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Fighting the Hidden Barriers: Applying Universal Design for Learning to Library Instruction for People with Invisible Disabilities

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FIGHTING THE HIDDEN BARRIERS: APPLYING UNIVERSAL DESIGN FOR LEARNING TO LIBRARY INSTRUCTION FOR PEOPLE WITH INVISIBLE DISABILITIES

SAMANTHA COOK AND KRISTINA CLEMENT

Academic librarians are facing an increasing number of students with disabilities in their instruction sessions. The 2017 United States census shows that the percentage of people with disabilities has gradually increased over the past decade, from 11.9% in 2010 to 12.7% (U.S. Census Bureau, 2017). Within that group there is likely a large population of people with invisible disabilities. It can be very difficult to pinpoint the number of people with disabilities due to the fact that many do not wish to publicly disclose their disability and seek accommodation. To meet the needs of the increasing number of students with disabilities, colleges and universities have been adopting Universal Design for Learning (UDL).

UNIVERSAL DESIGN FOR LEARNING

UDL is related to the concept of Universal Design (UD) which was introduced in 1997 by Ronald Mace. Mace defined UD as “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design” (Center for Universal Design, para. 2). While UD focuses primarily on spaces, UDL takes the underlying structure of UD and translates it into instruction. UDL works to reduce barriers to instruction, accommodations, support, and challenges and helps to maintain high achievement expectations for all students, not just students with disabilities (Schreiber, 2017).

To understand how to successfully incorporate UDL into library instruction, librarians need to first understand the framework, which is typically defined in either three primary principles or seven guiding principles.

The three *primary* principles of the UDL framework are based on cognitive psychology (CAST, 2018):

- **Multiple means of engagement**, which encourages adaptation based upon the understanding that every student learns and engages with materials in different ways
- **Multiple means of representation**, which looks to understand different ways to approach content because every student perceives and understands that content in different ways
- **Multiple means of action and expression**, which works to adapt instruction based upon the understanding that every student has different needs when navigating a learning environment

Each of these three primary principles has 9-12 checkpoints that take instructors deeper into the framework.

The UDL framework has also been adapted into seven *guiding* principles that are more streamlined (Scott, McGuire, & Shaw., p. 375)

- **Equitable use**, which looks at whether or not course materials are designed in a useful way to a diverse group of abilities
- **Flexibility in use**, which works to provide choice in the methods of instruction to accommodate different abilities and learning styles
- **Simple and intuitive**, which evaluates whether instruction is designed in a simple and clear manner to eliminate unnecessary complexity
- **Perceptible information**, which looks at whether or not instruction provides effective communication styles for all students

- **Tolerance for error**, which understands that each student learns differently and will have different skills
- **Low physical effort**, which works to design instruction without having nonessential physical effort
- **Size and space for approach and use**, which evaluates whether or not instruction is designed with consideration for a student's body, posture, mobility, and communication needs

To guide this interactive workshop for LOEX, the authors created charts that use these principles to provide original examples specific to library instruction. (Appendices A-D).

INVISIBLE DISABILITIES

When thinking about incorporating UDL into instruction, instructors often think of disabilities as something they can see (e.g., people who use wheelchairs, canes, or other assistive devices). While it is important to consider these types of disabilities, a majority of people may have disabilities of a hidden or non-visible nature. Invisible disabilities are defined as “a physical, mental or neurological condition that limits a person’s movements, senses, or activities that is invisible to the onlooker.” The definition further reads, “the very fact that these symptoms are invisible can lead to misunderstandings, false perceptions, and judgments” (Invisible Disabilities Association, para. 1). Invisible disabilities include conditions and diseases that are not immediately visible, such as autoimmune disorders, chronic pain, autism, deafness, blindness, ADHD, and more. Specific conditions can include Epilepsy, Ehlers-Danlos Syndrome, Traumatic Brain Injury, Cystic Fibrosis and many, many more. Because their conditions are not immediately apparent to the onlooker, people with invisible disabilities often suffer discrimination, false perceptions, and misunderstandings related to their conditions. The best way to think about invisible disabilities is to visualize an iceberg, because what you can actually see on the surface is a tiny bit of what someone may be suffering from.

UDL & INVISIBLE DISABILITIES

Accommodating invisible disabilities can be complicated because they are not immediately visible and therefore librarians may not be as prepared to adapt their instruction on the fly. However, strategically incorporating UDL principles into library instruction allows students with invisible disabilities, visible disabilities, and anyone who may learn differently to succeed on the same level.

