**SATURDAY SCIENCE LESSON PLAN SPRING, 2010**

**WEEK ONE**

**LEARNING OBJECTIVES**

* Students will explain how nutrients and exercise are important for being a healthy kid.
* Students will learn how to measure heart rate.
* They will learn that heart beat increases when they walk and run and they will compare the results to resting heart rate.
* They will draw graphs and will compare the data what they jot down on the graph.
* They will use tool including stopwatch and explore heart rate.

**INDIANA STATE STANDARTS**

### 3.1

### Students, working collaboratively, carry out investigations. They question, observe, and make accurate measurements. Students increase their use of tools, record data in journals, and communicate results through chart, graph, written, and verbal forms.

Explain: The students will work in pairs and count heart rate. They will draw their results to tables and then draw graphs.

* + - **3.1.3**
    - Keep and report records of investigations and observations using tools, such as journals, charts, graphs, and computers. (Core Standard)

Explain: They will reports their results into tables and then draw graphs.

* + - **3.1.4**
    - Discuss the results of investigations and consider the explanations of others.

Explain: All students will present the graphs they draw and discuss the results.

* + - [**The Nature of Science and Technology: Scientific View and Inquiry (Option A)**](http://www.indianastandardsresources.org/files/sci/ca_sci_3_1_1_a.pdf) **This is a classroom assessment covering The Nature of Science and Technology: Scientific View and Inquiry (Option A).**
    - [**Waiting to Exhale**](http://www.indianastandardsresources.org/files/sci/sci_3_1_waiting%20to%20exhale.pdf) **Students will investigate respiration, compare and discuss their results, and consider the explanations of others.**
    - [**Color Burst**](http://www.sciencenetlinks.com/lessons.cfm?DocID=117) **SOURCE: American Association for the Advancement of Science. In this Science NetLinks lesson, students gain experience in asking questions and conducting inquiries by exploring the separation of colors in water and other solvent. This lesson uses a technique called paper chromatography. This activity helps students gain experience in conducting simple investigations of their own while working in small groups.**
    - [**Sink It**](http://www.sciencenetlinks.com/lessons.cfm?DocID=125) **SOURCE: American Association for the Advancement of Science. This Science NetLinks lesson is designed to develop students' understanding of sinking and floating. Students first classify a group of common objects by a characteristic of their own choosing. Then they reclassify the same group of objects by their predictions about whether each item will float or sink in water. As a group, they design an experiment to test their predictions (hypotheses).**
    - **3.1.5**
    - Demonstrate the ability to work cooperatively while respecting the ideas of others and communicating one's own conclusions about findings. (Core Standard)

Explain: The students will work in pairs. Student A will time when student B counts the number of his pulses. While the B times, Student A will count the number of his pulses. After the activity, all students will discuss the results.

### 3.2

### Students use a variety of skills and techniques when attempting to answer questions and solve problems. They describe their observations accurately and clearly, using numbers, words, and sketches, and are able to communicate their thinking to others.

Explain: The students will work in pairs and count heart rate. They will draw their results to tables and then draw graphs. They will discuss the results after the activity.

* **3.2.4**
* Appropriately use simple tools such as clamps, rulers, scissors, hand lenses, and other technology, such as calculators and computers, to help solve problems. (Core Standard)

Explain: The students will use clock and stopwatch.

* + - [Scientific Thinking (Option A)](http://www.indianastandardsresources.org/files/sci/ca_sci_3_2_1_a.pdf) This is a classroom assessment covering Scientific Thinking (Option A).
    - [Scientific Thinking (Option B)](http://www.indianastandardsresources.org/files/sci/ca_sci_3_2_1_b.pdf) This is a classroom assessment covering Scientific Thinking (Option B).
    - [Mysterious Seeds (includes BLM Science Journal)](http://www.indianastandardsresources.org/files/sci/sci_3_2_mysterious%20seeds.pdf) Students will use simple tools to observe seed parts and keep a notebook that describes observations of seed parts and how they grow.
    - [Paper Production](http://www.sciencenetlinks.com/lessons.cfm?BenchmarkID=8&DocID=27) SOURCE: American Association for the Advancement of Science. This Science NetLinks lesson is designed to help students understand how processes and jobs in developed countries have changed over time due to technology and mass production. Papermaking is used as an example of a craft that has become increasingly automated over time. Students make paper by hand and consider how mass production might improve product uniformity, quantity, and quality, while reducing cost.
    - [Reaction Time](http://www.sciencenetlinks.com/Esheet.cfm?DocID=22) SOURCE: American Association for the Advancement of Science. This E-sheet, from a Science NetLinks lesson, has students work in pairs to complete two reaction time activities. They record data during each activity and analyze their results at the end. Click "Display Full Record" and see the Relation field for a link to the lesson this E-sheet supports.
* **3.4.7**
* Explain that eating a variety of healthful foods and getting enough exercise and rest help people to stay healthy.

Explain: The students will listen “Tacky and Winter Games” story and then will discuss “What can be done to be healthy and fit?”.

**4.2**

* Students use a variety of skills and techniques when attempting to answer questions and solve problems. They describe their observations accurately and clearly, using numbers, words, and sketches, and are able to communicate their thinking to others. They compare, explain, and justify both information and numerical functions.

