Lesson Plan Two:

1. Content Learning Objective and Language Learning Objective:
   - I can integrate and evaluate multiple sources of information.

2. Curriculum Connections:
   - **B.A. Planetary Systems: Local Ecology:** Students will explain and demonstrate the flow of matter and energy in major biologic and physical processes.
   - **B.A. Planetary Systems: Biome Formation:** Students will use understanding of the interaction between major Earth systems to explain an aspect of local ecology.
   - **CCSS: ELA LITERACY.RST.11-12.7:** Students will integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
   - **ME Guiding Principle: Responsible and Involved Citizen:** Students will understand the interdependence within and across systems and bring to each situation the appropriate actions.

Students will be assigned to their unit-long special interest groups today and together will draft a group contract. They will then spend some time researching their special interest group. The goal of today is for students to build relationships and accountability within their groups and develop some knowledge about their special interest group.

3. Assessment:
   - **Group contracts:** The group contract serves as a formative assessment for the ME Guiding Principles (their habits of work). It also is a reference point for any potential conflicts within the group. This will not be assessed itself, but is a component of the presentation rubric for the summative assessment.
   - **Science Notebook:** Students will have time to record the topic's vocabulary and content as well as any connections and reflections they have. This is a personal communication that formally assesses their independent mastery of the concepts as well as their complex thinking.

4. Knowledge of Students:
   This lesson requires students to work collaboratively with peers to draft a group contract and research their interest group. I will assign the groups based upon both interest in the organization and also peer-relations. I will consult with Elke, as she has a knowledge of the students from past classes. She will help me create groups that have good dynamics and that will support each other well. The purpose of today is to allow groups to get to know each other in a low-stress situation and develop a group culture. If students seem disengaged I will sit with the group and ask them questions to engage them. It is critical that each member of the group contribute and be heard, especially on day one when the dynamics are being established.
5. Lesson Procedure:

1. Assign groups and group contracts. (30 minutes)
   - I will upload a list of the Special Interest Groups to Google Classroom using the student’s’ choices from the pre-assessment.
   - Groups will get together and draft their group contract. The contract asks students to assign roles, exchange contact information, decide what happens when someone is absent, and otherwise strategies plan-Bs. If there are any conflicts within the group, we will refer back to the contract to decide what to do.

2. Groups research their special interest group (25 minutes)
   - Students will use their computers to do some research about their special interest group and will take notes in their science notebooks. The purpose of this activity is to help students get into the mindset of their group. The project will be especially fun if students approach the entire three weeks as their special interest groups, and I want them to be thinking of how their group would use each bit of information we learn.
   - This little project also helps groups get to know each other. I expect there will be significant chatter, but I want them to be excited about the project and comfortable with their groups, so I will encourage this (for a few minutes!).

6. Instructional Strategies:

   - **Group work** - Students will meet their group, draft a contract and research their special interest groups’ stance. This is to establish a group dynamic and help build excitement for the project.

   - **Direct instruction/class discussion** - We will discuss the reading that was assigned as homework on Monday. It will form the background knowledge for our conversation about the water cycle. Students will recall what they know about the cycle as I take notes on the board. I will then have them draw the parts of the cycle on the board.

   - **Modeling** - I will model the biogeochemical project with the water cycle. I will project the worksheet that the students will use on the board and we will fill it out together about the water cycle. This gradual release of responsibility will build students confidence in their ability to do the project, and also ensures the expectations are very clear.

7. Materials and Equipment:

   - **Group Contract**

8. Reflection

This lesson went relatively well despite a few hiccups. I began the lesson by projected the special interest group assignments onto the board and asked students to sit with their group members. Since yesterday two students have dropped the class and one has joined, so I had to do some quick on-the-spot rearranging of groups. I did
this privately on my computer because as soon as I mentioned I had to do some quick rearranging I began getting change requests from everyone. I put a lot of thought into the groupings and did not plan to honor switch requests, so I simply said “No, you are in the group I put you in, no switching. Give me one second and I will project the final groups”. One student also asked to talk to me about his group privately- he expressed that he and another student in his group “do not talk to each other”. He also explained that he knows sometimes in school you have to work with people you don’t like, but he thought the problem would negatively affect the work. I respect the fact that he communicated this issue with me with such maturity. I assigned the student who had just added the class to that group, and let the other student change to his second choice group.