To begin thinking about how to incorporate UDL for people with invisible disabilities consider these three examples of students with invisible disabilities and workable accommodations you could provide specific to their disability.

Student 1: A student with anxiety struggles to speak in front of the class. They are constantly in fear of being called on because they continually worry they will be wrong.

UDL Accommodations: To accommodate students who may have anxiety, you can provide alternative means for answering questions. Try anonymous polling software instead of calling on students to answer. This accommodation aligns with the multiple means of representation principle and the multiple means of engagement principle.

Student 2: A student with a visual impairment has glasses and while sitting in a classroom setting, they sometimes cannot read slides or content on the board without visual strain.

UDL Accommodations: To accommodate students with a visual impairment, you can provide students a digital and printed copy of any classroom materials. This allows them to choose how they wish to accommodate their visual needs. This accommodation fits in with the multiple means of action and expression principle.

Student 3: A student with an autoimmune disorder has joint pain and affected organs and some days they have a hard time being physically active in the classroom as they get light headed and have joint pain.

UDL Accommodations: To accommodate students with movement disorders, try designing activities that allow students to choose their activity level by providing alternative options for every activity or assignment. This accommodation fits in with the multiple means of action and expression principle.

REDESIGNING AN ACTIVITY

Our workshop presented an example of how to redesign an activity involving classic Boolean operators. This example helped participants see how small adjustments to instruction activities can have big effects on learners:

Activity Before UDL: After explaining how Boolean operators work and the kinds of results you may get from using each one, sort the students according to what they are wearing. Have students who fit the parameters stand up and move to a certain part of the room to visually demonstrate your search results.

It can be challenging when first looking at an activity to understand where students might struggle. For this Boolean activity, students with mobility or anxiety issues will struggle to participate without outing themselves as having a disability or not participating at all. Instead, you can make small changes to make the activity accessible:

Activity After UDL: Use a polling software (Poll Everywhere, Mentimeter, etc.) to sort the students and let students participate via their computers or mobile devices.

This version allows students to participate without causing mobility or anxiety issues while still delivering the same message as the non-UDL version of this activity.

THE WORKSHOP

The process of incorporating UDL into library instruction can seem overwhelming. During our LOEX workshop, we asked participants to take small steps and find unique ways to reimagine common active learning techniques, keeping UDL and specifically persons with invisible disabilities in mind. The first step was to review the charts for the three primary principles and the seven guiding principles of UDL to see the examples of modified library instruction. Using these examples as models, participants were asked to either use the activity cards provided or come up with their own library instruction activities and then re-design them to incorporate elements of UDL that might work best for persons with invisible disabilities.

Redesigning Activities

Participants were presented with the following eight different active learning techniques, listed on cards, each with a strategy and an example that was not necessarily UDL compliant for persons with invisible disabilities:

- **Divide and conquer:** this strategy focuses on students teaching one another, rather than depending on the library instructor to provide all of the material to the students.
 - **Example:** Divide the course into pairs with concepts you are working to teach. Have each team present/teach the concept to the class. Examples are databases, research process, etc.
- **Concept mapping:** This strategy builds a spider web on a whiteboard or paper to work through their research topic.
 - **Example:** Have the students break into groups with whiteboards and help each other work through their topics.
- **Turn to a partner:** This strategy focuses on students being more comfortable sharing their thoughts with a peer.
 - **Example:** Have students work on a keyword worksheet together then have them share with another group.
- **Peer lessons:** This strategy focuses on having students learn from each other.
 - **Example:** Break the students into groups of 3-4 and have them work through problems they are having with the research process. Have each group share one of the problems they solved at the end of the class.
- **Stations:** This strategy focuses on engaging students by requiring them to move around the classroom and interact with other students.
 - **Example:** Create a few worksheets with a research topic. Have the students get into groups and pass the worksheets around to have each group fill out a research step.
- **Think, pair, share:** This strategy focuses on three stages where the students are given an activity and then are encouraged to think and work on an activity by themselves and together and later asked to share their experiences.
 - **Example:** Have students break into groups and start finding articles related to their subjects, then have them help each other, and lastly ask a group to share their experiences.
- **Affinity Grouping:** This strategy focuses on identifying and breaking down parts of a topic or idea.
 - **Example:** Have students write down their research process on post-it notes and rank how successful they feel they are on each step. Have them share it with the class.
- **Chalk Talk:** This strategy encourages participation and connecting information literacy concepts.
 - **Example:** Write a research topic on the board and have students come up and help generate keywords for the topic. Have them draw lines creating a concept map of the topic.

