Backward Design Lesson Plan for Intro Lesson – Grade 6 Science

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C&A Plan Title	Biodiversity	**Lesson # in unit**	1
Subject	Science	**Grade/level**	6
Strand	Understanding Life Systems	**Class length** (minutes)	60 minutes
Location	In class and in the school yard.		

Planning Stage One: Desired Results

Brief Description

This lesson is designed to get students interested in the unit and to gauge what students already know about this topic. First, students will be outside where they will have to observe the diversity of their surroundings and design a **Concept Map**. Then, students will complete a short **diagnostic test** that will give an indication what students are interested in and what they already know about biodiversity.
As an exit card activity, they will fill a **KWHL** chart and write their first entry in their **scientific journal**.

Preparation: Safety for outdoor work will be discussed with the class before heading outside.

Lesson's Guiding Question (What question will students be able to answer at the end?)

What is biodiversity and why is it important?

Overall & Specific expectations for this lesson (Numbers and descriptions from Ministry documents)

Overall

2. investigate the characteristics of living things, and classify diverse organisms according to specific characteristics;
3. demonstrate an understanding of biodiversity, its contributions to the stability of natural systems, and its benefits to humans

Specific

2.1 follow established safety procedures for outdoor activities and field work (e.g., stay with a partner when exploring habitats; wash hands after exploring a habitat)

2.5 use a variety of forms to communicate with different audiences and for a variety of purposes

3.2 demonstrate an understanding of biodiversity as the variety of life on earth, including variety within each species of plant and animal, among species of plants and animals in communities, and among communities and the physical landscapes that support them

Prior Knowledge Activation (Prior to this lesson, students will have...)

Readiness: As this is an introductory lesson, students need not have any prior knowledge of or exposure to the concept of biodiversity.

Planning Stage Two: Learning Experience and Instruction

Learning Goals: "Clearly identify what students are expected to know and be able to do, in language that students can readily understand."	**Success criteria:** "Describe in specific terms what successful attainment of the learning goals looks like." (Growing Success p. 33)

This lesson will take approximately 60 minutes (maybe a bit more) depending on the amount of time spent outdoors.

At the end of this lesson, students will be able to:
- explain the term biodiversity and
- determine (with justification) which of areas around the school is more biodiverse based on direct observations of the different kinds of organisms found.

2. Why?
So that I can understand what Biodiversity is about and why it is important.

Success Criteria for this Lesson: (complete phrases below)
* I can look around the school yard for living things
* I can define in my own terms what Biodiversity is
* I can say why I think Biodiversity is important
* I can design a Concept Map
* I can write the Diagnostic test
* I can fill the KWHL chart

Work Skills and Habits (Check ✓ those addressed in this lesson)		**Learning Environment** (e.g., Student groupings; transitions; physical set up):
✓	Responsibility	School yard In the classroom
✓	Organization	
✓	Independent Work	
	Collaboration	
✓	Initiative	
✓	Self-Regulation	

Resources and Materials (What do you need for this lesson? (e.g., YouTube clip, chart paper, markers)	**Technology Integration** (Will students need personal devices and/or internet connections?)
- Blank paper - Pencils - Clipboard - An outside space where students can observe a variety of living and non-living things (school yard) - Magnifying Glass - Ziplocs to collect (if wanted) - Copies of "Biodiversity Unit Pre-Test" for each student - Copies of the X map	PowerPoint

Accommodations and differentiation strategy *(to address different needs and preferences of students, including those with exceptionalities – these should be based on your student and class profiles)*

Pair students at different levels of understanding so they can benefit from each other.
If students are not ready to go outside because of their levels of English, use flash cards or a word wall for vocabulary before the outdoor observation begins.
Students that have trouble identifying or finding evidence of statements may need extra help or support from teacher-lead inquiry.
Observation of student questions will be a helpful assessment of help needed.

Planning Stage Three: Three Act Lesson Plan

Act I

Set (Hook): Focuses attention on the learning intention to come. Provides a framework for the learning, and examples/analogies for understanding. Promotes interest and involvement and bridges from past lesson(s)/learning or prior knowledge.

Three Types of Hooks:

1. ***Orientation*** – introduce, motivate, focus on new learning (hook to engage the brain),
2. ***Transition*** – links prior knowledge (relevance, meaning) through examples, analogies, activities, lets the brain know that new things are coming (novelty)
3. ***Evaluation*** – questions, examples, activities, quizzes, games that are student centered, evaluation will inform instruction (what do they need to know next)

