# Case Study: Universal Design for Learning

You have been hired by Washington High School as an instructional designer. You are to work with the faculty to design and develop lessons for their students. Universal Design for Learning has been adopted by the school as their focus for the upcoming school year.

Using the table below, help Ms. Hamilton convert the 50-minute traditional lesson about DNA into a lesson that incorporates UDL principles.

At the beginning of the year, Ms. Hamilton, a tenth-grade biology teacher, collected information about her students' learning preferences and learning needs. Of her 29 students, 12 prefer to learn visually, 10 prefer to learn through auditory means, and 7 prefer to learn kinesthetically. Additionally, two students struggle with reading and several have difficulty planning and organizing writing assignments.

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| **Traditional Lesson Plan** | **UDL Lesson Plan** |
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| **Goal**<br><br>The students will read the first three sections of the chapter on DNA in the textbook and turn in handwritten responses to the textbook review questions. | **Goal**<br><br>The students will learn about and present information on DNA structure. |
| **Focus** The structure of DNA | **Focus** The structure of DNA |
| **Materials**<br><br>Textbook, lecture, PowerPoint presentation, worksheet | **Materials**<br><br>• Digital textbook, including (a) interactive digital lesson with models that can be manipulated on screen, (b) embedded short video with transcript (video can be stopped and started by student) (c) support materials from the publisher (highlighted terms linked to informative website entries, terms gathered together at the end of the lesson in a printable list).<br>• Students will complete digital quiz at the end of the assignment (a non-graded, formative assessment)<br>• Video with transcripts and vocabulary list (for whole group discussion)<br>• Smart board review with class discussion<br>• Digital devices to substitute for coming to the board and as an alternative to written work in the small group or individual portion |

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| | • Digitally manipulated models, pipe cleaners and beads for real life models<br>• worksheets |
| **Instruction**<br><br>**10:00–10:30** Whole-group: Teacher summarizes the main ideas for sections 1–3 of the textbook, using a PowerPoint presentation and lecture<br><br>**10:30–10:40** Independent work: Students complete worksheets by labeling diagrams of DNA and writing the definitions for each key word<br><br>**10:40–10:50** Independent work: Students start working on the textbook review questions for these sections and will complete for homework | **Instruction**<br><br>**10:00–10:10** Whole group: watch a video that gives an overview of the concepts, highlighting new vocabulary, students have access to transcript and written list of the important terms and their definitions<br><br>**10:10-10:30** Whole-group (students are sitting together in small work groups). Teacher summarizes the main ideas for sections 1–3 of the textbook, using a Smartboard presentation. During the review, groups will take turns coming to the board to label and manipulate digital models. Students who would prefer not to come to the front of the class can participate from their seats using a connected digital device (notebook). Textbook review questions will be covered.<br><br>**10:30–10:40** Individual or Group (student choice): Students complete review by (1) building digital DNA model and adding labels *OR* and building a 3D model using color coded materials (Pipe cleaners and beads) and matching labels on a worksheet to their model by item color (2) selecting the proper order for DNA replication on a worksheet and writing a description for each step *OR* using a digital device to drag the terms into the proper order and selecting the appropriate description for each step |
| **Assessment**<br><br>Review questions will be graded | **Assessment**<br><br>Formative feedback is given during the quiz taken after reading the textbook and during the classroom whole-class and individual/small group activities. At the end of the lesson, students choose from the following graded options: (1) make a PowerPoint describing the key points about DNA structure, all terms must be defined (2) or capturing their screen as they build and label the digital model, all terms must be defined (3) Write a paragraphs describing the DNA structure, using all the terms discussed in class (4) complete an online quiz |