Lab Framework

Text: CORD and AMME
Unit number and title:
Short Description: **CORD Unit 19 – Working with Statistics**
AMME Unit 21 – Double or Nothing

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Date: January 19, 2008

Lab Title

How Good is Our Team at Free-throws

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**
  To examine the differences within a basketball team's free-throw ability.
- **Statement of pre-requisite skills needed**
- Formulas – mean, median, mode, standard deviation
- **Vocabulary**
- Mean, median, mode, average, standard deviation, histogram, free-throw

- **Materials List**
  Gym with basketball hoops
  Basketballs
  Marked free-throw line
  Data collection sheet
  Writing utensils
  Calculator
  Clipboards
- **GLEs (State Standards) addressed**
  Math: EALR 1 – Probability and Statistics – 1.4.1
  EALR 2 – Define and solve problems, 2.1.1, 2.2.1 – 2.2.4
  EALR 3 – Mathematical reasoning - 3.1.1, 3.2.1
  EARL 5 – Relate mathematics to real-world situations - all

  Reading: EALR 1 – Understands and uses different skills and reading strategies
  EALR 2 – Understand the meaning of what is read
  Writing: EALR 1 – Understand and uses a written process
  EALR 2 – Writes using a variety of forms for different audiences
  EALR 3 – Writes clearly and effectively
- **Leadership Skills**
  Attendance, participation, cooperative team skills
- **SCAN Skills/Workplace Skills**
- **Set-up information**
  1. Arrange with PE department for use of a gym on a block day.
  2. Arrange for use of basketball equipment.

3. Print materials for lab.
4. Find graph paper.
5. Find clipboards.

- **Lab organization** – students placed in teams of 5 (attempt to pick a range of basketball abilities for each team); team determines the shooting order; writes names, in that order, on data collection sheet

- **Teacher Assessment of student learning** (scoring guide, rubric)
  I am unable to access my lab rubrics at this time. Email me and I will send them to you. (cannot connect to the Renton School District servers)
- **Summary of learning** (to be finished after student completes lab)
  -use WASL summarizing strategy to summarize the outcome of the lab
  A main idea, 3 concrete details (facts) to support the main idea, concluding sentence about results
  -opportunity for students to share/present learning (provides opportunity for earning leadership points)

- **Optional activities**
- **Career Applications**
  Sports statistician

LAB TITLE: How Good is Our Team at Free-throws

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**

  Discovering how accurate a basketball team is at free-throws

  Using the team's mean, median, mode, and standard deviation to determine their excellence

  Presenting the results in numeric, written, and pictorial form

- **Grouping instructions and roles**
  1. Teams are selected with a balance of basketball ability.
  2. Each team member has equal responsibility for the professional behavior of their fellow players

- **Procedures**

  Classroom Procedures (before free-throws)
  1. Stand with your team members as the names are announced.
  2. Record the team member's name on the roster (data collection sheet).
  3. Bring the roster, writing utensil, and a clipboard to the gym.

  Gym Procedures
  1. Procedure to your team's assigned basketball hoop.
  2. Arrange the players in roster order.
  3. The person behind (next in line to shoot) will record for the player shooting. (need to have clipboard, writing utensil, roster)
  4. The recorder will mark down the number of successful free-throws.
  5. The shooter will shoot 5 free-throws from behind the free-throw line.
  6. The shooter will move to the end of the line.
  7. The current recorder will pass the materials to the person behind them.
  8. The next shooter will shoot.
  9. The team will repeat gym steps 3 – 7 until all players have shot 5 balls once.
  10. Repeat steps 2 – 7 until all players have shot a total of 10 free-throws.
  11. REMEMBER TO FOLLOW ALL NORMAL GYM RULES.1.

- **Outcome instructions**

  Classroom Instructions (after gym)
  1. Each team member will need to record the results on their own roster (data collection sheet).
  2. A team member will get enough graph paper and calculators for their team.
  3. Each team member will perform one of the mathematical tasks –
     a. Mean
     b. Median
     c. Mode
     d. Standard deviation
     e. Histogram
  4. Decide who will perform which task. Indicate on your paper which task your performed.

5. Perform your task and share your results with your team members. **Each team member needs all the data, calculations, and graph.**
6. **Decide who (one or two players) will present their results to the class. You will need to show your data table, all calculations, your histogram, and summarize your results.**

- **Assessment instructions** (peer-teacher)

I have peer assessment (cooperative learning) and teacher assessments on my school file. Please email me and I will send them to you.

Free-throw Data Collection

Student: _____ **Date:** _____

Unit: Statistics

Lab Title: How Good is Our Team at Free-throws

Criteria: Write the objective of this lab in your own words

Data Collection: Record the successful number of free-throws for each team member

Player's Name	Number of Successful Free-throws

Calculations: Complete the given calculations to solve for an answer(s) – show all work on the back of your paper

1. Mean –
2. Median
3. Mode
4. Standard Deviation
5. Histogram (use graph paper) – Provide a meaningful title, x and y axis labels

Summary Statement:

Write a summary of the lab results. The summary needs a main idea, 3 concrete details related to the main idea, and a concluding statement.

Other Assessment(s)

Washington Applied Math Council

https://wa-appliedmath.org/