Lesson Plan #3

Title: Exam Completion  Date: March 25th, 2009  Time: 0948 – 1033hrs
Name: Mr. Lance Cunningham  Grade Level: 9th

Content Objectives:
- Students will complete their previously begun examinations on the material of the previous chapter, the atmosphere, during the first portion of the class period.
- Students will translate supplied raw atmospheric data to the appropriate symbolic station model

State Standards:
3.5.7.C
- Explain weather forecasts by interpreting weather data and symbols.
- Explain the oceans’ impact on local weather and the climate of a region.
- Identify how cloud types, wind directions and barometric pressure changes are associated with weather patterns in different regions of the country.
- Describe and illustrate the major layers of the earth’s atmosphere.
- Identify different air masses and global wind patterns and how they relate to the weather patterns in different regions of the U. S.

Rationale:
This material is important to the student as it provides a means of evaluation of their developed understandings and conceptualizations during the previous lessons. This allows the teacher to accurately determine student need for additional instruction and time for development within this realm of material.

I chose to administer this lesson after this fashion as it was an efficient and time tested method by the teacher for whom I was filling in. He left me explicit instruction for the means of lesson delivery.

Materials:
Teacher: Chapter 14 exam key (), station model worksheet key (), weather terms worksheet key ()

Student: Writing utensil, chapter 14 exam (), station model worksheet (), weather terms worksheet ()

Procedures:
Transition Motivation:
Not everyone managed to finish the exam from yesterday and so today you will be granted the first ten minutes of this period to wrap that up.

Behavioral Objectives:
Students will apply previously developed content knowledge in order to complete their examinations. Following this they will demonstrate their ability to interpret atmospheric data and organize it into the fashion of the previously discussed 'station model'. If completed this with enough time remaining they will begin to discover new terms related to weather by completing an encoded cryptogram of weather terms and attempt to infer meanings from context.

Organizer:
1. Complete chapter exam (10 minutes)
2. Station Model worksheet
3. Weather terms worksheet (if completed #2)
Sequence of Lesson:

I. Complete chapter 14 exam (10 minutes)

II. Station Model worksheet
   A. Complete in small group (if desired)
   B. Aided by available resources
      1. Textbook
      2. Peers
      3. Teacher

III. Weather Terms worksheet (if completed II)
   A. Complete in small group (if desired)
   B. Aided by available resources
      1. Textbook
      2. Peers
      3. Teacher

Assessment Strategies:
Questions asked by students of the teacher, overheard on-task conversation among
students, responses to the assignment

Closure:

Transition to next Lesson:
This weather terms worksheet will give you an introduction to some of the terms we'll be
hearing and using tomorrow when we start our next chapter on weather.

Assessment:
- Chapter 14 Exam
- Station Model worksheet
- Weather Terms worksheet

Homework Assignment:
None
Wind an Atmosphere

Name ___________________________

Test Completion—please provide the best answer for each question.

1. The mixture of gases and particles that surround the earth are called the _____________.

2. The study of the atmosphere is called _____________.

3. The sun appears red at sunrise because of the process of _____________.

4. Heat can be transferred in the atmosphere in three ways, radiation, _____________ and convection.

5. Sunburns are caused by _____________ radiation.

6. A steady wind that blow out of a valley would be called a _____________ breeze.

7. Any substance in the atmosphere that is harmful to organisms or property is called a _____________.

8. The layer of gas in the atmosphere that absorbs solar ultraviolet radiation effectively is the _____________.

9. The most abundant gas in the earth’s atmosphere _____________.

10. The general atmospheric conditions at a given place at a specific time are called _____________.

11. The turning of winds as a result of the earth’s rotation is called _____________ _____________.

12. In the southern hemisphere, winds will be deflected to the _____________.

13. The top of the troposphere is called the _____________.

14. The flow of air from high to low pressure results because of _____________ _____________.

15. The band of global winds that exist between 30 N and 60 N and affects us here in Tyrone is called the _____________.

16. The temperature in the _____________ layer of the atmosphere increases with altitude.

17. _____________ is the method of heating air in which heat is transferred from one molecule to the next.

18. _____________ is the movement of heat in a liquid or a gas.

