

UDL Solutions for Science Reference Guide

Science Barriers	UDL Checkpoint	Strategy
Disengagement during assignments, labs and activities	Engagement Checkpoint 7.1: Optimize individualize choice and autonomy	Provide choice boards for options on learning tasks and assessments. Choice Boards, Learning Menus, and Tic-Tac-Toe
Content is not immediately relevant	Engagement Checkpoint 7.2 Optimize relevance, value, and authenticity	Invite community partners to demonstrate connections to relevance. Connect to careers CareerOneStop Participate in a community project (i.e., ATMakers, Robotics, design thinking)
Difficulty staying focused on video lessons or being distracted during digital instruction	Engagement Checkpoint 7.3: Minimize distraction	Build in stopping points for discussions and comprehension checks at least every 10 minutes. EdPuzzle builds questions into your choice of video so that students watch and stay engaged. EdPuzzle Sample: Nature of Science
Audio presentations are difficult to understand	Representation Checkpoint 1.2 Offer alternatives for auditory information	Use closed captioning with videos and presentations. Descriptive Captioned Media Program Families and educators who have at least one student with a disability can register for free membership and access over 8,000 captioned and described educational videos. <ul style="list-style-type: none"> ● Putting subtitles in PowerPoint ● Captioning in Google Slides
Rigorous science vocabulary	Representation 2.1 Clarify vocabulary and symbols 2.2 Clarify syntax and structure 2.4 Promote understanding across languages 2.5 Illustrate through multiple media	Embed support for vocabulary within the text <ul style="list-style-type: none"> ● Create hyperlinks that link to videos demonstrating the vocabulary in action ● Use images to accompany text ● Provide translations as needed ● Word sorts for relationships ● Quizlet ● Comicstrip/Storyboard generator
Difficulty grasping abstract science concepts	Representation Checkpoint 3.2: Highlight patterns, critical features, big ideas, and relationships	Use virtual manipulatives <ul style="list-style-type: none"> ● PhET ● The Virtual UCF Arboretum Use Immersive Virtual Learning (IVR) <ul style="list-style-type: none"> ● ClassVR: Portal to Resources ● ClassVR: Augmented Reality: Heart ● Class VR: Life on Mars Metacognitive Modeling/Think Aloud Stemvisions Blog: That's So Metacognitive
Difficulty understanding relationships within the content	Representation Checkpoint 3.2: Highlight patterns, critical features, big ideas, and relationships	Present concepts visually through mindmapping, graphic organizers and anchor charts. <ul style="list-style-type: none"> ● Mind Mapping ● MindMapping Basics ● Using Concept Maps in the Science Classroom

Barriers in Science	UDL Checkpoint	Strategy
Labs are not done correctly	Representation Checkpoint 3.3 Guide information processing and visualization	Provide explicit prompts for each step in a sequential sequence/Provide interactive models that guide exploration and new understandings Use simulations to support engagement Resource: Labster Lab Simulations or PHET Interactive Simulations Video: Safety Lab Rules
Traditional assessment not reflecting student understanding	Action and Expression Checkpoint 5.1: Use multiple media for communication	Students demonstrate knowledge using virtual or tangible manipulatives and models. This works well with standards such as <i>SC.5.E.7.1 Create a model to explain the parts of the water cycle</i> Use video recordings to provide an alternate way to demonstrate knowledge. Consider content standards that are easily measured in alternate ways. Ex. <i>SC.6.E.6.1: Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering</i> Resource: Flipgrid Integrating Flipgrid in Grade 6-8 Science
Standard mastery occurs at different rates	Action and Expression 5.3 Build fluencies with graduated levels of support for practice and performance	Provide scaffolds Ex. Balancing equations equation, PhET , manipulatives (colored beads), whiteboard
Organizing and recalling information	Action and Expression Checkpoint 6.3 Facilitate managing information and resources	Provide multiple methods for taking notes such as Cloze notes (students only need to write in keywords), guided notes, sketchnoting or highlight printed slides notes. <ul style="list-style-type: none"> • What is Sketchnoting? • Sketchnoting in the Classroom—12 Ways to Get Started (Ditch that Textbook) • Tips for Interactive Notebooks • Guided notes
Science work is incomplete, has careless mistakes, or is missing elements	Action and Expression- Checkpoint 6.4 Enhance capacity for monitoring progress	Provide rubrics and checklists, and scaffold activities to support students. Sample: Science Fair Checklist
Additional Resources: Flowchart: Designing Lessons with UDL UDL: Standards Based Curriculum Design (Understanding Content and Method Standards) Designing Lessons with UDL and Design Thinking for STEM Webinar: Teaching Science through the lens of Universal Design for Learning		

For more information, see the [UDL Guidelines](#)

The digital version of this form is available online at <http://bit.ly/UDLScience>

Note this is case sensitive so be sure to use lowercase and uppercase as linked