Participants were also given the choice of redesigning an activity of their own creation. Everyone was encouraged to discuss among their tables in order to come up with their modifications. It was also emphasized that the modifications were likely to be small changes, rather than huge overhauls.

WORKSHOP RESULTS

The most popular activities that participants chose to redesign were chalk talk, concept mapping, stations, affinity grouping, and their own examples. Below are samples of the work that participants produced during the workshop.

Figure 1: Chalk Talk activity with a UDL Example.

Figure 1 shows a simple solution to make the Chalk Talk strategy more accommodating for people with invisible disabilities. The participant writes, "Use polling software to create a word cloud so everyone can contribute to the keyword portion. Maybe break into groups so a volunteer can convert into an organized concept map on separate whiteboards." This re-designed activity allows users to *choose how they want to participate*, which is a key principle in UDL. Additionally, the change is relatively small and would not be difficult to implement in the library classroom.

Figure 2: Concept Mapping activity with a UDL example.

Figure 2 shows an imaginative way to allow students to express themselves during a concept mapping activity. The participant writes, "Use a word cloud software (similar to Menti) and give students 2 minutes to upload their own keywords/concepts. Then allow peers to add their own keywords. Students can then see which were most popular and create a final concept map. Allow students to use images, songs, and other forms of representation in concept mapping." By allowing students to *use more than just words* to contribute to a concept map, this re-designed activity would likely appeal to a diverse range of learning styles and be suitable for disability accommodations in many ways.

Figure 3: Stations activity with a UDL example.

Figure 3 demonstrates a simple way to use UDL principles to consider persons with invisible disabilities by *giving multiple options for recording and reporting*. The participant writes: "also have a padlet or non-analog option not everyone has to be a scribe some can say their comments" (Padlet is a software that allows for creation and collaboration in digital space).

Figure 4: Affinity Grouping activity with a UDL example.

Figure 4 shows another simple way to modify the affinity grouping activity to incorporate elements of UDL while still taking into account persons with invisible disabilities. The participant writes, "Break students into groups and have them research a particular topic and talk about their collective research process. Then make a collective Padlet of a research process." This re-designed activity allows students to *collaborate* rather than having to come up with individual ideas and would be an excellent way to approach this activity in a first-year classroom where students might have limited experience with the research process.

Figure 5: A participant's own activity with a UDL example.

Figure 5 shows a participant's own activity and their own re-design to incorporate elements of UDL. For the Explanation, the participant writes, "Student share their topic out loud so librarian doesn't do canned searches." For the Example, the participant writes, "Let's get into PsycINFO, will someone tell me their research topic or question and we'll search it?" And for the UDL Example, the participant writes, "Have a poll option for them to share anonymously or by not saying it out loud. Also give the option to share out loud, use the poll for questions too." In this example, the participant has considered *multiple ways of allowing students to share* and choose whether or not they will remain anonymous.

CONCLUSION

Incorporating UDL for people with invisible disabilities into library instruction may seem overwhelming. Librarians should not attempt to incorporate every element of UDL into their instruction all at once. Instead, choose one guideline or core concept and incorporate it into instruction sessions. This could be redesigning a common activity like the Boolean exercise or providing students digital access via a Google folder to all slides and handouts over a semester. Then, begin to add additional

guidelines or concepts semester-to-semester. Making single, small, periodic changes can make a big difference for all students within library classrooms, especially for students with invisible disabilities.

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APPENDIX A: CHART FOR MULTIPLE MEANS OF ENGAGEMENT

Guideline 1: Multiple Means of Engagement

Everyone learns in different ways, not just individuals who need accommodations. The motivation behind learning and engagement also differs from person to person. This guideline encourages instructors to consider multiple ways to engage students in a classroom by providing multiple options, as there is no one means of engagement that will work for everyone.