Groups were instructed to create a “group contract” that outlines attendance expectations (what happens if a group member misses a class?), division of work (do you want to assign roles? What happens if someone doesn’t follow through with their job?) and conflict resolution (“list two conflicts that could arise and outline your plan for solving them”). The purpose of this document was to have students take ownership of the expectations and help set their own criteria and repercussions. I looked them over and they are so great! I am very glad that I decided to do this activity - it got the group members talking about what they expected of each other, and it also will help them stay accountable to their groups. Rather than saying “you didn’t do your part” at the end, this setting of expectations and guidelines allows students to have very clear and concise expectations from their group and it makes them take the progress and their contributions more seriously. It also troubleshoots any conflicts and problems before they arise. Most groups have different conflicts and solutions, but all of them are relevant and thoughtful. One group said “if someone doesn’t do an assignment they said they would, they have to do sixty jumping jacks”. Another group said they would allocate work based upon who had the least on their plate, but if everyone had equal work “we will play rock paper scissors”. Even though these plans are sort of silly, I do expect them to work! The conflict resolution plans will eliminate arguing, instead I can just say “well, look at the contract. You agreed you’d rock-paper-scissors to allocate that.” I felt sort of guilty spending so much time these first two days on introductions, goal setting and group contracts, but looking back I am very glad that I did. I am happy that the students took the contracts seriously and think that they will be useful throughout the next few weeks! We will revisit the group goals in the middle of next week and again at the end of the project.

The groups spent the remainder of time researching their special interest groups. I heard a few “wait what are we doing with these groups” resounding through the room so I decided to stop the class and re-explain the project. I said something along the lines of “now that you are in your special interest groups, you need to understand your group’s philosophy when it comes to deer mitigation”. I briefly explained what each group’s stance is to lead them in the right direction. And then I went into a little more detail about the project - I projected the project outline from the syllabus (which lists an alignment of topics, targets and “mini-projects” or formative assessments). I talked us through the sequence of topics and targets along with what we would be doing to learn about each. This second explanation seemed to sink in much better than yesterday’s. I think that students thought that they understood the scope of the project yesterday, but once they were in their groups and actually getting to work they needed clarification and a clearer scope of the unit. I think I should probably have expected this - from my experience it is extremely rare for students (especially at Baxter!) to comprehend instructions the first time they are given. I also recognize that this class and project are structured differently than they are used to, and that it may take a little while for them to feel comfortable learning in this style and format.
Because I dedicated some extra time to direct instruction I ran out of time to begin the biogeochemical cycle topic. I will start class tomorrow with the discussion of biogeochemical cycles and the water cycles, before putting students into groups to research another nutrient cycle in depth. We may need to finish the drawings and discussion on Thursday morning before beginning the biome slides.

If I could do this lesson again I would have began the class with the second explanation rather than having it arise naturally. I could have put the students into groups and then gone over the unit scope and each group’s stance before setting them free to do the contract and research. It would have given a little more structure to the class. I also wish that I had remembered to assign the pre-assessment to the students who were absent yesterday. I am going to email them and suggest that they do it for homework tonight.

Finally, I wish that I had thought to assign the biogeochemical cycles to groups before the end of class so that students could do some research for homework. Instead we are going to need to use some class time for research and the biogeochemical cycle drawings may take longer than anticipated. In conversations with Elke she has expressed that students usually have a very hard time understanding biogeochemical cycles, so it may be wise to anticipate some extra time on this topic anyway. If they usually have a hard time understanding this information it will be good to have them do the research in class while I am available to answer questions and help tutor and explain difficult concepts.
Interview An Expert

Learning Target: I can evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.

Instructions:

Each member of your group must conduct an “interview” with an expert in the field. It would benefit you to choose people that are members of your Special Interest Group, or that have ideas that align with those of your groups. The information you glean from this interview will be of crucial importance in formulating your group’s deer mitigation proposal.

Each member of your group must find a video or article online and take notes about the speaker or author’s opinion and stance. Use these notes to help form your own stance in the final project.

Each member of your group must submit their interview notes along with a citation of the source in APA format. This should go into your science notebook.