

Maria Reyes  
ETP Summer 2004

# **Data Collection: A Home-School Connection**

----

**An Educational Transfer Plan  
Presented to IISME  
In Partial Fulfillment of the  
Requirements of the Internship**

-----

**Sponsored by  
The San Jose Mercury News**

----

**Maria Reyes  
Summer 2004**

## **Data Collection: A Home-School Connection**

### **Abstract:**

The purpose of this unit is two-fold. I want my students to master the content areas covered in this unit as well as bridge their home and school worlds. In order to do this I will create lessons that give students the opportunity to collect data based on their own interests and curiosity. Data Collection is usually a chapter in our math books that we cover in less than two weeks and never revisit again. Given that we are a data driven world, I decided to take that chapter and turn it into a yearlong unit. At the beginning of the school year students are at a concrete graphing stage. This is an excellent time to graph real objects. Through out the year they will move to the pictorial stage where they will create picture graphs. Students will also be introduced to tally marks as a quick method to record collected data in a chart. As they move from picture graphs into an abstract graphing stage they will create and interpret bar graphs, where the graph does not resemble the items graphed. The development of these important skills will continue in the home. Students will have the ability to take home a programmed page once a month and collect data from their families. With the family data collected we will create graphs that represent the families in our classroom.

### **California State Content Standards – Grade One**

#### **Mathematics**

##### **Statistics, Data Analysis, and Probability**

1.0 Students organize, represent, and compare data by category on simple graphs and charts:

1.1 Sort objects and data by common attributes and describe the categories.

1.2 Represent and compare data (e.g., largest, smallest, most often, least often) by using pictures, bar graphs, tally charts, and picture graphs.

##### **Algebra and Functions**

1.0 Students use number sentences with operational symbols and expressions to solve problems:

1.1 Write and solve number sentences from problem situations that express relationships involving addition and subtraction.

1.2 Understand the meaning of the symbols +, -, =.

1.3 Create problem situations that might lead to given number sentences involving addition and subtraction.

#### **Spanish-language Arts**

##### **Writing**

1.0 Writing Strategies

Students write clear and coherent sentences and paragraphs that develop a central idea. Their writing shows they consider the audience and purpose. Students progress through the stages of the writing process (e.g., prewriting, drafting, revising, editing successive versions).

##### **Listening and Speaking**

1.0 Listening and Speaking Strategies

Students listen critically and respond appropriately to oral communication. They speak in a manner that guides the listener to understand important ideas by using proper phrasing, pitch, and modulation

## Overview

- ❖ Lesson 1 - In September students will learn about tally marks and create tables.
- ❖ Lesson 2 - In October students will create a pictograph.
- ❖ Lesson 3 - In November students will create a vertical bar graph.
- ❖ Lesson 4 - In December students will create a vertical bar graph.
- ❖ Lesson 5 - In January students will create a horizontal bar graph.
- ❖ Lesson 6 - In February students will create a horizontal bar graph.
- ❖ Lesson 7 - In March students will create a line graph.
- ❖ Lesson 8 - In April students will create line graph.
- ❖ Lesson 9 - In May students will create a Venn diagram.
- ❖ Lesson 10 – In June students will create a Venn diagram.

## Objectives:

Students will:

1. Use concrete models and tally marks to sort data and make a table.
2. Students will create questions to ask in surveys based on their own interests.
3. Collect data by surveying their fellow classmates to construct different types of graphs.
4. Collect data by surveying their families to construct different types of graphs.
5. Students will create and interpret picture graphs.
6. Students will create and interpret horizontal bar graphs.
7. Students will create and interpret vertical bar graphs.
8. Use words or pictures to draw conclusions based upon the information they've gathered.
9. Compare data collected to write and solve number sentences involving addition and subtraction.
10. Write clear and coherent sentences and paragraphs that develop a central idea.
11. Present their graphs in a manner that guides listeners to understand the important ideas.

## Our Favorite Activities Lesson 1 (September)

**Grade Level:** First

**Approximate Length:** 90 min. (This lesson can be done in one big block of time or broken up into several small blocks.)