Here are some ways to incorporate the checkpoints into your library instruction:

| Guideline | Checkpoint | Definition | Library-Related Example |
|------------------------------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Options for Recruiting Interest | Optimize individual choice and autonomy. | Provide options for various things, such as level of perceived challenge, tools used for information gathering, and learning objects. | Let the students take charge of their own learning - give them multiple ways to access worksheets, ways to access resources (let them choose to browse databases along with you, or give them the option to just watch), and provide learning objects in multiple formats (written and digital). |
| | Optimize relevance, value, and authenticity. | Find ways to make the content relevant and valuable to the students while still being authentic. | Prior to the session, work with the instructor to fully understand the research assignment and tie the library instruction directly to the classroom output . This can be as simple as demonstrating knowledge of the assignment and explaining that the library has the resources that they need to successfully complete it . |
| | Minimize threats and distractions. | Create a safe space for the students that helps them avoid having a negative and/or distracting experience. | There are many ways that we can do this for the library classroom. One simple way could be introducing yourself with your preferred pronouns to indicate that this is an inclusive space. Librarians can also provide an outline of the tasks and objectives for the lesson to ease any fear of the unknown and set clear expectations for the lesson. It could also be as simple as acknowledging that a lot of information will be presented and it's okay to feel lost . |
| Options for Sustaining Effort and Persistence | Heighten salience of goals and objectives. | Build in periodic reminders of the goals and objectives to sustain concentration and focus. | In addition to presenting the goals at the beginning of the session, connect each activity or action back to these goals . Librarians who may teach scaffolded instruction sessions throughout a disciplinary program can choose to connect current activities to previous ones with small reminders of what was learned in previous sessions . |
| Guideline | Checkpoint | Definition | Library-Related Example |

| | | | |
|------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Vary demands and resources to optimize challenge. | Students need to be challenged, but not always in the same way because they vary in their skills and abilities. | Provide different options for in-class work, such as a worksheet that takes the student through different levels of database searching . Emphasize that you'd like them to make it through at least the first part but encourage those who finish early to start on the other, more challenging parts . |
| | Foster collaboration and community. | Provide flexible options for students to work in groupings to help them learn how to work effectively with others. | When doing activities, like a classic Think/Pair/Share, give students the opportunity to choose with whom they want to pair and set clear expectations for the group work . Craft the expectations to encourage students to work with their partners to engage in meaningful discussion about the session content . |
| | Increase mastery-oriented feedback. | Use assessment strategically to give students the feedback they need to help them stay motivated to learn. | There are many ways that we assess the effectiveness of our instruction sessions but consider developing small assessment checkpoints throughout the session . You could use live polling programs (Mentimeter or Poll Everywhere, etc.) to allow students to provide anonymous feedback and assess their learning throughout . |
| Options for Self-Regulation | Promote expectations and beliefs that optimize motivation. | Let students set personal goals that are attainable in the time allowed. | This one is more difficult given the short time we often get with students. However, you could ask students to write down 1-3 things that they are wanting to learn in today's session and then have them do a one-minute paper at the end to evaluate whether or not they learned those things . You could also ask the instructor to collect these things before the library session and use them to set the goals for the lesson plan. |
| | Facilitate personal coping skills and strategies. | Consider students' need to cope with anxiety-inducing social situations. | Give students the opportunity to ask questions at any point throughout the session, either publicly with the group or individually (and even after the session) . Encourage them to ask even what may seem like the most basic questions to ease any anxiety. Provide contact information many times. |
| | Develop self-assessment and reflection. | Find creative ways for students to recognize their own progress. | Ask students at the beginning of the session to tell you what they think of when they hear the word "Library" and then repeat it at the end so that they can see how they have progressed in their views on the library. |

Adapted from: CAST (2018). Universal Design for Learning Guidelines version 2.2. Retrieved from <http://udlguidelines.cast.org>



APPENDIX B: CHART FOR MULTIPLE MEANS OF REPRESENTATION

Guideline 2: Multiple Means of Representation

Everyone perceives and comprehends content in different ways, not just individuals who need accommodations. There are many different ways that students might need to approach content. This guideline encourages instructors to consider multiple ways to present content and provide multiple options for the representation of information.

