Lab Template

Text: CORD Unit 17
Volume: 2   Chapter: 3
Unit number: 17
Title of unit: Graphing Data & Scatter Plots, Correlations, and Lines of Best Fit
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Attach the Following Documents:
1. **Lab Instructions**
2. **Student Handout(s)**
3. **Rubric and/or Assessment Tool**

Short Description:

Students will document the amount of layups (basketball) they can make in a 2-minute period. They will then make one graph of this data with a variable to create a positive correlation (i.e. number of hours per week playing basketball, number of hours doing athletic activity, etc.) and then a second graph with a variable of no likely correlation (i.e. number of facebook friends, etc.).

Lay-up Challenge

LAB PLAN

TEACHER: *(Teacher Prep/Lab Plan)*
- **Lab Objective**
  - Students will be able to create graph data in a scatter plot on a Cartesian coordinate system.
  - Students will be able to find the line of best fit.
  - Students will calculate the slope and y-intercept as well as write the equation in slope-intercept form $y = mx + b$.
  - Once theoretical results are found for the line of best fit, students will relate the applicability of the numbers to context of the lab. (i.e. does the y-intercept make sense in real-life context? Is there an upper limit of how many layups can realistically be made?)

- **Statement of prerequisite skills needed**
  - Graphing ordered pairs on coordinate system
  - Plotting line of best fit
  - Understanding of slope, y-intercept

- ⋏ **Vocabulary**
  - ⋏ Coordinate system, y-intercept, slope, line of best fit, scatter plot, slope/intercept equation, correlation.

- ⋏ **State Standards addressed:**
  - ⋏ **Math:**
    - ⋏ A1.1.A – (Green Standard) Select and justify functions and equations to model and solve problems
    - ⋏ A1.6.B - (Green Standard) – Make valid inferences and draw conclusions based on data.
    - ⋏ A1.6.E - (Green Standard) – Describe the correlation of data in scatterplots in terms of strong or weak and positive or negative.
    - ⋏ A1.6.D - (Green Standard) – Find the equation of a linear function that best fits bivariate data that are linearly related, interpret the slope and y-intercept of the line, and use the equation to make predictions.
    - ⋏ A1.8.C - (Green Standard) – Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem.

  - ⋏ **Leadership:**
    - ⋏ Reference classroom citizenship policies.
    - ⋏ Each student will have opportunity to scribe results of other students' shooting trials as well as be time-keeper.

- ⋏ **Teacher Preparation:** *(What materials and set-up are required for this lesson?)*
  - ⋏ **Materials**: Graph paper, t-chart, straight edge, basketball, basketball hoop, (introduction youtube video: http://www.youtube.com/watch?v=65joUE2R2jo&feature=related)
  - ⋏ **Set-Up Required:** None. Single session lab.

- ⋏ **Lab Organizational Strategies:**
  - ⋏ 1. Introduce lab with youtube layup video
  - ⋏ 2. Example group class question: What do these players have to do in order to become this good (practice, athleticism, etc)? What do you think has nothing to do with how well these players perform (fb friends, high school credits, etc)?
  - ⋏ 3. Go over class goals for the day, create t-chart, conduct lab.
  - ⋏ 4. Each student marks and keeps track of their own t-chart for every trial during lab. Each student takes turn making as many layups in 1-minute period as possible.
  - ⋏ 5. Regroup, graph and discuss results
  - ⋏ Time-line: 1-2 days, 50 minute class periods.

- ⋏ **Post Lab Follow-Up/Conclusions** *(to be covered after student completes lab)*
  - ⋏ Discuss real world application of learning from lab: What results do we get from the graph? Is there an upper limit to what we can have for shots made/xy values? Students are to complete the attached worksheet.