

Lesson Plan

Assessment	AFL, questions
Cross-curricular	

Big Ideas

- Ecosystems are made up of biotic (living) and abiotic (non-living) elements, which depend on each other to survive.
- Ecosystems are in a constant state of change. The changes may be caused by nature or by human intervention.

Learning Goals

- Understanding of the term “ecosystem” and what it constitutes.
- Draw a game board that represents an ecosystem and can be used to play the game.

Specific Expectations:

- 2.2** Design and construct a model ecosystem.
- 2.4** Use appropriate science and technology vocabulary.
- 3.1** Demonstrate an understanding of an ecosystem as a system of interactions between living organisms and their environment.
- 3.2** Identify biotic and abiotic elements in an ecosystem, and describe the interactions between them.

Description:

This is the **first** lesson in a five-lesson unit on ecosystems. The whole unit is based on the concept of playing a board game to learn about the interactions that occur in an ecosystem. Each day the rules of the game change as we focus on a different aspect. The first day students will focus on biotic and abiotic elements.

Materials/Resources:

Game rules summary (see link)
 Game Pieces (includes board and cards) (see link)
 Dice (one per student group)
 Playing pieces (e.g. Lego figures, or any other token you can come up with)

Safety Notes

Introduction

On the first day students will focus on biotic and abiotic elements. The game mechanics are kept simple so that students can get the idea of how it works. Students will also draw their game board the first day.

Introduce the concept:

- Students will learn about how ecosystems work by playing a game!
- Students will work (play) in the same group for the next five days. Ideally a group of four but if that doesn't work out this is flexible.
- The rules of the game will change every day but students will always play on the same game board – which they will draw themselves today!
- Students learn each day about a new aspect of ecosystems and then play the game to see what the effect on an ecosystem may be.

Introduction to Ecosystems:

- What is an ecosystem? Discuss.
 - Definition: The complex of a community of organisms and its environment functioning as an ecological unit.
 - Also: The whole group of living and nonliving things that make up an environment and affect each other
 - **What does that mean?**
 - A unit that we can define – e.g. a pond, a log, a forest, etc. etc.
 - Everything within that unit. Both living and non-living.
 - Discuss other examples of ecosystems (get students to suggest them).
- Students focus on the most basic parts today: living and non-living things: biotic and abiotic.

Action

Draw Game Boards

- Each student should draw an “ecosystem” on a game board sheet (**see Game Pieces link**).
- Students can be creative. They can draw anything they want, as long as it can be seen as one ecosystem.
- It may make sense however if they discuss with their team mates what they want to draw as they will attach four sheets together to make their group board (so having a log on one sheet and a whole forest on another one may be a bit funny)
- Drawing can include life forms, non-living things (such as rocks etc.), but no human-made structures.
- Once all four sheets are done **tape them together into one big rectangle**, making sure the path connects to make a **closed loop**.
- Also cut out the coloured squares that are on a separate sheet – they will be used each day to colour code the playing fields.

Playing the Game

NOTE: To understand the game you will want to always first read the **game rules summary** (see **Summary link**), then look at the materials provided in the Game Piece document (see Game Pieces link), and read the rules in the lesson plan. You will have to explain the rules each day to students so they are not confused.

- **Set up the game board:**
 - Today students randomly distribute green and gray coloured squares along the path of the game board. Every field should have one of those colours.
- Each player places their game token on a field on the board. Today it doesn't matter where they start. So players choose any place on their board.
- Students take turns rolling dice, and then move as many positions as they rolled in any direction.
- When students land on a field, they take a card:
 - Green fields: biotic card (living things)
 - Gray fields: abiotic card (non-living things)
- Students read out the card to the group and follow any instructions given.
- Students record the number of points indicated on the card.
- The goal is to score as many points as possible, but there is no loser here – everybody will learn together and have fun!
- **If students are out of cards they can play the game again but with a twist: Read only the title of the card this time and ask the other players to say what they remember from that card. Everyone who remembers something correct gets a point!**

Consolidation/Extension

Wrap up discussion questions:

Leave yourself about 5 minutes for a wrap up discussion.

- **Wrap-up discussion questions:**
- How did the game go today?
- What did you learn?
 - Focus on definition of ecosystems, biotic and abiotic.
 - It is easy to see how living things are part of an ecosystem. The idea that abiotic things are just as crucial may be a bit harder conceptually. Focus the discussion on how biotic elements **DEPEND** on abiotic factors.
 - We also introduced the idea of consumers, producers, and decomposers. Tomorrow we will learn much more on how those work together.