Here are some ways to incorporate the checkpoints into your library instruction:

| Guideline | Checkpoint | Definition | Library-Related Example |
|-----------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Options for Perception | Offer ways of customizing the display of information. | Digital materials provide more flexibility in displaying information that is static in traditional print. | Provide students with a variety of ways to access the content covered in your instruction session . In addition to providing a print copy of a worksheet, provide an editable, digital copy so that students are given the option to adjust things like font size, image size, and colors . |
| | Offer alternatives for auditory information. | Consider options for presenting information, including that presented aurally. | If you are showing video clips in your instruction session, make sure that the videos have clear captions, or provide a transcript if possible . Additionally, if the classroom technology allows it, use a microphone to amplify your voice . |
| | Offer alternatives for visual information. | Visual representations are not always equally accessible; provide a non-visual option. | The simplest way to offer alternatives to visual information is to use alt-text on any visual materials (PowerPoint slides, handouts, etc.). Using alt-text will also make accessibility software, such as screen readers, work better for those who may need them . |
| Options for Language and Symbols | Clarify vocabulary and symbols. | Use a combination of words, symbols, numbers, and icons to represent content in many different ways. | If you like to use icons/symbols instead of words or numbers in your instruction presentation or materials, consider adding alternative text descriptions to your materials or provide alternative materials that explain the same things, but in different ways . Or, provide a glossary of terms as an additional material that explains much of the library jargon that student may not be familiar with . |
| | Clarify syntax and structure. | Provide alternative representations of the content that can help clarify or make more explicit syntax and structure. | Database searching and using other library resources comes naturally to librarians, but not necessarily to students. When demonstrating how to search in a database, try to make connections to concepts students may be more familiar with or have previously learned . When talking about how filters work, consider what other kinds of websites and services use filters that might be more common to the students . |

| Guideline | Checkpoint | Definition | Library-Related Example |
|----------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Support decoding of text, mathematical notation, and symbols. | Make sure that text and symbols don't get in the way of the learning goals. | Students in disciplines such as math, science, and engineering, may discover that scholarly articles contain formulas, equations, and symbols specific to those fields. Be prepared to provide assistive technology (if your library has it) that could help them with text-to-speech to decode these things. |
| | Promote understanding across languages. | Be prepared to use translations or descriptions of materials for other languages. | If possible, take all the key information from the session and make it available in other languages that are most common at your institution. Or, let the students know if they need a translation to reach out to you and you will do your best to get them one. |
| | Illustrate through multiple media. | Use simulations, graphics, activities, videos, etc. | Use a combination of text, diagrams, illustrations, videos, images, charts, etc. in your presentation materials to make the information you are presenting more comprehensible to the students who may not learn as well from text alone. |
| Options for Comprehension | Activate or supply background knowledge. | Build connections to prior understandings and experiences. | It's important to understand what the students may or may not have covered before the library session, but it is also important to understand that things can throw a class off schedule. Reach out to the instructor a few days before the session to confirm that students have chosen research topics in order to make sure that you are designing a lesson that directly connects to their previous classes. |
| | Highlight patterns, critical features, big ideas, and relationships. | Emphasize the important information and connect it to the learning goals. | Work with the instructor to fully understand the objectives of the course, the research assignment, and previous material covered in class leading up to the library session. Connect the library content to the overarching student learning outcomes of their course to help students realize the importance of library resources. |
| | Guide information processing and visualization. | Use well-designed materials to help students process the content. | If presenting an activity with several steps, give explicit instructions (verbally and written) and/or diagram the steps visually. For example, if doing an activity where groups each evaluate a different library resource and you have them form new groups with one representative from each resource group, explain explicitly how the groups will be formed and provide a visual model for how this will look. |
| | Maximize transfer and generalization. | Help students apply what they learned to the bigger picture. | Ask students to take a brief, end-of-session assessment, asking them what their takeaway was from the session, or asking them how they will apply what they learned to their course. |

Adapted from: CAST (2018). Universal Design for Learning Guidelines version 2.2. Retrieved from <http://udlguidelines.cast.org>



APPENDIX C: CHART FOR MULTIPLE MEANS OF ACTION & EXPRESSION

Guideline 3: Multiple Means of Action and Expression

Everyone has different needs when it comes to navigating a learning environment. Individuals with movement impairments or limitations may need to approach tasks in alternative ways. This guideline encourages instructors to consider all types of abilities (not just movement) when designing lessons because there is not one means of action and expression that will work for all learners.

