**Earth and Space Science 2nd Grade**

S2E1. Obtain, evaluate, and communicate information about stars having different sizes and brightness. a. Ask questions to describe the physical attributes (size and brightness) of stars. b. Construct an argument to support the claim that although the sun appears to be the brightest and largest star, it is actually medium in size and brightness.

**S2E2. Obtain, evaluate, and communicate information to develop an understanding of the patterns of the sun and the moon and the sun’s effect on Earth.** a. Plan and carry out an investigation to determine the effect of the position of the sun in relation to a fixed object on Earth at various times of the day. b. Design and build a structure that demonstrates how shadows change throughout the day. c. Represent data in tables and/or graphs of the length of the day and night to recognize the change in seasons. d. Use data from personal observations to describe, illustrate, and predict how the appearance of the moon changes over time in a pattern.

**Whole Class Activity:**

Place students in small groups. Read informational texts about the reason for the seasons. Groups make a two column chart about information you know and new information you learned from the text. Each group will share their chart with the class and post on the classroom wall.

**Directions: Thinking Hats Questions**

The teacher will assign you to each of the Thinking Hat groups except for the Blue Hat thinking. Work in groups to answer your Hat’s questions. Each group should have a recorder to write the answers. Groups will share their answers with the whole class before each student starts the Blue Hat Thinking questions and activity.

<http://extension.illinois.edu/treehouse/seasons.cfm?Slide=1>

**White Hat Thinking (Facts)**

1. List three things that cause the seasons.
2. The Earth moves in two ways. Explain.
3. How does the position of the sun change from summer to winter?

**Yellow Thinking Hat (Benefits)**

1. How can knowledge about the changing seasons help people prepare for life on Earth?
2. What has been more helpful in predicting seasonal weather changes – man or machine?
3. The weather is always warm at locations close to the equator. They have small seasonal changes in their weather. How can this be beneficial for people who live close to the equator?

**Black Hat Thinking (Flaws or Problems)**

1. What would happen if we could not predict weather patterns associated with the seasons?
2. How can the changing seasons negatively affect animals/people?
3. Without the greenhouse effect, Earth would be too cold. How have people increased greenhouse gases and what negative effect has that had on the greenhouse effect?
4. What is the most dangerous thing about the weather?

**Red Hat Thinking (Feelings)**

1. How do the changing seasons make you feel?
2. What is your favorite season and why?
3. Would you rather live close to the equator or at one of the poles (North or South – Artic or Antarctic)? Explain

**Green Hat Thinking (Creativity)**

1. If you could change the cycle of the seasons (summer, fall, winter, spring) or eliminate a season, what changes would you make?
2. Pretend you are a meteorologist. Write a forecast for your favorite season.
3. Write a journal entry for… what would life on Earth be like if there were no seasons?

**Blue Hat Thinking (Summarizing)**

1. Write a poem, song, or rap expressing your thoughts about the reasons for the seasons.
2. What is your favorite seasons? Write and present a 3 minute persuasive speech explaining your point of view.
3. Cold is to winter as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is to summer. Write 4 more analogies about the seasons.
4. Draw and explain 4 cause and effect pictures to go with your knowledge about the reason for the seasons. Example, Because the sun is high in the sky it is summer and I am swimming in the pool.