Timing: (Number of minutes)	15 minutes

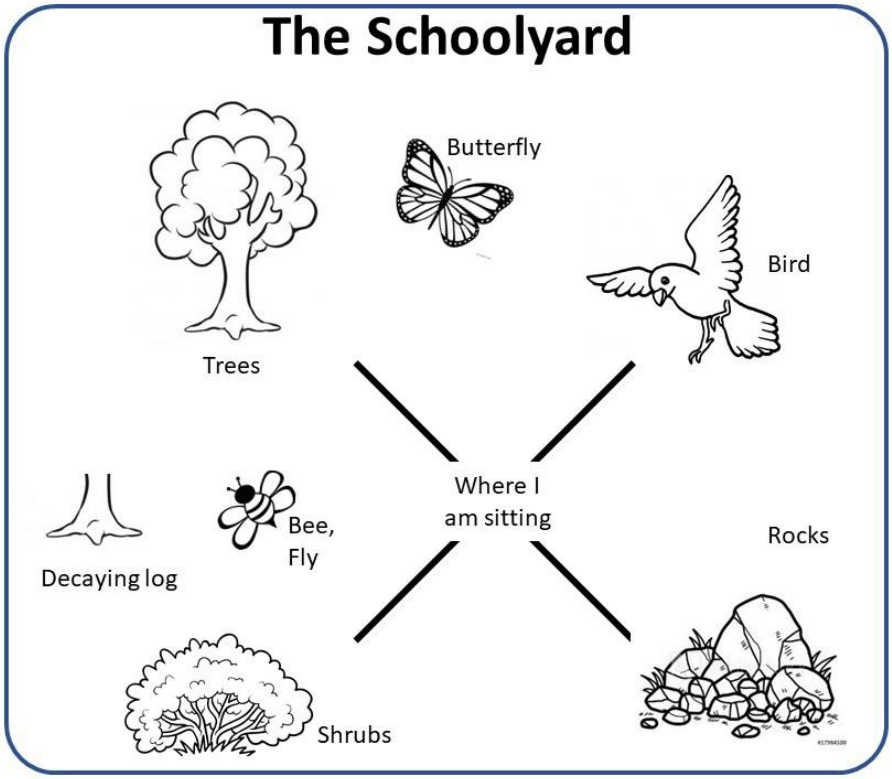
Description: The Concept Map (In the schoolyard)

1. Have students find places to sit outside where they are away from other students and distractions.

2. Provide each of them with a blank piece of paper with an X in the middle.

3. Tell students that the X indicates where they are sitting. Have students sit in silence for 5 to 10 minutes marking down what they can hear and see and where it is in relation to them. They can either draw pictures or use words.

Example of ***Concept Map***



4. After heading inside, discussion will follow where students share what they heard. Emphasis should be on the diversity of the living things that they saw outside.

Act II

Development: Provides experiences that guide and support students. Introduces content that is meaningful and relevant. Challenges the students without frustrating them. Actively engages the students. Involves a range of instructional approaches and activities. Gradual release of responsibility is evident.

Timing: (Number of minutes)	35 minutes

Description:

1. A SmartBoard presentation will be used to introduce the topic of biodiversity. I will answer the question "what is biodiversity?" With the class, teacher will create a word web of key ideas of biodiversity.

2. With the class, I will create a word web of key ideas of biodiversity especially as it relates to the day's findings: biodiversity, flora, fauna, invertebrates, vertebrates, natural community, interrelationships, organism, habitats etc

3. Start a discussion with students: Is the schoolyard biodiverse? Why or why not? What makes a habitat biodiverse? Is biodiversity a good thing? Why or why not?

4. Hand out the diagnostic test to each student. Give students 20 minutes to complete their assessment. Collect the assessment and review to get an idea of the students' prior knowledge and interests.

Act III

Closure: Brings together ideas, helps students to make sense of what they've learned (metacognition), highlights key ideas, reinforces, summarizes. Involves the students in actively consolidating their learning.

Three basic kinds of Closure:

1. ***Review*** – students tie the learning in a concise manner – revisit, rethink, restate, synthesize/summarize
2. ***Transfer*** – reinforces key ideas, ask students to make connections to real world
3. ***Serendipity*** – natural but unplanned closure – a "teachable moment" occurs[1] through a student response/question, unusual event, sudden insight/connection

Timing: (Number of minutes)	10 minutes

Description:

Student will fill in a KWHL chart

Students write in the scientific journal about their first lesson on Biodiversity. They can write/draw/doodle and be as creative as they want to explain what they learned today.

Assessment Tool (Gathering data to check for understanding)

Using bullet points, briefly describe your assessment strategies (for, as, of), the tools will you use, and for what purpose.

Assess achievement category Thinking and Investigation (T/I) as they are outside for inquiry (questions asked), and the depth of investigation. Anecdotal observations of the students' observations and questions they ask will help the teacher assess learning during the outdoor activity.

Post Lesson Reflection: What went well (WWW), Even Better If (EBI)?

[1] Be sure to plan either a review or transfer closure, but also be open to weaving in a teachable moment.

This template was collaboratively designed by Radford, Orders, and Hollweck (UO UCC) and Dr. Avril Aitken (Bishop's U), using the principles outlined in "Understanding by Design" (Wiggins & McTighe, 2005)

Post Lesson reflection: Even Better If (EBI)?