**Learning Objectives:**

1. Students will use concrete models and tally marks to sort data and make a table.
2. Students will create questions to ask in surveys based on their own interests.

**Materials:**

- Chart paper
- Markers
- Counting cubes in different colors
- Letter to the families
- Data Collection sheets
- Computer
- Power Point

**I. ANTICIPATORY SET**

- A. Focus students: Share with your students your favorite thing to do in your spare time. *You know that as a teacher I have a lot of things to do. As a mother, I also have a lot of responsibilities. So whenever I have a minute to myself I love getting cozy with a good book. My favorite thing to do in my spare time is reading.*
- B. State the objective: *Today we are going to collect data (information) on your favorite thing to do when you have free time. Once we collect the data we are going to put in a table. A table helps us organize our data. Once we are done with this process we will brainstorm some questions that you would like to get some data on for our future lessons.*

**II. INSTRUCTION**

- A. Create a large table on chart paper

<b>Our Favorite Things To Do In Our Spare Time</b>		
<b>Activity</b>	<b>Votes</b>	<b>Total</b>

- B. Ask students: *Has anyone ever used a table to organize information? Can you give me an example?*
- C. Ask students one by one what they like to do on their spare time and write students' responses on the activity side of the table. You also need to write in 1 tally mark on the votes side.

\*\*Note: I did not program the activity side of the table because asking your own students what their favorite thing to do during their spare time will give you very valuable information. You can use that information to tailor your classroom management. Ex. Knowing your class likes and dislikes will help you offer rewards that they are truly interested in.

D. Help students understand the meaning of **Tally marks**.

❖ *I am using tally marks to help me keep count.*

❖ *Whenever some one tells me their favorite activity, I write in a tally mark in the votes column.*

❖ *The 5<sup>th</sup> tally mark is drawn across the first 4 tally marks to make one group of 5.*

E. Show students that once all the data is collected you go back and total your tally marks. Go ahead and total all your tally marks and write the corresponding number in the total column.

### III. GUIDED PRACTICE

- A. Give students a copy of tally chart worksheet (included as part of this lesson).
- B. Divide your class in groups of 4.
- C. Give each group a set of different colored connecting cubes. Have them sort the cubes by color. *How many cubes do you have?* Have them use a tally mark to show the color of each cube. Show them how to show five tally marks.
- D. *What is the total number of tally marks for each color?* Have students write the total number of tally marks in the total column.
- E. Ask questions that compare the number of different colors of cubes.

### IV. CLOSE/ASSESS

- A. Invite the students back to the discussion carpet
- B. Direct student's attention to the table they created earlier.
- C. Say: *Lets look at our table. When I look at this table I can get a lot of data about this class' favorite things to do in their spare time.*
- D. Ask questions that compare the number of votes for each activity.
  - How can you tell which activity is the most popular? (It has the most tally marks.)
  - Which activity is the least popular?
  - How many does each tally mark stand for?
  - How do you show 8 using tally marks?
  - Why do we group tally marks by fives?
- E. As a whole class brainstorm a list of questions that your students have interest in collecting data about. (
  - What is your favorite number?
  - What month where you born in?
  - What is your favorite color?
  - What hand do you write with?
  - How old are you?
  - What is your favorite book?
  - What is your favorite food?

- How tall are you?
- What do you want to be when you grow up?
- Do you like school?

**\*\*Note:** Post your list of questions on a classroom wall. Let your students know that you will be using their questions in future lessons and that it's a list in progress that they can feel to add questions to as their interests change.

#### **V. HOME CONNECTION:**

Give students a copy of the letter to take home to their families. Attached to it a programmed tally chart page to collect data.

#### **VI. ASSESSMENT**



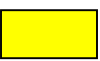
Student's comments, group work, and homework should indicate an awareness of the tally marks and tables. Make final assessment to determine if students have met the objectives by using the following rubric to grade their individual tally charts.

