

“Flat Stanley Visits Miss Eacrett’s Class” Lesson Plan

Lesson: Flat Stanley Visits Miss Eacrett’s Class

Date: November 11, 2005

Strand: All strands of math.

Class: 1/2 Congregated Gifted

Duration: 6 x 20 min. (math component)

Associate Teacher: Emily Eacrett

Resources

- Flat Stanley by Jeff Brown
- Flat Stanley templates (one per student)
- "Flat Stanley Survey"
 - sufficient copies of worksheet for all students in appropriate grade level
 - Stanley-parts pictos (one set per student)
 - class graph posters
 - fun-tac
- Learning centre bins:
 - "Flat Stanley's Mail" -- sufficient copies of worksheet for all students in appropriate grade level
 - 45 index card decorated to look like postcards
 - coin manipulatives
 - stamp manipulatives in units of 25¢, 10¢ and 5¢
 - "Flat Stanley Patterning"
 - sufficient copies of worksheet for all students in appropriate grade level
 - "Flat Stanley Symmetry"
 - sufficient copies of worksheet for all students in appropriate grade level
 - Miras
 - "Flat Stanley Dominos"
 - sufficient copies of worksheet for all students in appropriate grade level
 - loose dominoes, and dominoes in preordained groups of three in numbered
 - "Flat Stanley Geometry"
 - sufficient copies of worksheet for all students in appropriate grade level
 - geometric shape manipulatives
 - blank paper
 - scissors
 - glue
 - "Flat Stanley Measurement"
 - sufficient copies of worksheet for all students in appropriate grade level

* Note: All templates and worksheets attached

Overall Expectations

Number Sense and Numeration

By the end of Grade 1, students will:

- read, represent and compare whole numbers to 50, and use concrete materials to investigate fractions and money amounts;
- solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of strategies

By the end of Grade 2, students will:

- read, represent and compare whole numbers to 100, and use concrete materials to investigate fractions and money amounts to 100¢;
- solve problems involving the addition and subtraction of one- and two-digit whole numbers, using a variety of strategies, and investigate multiplication and division.

Measurement

By the end of Grade 1, students will:

- estimate, measure, and describe length, area, mass, capacity, time, and temperature, using non-standard units of the same size;
- compare, describe, and order objects, using attributes measures in non-standard units.

By the end of Grade 2, students will:

- estimate, measure, and record length, perimeter, area, mass, capacity, time, and temperature, using non-standard units and standard units;
- compare, describe, and order objects, using attributes measures in non-standard units and standard units.

Geometry and Spatial Sense

By the end of Grade 1, students will:

- identify common two-dimensional shapes and three-dimensional figures and sort and classify them by their attributes

By the end of Grade 2, students will:

- identify two-dimensional shapes and three-dimensional figures and sort and classify them by their geometric properties

Patterning and Algebra

By the end of Grade 1, students will:

- identify, describe, extend, and create repeating patterns

By the end of Grade 2, students will:

- identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns.

Data Management and Probability

By the end of Grade 1, students will:

- collect and organize categorical primary data and display the data using concrete graphs and pictographs, without regard to the order of labels on the horizontal axis;
- read and describe primary data presented in concrete graphs and pictographs

By the end of Grade 2, students will:

- collect and organize categorical or discrete primary data and display the data using charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, with labels ordered appropriately along horizontal axes, as needed;
- read and describe primary data presented in tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers

Specific Expectations

Number Sense and Numeration

By the end of Grade 1, students will:

- represent, compare and order whole numbers to 50, using a variety of tools and contexts;
- estimate the number of objects in a set, and check by counting;
- count forward by 1's, 2's, 5's and 10's to 100, using a variety of tools and strategies

By the end of Grade 2, students will:

- represent, compare and order whole numbers to 100, including money amounts to 100¢, using a variety of tools;
- compose and decompose two-digit numbers in a variety of ways, using concrete material
- represent and explain, through investigation using concrete materials and drawings, multiplication as the combining of equal groups.

Measurement

By the end of Grade 1, students will:

- demonstrate an understanding of the use of non-standard units of the same size for measuring;
- estimate, measure, and record lengths, heights, and distances;
- estimate, measure, and describe area, through investigation using non-standard units;
- compare and order objects by their linear measurements, using the same non-standard unit.

By the end of Grade 2, students will:

- estimate, measure, and record the distance around objects, using non-standard units;
- estimate, measure, and record area, through investigation using a variety of non-standard units

Geometry and Spatial Sense

By the end of Grade 1, students will:

- identify and describe common two-dimensional shapes (e.g., circles, triangles, rectangles, squares) and sort and classify them by their attributes, using concrete materials and pictorial representations;
- locate shapes in the environment that have symmetry, and describe the symmetry;
- compose patterns, pictures, and designs, using common two-dimensional shapes.

By the end of Grade 2, students will:

- identify and describe various polygons (i.e., triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons) and sort and classify them by their geometric properties, using concrete materials and pictorial representations;
- locate the line of symmetry in a two-dimensional shape.

