

Earth's Seasons

5E Lesson

The 5E model is a scientifically proven method to improve student engagement and learning in your classroom

- ✓ Engagement
- ✓ Exploration
- ✓ Explanation
- ✓ Elaborate
- ✓ Evaluate



Complete Teacher Instructions

Earth's Seasons – 5E Lesson

Grades 7-10	Earth's Seasons
Lesson Objective: Students will: - Investigate factors that cause seasons to occur on Earth - Be able to explain Earth's rotation, tilt, and revolution - Demonstrate an understanding of direct and indirect seasons - Describe why the different hemispheres experience opposite seasons - Gain an understanding for season vocabulary including equator, hemisphere, solstice, and equinox - Overcome the misconceptions many children bring with seasons	
Possible Student Misconceptions: - The seasons are caused by Earth's distance from the Sun - The Earth is straight up and down, not tilted - Day and night is caused by the Sun moving across the sky	
Materials: 1 device (smartphone, Chromebook, laptop, tablet, or similar) - A means of projecting a PowerPoint presentation - Internet access - Flashlight	
Teacher Notes: - All videos can be accessed directly from the PowerPoint icon while in slideshow mode and it will automatically change slides. Right-click on the image and click Edit Hyperlink. - I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ - I don't believe in long lessons. If you feel your students need a break, stop the PowerPoint and give them a 5-minute break. I recommend my video collection here - http://www.teachwithfergy.com are tons of brain-break videos to choose from all grouped by subject.	

Earth's Seasons – 5E Lesson

Engagement Phase	Duration 15-30 min.
What causes Earth's seasons? - Start by having your students answer the following questions in as much detail as they can <u>prior</u> to watching the video - What causes the seasons to occur? In the summer, are you closer or further from the Sun? - Watch the video – <i>Seasons and The Sun</i>. It can be accessed here - http://www.teachwithfergy.com/seasons-and-the-sun/ - Once it's done, ask your students to review and revise their answer - Follow that up with another question. When it's summer in the northern hemisphere (i.e. New York, U.S.), what season is it in the southern hemisphere (i.e. Sydney, Australia)? They may use their devices to look this up - We are going to dispel the biggest misconception that the seasons are caused by Earth's distance from the Sun. Once they've determined that the northern and southern hemispheres experience opposite seasons, ask them how that could be if seasons are simply a byproduct of Earth's distance from the Sun. I usually have them work in groups and bring it all back to direct vs. indirect sunlight using a flashlight in class to provide a visual.	Teacher Role – Facilitate learning and guide student understanding Goals - Connect student's experiences - Create interest - Ask questions - Understand the objective of the lesson
Teacher Notes: - The video is about four minutes long - The answer to why we get seasons always comes down to the amount of direct sunlight we receive. More direct sunlight will equal warmer temperatures and longer days - If for some reason the video doesn't play, go to www.youtube.com and type in "Seasons and the Sun: Crash Course Kids 11.1" to locate it.	
Exploration Phase	Duration: 1 hour
Exploration – Lab Station Activity In groups of 2-3, have your students complete <i>Exploration – Lab Station Activity</i>. Once they're done, they will submit their passport to you.	Teacher Role – Facilitate learning and guide student understanding Goals - Students receive real experience with the concept - Students use and demonstrate creative thinking skills - Students make observations, record results, and make connections
Teacher Notes: The complete instructions for my Lab Station activity can be found in the <i>START HERE – Instructions</i> file.	

Explanation Phase	Duration: 1 hour
Explanation – Introducing Ecosystems Lesson - Complete – <i>Explanation – The Seasons Lesson</i>. This lesson is designed to be completed over one day - There are two embedded videos and lots of opportunities to engage and interact with your students with discussion and online simulations - This lesson covers the following topics: - Earth's rotation, tilt, and revolution - Inquiry Activity - Direct vs. Indirect Sunlight - The Seasons	Teacher Role – Explain the concepts by presenting the material found in the presentation. Goals - Students develop understanding of the content - Observations and experiences are discussed and critiqued - Students develop vocabulary - Students are able to connect the content presented to previous experiences
Teacher Notes: - No prior knowledge is required - All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-click the image and select Edit Hyperlink or something similar. - The Bill Nye episode comes with a worksheet that is located in the same folder. If the Bill Nye video link doesn't work, go to www.youtube.com and type in "Bill Nye Seasons" - I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ - I have also enclosed a .PDF version of both the teacher and student versions	
Elaborate Phase	Duration: 1 hour
Elaborate – Scavenger Hunt Activity Your students will complete – <i>Elaborate – Scavenger Hunt Activity</i>. This activity will require your students to move beyond what was covered directly in the lesson and allow them to demonstrate why learning about our solar system is so applicable and important.	Teacher Role – Facilitate learning and keep students focused Goal Students use their newly obtained knowledge to propose solutions and extend their learning to new situations
Teacher Notes: - Students will work in groups of two or three - Each group will only require a single device (smartphone, tablet, Chromebook, laptop, etc.).	
Evaluate Phase	Duration: 1-2 hours
Evaluate Folder - Have your students complete – <i>Evaluate – The Seasons and What Causes Them</i> - This reading will require your students to move beyond what was covered directly in the lesson and allow them to further develop their understanding of the seasons as well as related terminology - The reading provides an excellent opportunity to evaluate student understanding as it contains 6 comprehension questions and 4 extension questions. It is fully editable so I encourage you to remove any question(s) in order to meet the needs of your students as well as your time frame	Teacher Role – Distribute and collect evaluation Goal Students are given the opportunity to demonstrate their understanding and evaluate their own progress

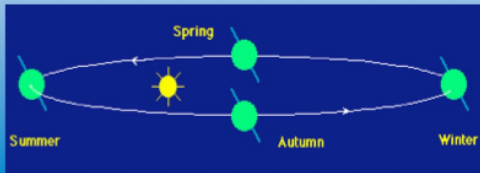
Each phase is clearly described

Complete Lesson

The Seasons

- In North America it is summer in June, July and August and winter in South America because

— _____



Blanks on student versions

A video embedded right into your slideshow

Minds-on Revisit

1. Why is it cold in the winter and hot in the summer?
2. What about places near the equator? Why is there temperature pretty much constant throughout the year?

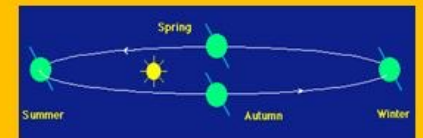
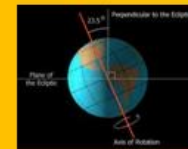


What Causes the Seasons to Change?

THINKING...
(PLEASE BE PATIENT)

The Seasons and Earth's Tilt

- Minds-on
- Earth's
 - Rotation
 - Tilt
 - Revolution
- Inquiry Activity
- Direct vs. Indirect Sunlight
- The Seasons
- Inquiry Lab



Interactive and Engaging Activities

The Seasons and What Causes Them

Scientific Reading Comprehension Article and Extension Activity



Improve your students **Literacy** and **Analysis Skills**, use as an **Emergency Substitute Plan** or create **Applicability** in your classroom

Earth's Seasons Lab Station Activity



Lab Station Activities to get your kids out of their seats and engaged in their learning

Device-Based Scavenger Hunt The Seasons



Includes

- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks and laptops

- **100% Digital**
- Simulations
- Quizzes
- Videos
- Games
- Word Scramble
- and more



Get away from tired practices and unengaged students



Provide a Scientifically-Proven means of instruction



Incorporate Technology and Increase Collaboration