19. Increases in the atmospheres temperature as a result of long wave radiation being trapped is called the _____________ _____________.

20. A slow steady wind that is blowing off the land toward the ocean during the night is called a _____________ _____________.
Matching—please select the best answer for each term. Use each letter only one time.

21. Polar Easterlies
22. Prevailing Westerlies
23. Mountain Breeze
24. Conduction
25. Solids
26. Gases
27. Sea Breeze
28. Trade Winds
29. Northeast Trades
30. Southeast Trades
31. Ionosphere
32. Exosphere

A. Make the best conductors
B. Molecule to molecule heat transfer
C. 0° to 30° N
D. Global Winds from near the equator
E. Winds blowing off the ocean
F. Winds blowing off the mountains
G. Global Winds near the poles
H. 0° to 30° S
I. Global Winds from 30° to 60°
J. Make bad conductors
K. Outer most layer of the thermosphere
L. Contains charged particles

Short Answer—please provide complete answers for the following questions.

33. Please explain what would happen to air in a high pressure system that is located in the Northern Hemisphere if a low pressure system was close.

34. You are in California and you decide to go for a walk inland. You know that you are close to the beach, but it is night and you need some help to find your direction. What could you use to find your way and why?

35. Explain what would happen in a valley next to a mountain to the air movements during the day.

36. Please explain what the coriolis effect is and what causes this phenomenon.

37. What can happen to light as it enters the earth’s atmosphere?

38. Please label the global wind belts in the following diagram. Include approximate latitudes and names for the wind belts.
Wind an Atmosphere

Completion—please provide the best answer for each question.

1. The mixture of gases and particles that surround the earth are called the Atmosphere.

2. The study of the atmosphere is called Meteorology.

3. The sun appears red at sunrise because of the process of Scattering/Reflection.

4. Heat can be transferred in the atmosphere in three ways, radiation, Conduction and convection.

5. Sunburns are caused by Ultraviolet radiation.

6. A steady wind that blow out of a valley would be called a Valley breeze.

7. Any substance in the atmosphere that is harmful to organisms or property is called a Pollutant.

8. The layer of gas in the atmosphere that absorbs solar ultraviolet radiation effectively is the Ozone Layer.

9. The most abundant gas in the earth’s atmosphere is Nitrogen.

10. The general atmospheric conditions at a given place at a specific time are called Weather.

11. The turning of winds as a result of the earth’s rotation is called Coriolis Effect.

12. In the southern hemisphere, winds will be deflected to the Left.

13. The top of the troposphere is called the Tropopause.

14. The flow of air from high to low pressure results because of Pressure Gradients/Differences.

15. The band of global winds that exist between 30 N and 60 N and affects us here in Tyrone is called the Prevailing Westerlies.

16. The temperature in the Thermosphere/Stratosphere layer of the atmosphere increases with altitude.

17. Conduction is the method of heating air in which heat is transferred from one molecule to the next.

18. Convection is the movement of heat in a liquid or a gas.

19. Increases in the atmosphere’s temperature as a result of long wave radiation being trapped is called the Greenhouse Effect.

20. A slow steady wind that is blowing off the land toward the ocean during the night is called a Land Breeze.
Matching—please select the best answer for each term. Use each letter only one time.

G 21. Polar Easterlies A. Make the best conductors
T 22. Prevailing Westerlies B. Molecule to molecule heat transfer
F 23. Mountain Breeze C. 0° to 30° N
B 24. Conduction D. Global Winds from near the equator
A 25. Solids E. Winds blowing off the ocean
J 26. Gases F. Winds blowing off the mountains
E 27. Sea Breeze G. Global Winds near the poles
D 28. Trade Winds H. 0° to 30° S
C 29. Northeast Trades I. Global Winds from 30° to 60°
H 30. Southeast Trades J. Make bad conductors
L 31. Ionosphere K. Outer most layer of the thermosphere
K 32. Exosphere L. Contains charged particles

Short Answer—please provide complete answers for the following questions.

33. Please explain what would happen to air in a high pressure system that is located in the Northern Hemisphere if a low pressure system was close.

Air would move generally from H to L while being deflected right by the coriolis effect.

