Lesson Plan One - Syllabus and Expectations

1. Content Learning Objective and Language Learning Objective:

We will introduce the class today and review all of the learning targets and the overarching Baxter, Common Core and ME Guiding Principle standards. We will also discuss the essential question: “How do scientists use ecological data to make decisions about populations and ecosystems?” and the driving questions:

1. How do matter and energy flow through biological and physical systems?
2. How are species interdependent and interrelated?
3. How do populations respond to positive and negative inputs?
4. How do ecosystems respond to positive and negative inputs?

The day’s learning objective is: “I can understand and explain the expectations for the Deer Mitigation Project.”

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.

This is the first day of the Field Ecology class. The day is dedicated to introducing the three-week interdisciplinary unit and assigning the long-term projects. Students will also take a brief pre-assessment and an interest survey.

3. Assessment:

Students will take a pre-assessment in the form of a select-response and written-response Google Sheets quiz. The goal is to assess pre-knowledge and to determine the class’ prior exposure to and interest in the topic. The results will help guide the curriculum for the remainder of the unit.

Students will be assigned the long-term summative assessments and we will read through the rubrics together. All three are performance indicators.

- **Science Notebook:** Students record content and vocabulary as well as their complex thinking, connections and reflections daily. This serves as the independent summative assessment for the skills of the standard. There is a rubric that outlines the requirements to be On Target and Above Target for the assessment.
- **Independent Goals and Reflection**: Setting independent goals is a part of the science notebook. We will set goals on day two, revisit and revise them in week two, and then reflect on the final day of class. The teacher will briefly confer with individual students and have a dialogue about the goals and progress at each step. This personal communication will serve as the assessment for ME Guiding Principles.

- **Maine Deer Mitigation Meeting Presentation**: Groups of students prepare final presentations that summarize the content from the unit and apply it to solving a real-world problem. This performance indicator directly answers and applies the essential question: “How do scientists use ecological data to make decisions about populations and ecosystems?” There is a rubric that outlines the requirements to be On Target and Above Target for the assessment.

- **Exit Slip**: Students will answer the question “What is expected of you for this project?” In their science notebooks. This is a written communication that assesses the learning target: “I can understand and explain the expectations of this project”

**4. Lesson Procedure:**

1. **Welcome and attendance (10 minutes)**
   - This is the first day of the class and I only know a handful of the students. I will introduce myself and briefly explain ETEP and what I’m doing there. I have found that being clear about the unit I’m teaching being MY assessment in school actually helps generate more buy-in from the students. It seems to make their work have more value when they know that I’m collecting data and learning from and with them, and that this project has a larger audience.
   - I will have students go around and introduce themselves. I must do this in order to take attendance, because I do not know their names. The class is a mix of 10th, 11th and 12th graders, so I also expect that they may not know all of their peers. The introductions is the beginning of establishing a safe classroom culture.

2. **Introduce and discuss syllabus (essential and guiding questions, project outline, learning targets) and summative assessments (science notebook, group presentation, habits of work) (15 minutes)**
   - I want to make the project outline, targets, and rubrics explicitly clear at the onset of the unit so that everything is completely transparent and students feel safe and understand what is expected of them. By explaining the project and the long-term summative assessments, they can be thinking about their plans and projects as they learn the content. By discussing the grading, habits of work and behavioral expectations, students can be sure there are no tricks or surprises in store.

3. **Students take pre-assessment and interest survey. (20 minutes)**
   - The pre-assessment will be the individual data for students’ progress in the unit. They will take the same assessment on the final day and I will have clear evidence of how much they have learned. It also helps inform me of students’ prior knowledge, which will inform what I need to teach.
   - I also ask students to pick their top three choices of interest groups. I wanted to give them this personal choice to increase their investment and interest in the project; they will have much more
drive to understand an organization’s ideas if they actually identify with that organization. I still kept plenty of teacher control though: I will use their top three choices to assign groups that I think will be most productive. Elke (my mentor teacher) has had most of the students in HEA, so she will help me assign the groups based upon what she knows about the student’s work habits and behavior.

4. Students fill out individual goal sheet and exit slip (10 minutes)
   - The individual goals are to collect data on habits of work. Students will revisit these goals in the middle of the unit and again at the end of the unit. I will ask them to make their goals specific and measurable, so that we can analyze quantitative data and assess their progress.
   - The exit slip is a question in their science notebooks: “Explain what is expected of you in this project”. By answering this question, I will have direct formative evidence of if they have met the learning target: “I can understand and explain the expectations for this project”.

5. Assign homework: read about the water cycle (5 minutes)
   - Students will read about the water cycle for homework so they have background information to inform our discussion tomorrow.

5. Instructional Strategies:

   - **Direct instruction/class discussion** - Most of the this day is informational. It is the first day of class and I need to introduce the standards, scope of the unit and long-term projects. I will engage students by having them read through the handouts and then explain to me what they are expected to do. The class will generate lists and I will write them on the board. This makes the process more active and student-lead, thus increasing interest and retention of the information. It also serves as a formative check for understanding.

   - **Independent work** - students will take a pre-assessment and student interest survey independently on their computers. They will also fill out their goals and an exit slip in their science notebooks.

6. Materials and Equipment:
   - syllabus
   - presentation product descriptor
   - science notebook product descriptor
   - Pre-Assessment
   - water cycle reading for homework - http://water.usgs.gov/edu/watercyclesummary.html