redesign her courses to more proactively support her diverse learners.

Introduction

Instructional design (ID), a systematic process of creating instructional experiences, lies at the heart of developing effective lessons and courses. Broadly, various systems of instructional design include these five stages: Analysis, Design, Development, Implementation, and Evaluation (Morison, Ross, Kemp, & Kalman, 2010). The ID process is a systematic way to design and implement courses aligning learner needs with pedagogical decision-making.

Although ID is essential to course development, university-level instructors often do not have formal training on how to systematically use these processes when they develop courses. Instructors generally use teaching methods and formats that they have encountered as students or have seen colleagues using. These days, instructors may be tasked with teaching courses in various formats such as online, blended, and face-to-face. When tasked with teaching courses in a new or different format, it can seem expedient to transfer activities and materials from one format to another (for example, from one's face-to-face course to their online course). By using an ID process, instructors can make more thoughtful decisions about pedagogical practices, providing supportive and engaging learning environments in the formats they teach.

This chapter provides an overview of how instructors can benefit from undertaking a systematic ID process as they develop courses. The ID process lets instructors consider how they can most effectively use various pedagogical practices to meet their objectives for a course. The systematic process also allows instructors to begin with a needs assessment that includes consideration of the learners they will be teaching and to proactively design instruction to address student needs and preferences. This process can be applied to online, blended, and face-to-face courses.

Learner variability and Universal Design for Learning

Learner variability is the norm in today's classrooms. Refuting the notion that there is an "average learner," the concept of learner variability emphasizes individuals can become expert learners in varied ways (Meyer, Rose, & Gordon, 2014). There is no one path to mastery; all students can benefit

from having flexible options and choices as part of the learning process. Meyer and colleagues describe the implications of learner variability for educators:

We now understand from scientific research that brains and even genes are highly responsive to their environments. Individual differences in our brains are not innate or fixed but developed and malleable, and context has huge impact. This is the best news yet for educators who have the opportunity to provide environments that facilitate positive growth, or learning, for all students.

(p. 81)

Instructors can design instructional experiences that address learner variability, proactively building in flexible choices, supports, and scaffolds that facilitate the learning experience for all. Learner variability is systematic and predictable, making it possible for instructors to design learning experiences that will benefit many students instead of designing for each individual student (Meyer et al., 2014). To design for variability, instructors can begin by preempting common barriers to learning, identifying students' attributes and preferences, and by investigating specific areas and needs for supports that students have in their courses.

UDL is defined in the Higher Education Opportunity Act of 2008 (HEOA) of the U.S Department of Education as a scientifically validated framework for supporting all learners through flexible curriculum. The HEOA emphasizes the need to use UDL to provide supports for students with disabilities at a post-secondary level. In addition to proactively providing support for students with disabilities, UDL can be used to enhance access to curriculum and instruction for all learners. Researchers describe various ways apply UDL guidelines to post-secondary course design to enhance student support and increase accessibility (Dell, Dell, & Blackwell, 2015; Gradel & Edson, 2009; Rao, Edelen-Smith, & Wailehua, 2015; Rao & Tanners, 2011; Scott & Temple, 2017). The term "access" commonly connotes the provision of support to students with disabilities to ensure that they receive appropriate accommodations and modifications. The use of UDL extends the concept of access to all students who can benefit from the design features that take into consideration that individuals learn in varied ways. This broader definition includes "cognitive access," a consideration of flexible options and scaffolds that can help students master knowledge and skills in a course.

In the literature, UDL researchers address various levels of access within courses. Dell et al. (2015) present the University of Arkansas' Ten Steps of Design of Online Courses. These ten steps include considerations of text readability, color choices, presentation design, and use of captions and transcriptions, which are consistent with UDL guidelines for *providing options for perception* and *options for comprehension* (associated with Multiple Means

of Representation). Researchers describe UDL-based strategies that can be incorporated during the learning process, such as supports that can be provided to help students conduct a research project (Gradel & Edson, 2009). Articles on universally designed courses also illustrate how researchers can use various digital tools, scaffolds, and interactive strategies to add flexibility and enhance clarity in a course (Rao & Tanners, 2011) that are consistent guidelines for providing *options for expression and communication* (associated with Multiple Means of Action and Expression) and *providing options for self-regulation* (associated with Multiple Means of Engagement). Researchers also emphasize the importance of clear and consistent navigation in a course (Rao et al., 2015; Scott & Temple, 2017), which aligns with the idea of *providing options for comprehension* by highlighting key areas and *provide options for supporting executive function* (associated with Multiple Means of Action and Expression).