34. You are in California and you decide to go for a walk inland. You know that you are close to the beach, but it is night and you need some help to find your direction. What could you use to find your way and why?

35. Explain what would happen in a valley next to a mountain to the air movements during the day.

36. Please explain what the coriolis effect is and what causes this phenomenon.

Deflection, apparent only, from straight travel caused by rotation of the Earth

→ in N, ← in S

37. What can happen to light as it enters the earth’s atmosphere?

Bends or scatters (refraction), reflection

38. Please label the global wind belts in the following diagram. Include approximate latitudes and names for the wind belts.
Weather Plotting

Directions: Please use the information provided below to plot the weather information for the stations below.

<table>
<thead>
<tr>
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1. [Diagram]
2. [Diagram]
3. [Diagram]
4. [Diagram]
10-3 Weather Terms Coded Message

Each of the terms described below has the same code as the secret message. Fill in the letters for each term and reveal the coded message.

1. Piled-up, billowy clouds
   1 26 7 26 8 26 22

2. Makes up 78% of the atmosphere
   11 15 18 6 3 12 10 11

3. All weather occurs in this atmospheric layer
   18 6 3 2 3 22 2 20 10 6 10

4. The atmospheric layer that protects the Earth from ultraviolet rays
   7 10 22 3 22 2 20 10 6 10

5. Rising currents of warm air around the equator
   13 3 8 13 6 26 7 22

6. The daily changes of pressure, humidity, temperature, and wind
   23 10 5 18 20 10 6

7. Condensed moisture suspended in air molecules—for example, stratus and cirrus
   1 8 3 26 13 22

8. Small whirls of air that move up and down rapidly
   18 26 6 4 26 8 10 11 1 10

9. Lines drawn on a map showing the same average yearly temperature
   15 22 3 18 20 10 6 7

10. Air moving from the land toward the water (two words)
    8 5 11 13 4 6 10 10 19 10

11. Air moving from the sea toward the land (two words)
    22 10 5 4 6 10 10 19 10
12. The ratio between the amount of water vapor actually in the air and the amount the air could hold at the same temperature (two words)

6 10 8 5 18 15 25 10 20 25 7 15 13 15 18 30

13. Lines drawn on a map having equal atmospheric pressure

15 22 3 4 5 6

14. A short-term prediction of weather patterns

9 3 6 10 1 5 22 18

15. An instrument that measures wind velocity

5 11 10 7 3 7 10 18 10 6

16. A measure of air pressure

7 15 8 8 15 4 5 6

17. Two air masses meet; the warm air replaces the cold air (two words)

23 5 6 7 9 6 3 11 18

18. Two air masses meet; the cold air replaces the warm air (two words)

1 3 8 13 9 6 3 11 18

Secret Message: 22 18 6 5 18 26 22 1 8 3 26 13 22 9 3 6 7

15 11 8 5 30 10 6 22.
10-3 Weather Terms Coded Message

Each of the terms described below has the same code as the secret message. Fill in the letters for each term and reveal the coded message.

1. Piled-up, billowy clouds
   C U M U L U S
   1 26 7 26 8 26 22

2. Makes up 78% of the atmosphere
   N I T R O G E N
   11 15 18 6 3 12 10 11

3. All weather occurs in this atmospheric layer
   T R O P O S P H E R E
   18 6 3 2 3 22 2 20 10 6 10

4. The atmospheric layer that protects the Earth from ultraviolet rays
   M E S O S P H E R E
   7 10 22 3 22 2 20 10 6 10

5. Rising currents of warm air around the equator
   D O B D R U M S
   13 3 8 13 6 26 7 22

6. The daily changes of pressure, humidity, temperature, and wind
   W E A T H E R
   23 10 5 18 20 10 6

7. Condensed moisture suspended in air molecules—for example, stratus and cirrus
   C L O U D S
   1 8 3 26 13 22

8. Small whirls of air that move up and down rapidly
   T U R B U L E N C E
   18 26 6 4 26 8 10 11 1 1 10

9. Lines drawn on a map showing the same average yearly temperature
   T E R M
   15 22 3 18 20 10 6 7

10. Air moving from the land toward the water (two words)
    L A N D B R E E Z E
    8 5 11 13 4 6 10 10 19 10

11. Air moving from the sea toward the land (two words)
    S E A B R E E Z E
    22 10 5 4 6 10 10 19 10
12. The ratio between the amount of water vapor actually in the air and the amount the air could hold at the same temperature (two words)

