

Middle School Science Lesson Plan

Planning Steps	Details
Before Class	
Collecting Student Data	<ul style="list-style-type: none"> I have thirty-one students (fifteen boys; sixteen girls) in my ninth-grade science classroom. Ninety-two percent of them receive free and reduced meals. The data on my students from last year showed that 22 percent of my classroom achieved proficiency, 8 percent expert, and 70 percent basic. My gutsy goal is for 100 percent proficiency this semester. I review students' information in their learning profiles, and what I need to do for this lesson. Yesterday's exit passes showed that 75 percent of my students across class periods did not distinguish among facts, reasoned judgment based on findings, and speculation in a text. They were also unsure of what was valid or invalid information. I created a plan for reteaching these concepts to those students in particular. I created extension activities for those who did master the concepts.
Planning the Lesson Memory Recall Strategies	<ul style="list-style-type: none"> I focused on priming students for one to two weeks before starting the science writing. The written arguments emphasize <i>discipline-specific content</i>. We will introduce claims about a science topic or issue, acknowledge and distinguish the claims from alternate or opposing claims, and organize the reasons and evidence logically. Next, I'll ask students to do a three-minute content retrieval activity to see what they recall. Students will work with a partner I have chosen. (I have a student list of Lexile scores, and they have their own records.)
Creating a Positive Physical Environment	<ul style="list-style-type: none"> Open windows and shades (if possible). Create a word wall with rich adjectives for writing and the Tier 2 words that my classroom is focusing on. Place anchor charts on the walls with the most important science concepts and the writing process. Play upbeat music. Make posters and bulletin boards visible with content and skills students need to learn. Bring in plants. Write positive messages on the walls.

First Minute of Class Time	
Building Relationships	<ul style="list-style-type: none"> When students enter, I am always at the door with a smile and a handshake. I make sure to exude safety and excitement. Students sit with their teams. Team leaders check on the attendance to get things started. Then, before the learning begins, each team member gets thirty seconds to check in and update others on the most important thing on their mind. Then, the team leader shares today's goals.
Core Class Time	
Getting Started	<ul style="list-style-type: none"> Early in class, I ask students to do a three-minute content-retrieval activity to see what they recall from yesterday. They turn this in, and I'll look this over while they are working. I introduce the class objectives from the Next Generation Science Standards and Common Core State Standards, including the evidence for learning or success criteria. <p>Physical Science (Eighth Grade)</p> <ul style="list-style-type: none"> Objective: Students will be able to write an argumentative paper about their perspective on cryobiology (study of living things at very low temperatures). (MS-PS1-3)
Getting Started (continued)	<ul style="list-style-type: none"> Explanation: They will read several articles and visit many websites to determine the pros and cons of cryobiology. Then, they will formulate their opinions about it and argue for or against using the criteria for argumentative writing. (WHST.6-8.1) Question: Should the cryobiology technique be used to preserve living things? I share relevance: "Students, you have to learn how to make a case for <i>anything</i> in life so you can be your own advocate (for a better grade, in the legal system, to get hired, and so on). Without it, you won't get a fair shake." Today's hooks are that every student gets to pick a famous scientist from history (I have a list for them), and they will be that scientist while they are writing their argumentative piece. I write out and share sample arguments focused on the science content in the following order. I list these writing criteria so that students can self-evaluate, and peers can give feedback too. <p>Criteria from the Common Core State Standards in argumentative writing for middle school:</p> <ul style="list-style-type: none"> WHST.6-8.1a—Introduce claims about a topic or issue, acknowledge and distinguish the claims from alternate or opposing claims, and organize the reasons and evidence logically. WHST.6-8.1b—Support claims with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. WHST.6-8.1c—Use words, phrases, and clauses to create cohesion and clarify the relationships among claims, counterclaims, reasons, and evidence. WHST.6-8.1d—Establish and maintain a formal style. WHST.6-8.1e—Provide a concluding statement or section that follows from and supports the argument presented.

Creating First Drafts	<ul style="list-style-type: none"> • First, I use a quick hook strategy. Students use a blank template that I provide with the writing criteria listed so they can keep track of my posted example to see if I have included all the criteria. Now, they have a sense of how it is done. They evaluate my writing and give me feedback on what I need to improve. My examples are about a different topic so that I don't give away my perspective before they write. • Next, they write a rough draft in their own words using the content from the texts and in the format we have just learned. They will have a partner to exchange ideas with for this process. • Yesterday's exit pass reminded me that students were unsure of what was valid or invalid information. I will check their understanding of this concept and form a small group of students to guide and reteach this concept with the science topic. • I will use this time to walk around and support the writing process, as well as to work with a small group of students who still need help with writing using the specific criteria.
Editing Time in Peer Group	<ul style="list-style-type: none"> • Next, students go back to their teams for editing again. They support each other and cooperatively work together to learn. Each team has a name, chant, or song with special movements, and a different leader each week. They get points for proper behavior, teamwork, homework completion, celebrations, and other tasks. Each team will peer edit other team members' rough drafts. For homework, they will rewrite, using the peer comments for guidance. This feedback is critical.
Connecting to the Real World	<ul style="list-style-type: none"> • I will share a personal story about how I learned to write and how I learned to respond to feedback with the growth mindset. • During my connection time at the end of each class, I review the day's objectives and how they personally related to each student and the community.
Last Four Minutes of Class Time	
Strengthening Memory and Closing the Day	<p>Using an exit pass, I have students answer the following questions.</p> <ul style="list-style-type: none"> • What did you do well in your science writing summary? • What was the single most important change you had to make in your paper? <p>Once they're finished, I put on music as students leave and thank them at the door.</p>