Identifying barriers, preferences, and support needs

During the ID process, the first step is to consider the intended learners. With this as a starting point, instructors can begin to make pedagogical design decisions. When considering instructional design with a UDL lens, this first step includes not only considering who the learners might be but also identifying potential barriers for learners. Although instructors may not know exactly who will enroll in their courses, they have some idea of the characteristics of students who take a particular course or enroll in a program. Instructors can often discern some common challenges for students once they have taught a course or worked with particular groups of students. Although each student will have individual strengths, preferences, and needs, there will be commonalities that can be addressed through a systematic design process. Because learner variability is systematic and predictable (Meyer et al., 2014), instructors can consider the common barriers for students and begin to address those during course design.

It is important to note here, that in addition to predictable variability, there are students who require specific accommodations. Using UDL does not eliminate the need to provide specific modifications when needed. For example, for a student with a sensory impairment (e.g., visual impairment or deaf/hard of hearing), the UDL options may reduce the need for modifications if the instructor has already provided text-based captions to videos and auditory options for various resources. However, some students may need additional specific modifications or accommodations to ensure access to all aspects of the course.

The following sections describe ways in which instructors can address variability and support students who enroll in post-secondary programs with diverse educational backgrounds and life experiences, such as the students who enrolled in Elza's classes in the opening vignette. This includes culturally and linguistically diverse students, first generation college students,

students with disabilities, and adult learners. These students bring with them various experiences and strengths but can also benefit from supports to help them juggle multiple obligations, access academic content, and understand academic expectations. For example, adult learners may return to school to gain new or advanced training in a field while concurrently working and managing other obligations. First generation learners are the first in their families to go to college and may not have the family support or background knowledge on how to navigate academic expectations. While UDL-based course design can provide supports for all learners, this chapter addresses specific ways in which instructors can reduce barriers and integrate supports students with diverse backgrounds and abilities (Johnson, Taasobshirazi, Clark, Howell, & Breen, 2016; Schuetze, 2014). Common barriers for these students can include:

- 1 Excessive reliance on text (reading and written assignments)
- 2 Ambiguity about expectations

(Eady & Woodcock, 2010; McLoughlin & Oliver, 2000; Rao, Eady, & Edelen-Smith, 2011; Rao et al., 2015)

These barriers can arise as a function of the pedagogical practices instructors regularly use in courses. With an awareness of the challenges that some pedagogical practices can create for students, instructors can design courses that provide flexibility and build in options that support students to persist and succeed with coursework.

When faced with these barriers, some students report feeling less confident about their ability to complete a course or a program. Students might internalize these feelings of underconfidence and start to feel a sense of failure in their attempts to undertake post-secondary coursework, assuming they are personally not qualified or capable enough to be in these university level courses. This can lead to a lack of persistence on the student's part and eventual attrition from the course. Table 7.1 provides additional information on the types of issues that students have reported for each category of barrier.

In addition to barriers, it is important to consider students' potential preferences. Instructors might be aware of preferences that the students who typically enroll in their courses have and can use that information to design future courses. For example, some students prefer collaborative work while others prefer working individually. Some may prefer having structure within an open-ended task. It can be useful to survey students on their preferences to find out what sorts of options students choose and benefit from having. This sort of information can be collected through short inventories (e.g., a three-item survey using Google forms) that give instructors insights on options that students use. Although instructional design decisions are made before a course begins, instructors can consider the patterns they see in student preferences and build in options for a current course or for future courses based on students' feedback.

Table 7.1 Common pedagogical barriers

<i>Barriers</i>	<i>Specific issues</i>
Excessive reliance on text	<ul style="list-style-type: none"> • The volume of reading can be overwhelming. • Students may not be familiar with the types of texts being assigned (e.g., scholarly research articles). • Due to the heavy volume of reading, students may find it difficult to comprehend and/or to identify key points. • Assessments that rely heavily on writing (essays, reports) can be challenging.
Ambiguity about expectations	<ul style="list-style-type: none"> • It is confusing to navigate through the course (especially for online courses). • It is difficult to discern what the course expectations are from the syllabus or directions provided. • The professor's expectations for assignments are unclear. • Feedback provided on assignments does not give students information on how to improve work.

