Reflection Title: Childhood Obesity  
Learning Activity: Understanding BMI by Mike Cruse  
Subject Area: Science  
Focus Areas: Health, Exercise, Obesity, Presidential Fitness Award  
Grades: 6-8  
Duration: 1-2 class periods (80-100 minutes)  
Common Core: Literacy in Science and Technical Studies, Reading: 1, 2, 4 Writing: 3, 4, 5, 7  

Learning Activity Overview:  
Students will identify Body Mass Index (BMI) and how it is calculated. Students will record an activity log as part of their goal of receiving the Presidential Active Lifestyle Award.

Objectives: (LW –Learners Will)  
* LW define and calculate BMI for youth ages 2-20  
* LW define percentile and interpret graphic representation of the percentile for their own BMI  
* LW record an Active Lifestyle Activity Log, as part of the President’s Council on Fitness

Preparation:  
Bathroom scale, Tape measure, Masking tape, internet access, worksheets  

Unit Resources:  
Students will have read the Reflection, Childhood Obesity. Additionally, students should have completed the following Unit Resources:  
Previewing the Reflection  
Understanding the Reflection  
Reviewing the Reflection

Reflection Prompt:  
In the seventh paragraph, Nancy says, “However, many obese children do not have the incentive to exercise. It may be because there are more appealing things out there, such as the internet, video games, or junk food, but exercise is absolutely essential for growing bodies.”

Procedure:  
Essential Question: How does exercise impact our Body Mass Index (BMI)?  

Step 1: What is a BMI? (15 min)  
Introduce the topic of Body Mass Index (BMI) to students by asking what affects their weight? What weight do they think makes someone ‘overweight’?

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Explain that there is no single weight that makes someone overweight, but that obesity – also known as being overweight - varies from person to person. Each person can use physical facts about their body to determine their own BMI.

Explain that BMI is a number calculated from a person's weight and height, which is used to determine obesity rates. BMI is an easy-to-perform method of screening for weight categories that leads to obesity and other health problems. For anyone under 20, their BMI is specific to their age and sex. These criteria (age and sex) are considered for children and teens for two reasons: 1. The amount of body fat changes with age. (BMI for children and teens is often referred to as BMI-for-age.) 2. The amount of body fat is different between girls and boys.

Explain that BMI is used to screen for obesity in children and teens, but it is not used to diagnose any medical conditions. A person who is relatively heavy may have a high BMI for his or her age, but to figure out whether they have excess fat, a medical assessment would be required.

**Step 2: Finding your BMI (30 min)**
Calculating and interpreting BMI requires using the BMI Percentile Calculator. Students will work individually and use worksheet to complete these steps:

1. Measure and record your height and weight. Students should work in pairs to measure their height by having a location in the room where they can lie on the floor and place their feet against a wall. Their partner will place a piece of masking tape on the floor at the top of their head. The student being measured is then responsible for using the tape measure or measuring stick to measure the distance from the wall to the tape marker. Once they have measured this distance in inches, they do the same for their partner. Students can individually use a bathroom scale to find their weight (this should be placed somewhere to give the student privacy).

2. Go online to calculate the BMI and percentile using the Center for Disease Control’s BMI Calculator at [http://apps.nccd.cdc.gov/dnpabmi/](http://apps.nccd.cdc.gov/dnpabmi/)

3. Review and record the calculated BMI-for-age using worksheet and these links: [http://www.cdc.gov/growthcharts/data/set1clinical/cj41l023.pdf](http://www.cdc.gov/growthcharts/data/set1clinical/cj41l023.pdf) [http://www.cdc.gov/growthcharts/clinical_charts.htm](http://www.cdc.gov/growthcharts/clinical_charts.htm)  
   (Note: Explain to students that the term “stature” is another term used for height.)

How is BMI calculated? Check your results…

Weight / Height / Height x 703 = BMI (Weight divided by height, divided by height (2\text{nd} time), times 703 = BMI)

Formula taken from: [http://www.cdc.gov/growthcharts/data/set1clinical/cj41l023.pdf](http://www.cdc.gov/growthcharts/data/set1clinical/cj41l023.pdf)

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Step 3: BMI Percentile (15 min)

A **percentile** is a measure that tells us what percent of the total frequency scored at or below that measure. A **percentile rank** is the percentage of scores that fall at or below a given score.

Using the referenced CDC *Growth Charts, BMI for Age* for boys and girls, students should find their percentile group, based on their BMI and record this on worksheet.

Next, students should use the following chart to find their Weight Status Category, based on their percentile, and record it on worksheet.

**Weight Status – Percentile Range**

- **Underweight**: Less than 5\textsuperscript{th} Percentile
- **Healthy Weight**: Between 5\textsuperscript{th} and 85\textsuperscript{th} Percentile
- **Overweight**: Between 85\textsuperscript{th} and 95\textsuperscript{th} Percentile
- **Obese**: Over 95\textsuperscript{th} Percentile

Step 4: Presidential Active Lifestyles Award (20 min)

Introduce the *Presidential Active Lifestyle Award*, which requires students be active 60 minutes a day, at least 5 days a week, for 6 out of 8 weeks. Students use the *Presidential Activity Log Form* to record and track their daily progress over the 6-8 weeks. Log is found at: [http://www.presidentschallenge.org/tools-resources/docs/PALA_log.pdf](http://www.presidentschallenge.org/tools-resources/docs/PALA_log.pdf)

Students should reflect on the Essential Question of how exercise impacts BMI? What do they think they can achieve in 6 weeks of activity? What goals do they want to set for themselves? Encourage students to complete a written statement of their BMI goal. This may be a personal statement, or one that they share with the teacher. Individual teachers may wish to build a routine into the daily schedule of having students record their activities, or provide for greater student autonomy with weekly or bi-weekly checks of their progress in completing this form.

At the end of the six weeks, students should be given the opportunity to calculate their BMI a second time and determine if they have reached their goal and write a short Reflection piece on their experience.

**Students Demonstrate Understanding by:**

* Defining and calculating BMI and percentiles
* Completing their 6-8 week *Presidential Activity Log Form* and turning it in to their teacher.
* Writing reflection on this experience that reflects specifically on their goal and if/how they achieved it.