Here are some ways to incorporate the checkpoints into your library instruction:

| Guideline | Checkpoint | Definition | Library-Related Example |
|-------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Options for Physical Action | Vary the methods for response and navigation. | Consider using a variety of tools and methods that make the content physically accessible for all students. | Provide a variety of ways that students can participate. Instead of requiring students to get up and move around the classroom for an activity, give them the option of working with a partner near to them or across the room. You can also offer different ways to signal participation, such as giving the option to raise a hand, stand up, or verbally signal their participation. |
| | Optimize access to tools and to assistive technologies. | Facilitate access to assistive technologies for those students who need them. | Familiarize yourself with what assistive technology your library has available to users. If you don't have any available, try providing multiple ways for students to engage with the content using what you do have. You may have to do some research and get creative. |
| Options for Expression and Communication | Use multiple media for communication. | Express learning in flexible ways. | Try creating a google drive folder or something similar so that students can have immediate access to the digital materials for the session. Documents to include might be presentation slides, session outline, worksheets or handouts, supplemental materials, etc. |
| | Use multiple tools for construction and composition. | Provide alternative media options to reduce barriers to those with different learning styles. | Provide students with digital and physical copies of assignments to allow them to choose if they would prefer to type or handwrite the exercise. |
| | Build fluencies with graduated levels of support for practice and performance. | Use scaffolding to help students practice what they learned and develop deeper skills. | If possible, use a scaffolded instruction model for programs that tend to bring their students to the library multiple times throughout their academic careers. Build on what they have learned in previous sessions. If a first-year communications class focuses on how to effectively search databases, focus a second-year communications class on critically evaluate resources for their scholarly content. |
| Options for Executive Functions | Guide appropriate goal setting. | Let students practice setting challenging and authentic goals | After you have explained the goals of the session, ask students to write down 1-3 questions that they have at the beginning of the library session. Have them return to those questions at the end and have them rank on a scale of 1-10 how well their question was answered. |
| | Support planning and strategy development. | Have the students try to formulate reasonable plans for reaching their goals. | Build in small checkpoints during your session where you can have the students stop and think about what they have learned and connect it to the overarching goals of the course and/or their whole college career. If you give the students a worksheet to help them develop better keywords for searching, design it in a way that allows them to stop and reflect on the activity. If they need this step, they will use it; if they don't, they will skip it. |
| | Facilitate managing information and resources. | Support organization and memory using flexible tools and processes. | Students have a lot going on in their lives, and remembering how to use the library is probably not high on the priority list. To help them commit the content to memory, invite students to follow the steps along with you as you demonstrate database searching. Or, provide a detailed outline with the steps you went over in class that they can use as a reference point later when trying to do it themselves. |
| | Enhance capacity for monitoring progress. | Analyze growth over time and how to build from it. | If you are embedded in a semester-long course, work with the instructor to structure discussions throughout that encourage students to reflect on and discuss their progress when it comes to information literacy skills. Allow students to also discuss their progress privately with you if so desired. |

Adapted from: CAST (2018). Universal Design for Learning Guidelines version 2.2. Retrieved from <http://udlguidelines.cast.org>



APPENDIX D: CHART FOR THE SEVEN GUIDING PRINCIPLES OF UDL

Universal Design Learning Adapted to Library Instruction

| Principle | Definition | Library-Related Example |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equitable use | Make your lesson applicable and appealing to all users. | If you use slides during library instructions provide a google doc of slides or notes so students can follow along. |
| Flexibility in use | Make your lesson flexible to accommodate a wide range of abilities. | Use a variety of instruction methods (for example slides, lecture, group activities, poll everywhere or mentimeter) to provide different styles of learning for the students. |
| Simple and intuitive | Be straightforward and predictable, do not add unnecessary complexity. | When breaking students into groups for a group activity provide clear instructions (written and verbal) and examples for the students of what you are wanting them to do. |
| Perceptible information | In an effective manner provide all necessary information to students. | If you talk about databases throughout your library instruction provide students with a resource listing and linking what you are discussing (could be a document or a LibGuide). |
| Tolerance for error | Understand that every student learns at a different pace and has different skills. | Before asking a student to come and demonstrate database searching, make sure they understand what they are expected to demonstrate and that they are comfortable presenting. If they do not understand, meet with them after the class to continue helping the student. |
| Low physical effort | Instruction is designed to minimize physical effort for learning. | Allow students to type answers to group activities. For example, if you have a finding primary resources document, allow students to choose to handwrite or type their answers and provide physical and digital copies. |
| Size and space for approach and use | Design instruction thinking about how your approach thinking of students' body, posture, mobility, and communication needs. | When doing a Boolean operator exercise allow students to raise their hands or say "I" instead of standing up. |

Scott, S. S., McGuire, J. M., & Shaw, S. F. (2003). Universal Design for Instruction: A New Paradigm for Adult Instruction in Postsecondary Education. *Remedial & Special Education*, 24(6), 369–379. <https://doi.org/10.1177/07419325030240060801>



Images for Tables and Figures (Editor will put in body of the text later)

Figure 1: Chalk Talk activity with a UDL Example.