Reflection

- Identify learner variability factors in a typical course you teach.
- What are some aspects of curriculum and instruction that can create barriers for your students?
- What are preferences and needs of the students you teach?
- What types of student diversity do you have in your classroom (e.g., factors may include cultural and linguistic backgrounds, socio-economic backgrounds, educational experiences)?

The next step of the planning process is to consider the instructional components of a course, in relation to barriers and preferences. This is the point at which the UDL guidelines can provide guidance and ideas for incorporating elements that support students.

Intentional design: instructional design with UDL

Undertaking an intentional design process to consider one's pedagogical practices is essential to developing a universally designed course. By proactively designing a course to address variability, UDL-aligned strategies can be used in purposeful and systematic ways. By being thoughtful and intentional, instructors can address barriers and embed strategies meaningfully and in ways that can support student needs. The instructional design process can

also reduce the potential for strategies to be used in inefficient or ineffective ways. For example, instructors might provide flexible methods for students to respond (using text, audio, or video). Some strategies, when overused or not integrated to support a specific purpose, can become wearisome to students. UDL-based instructional design allows instructors to integrate supports in a thoughtful and deliberate way. When instructors make design decisions taking into consideration how a strategy can support student mastery of learning objectives, it is more likely that the strategy will be useful and effective for students.

The instructional design process with UDL entails (a) considering learner variability and identifying potential barriers, preferences, and needs and (b) using the UDL Design Cycle (see Figure 7.1) to course components by identifying goals, applying UDL to assessments, and applying UDL to methods and materials to support students in reaching the goals.

The following sections provide more detailed information and examples of how to undertake these steps.

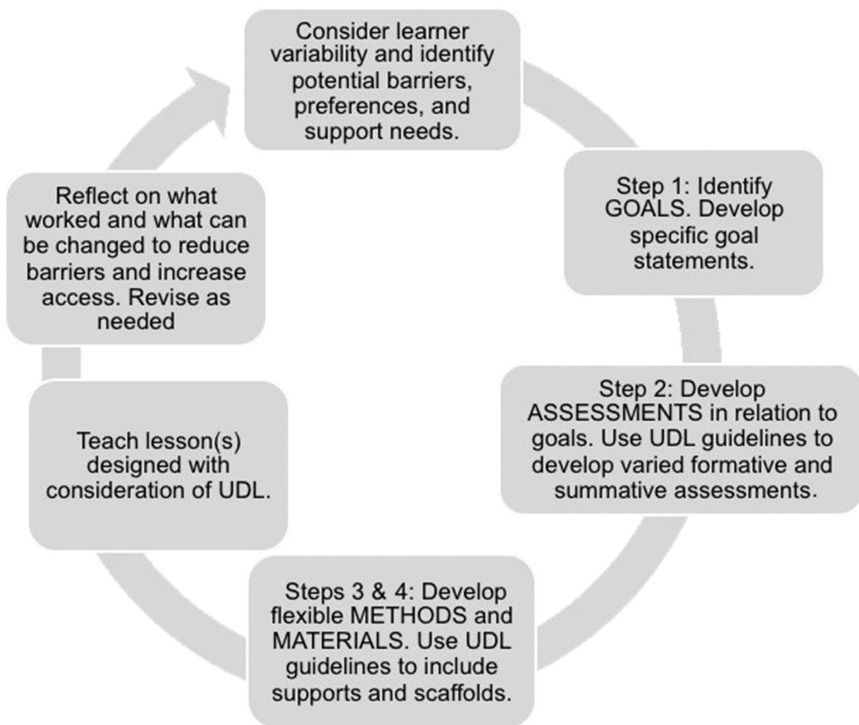


Figure 7.1 UDL Design Cycle

Applying UDL to instructional components

One way to approach course development is to think about what needs to be taught in relation to four major components of lessons and units of instruction: Goals, Assessments, Methods, and Materials (Meyer et al., 2014; Rao & Meo, 2016). Regardless of the content or skills we teach, all faculty start with goals or objectives, have ways to assess student learning, and use a variety of instructional methods and materials. UDL can be applied to any of these components by the instructor as appropriate for the instructional unit they are teaching. Table 7.2 presents the questions that instructors can consider for each component.