\[
\begin{align*}
R & \quad 6 \\
E & \quad 10 \\
L & \quad 8 \\
A & \quad 5 \\
T & \quad 18 \\
I & \quad 15 \\
V & \quad 10 \\
E & \quad 20 \\
H & \quad 26 \\
U & \quad 7 \\
M & \quad 15 \\
I & \quad 13 \\
D & \quad 15 \\
I & \quad 18 \\
T & \quad 30
\end{align*}
\]

13. Lines drawn on a map having equal atmospheric pressure

\[
\begin{align*}
I & \quad 15 \\
S & \quad 22 \\
O & \quad 3 \\
B & \quad 4 \\
A & \quad 5 \\
R & \quad 6
\end{align*}
\]

14. A short-term prediction of weather patterns

\[
\begin{align*}
F & \quad 9 \\
O & \quad 3 \\
R & \quad 7 \\
E & \quad 6 \\
C & \quad 10 \\
A & \quad 1 \\
S & \quad 22 \\
T & \quad 18
\end{align*}
\]

15. An instrument that measures wind velocity

\[
\begin{align*}
A & \quad 5 \\
N & \quad 11 \\
E & \quad 10 \\
M & \quad 7 \\
O & \quad 3 \\
M & \quad 7 \\
E & \quad 10 \\
T & \quad 18 \\
E & \quad 10 \\
R & \quad 6
\end{align*}
\]

16. A measure of air pressure

\[
\begin{align*}
M & \quad 7 \\
I & \quad 15 \\
L & \quad 8 \\
L & \quad 8 \\
I & \quad 15 \\
B & \quad 4 \\
A & \quad 5 \\
R & \quad 6
\end{align*}
\]

17. Two air masses meet; the warm air replaces the cold air (two words)

\[
\begin{align*}
W & \quad 23 \\
A & \quad 5 \\
R & \quad 6 \\
M & \quad 7 \\
F & \quad 9 \\
R & \quad 3 \\
O & \quad 11 \\
T & \quad 18
\end{align*}
\]

18. Two air masses meet; the cold air replaces the warm air (two words)

\[
\begin{align*}
C & \quad 1 \\
O & \quad 3 \\
L & \quad 8 \\
D & \quad 13 \\
D & \quad 3 \\
S & \quad 22 \\
F & \quad 9 \\
O & \quad 3 \\
R & \quad 11 \\
T & \quad 18
\end{align*}
\]

**Secret Message:**

\[
\begin{align*}
S \quad 22 \\
T \quad 18 \\
R \quad 6 \\
A \quad 18 \\
T \quad 26 \\
U \quad 22 \\
C \quad 1 \\
L \quad 8 \\
O \quad 3 \\
U \quad 13 \\
D \quad 22 \\
S \quad 9 \\
F \quad 3 \\
O \quad 6 \\
M & \quad 7
\end{align*}
\]

\[
\begin{align*}
I & \quad 15 \\
N & \quad 11 \\
L & \quad 8 \\
A & \quad 5 \\
Y & \quad 30 \\
T & \quad 10 \\
E & \quad 6 \\
S & \quad 22
\end{align*}
\]
Mr. Lance Cunningham

Earth & Space

9th

12th

Tyrone Area High School

DATE/DAY 3-25-09 Wed

TIME Pd 3 9:48 - 10:33

Observer: Nogoshinski

Dist: Tyrone Area High School

Dress - very professional. Started class on time and greeted students as they came into room. Passed back previous work to start class as a bell ringer. Completion of exam.

You asked for all to be quiet and work - they all did - good. You did a good job working with the sub to teach your lesson. Will let student know how much time they have to complete make-up.

Handed out work sheet for students to work on. You clearly told them when this work would be completed and turned in.