<b>Criterios de calificación</b>	
<b>3</b>	<ul style="list-style-type: none"><li>• <b>Mi tabla de conteo reflejá mis datos.</b></li><li>• <b>Respondí correctamente a las preguntas</b></li></ul>
<b>2</b>	<ul style="list-style-type: none"><li>• <b>Mi tabla de conteo no reflejá todos mis datos.</b></li><li>• <b>Respondí correctamente a unas de las preguntas.</b></li></ul>
<b>1</b>	<ul style="list-style-type: none"><li>• <b>Mi tabla de conteo no reflejá ninguno de mis datos.</b></li><li>• <b>No respondí correctamente a ninguna de las preguntas.</b></li></ul>

Nombre: \_\_\_\_\_

Fecha: \_\_\_\_\_

**Saca los cubos de la bolsa.  
Agrupa los cubos por color.  
Haz una tabla de conteo  
Responde a las preguntas.**

<b>Cubos de colores</b>		
<b>Color</b>	<b>Conteo</b>	<b>Total</b>
<b>rojo</b> 		
<b>azúl</b> 		
<b>amarillo</b> 		

1. **Cuántos cubos de color  hay?**

\_\_\_\_\_

2. **Cuántos cubos de color  hay?**

\_\_\_\_\_

3. **Cuántos cubos de color  hay?**

\_\_\_\_\_

4. **Cuántos cubos hay en total?**

\_\_\_\_\_

Querida Familia,

Duarante el año escolar nuestra clase va a aprender al leer y a hacer gráficas. Cada mes recibirá una carta como esta. En esta hoja encontrará el nuevo vocabulario que su hijo(a) aprenderá y la actividad que podran realizar juntos.

## Vocabulario

### **Tabla de conteo:**

Una tabla para anotar datos.

	<b>Conteo</b>	<b>Total</b>

### **Marcas de conteo:**

Una manera de llevar la cuenta. 

- Ayude a su niño o niña a coleccionar los datos necesarios para comopletar su tabla de conteo.
- Al pasear por la casa junto con su niño o niña prenguntadole la pregunta programada a los mimbros de su familia ayudele a poner una marca de conteo por cada respuesta.
- Hágale preguntas sobre los datos de la tabla de conteo. Por ejemplo, Cuál es la actividad más popular en está familia? Cuál es la menos popular?

Necesitan:

La hoja con la tabla de conteo.

<b>Actividad</b>	<b>Conteo</b>	<b>Total</b>
Leer		
cocinar		
Andar en bicicleta		
Otro		

Un lápiz



Su niño o niña tendra la oportunidad de compartir con la clase los datos de su familia. Esta información yo la podre poner en una hoja de PowerPoint para mostrar los pasatiempos favoritos de nuestras familias.

Gracias,

La maestra

Nombre: \_\_\_\_\_

Fecha: \_\_\_\_\_

Que te gusta hacer durante tu tiempo libre?

<b>Actividad</b>	<b>Conteo</b>	<b>Total</b>
<b>Leer</b>		
<b>Cocinar</b>		
<b>Andar en bicicleta</b>		
<b>Otro</b>		

Escribe una oración sobre tu table de conteo.

---

---

---

---

Name: \_\_\_\_\_

Date: \_\_\_\_\_

*Survey your family to find out* \_\_\_\_\_

?		
Choice	Tally Marks	Number
<b>Base (total number of people in your family)</b> _____		

*Use the data you have in your table to create a horizontal bar graph.*


0            1            2            3            4            5            6            7

Note to teacher: This is a blank template for you to use with your class. Select your own topics and questions to fill in the blanks. After you select your own topic, program the tally table and graph with the same choices. Give each student a copy of the programmed page to take home and collect the data. Tell students to mark each response on the tally table and color the graph to show results.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

*Survey your family to find out the highest grade they completed. Use tally marks to keep count of your data.*

## Education

What is your highest level of education?		
Choice	Tally Marks	Number
College Degree		
Some College		
High School		
Middle School		
Elementary School		
No Formal Schooling		
Base (total number of people in your family) _____		

### Highest Level of Education completed

College Degree							
Some College							
High School							
Middle School							
Elementary School							
No formal schooling							

Number of people in your family \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

*Write four sentences about the graph.*

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

Nombre: \_\_\_\_\_

Fecha: \_\_\_\_\_

*Write four sentences about the graph.*

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_