Instructors can start by chunking down a semester long course into three to four distinct instructional modules. The number of modules can be determined by the instructor and based on the natural topical breakdown of the course. The first module of a course may include an overview of the main concepts, followed by modules that focus on specific aspects of content. The final module may be one in which the students synthesize or apply knowledge from the earlier modules. For example, a course on research methods may start with a module on research methodologies in general, be followed by modules that address specific methodologies for two to three weeks each. The final module could include activities for students to apply a methodology to a project of their own. Using this modular approach, the instructor can break design down into manageable chunks and ensure that the activities of each module integrates supports as needed. The instructor can also consider how to integrate a variety of support strategies, ensuring that they do not seem redundant or overused, within each module as well as across all the modules of the course.

The first step of instructional design with UDL is to identify instructional goals for each module. Based on these goals, the instructor can apply UDL to

Table 7.2 Considering UDL for course components

<i>Instructional Components</i>	<i>Questions to ask when considering flexible components and UDL</i>
Goals	Based on course objectives, what are the skills and concepts that you want students to master?
Assessments	How can students demonstrate understanding and mastery of the identified goals in varied ways? How can formative and summative assessments be used to give students flexible ways to demonstrate their knowledge?
Methods	How can instruction be designed with supports and scaffolds that help students acquire the content and demonstrate what they have learned? How can flexibility and choice be incorporated into instruction?
Materials	What resources, materials, and tools can be used to provide multiple means to represent and express information and concepts or to engage with content?

other three components – assessments, methods, and materials – for each module. Within a module, the instructor can apply UDL to different components as appropriate.

UDL does not have to be applied to aspects of a course concurrently. In fact, as instructors become familiar with UDL and try to design a course with some UDL-based elements, it can be useful to start by applying UDL to one module and selecting a specific component to begin with (e.g., creating a more flexible assessment). UDL can be applied to additional modules and components over time. The ID process and the UDL Design Cycle can be iterative. After implementing a course with some UDL-based elements, instructors should reflect on those elements, retain the ones that were effective for students, and apply UDL to other components as needed for future courses.

When designing a course, it is most important to make design decisions based on the content being taught. The instructor can identify how to most effectively teach that content and where to introduce support and flexibility with UDL. There are no prescribed number of guidelines that an instructor must use; instead it is important to consider instructional goals and identify how to apply UDL guidelines to the course components to reduce barriers and to increase flexibility and engagement.

Reflection

- Consider a course you teach. What are some common barriers for students (e.g., areas that are challenging for students to comprehend or master)?
- Identify one module within a course you teach (a series of lessons) that you could redesign with the UDL Design Cycle. This could include the lessons you teach over a multi-week period and the assessment given at the end of a series of lessons.
- Use the guiding questions in Table 7.2 to define where you can integrate UDL-based strategies for the module you identified.

Examples of UDL application

When designing with UDL, instructors might ask, “Where do I begin?” The prospect of overhauling a course to integrate various flexible options can be daunting for instructors who are tasked with developing and implement multiple courses along with other commitments as they develop and implement courses. Although some universities provide workshops and professional development opportunities for faculty to learn about universal design, in many cases faculty design their courses without access to much information or professional development on instructional design or UDL.

Although it can seem daunting at the start, there are ways to systematically begin using UDL during the course design process. One way to begin using UDL is by starting small – selecting pieces of a course to modify. Ideally, an instructor can look at the big picture and design the whole course, but realistically, adding flexibility to components bit by bit will also achieve the same end result of making courses more accessible and engaging to students. One asset of UDL is that it is not prescriptive. The 31 checkpoints of UDL provide a “menu of options” that can be applied in ways that are most relevant and useful to a given instructor. With some information on the UDL framework, faculty will be able to integrate flexible and engaging options into their course design, choosing a few of the checkpoints to apply to selected components. This non-prescriptive nature of UDL application can also pose a challenge for instructors seeking to design with UDL; some may prefer to have concrete models and examples of UDL-based course components that they can integrate into their courses.

The following sections present some ways in which instructors can address the barriers described in Table 7.1. These strategies can be adapted as relevant for individual instructors. Although some examples of UDL-based strategies are presented, they represent just some of the ways that that UDL can be applied. The following examples illustrate how an instructor can use the UDL Design Cycle while planning a course and making instructional design decisions. These strategies can be applied to all course formats – face-to-face, online, and hybrid courses.

