Title/Description of Lesson
Statistical concept of Mode as seen through the use of Shapes and Color in art

Grade Level:
2nd, 4th and 5th

Lesson Links

Objectives/Outcomes
Materials and Resources
Vocabulary
Procedures
Criteria for Assessing Student Learning
California Standards in Visual & Performing Arts
California Standards for Integrated Subject
Other Resources

Objectives/Outcomes  (Return to Links)

Relate/connect the use of different shapes and different colors in an art composition to the math concept of ‘Mode’. [Define: Mode – in a dataset, the number that occurs the most is the mode.]  {ex. (1, 7, 3, 6, 3, 9, 5) …the mode is the number 3.}

Materials and Resources  (Return to Links)

Circles(3” Diam.), squares(3” side) and triangles(Equilateral, 3” sides) cut from poster or tag board. A set for every 2 students to share.
Sheet of White or gray paper (9x12 or 12x18)
Pencil
Red, blue and yellow crayons, enough for class…(each student needs 1 of each,… they could share by partners again.)
Worksheet attached under ‘Other Resources’ (print out and copy)
**Vocabulary**  [Return to Links](#)

Compose – The arrangement of the elements of art in a balance work of art.

Data Set – a collection of data, a group of numbers, examples, or things.

Mode – In a data set of number, the number that occurs the most number of times.

**Procedures**  [Return to Links](#)

This lesson is intended to support the discussion of the statistical concept of mode. It can be used after a math lesson that presents the concept or it can be used as reinforcement of the concept later in the year following the teaching of the concept in math class.

1. Student are put in pairs in order to work together.
2. Distribute a sheet of paper to each student.
3. Give each pair a set of stencil shapes (circle, square and triangle…see materials list above).
4. Instruct the students that they are to use the shapes to trace on the paper and compose a geometric design.
5. Students are told they must use all the shapes. Each shape should be used at least 2 times and they are to trace 11 shapes total. Tell them that it is okay if shapes overlap. They will need to erase the lines that are not necessary due to be under a shape.
6. Next distribute the Crayons(red, blue, yellow) to all students.
7. Instruct them to use only one color per shape. For overlapping shapes, they must remember which shapes are on top. Remind them to be careful when coloring.
8. They must use each color at least twice.
9. Once they have finished the drawing, ask them to count how many times that they traced each shape and record their totals on the attached tally sheet.
10. This should be repeated for the colors and record these totals on the tally sheet as well.
11. Ask students to report on which shape and color was used the most in their drawing. Have them identify the shape and color mode.
12. Led a discussion on how the shape used most and the color used most are modes for the set of shapes used in their drawings. Draw comparison with math datasets of numbers. Through discussion, facilitate the students reaching the real world connection that the mode is applicable to any real world situation in which objects, products, opinion, choices are made and we want to identify which choice is made or preferred most.
13. Extension Activity: You could tally the results from the class…numbers of circles, triangles, squares for each student…same with colors. This would show class preferences for the shapes and colors.
14. Extension Activity: Collect the number of shape usage for each student and examine the numbers as a datasets. How many times did each student use circles? Place the numbers into 1 long data set, order them and have the class identify the mode. This would bring the concept full circle back to math and a dataset of numbers.
Criteria for Assessing Student Learning

Each student will produce 1 drawing and complete the tally sheet.

1. Did the student use each shape at least twice and have a total of 11 shapes?
2. Did the student use each color at least twice?
3. Did the student complete the tally sheet?
4. Was the student able to identify the shape and color used most?
5. Was the student able to identify the mode for each set?

California Standards in Visual & Performing Arts

2.0 CREATIVE EXPRESSION (Make)
Creating, Performing, and Participating in the Visual Arts

Students apply artistic processes and skills, using a variety of media to communicate meaning and intent in original works of art.

5.0 CONNECTIONS, RELATIONSHIPS, APPLICATIONS (Connect)
Connecting and Applying What Is Learned in the Visual Arts to Other Art Forms and Subject Areas and to Careers

Students apply what they learn in the visual arts across subject areas. They develop competencies and creative skills in problem solving, communication, and management of time and resources that contribute to lifelong learning and career skills. They also learn about careers in and related to the visual arts.

California Standards for Integrated Subject

Math

2nd Grade

Statistics, Data Analysis, and Probability
1.0 Students collect numerical data and record, organize, display, and interpret the data on bar graphs and other representations:
1.1 Record numerical data in systematic ways, keeping track of what has been counted.
1.2 Represent the same data set in more than one way (e.g., bar graphs and charts with tallies).
1.3 Identify features of data sets (range and mode).
1.4 Ask and answer simple questions related to data representations.
4th Grade

Statistics, Data Analysis, and Probability
1.2 Identify the mode(s) for sets of categorical data and the mode(s), median, and any apparent outliers for numerical data sets.

5th Grade

Statistics, Data Analysis, and Probability
1.1 Know the concepts of mean, median, and mode; compute and compare simple examples to show that they may differ.

Other Resources  (Return to Links)

Following 2 pages are to be used as worksheets…

- Tally Worksheet (Depending on your printer, it may try to print this documents background. Test and if needed, copy and paste into a new word document with a white background. This will save printer and copy machine ink.)

- Triangle, Square and Circle template (copy on card stock and then cut out for use as a template for students to trace.)
### Shape Mode

<table>
<thead>
<tr>
<th>Shapes</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circle</td>
<td></td>
</tr>
<tr>
<td>Square</td>
<td></td>
</tr>
<tr>
<td>Triangle</td>
<td></td>
</tr>
</tbody>
</table>

Which shape was used most? _______________

The shape used most can be called the mode for the set of shapes used.

What shape is the mode for this set of shapes? ______________

### Color Mode

<table>
<thead>
<tr>
<th>Colors</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td></td>
</tr>
<tr>
<td>Yellow</td>
<td></td>
</tr>
</tbody>
</table>

Which color was used most? ______________

The color used most can be called the mode for the set of colors used.

What color is the mode for this set of colors? ______________