Lab Framework

Text: CORD Applied Mathematics
Unit number and title: Unit 2 – Estimating Answers

Short Description: By working in groups of 3-4, the students will estimate the bleacher capacity of the school gymnasium. They will be told that they must use stride length in helping to determine the size(length) of the gyms bleachers. They will go to the gym and each group will have members actually sit on the bleachers to help determine the seating capacity of the gym.

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Lab Title
Bleacher Capacity

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**
  Students will accurately estimate the seating capacity of the school gymnasium.
- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)
  Students must be familiar with how to calculate their stride length and then be able to use that in measuring the size of the gym bleachers.
- **Vocabulary**
  Stride length
  Bleacher capacity
- **Materials List**
  One yardstick per group
  One copy of lab data sheet and instructions per student
  School gymnasium(could use another seating facility that has bleacher style seating)
- **GLEs (State Standards) addressed**
  Math: 1.1.8 Apply estimation strategies involving the computation of real numbers.
  2.2.3 Apply a variety of strategies and approaches to construct solutions.
  Reading: 3.2 Read to perform a task.
  Writing: 3.3 Knows and applies writing conventions appropriate for the grade level.
- **Leadership Skills**
  1.4 The students will be involved in activities that require applying theory, problem-solving and using critical thinking skills while understanding the outcomes of related decisions.
  2.1 The students will communicate, participate and advocate effectively in pairs, small groups, teams and large groups in order to reach common goals.
- **SCAN Skills/Workplace Skills**
  Writing
  A. Communicates thoughts, ideas, information and messages in writing

B. Records information completely and accurately

Arithmetic

A. Performs basic computations

Mathematics

A. Approaches practical problems by choosing appropriately from a variety of mathematical techniques

Speaking

A. Participates in conversation, discussion and group presentations

- **Set-up information**

  Hand out and go over the Lab Data Collection worksheet with the students. Put students in groups of 3-4. Students will be given a general description of what data they will need to collect and they will be given a chance to brainstorm ideas to solve problem before going to the gym.

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**

  One class period.

  Students will be organized into groups of 3-4 with every group having necessary materials.

  Students will work as a group to collect the data they feel necessary to complete problem.

- **Teacher Assessment of student learning** (scoring guide, rubric)

  Successful completion of the given task and accompanying lab data collection worksheet

- **Summary of learning** (to be finished after student completes lab)

  -discuss real world application of learning from lab
  -opportunity for students to share/present learning
  -discuss what students would do different next time

- **Optional activities**

  Try conducting a similar lab on another seating venue

  This lab – Fire Marshall(maximum seating capacity for fire code)
  Estimating skills are used in a variety of occupations. Ask students for a list of careers where they think estimating would be useful.

LAB TITLE: Bleacher Capacity
STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**
  The process of using estimation techniques to calculate the seating capacity of the school gymnasium. The students must first calculate stride length and then use this in calculating their estimate.

- **Grouping instructions and roles**
  In groups of 3-4 the students will need to work together to measure stride length of at least one group member and then brainstorm to decide how they will use this information to reach their estimate. Someone in the group will need to record the data collected.

- **Procedures** – steps to follow/instructions
  1. Decide in a unit of measure and measure stride length that will be used in calculations.
     a. Go to the gym and use stride length to measure the size(length) of the schools bleachers.
     b. Count the number of rows of bleachers in the gym.
     c. Have group members sit on the bleachers and measure the distance required for the number of group members.
  2. Go back to the classroom and as a group use the information that was gathered to calculate the seating capacity of the gym.
- **Outcome instructions**
  1. Calculate the size(length) of the school gym
  2. Correctly record the number of rows of bleachers
  3. Use the distance recorded of the group members sitting on the bleachers to estimate how many students would sit in one row
  4. Use all data collected and recorded to estimate bleacher capacity
- **Assessment instructions** (peer-teacher)
  Teacher will monitor students in groups to assess learning as lab progresses. Teacher will assess how close group estimates are to actual seating capacity.

Lab Data Collection

Student: _____ Date: _____

Unit: _____

Lab Title:

Criteria: Write the problem/objective in statement form

Data Collection: Record the collected/given data

Calculations: Complete the given calculations to solve for an answer(s)

Summary Statement:

Other Assessment(s)