Excessive reliance on text. One common barrier is the text-heavy nature of college coursework. Students may struggle with the volume of reading for many reasons, such as not being able to keep up with all that is required, having difficulty with comprehension of academic texts/scholarly articles, or finding it difficult to identify key points due to the complexity of text and the unfamiliarity with new content/concepts.

Faculty who strive to maintain high standards may be reticent to “dumb down” the course by requiring fewer or simpler text. As experts in their fields, faculty have often selected texts that are essential for students to read in order to learn the course material. Faculty can rightfully expect students to tackle challenging text and to keep up with readings once they enroll in an academic course or program. Using the UDL Design Cycle, they can design ahead of time and provide supports to help students manage the amount of text they are expected to read and to comprehend key information. Having identified the barrier, instructors can consider their goals and then decide to apply UDL to their methods, materials and/or assessments.

For example, an instructor’s goal may be for students to complete all readings and comprehend core concepts in the readings. The instructor can provide supports in varied ways to reach this goal. The instructor may choose to provide flexible options in their methods or materials as noted in Table 7.3. Table 7.3 also denotes the alignment between the instructor’s design choices and the relevant UDL guidelines and checkpoints.

Table 7.3 UDL-based strategies for reading assignments

<p>Goals:</p> <ol style="list-style-type: none"> 1 Students complete all assigned readings each week (textbook and additional scholarly articles) 2 Students comprehend core concepts in the assigned readings 3 Students begin to synthesize ideas across texts 	<p>UDL Guideline: Provide options for comprehension</p> <ul style="list-style-type: none"> • Highlight patterns, critical features, big ideas, and relationships • Guide information processing, visualization, and manipulation • Maximize transfer and generalization <p>UDL Guideline: Provide options for expression and communication</p> <ul style="list-style-type: none"> • Build fluencies with graduated support for practice/performance <p>UDL Guideline: Provide options for recruiting interest</p> <ul style="list-style-type: none"> • Optimize individual choice and autonomy <p>UDL Guideline: Provide options for sustaining effort and persistence</p> <ul style="list-style-type: none"> • Foster collaboration and community
<p>Methods:</p> <ul style="list-style-type: none"> • Highlight key aspects that students should look for as they read a text. If using articles, include a short summary describing the article relation to the current topic being addressed in class. • Include a short assignment related to the reading, in which students pick a few key points and write some sentences about the reading; review the students' key points to assess who may need assistance and redirection with comprehension. • Make some of the readings optional. If you assign several articles in one week, identify the essential ones as required readings; anything that is not essential can be optional reading. This allows students who struggle with volume of text and comprehension to focus on essential information. • In an online course, include synchronous sessions and provide guidance for students to discuss essential points from the readings together; have students summarize the discussion as a group or individually. These discussions can be ungraded to ensure that they provide support without adding pressure. 	<p>UDL Guideline: Provide options for perception</p> <ul style="list-style-type: none"> • Offer ways of customizing the display of information • Offer alternatives for auditory information • Offer alternatives for visual information <p>UDL Guideline: Provide options for physical action</p> <ul style="list-style-type: none"> • Optimize access to tools and assistive technologies
<p>Materials:</p> <ul style="list-style-type: none"> • Provide text in digital format (or make students aware of how to download digital format of texts, e.g., a digital textbook) • Encourage students to use text-to-speech features, built into devices, to listen and read concurrently • Use a collaborative document (e.g. Google Docs, Padlet) to have students share key points about a reading with instructor or each other 	

Courses that rely heavily on written assessments can also pose a challenge for non-traditional students who may need extra supports during the writing process. Instructors may expect students to have a minimum level of writing proficiency and to be able to communicate ideas via writing, especially in online courses where information is largely communicated by text rather than verbally. However, students struggle with writing for various reasons. For example, students with learning disabilities may experience challenges with organizing their thoughts and clearly drafting written text. Students who speak the language of instruction as a second language may find it harder to express what they know in writing. Students without solid foundations in writing at a college level may also experience issues of confidence in relation to writing, thinking of themselves as “bad writers” when they receive feedback that their written assignments do not meet expectations. Table 7.4 presents some strategies an instructor can use to provide address these barriers, in this case by applying UDL to assessments and methods.

With all the supports listed in Table 7.4, instructors can choose to use them as appropriate for the students in their courses. Providing some support to build a sense of confidence and to help learners persist can go a long way for many students.

