

## **Spring 2018 Planning Calendar**

### **Prior to February 5th:**

1. Read through the Teachers Handbook and plan for the World MOON Project.
2. Decide whether to have your students use the Student Handbook or a science notebook.
3. Schedule time in your school's Computer Lab, if advanced planning is necessary.
4. If you have chosen to have your students take the Comprehensive Moon Phases Assessment-Revised (CMPA-R), have your students go on line to take the CMPA-R before any instruction about the Moon.
5. If your students will take the CMPA-R, tell us so we can add your name to the list of teachers.

### **(1a) Week of February 8th or As Soon Thereafter As Possible:**

1. After giving the CMPA-R, if you give it, instruct students about how to make and record Moon observations.
2. Have your students begin to observe the Moon each day and record their observations in their Student Handbook or science notebook.
3. Once your students have started to make lunar observations, ask your class each day to report their Moon observation from the previous day so the students come to consensus about what they saw, where they saw it, and when then saw it. They should record this "consensus" observation in their Student Handbook or science notebook and you may have your students record their consensus observation on a wall chart like that shown on page 14 in the Student Handbook.
4. This discussion may take 15 minutes the first day, but soon the class should settle into a routine, so this discussion should take five minutes and may even be bell work while you take attendance, etc.

### **(1b) Week of February 8<sup>th</sup>:**

1. Students should continue daily observations and recording of observations.
2. Suggest they look both at dusk and earlier (say, around 4 PM). (We want students to see that the Moon can sometimes be seen during daylight.)
3. Continue the daily development of a class consensus about observations the preceding day.
4. At least once this week, add in a discussion focusing on patterns in the Moon's behavior. For example, is the Moon the same shape (phase) on February 5<sup>th</sup> and 8<sup>th</sup>? How has it changed? Compare where the Moon was located at the same time (e.g., 7 PM) on two days a week apart –

say, February 5<sup>th</sup> and 8<sup>th</sup>. (When comparing the Moon's location at, say, 7 PM, it will be further east on September 15<sup>th</sup> than it was a week earlier on February 5<sup>th</sup>.)

**(2) Week of February 15:**

- 1. This is an especially important week. Everyone needs to be observing the Moon this week.**
2. Continue the daily development of a class consensus about observations the preceding day.
3. Make very certain students have recorded the Moon shape and location and their time of making their observation for three times:
  - a. between February 17 – 19 with *February 18* being the target date,**
  - b. between February 21 - 23 with *February 22* being the target date, and**
  - c. between February 24 - 26 with *February 25* being the target date.**
4. Continue having students predict where and when they'll see the Moon and what shape it will be.

**(3) Week of February 21:**

- 1. This is an especially important week. Everyone needs to be observing the Moon this week.**
2. Continue the daily development of a class consensus about observations the preceding day.
3. Make very certain students have recorded the Moon shape and location and their time of making their observation for three times:
  - a. between February 17 – 19 with *February 18* being the target date,**
  - b. between February 21 - 23 with *February 22* being the target date, and**
  - c. between February 24 - 26 with *February 25* being the target date.**
4. Continue having students predict where and when they'll see the Moon and what shape it will be.

**(4) Week of February 27:**

- 1. This is a very important week. Everyone should be writing and posting their first (observation) essay to the Internet this week.** See directions starting on page 14 in Student Handbook.
2. Then they should submit their observation essay in the World MOON Project software.
3. Perhaps you will have your students continue their observations.
4. At the end of this week, students may stop their observations; but that is your choice. If they continue two more weeks, then they can compare their observations for two entire lunar cycles. It will be very valuable for them to discover these patterns.

**(5) Week of March 6:**

1. If your students didn't submit their observation essay already, then they need to do that this week, for this is the last chance to submit the observation essay.
2. Perhaps you will have your students continue their observations.
3. In class discussions emphasize students finding patterns in the data. (For example, from day to day does the Moon have the same shape? Is there a predictable pattern in this shape change?)

**(6) Week of March 16:**

1. Starting March 16, we will package the observation essays we've received into groups of approximately ten essays with each essay, to the extent possible, being from a different location in the world.
2. We will email you to let you know when the essays are ready to be downloaded.
3. We will also send you – and only to you – a set of ten essays with complete and accurate information. We refer to these essays as “correct essays” as opposed to the essays your students will receive that are “authentic” in that they really were written by other students, but past experience tells us the “authentic” will have errors of omission and commission. That is, the essay authors will forget to include some key data and/or they will make errors in what they write. The “correct” essays, to the extent possible, will stick to the words actually written by students but edited to make the essays complete and correct.

4. You have a decision to make. Do you want your students to work from “authentic” essays (with all their errors but from real students – after all, scientists have to figure out problems in their data, since problems almost always exist) or from “correct” essays (with no errors but also not entirely from real students); or do you want them to work with both “correct” and “authentic” essays. There is no right answer to this question; it's your decision based on your instructional goals.

5. As soon as you can after we let you know the essays are ready, your students should download their ten essays written by themselves and nine other students from other locations.
6. Whereas you heretofore have had students look for patterns in the Moon's appearance from their local perspective, you now should have students use the data they find in essays from other students in their group to identify global lunar patterns. (For example, on any given day in what way is the Moon's shape the same and how is it different for all observers around the world?)
7. The World MOON Project student handbook has directions and a matrix for the students to organize the data they obtain from these essays.
8. Once they've identified patterns, students should compose an essay about the global patterns they found. See directions starting on page 16 in the Student Handbook.
9. Then they should submit their global patterns essay in the World MOON Project software.

**(7) Week of March 23:**

1. If your students didn't submit their global pattern essay already, then they need to do that this week.

**(8) Week of March 26:**

1. If your students didn't submit their global pattern essay already, then they need to do that this week.

**(9) Week of April 6:**

1. Starting April 6, we will package the global pattern essays we've received into groups of approximately ten essays with each essay, to the extent possible, being from a different location in the world.
2. We will email you to let you know when the essays are ready to be downloaded.
3. As soon as you can after we let you know the essays are ready, your students should download their ten essays written by themselves and nine other students from other locations.
4. You should help them identify important global patterns and then try to explain those patterns. (For example, they might find several students writing that on any given day the Moon is the same shape for all observers but the orientation of the Moon is different in the United States and Brazil. Then they need to figure out why this occurs.)
5. Once they've developed explanations for the cause of one or more of the global patterns that can be found, your students should compose their essay about the explanations they developed. See directions starting on page 18.
6. Then they should submit their causal explanation essay in the World MOON Project software.

**(10) Week of April 9:**

1. As soon as you can after we let you know the essays are ready, your students should download their ten essays written by themselves and nine other students from other locations.
2. We suggest you hold a class discussion to work through the causal explanations the students find in those essays. Which explanations seem to fit the data? Which explanations are correct but don't go very far? For example, students may list all of the locations where the orientation of the illuminated portion of the Moon is the same; but instead of making a list, they could more succinctly say, "All of the observers in the Northern Hemisphere saw the waxing moon illuminated on the right or lower right, whereas the Southern Hemisphere observers at the same time saw the waxing Moon illuminated on the left or lower left side."
3. Once they've developed explanations for the cause of one or more of the global patterns that can be found, your students should compose their essay about the explanations they developed. See directions starting on page 18.
4. Then they should submit their causal explanation essay in the World MOON Project software.

**(11) Week of April 20:**

1. If your students have not submitted their causal explanation essay in the World MOON Project software already, then they will need to this week.

**(12) Week of April 27:**

1. **If your students took the CMPA-R as a pre-test, have them take the CMPA-R as a post-test now that the World MOON Project instruction is complete.**