Explain: The students will work in pairs and count heart rate. They will report their results to tables and then draw graphs. They will discuss the results after the activity.

* + **4.2.1**
  + Judge whether measurements and computations of quantities, such as length, area, volume, weight, or time, are reasonable. (Core Standard)

**MATERIALS**

* Stopwatch
* Worksheet

**Teacher Content Knowledge**

Being a fit is a one way to stay healthy and live long. This is related to eat well, gets a lot of physical activity, and being aware of our body. Each person needs s to get a variety of including fruits, vegetables, and enough water. Moreover, kids also need calcium to build strong bones and need to drink milk which is a rich source of calcium. Human beings should aware of their body to determine what they need. Children should try to spend more time for physical exercises such as basketball, baseball.

Our blood system carries oxygen to our respiratory system and removes CO2 from the system. While we exercise, our respiratory system needs more oxygen to use. Since heart is the organ, which pumps blood, needs to work harder to meet respiratory system needs when we exercise.

**Description of lesson**

**Part 1: Icebreaker (Engagement)**

Introduction:

First, we will design the classroom being a circle before students arrive. At the beginning of the lesson all teachers in the room will introduce themselves, and then the student introduction sheets will be given to the students and told to fill out the blanks. Later, one of the teachers will start “Have you ever?” activity. Each of the students presents themselves. Later, one teacher will read the story book “Tracky and the Winter Games”

**Engagement:**

“Welcome to Saturday Science, during our sixth weeks together, we are going to explore how we can be a fit kid.

1.) Warm Up Activity (Have You Ever……..?)

Students can generate their own questions in a row. The student, who generates the question, stands in the center; the other students sit in their chairs. The person, who is in the middle, asks a “Have you ever…….?” question which is true for him/her self.

**List of Possible “Have You Ever” Questions**

* Have you ever looked up into the sky at night and wondered how many stars there are in space?
* Have you ever wondered how clouds formed?
* Have you ever seen a molecule?

Anyone, whose answer is YES, will move to the center as quickly as possible and asks his own question.

**2.) Children’s Literature: Tacky and the Winter Games**

Today, we have also one story for you “Tacky and the Winter Games”. The Winter Games are coming. Tacky and his friends need to be in shape to win so penguins trained. They raced up the steep hills. They jumped rope. They lifted weights. They rode bikes. They ate special training meals. They kept string training hours. Most of all, they practiced their events. And finally after weeks of work, they ready to winter games.

After the teacher finishes reading the story, she will pose some questions related the story. While one teacher is asking the questions, another teacher will write the key words on the board. Here are the questions;

* What kinds of activities did tacky and his friends do in order to win the winter games?
* Did they change their eating habits?
* If you were Tacky or his friends, what would you do/eat to get ready for the game?
* What kinds of foods did Tacky or his friends eat to be fit?
* Can you think of other things you might do to get in shape?

(Teachers expect students to give answers including the keywords of healthy food, enough sleep, and awareness of body.)

On the basis on the student answers, one of the teachers will pose the big question;

“Why do I need to be a fit kid?”

After giving a reflection time, the teacher will pose another question which is related to the students’ answers. (Teachers expect one (or more) student(s) to give an answer related to doing exercise; walking, running, playing and so on).

The teacher will ask subquestions;

* “Have you ever realized your breathing change when you exercise?”
* “What information do we need to answer this question?”

The teacher will say, “Why don’t we figure out together after break what happens to our breathing when we exercise?”

**BREAK**

**EXPLORE**

The worksheets will be given to the students and the activity will be explained in detail. The, the students will be divided in 7 groups (2 students in each group).

Here is the activity,

First, students will decide on three physical activities; sitting in a chair, walking in place, and running in place and think how each activity affects their heart rate?

Then, students will explore the activity. They will work in pairs and one student will time when the other student will count the number of his pulses in 30 seconds and then each student will record his results to the worksheet. They will follow the same steps for each physical activity above. After all students are done with the activity, they will draw line graph based on the data.

**EXPLAIN**

Once each group completes the activity, the teacher will promote the students to discuss the results by asking some questions. These questions are;

* What did you find?
* How did your heart rate change after walking/running compared to sitting?
* Is the graph line goes up continuously or not?

The purpose of these questions is to examine the students’ ability to read tables and graphs, also see the heart rate changes based on the activity.

**ELABORATE**

The teacher will pose another question; “Why did your heart rate change when you were more active?” After giving time for students’ reflections, the teacher will introduce the new title”Respiratory System”. Then, the teacher will explain the question on the basis of students’ answers. “Our blood system carry oxygen to our respiratory system and remove CO2 from the system. While we exercise, our respiratory system needs more oxygen to use. Since heart is the organ, which pumps blood, needs to work harder to meet respiratory system needs when we exercise.” At the end of the lesson, Respiratory System worksheets will be given to all students to look at it over the week.

**EVALUATION/ASSESSMENT**

The students will be assessed based on their answers during the lesson. They will also present their graphs and tables. In doing this, they will be evaluated based on their presentations. At the end of the lesson, the teachers will take the graphs from students to look over them until next week. The students will divided into groups to prepare posters to make presentations at the end of the Saturday Science Semester based on the questions below.

1. Why do I need to be a fit kid?
2. Why do I need to eat healthy food?
3. Why do I need to drink water?
4. Why do I need to be active?

References

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