Ambiguity about expectations. Students may find it difficult to understand the structure and expectations of instructors. If a student is enrolled in multiple courses, they may find that instructors have varied ways to post materials, communicate deadlines, and interact. This can be an issue especially for students enrolled in multiple courses online. Although instructors might have a clear scheme about what they are presenting and how, the student may feel confused for varied reasons. Students may require more time to complete assignments due to learning disabilities or juggling multiple obligations and commitments. Table 7.5 delineates some ways that instructors can enhance clarity and provide checks to ensure that students are not confused.

Conclusion

This chapter describes how instructors can undertake a process to design courses in ways that reduce barriers and support students in mastery of course goals. Using a systematic process of instructional design with UDL, instructors can plan for learner variability from the outset, ensuring that students with varied backgrounds and experiences feel supported in a course. The process itself is flexible and can be applied in ways that resonate for each individual instructor. The most important part is to design intentionally, with a consideration of what you intend to teach and how to help students both “access” and “master” the content and skills they are learning.

Instructors can feel free to make instructional design decisions that resonate with their philosophy of teaching and match their pedagogical styles. Some instructors might feel that certain supports mentioned in this article are not

Table 7.4 UDL-based strategies for written assignments

<p>Goals:</p> <ol style="list-style-type: none"> 1 Students will express their understanding of key concepts in an essay format 2 Students will engage in discussion in the online forum, demonstrating their synthesis of key concepts and by presenting persuasive arguments and written feedback in response to peers' discussion comments <p>Assessments:</p> <ul style="list-style-type: none"> • Have students build a set of slides outlining key ideas over the course of the module; if the slides are created in a collaborative environment (e.g., Google Slides) instructors can periodically review the students' work. For the final written assessment, students use the slides as a structure to write the essay. • Give students option to submit supplemental files using other modes of expression, for example, presenting information orally (or with an audio or video recording). 	<p>UDL Guideline: Provide options for expression and communication</p> <ul style="list-style-type: none"> • Use multiple media for communication • Use multiple tools for construction and composition • Build fluencies with graduated support for practice/performance
<p>Methods:</p> <ul style="list-style-type: none"> • Post models of what is expected in a written assignment, including a discussion post and an excerpt from an essay. Models can also illustrate non-examples, what would constitute a weak essay • Clearly delineate expectations using a checklist or rubric of what an acceptable or exceptional written product includes; when grading an assignment, note which areas of the criteria the student met/did not meet • Provide specific feedback on areas that can be improved or modified; if appropriate for the assignment, allow student to make the modification to earn additional points 	<p>UDL Guideline: Provide options for expression and communication</p> <ul style="list-style-type: none"> • Build fluencies with graduated support for practice/performance <p>UDL Guideline: Provide options for sustaining effort and persistence</p> <ul style="list-style-type: none"> • Increase mastery-oriented feedback <p>UDL Guideline: Provide options for self-regulation</p> <ul style="list-style-type: none"> • Promote expectations and beliefs that optimize motivation

Table 7.5 UDL-based strategies to reduce ambiguity

<p>Goals:</p> <ol style="list-style-type: none"> 1 For all course formats: Students will have a clear understanding of expectations, deadlines, and upcoming assignments 2 For online courses: Students will successfully navigate the online course environment and be able to find and use all key tools 3 Student will meet deadlines for all assignments during the semester 	<p>Methods:</p> <ul style="list-style-type: none"> • At the beginning of the semester, provide an overview of your course structure. For an online course, this can be done by creating a short video or narrated powerpoint that highlights your expectations and where/how to find key areas of the course. • For online courses that include synchronous (virtual class) meetings, begin or end the meeting with a quick check in about whether students have questions about upcoming assignments; end the synchronous session with info on the upcoming weeks and ask students if they have questions. For traditional face-to-face courses, end the class with an overview of what is expected the following week. • For all course formats: Have virtual office hours – be available online at a regular time when students can log in if they have questions. 	<p>UDL Guideline: Provide options for perception</p> <ul style="list-style-type: none"> • Offer alternatives for auditory information • Offer alternatives for visual information <p>UDL Guideline: Provide options for expression and communication</p> <ul style="list-style-type: none"> • Use multiple media for communication • Use multiple tools for construction and composition • Build fluencies with graduated support for practice/performance
<p>Materials</p> <ul style="list-style-type: none"> • Reduce clutter from documents that provide information about course expectations, such as the syllabus. If the syllabus is lengthy, place the key information about course expectations up front or create an overview of major assignment dates/expectations. • Choose tools carefully and use tools consistently within the course management system; for example, post announcements regularly on the main page about upcoming deadlines. • Too much or random information can also be confusing; consider sending out one email a week with all course info summarized for that week. • Encourage students to email or contact you as preferred if things are unclear. 	<p>UDL Guideline: Provide options for comprehension</p> <ul style="list-style-type: none"> • Activate or supply background knowledge • Highlight patterns, critical features, big ideas, and relationships <p>UDL Guideline: Provide options for executive functions</p> <ul style="list-style-type: none"> • Guide appropriate goal-setting • Support planning and strategy development • Facilitate managing information and resources 	