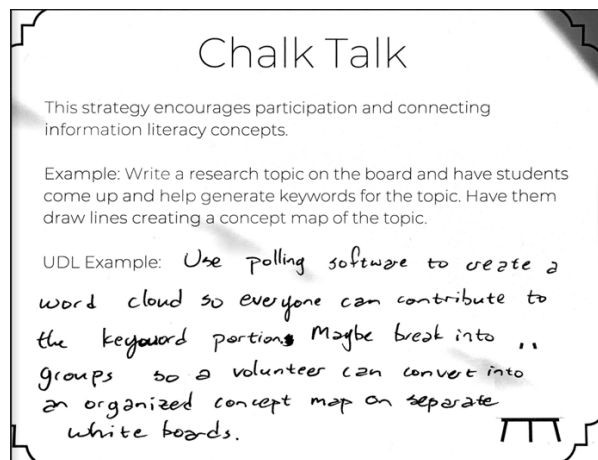


Figure 2 Concept Mapping activity with a UDL example.

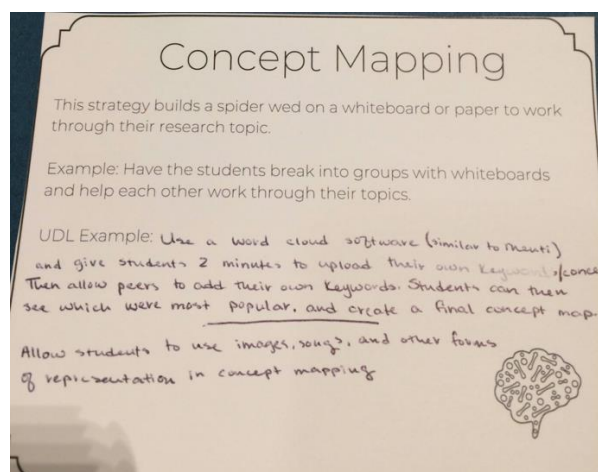


Figure 3 Stations activity with a UDL example.

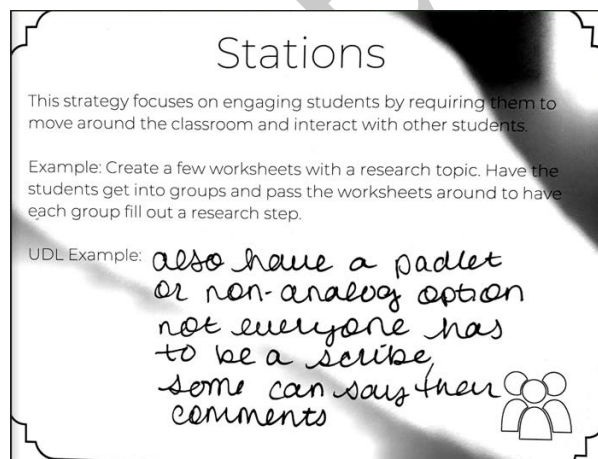


Figure 4 Affinity Grouping activity with a UDL example.

Affinity Grouping

This strategy focuses on identifying and breaking down parts of a topic or idea.

Example: Have students write down their research process on post it notes and rank how successful they feel they are on each step. Have them share it with the class. *scary!*

UDL Example:
Break students into groups and have them research a particular topic and talk about their collective research process. Then make a collective padlet of a ~~all~~ research process.

Figure 5 A participant's own activity with a UDL example.

Your Example

Explanation:
Students share their topic out loud so librarian doesn't do canned searches

Example:
Let's get into PsycINFO, will someone tell me their research topic or question and we'll search it?

UDL Example
Have a poll option for them to share anonymously or by not saying it out loud. Also give the option to share out loud, use the poll for questions, too.