**Heart Rate Data Displays:  An Engaging and Relevant Embodied Experience in Science and Algebra**

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**Goals:**  Collecting data and representing it with tables, graphs and equations.

**General Project Outline:**

During this project students will:

* Collect data regarding heart rates under different conditions, applying the concepts of variables [manipulated (independent), responding (dependent), controlled, confounding variables.]

**Technologies used:** heart rate monitors, Excel, googledocs; Texas Instrument Navigator; create histograms using clickers, stopwatches.

Each student will collect their own data.

* Compile data across larger groups and conditions.
* Class will share data with each other.
* Create visual representations of data.
* Students will make collage of self/heartrates
* Students will generate accurate tables and graphs
* Analyze and compare data sets.
* Students will observe trends, patterns, range, find measures of center, look at error and determine cause, identify outliers and discuss ramifications and management. Discuss and compare their findings.
* Generate questions based on the data.

Class will begin the question generating process and pairs and/or groups of students will select questions to pursue through further research using and inquiry model.

*Anticipated student questions:*

* What is the correlation between resting heart rate and running heart rate?
* What is the relationship between activity and heart rate?
* Is there a relationship between gender and heart rate?
* Is there a relationship between caffeine consumption and heart rate?
* Is there a relationship between minutes of exercise per week and heart rate?
* Is easier to get your heart rate up or to bring it down?
* How does heart rate change at different intervals of exercise?

**Assessment:**

* Table and graph generated through data.
* Written analysis of data set.
* Support analysis of class data with published research.
* Student generated research project aligned to goals above.

**Extensions:**

* Interview a health care professional about the importance of heart rates in health monitoring.
* Research congenital and environmentally caused heart trouble.
* Guide and conduct inquiry with a younger age group

*Outside resources:*  Invite in a nurse visitor – someone who uses a heart rate monitor.  Physical education teacher