for them; there is no set way to address barriers and instructors should feel free to choose strategies that work for them. Even if UDL-based strategies cannot be applied to every single element of a course, by applying UDL to even a few components of a course, instructors can broaden the range of students who will be supported and engaged by increased flexibility and choice in a course.

Additional resources on UDL-based course design

- UDL on Campus website – Course Design webpage: udloncampus.cast.org/page/planning_landing
- MERLOT Case Stories at elixr.merlot.org
- Universal Design in Higher Education – Promising Practices: www.washington.edu/doit/resources/books/universal-design-higher-education-promising-practices

References

- Dell, C. A., Dell, T. F., & Blackwell, T. L. (2015). Applying universal design for learning in online courses: Pedagogical and practical considerations. *The Journal of Educators Online*, 13(2), 166–192. <https://doi.org/ISSN1547-500X>
- Eady, M. J., & Woodcock, S. (2010). Understanding the need: Using collaboratively created draft guiding principles to direct online synchronous learning in Indigenous communities. *International Journal for Educational Integrity*, 6(2), 24–40.
- Gradel, K., & Edson, A. (2009). Putting universal design for learning on the higher ed agenda. *Journal of Educational Technology Systems*, 38(2), 111–121. Retrieved from <http://baywood.metapress.com/index/0673J2M1157820K3.pdf>
- Johnson, M. L., Taasobshirazi, G., Clark, L., Howell, L., & Breen, M. (2016). Motivations of traditional and nontraditional college students: From self-determination and attributions, to expectancy and values. *The Journal of Continuing Higher Education*, 64(1), 3–15. <https://doi.org/10.1080/07377363.2016.1132880>
- McLoughlin, C., & Oliver, R. (2000). Designing learning environments for cultural inclusivity: A case study of indigenous online learning at tertiary level. *Australian Journal of Educational Technology*, 16(1), 58–72. <https://doi.org/10.14742/ajet.v16i1.1822>
- Meyer, A., Rose, D. H., & Gordon, D. T. (2014). *Universal design for learning: Theory and practice*. Wakefield, MA: CAST Professional Publishing.
- Morrison, G. R., Ross, S. M., Kemp, J. E., & Kalman, H. (2010). *Designing effective instruction* (6th ed.). Hoboken, NJ: John Wiley & Sons.
- Rao, K., Eady, M., & Edelen-Smith, P. (2011). Virtual classrooms for rural and remote. *Phi Delta Kappan*, 92(6), 22–27.
- Rao, K., Edelen-Smith, P., & Wailehua, C. U. (2015). Universal design for online courses: Applying principles to pedagogy. *Open Learning: The Journal of Open, Distance and E-Learning*, 30(1), 35–52. <https://doi.org/10.1080/02680513.2014.991300>

- Rao, K., & Meo, G. (2016). Using universal design for learning to access academic standards. *Sage Open*, 6(4), 1–18. <https://doi.org/10.1177/2158244016680688>
- Rao, K., & Tanners, A. (2011). Curb cuts in cyberspace: Universal instructional design for online courses. *Journal of Post Secondary Education and Disability*, 24(3), 211–227.
- Schuetze, H. G. (2014). From adults to non-traditional students to lifelong learners in higher education: Changing contexts and perspectives. *Journal of Adult and Continuing Education*, 20(2), 37–55. <https://doi.org/10.7227/JACE.20.2.4>
- Scott, L., & Temple, P. (2017). A conceptual framework for building UDL in a special education distance education course. *Journal of Educators Online*, 14(1). Retrieved from <https://eric.ed.gov/?id=EJ1133749>