You did a good job of telling where they can find help (text book, notes, etc) to complete sheet. Try to keep all quiet during work sheet work. Tell the few student to get quiet and begin working. Some were talking and not on task. I know this can happen when mentor teacher is not in room.

You did more around room to help students - make sure you get to noisy student, even if you just stand by them a few times, you should have continued to have them work in their own - easier to control. OK to move students.

When you explain using board - make sure all see what you drew. Tell them to look up a second. Ex. \[ \frac{3}{4} \] + \[ \frac{2}{3} \]

You kept your cool working with the sub. All worked well. The sub helped you a lot!

Good day with kenes.
Penn State College of Education
Office of Curriculum and Instruction Field Experiences

Name: Mr. Lance Cunningham
Subject/Grade: Earth & Space, 9th
No. of Students: 6 female + 12 male = 18
School: Tyrone Area High School

Date/Day: 03-25-2009 Wednesday
Observer: Mr. Nezneski
District: Tyrone Area School District

Dress – very professional. Started class on time and greeted students as they came into room. Passed back previous work to start class as a bell ringer. Completion of exam.

You asked for all to be quiet and work – they all did – GOOD. You did a good job working with the sub to teach your lesson. Nice to let students know how much time they have to complete make-up.

Handed out worksheets for students to work on. You clearly told them when this work would be completed and turned in.

You did a good job of telling where they can find help (text/notes/etc.) to complete sheet. Try to keep all quiet during worksheet work. Tell the few students to get quiet and begin working. Some were talking and not on task. I know this can happen when mentor teacher is not in room.

You did move around room to help students – make sure you get to noisy students, even if you just stand by them a few times. You should have continued to have them work on their own – easier to control. OK to move students.

When you explain using board – make sure all see what you drew. Tell them to look up a second. Ex → (75% cloud cover + freezing rain symbol)

You kept your cool working with the sub. and students – all worked well. The sub helped you a lot!

Good Day with Lesson.
This, my third lesson, consisted of a portion for exam completion followed by a worksheet on station models and went poorly by comparison to my other lessons. My mentor teacher was in a meeting during this day and I was left to administer his lessons during my time at the school, aided by a substitute teacher, Mr. C. I was left fairly explicit instruction for the days agenda and administration consisting of allowing ten minutes at the third period's outset for the completion of the previous chapter's exam, and then following that, to have the students complete a worksheet of twenty station models with regard to provided atmospheric data. Following this, if the students were to complete both prior to the end of the period, I was to have them begin a worksheet on weather terminology. I was not provided explicit instruction as to whether the students needed do these worksheets on their own or in group, but as my mentor's wont is to allow students to work together I decided to as well. That was probably not on the list of my best decisions ever.

The students were cooperative through the exam completion. I handed back the questions first to all students, followed by their personal response sheets. I did this in this order in an attempt to normalize the time each had to work on the exam. My theory having been that despite having the questions they could not begin to truly finish until they had both, and each independent set of papers, questions and responses, took a minimal amount of time to distribute. I did not note any students that failed to follow protocol for exams by collaborating, and I noted only one that desired additional time beyond the endpoint of the allotted ten minutes. As I had fairly regularly announced the winding down of time during this allotted period I did not feel obliged to extend the period, despite what my mentor may or may not have done.

After collecting the exams, I distributed the station model worksheet and informed the students that they were welcome to work in small groups provided they were respectful of the fact that there were others also trying to work as well. This I had intended as a warning to keep the noise levels down. I also informed them that these worksheets were due no later than the end of the period, which I thought encouragement to remain on
task. I have rarely been more wrong. I spent the rest of the period trying to balance the needs of students requiring help with those of my own as the primary classroom supervisor, needing to enforce volume control and on-task behavior. I had attempted to offer alternative resources for help to the class when I handed out the worksheets by reminding them of the textbook and relevant pages as well as suggesting speaking with their peers or Mr. C. Despite my best efforts I could not effectively control the volume or on-task behavior and Mr. C. wound up needing to aid me by referring a few students poor conduct to the office. I hope, in the future, to find ways to avoid issues such as these. They may well diminish or preclude themselves next semester by simple fact of a greater regard for me as the teacher as I will be their primary educator from the beginning of their school year. We shall see.