Patterning and Algebra

By the end of Grade 1, students will:

- identify, describe, and extend, through investigation, geometric repeating patterns involving one attribute.

By the end of Grade 2, students will:

- identify repeating, growing, and shrinking patterns found in real-life contexts;
- create a repeating pattern by combining two attributes.

Data Management and Probability

By the end of Grade 1, students will:

- demonstrate an ability to organize objects into categories by sorting and classifying objects using one attribute...
- collect and organize primary data that is categorical and display the data using one-to-one correspondence, prepared templates of concrete graphs and pictographs, and a variety of recording methods;
- read primary data presented in concrete graphs and pictographs, and describe the data using comparative language.

By the end of Grade 2, students will:

- demonstrate an ability to organize objects into categories by sorting and classifying objects using two attributes simultaneously;
- gather data to answer a question, using a simple survey with a limited number of

- responses;
- collect and organize primary data that is categorical or discrete, and display the data using one-to-one correspondence in concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, with appropriate titles and labels and with labels ordered appropriately along horizontal axes, as needed;
 - read primary data presented in concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, and describe the data using mathematical language;
 - pose and answer questions about class-generated data in concrete graphs, pictographs, line plots, simple bar graphs, and tally charts.

Introduction

Anticipatory Set

1. Set the stage for students: "Imagine, one morning, you wake up to find that a bulletin board has fallen on you in the middle of the night. You're fine, except for one thing... you're flat. Very flat. Flat-as-a-pancake flat. You're about as thick as my finger. What would life be like for you? What could you do?..."
2. This multi-part math lesson begins in Language Arts, with the reading of Jeff Brown's Flat Stanley -- the story of a boy who, flat as a kite, goes on numerous adventures. The multi-part math lesson outlined here follows the group reading of this book.

Setting the Objective

1. Students will have the opportunity to look at the world through Stanley's eyes, exploring the mathematics of being flat. This will occur both through learning centres and large-group teacher-led mini-lesson (for data management).

Lesson Format

Input

1. Much of this lesson will occur through rotating learning centres, each one addressing a different strand of mathematics. First, however, the teacher will lead students through the data management activity:
 - a. Students receive their own Flat Stanley template and are asked to colour it as they please.
 - b. Students are invited to share their Flat Stanleys with the class.
 - c. Teacher comments on the wide variety of Flat Stanleys in the class: "I wonder how many of our Stanleys are wearing red shirts? Or how many... Let's find

out..."

- d. Students are asked to brainstorm (first individually, then with a partner) different ways to sort the Stanleys (hair colour, shirt colour / pattern, footwear, style of pants, etc). Ideas are recorded on "Flat Stanley Survey" sheets, then shared as a class.

Modelling

1. Teacher comments that her Stanley has a particular attribute (red hair, yellow shirt, etc.) and wonders how that compares to the rest of the class. Are there more Stanleys with another colour shirt?
2. Students are asked to brainstorm in groups of 3/4 strategies for comparing data, then ideas are shared as a class. Teacher draws out the suggestion of graphing, but poses challenge of putting all the Stanleys on the board. Suggests pictos as solution.
3. Grade 2 students are challenged to label the chart appropriately.
4. Students receive a set of pictos, which they colour to correspond to their individual Stanley, and then cut out.
5. Students are invited to place their appropriate picto (depending on what attribute is being compared) on the graph.
6. Students are invited to compare attributes on graph. ("What kind of shirt is most popular? What is the rarest kind of hair?...")

Guided Group Practice

1. Students repeat exercise, but comparing a new attribute.
2. Teacher asks various students to lead the activity, guided by teacher's "praise, prompt and leave" strategy.

Check for Understanding

1. Occurs throughout the activity, through questioning (whole class and individual students as teacher circulates during brainstorming sessions).
2. Occurs especially during "Guided Group Practice" section: Teacher questions reason for each step.

Independent Practice

1. Grade 2 students are challenged to survey the Stanleys re: two attributes (blue shirt with stripes, blue shirt without stripes, blue shirt with dots, etc.)
2. Students are divided into five groups of five in order to explore each of the learning centres (over the next few classes):
 - a. "Flat Stanley's Mail" -- through exploration of manipulatives, students explore patterning and number sense & numeration
 - b. "Flat Stanley Patterning" -- students create repeating patterns using one or two

- attributes
- c. "Flat Stanley Symmetry" -- students identify and create symmetry
 - d. "Flat Stanley Dominos" -- students explore number sense and numeration through use of domino manipulatives
 - e. "Flat Stanley Geometry" -- students create pictures with two-dimensional geometric shapes that they have identified and described
 - f. "Flat Stanley Measurement" -- students use non-standard unit of measurement (Flat Stanleys) to estimate, measure and record lengths, heights, distances and areas.

Subject Integration

The Flat Stanley project lends itself very well to extensive cross-curricular integration on numerous subject areas, the most obvious of which is Language Arts:

Students begin by listening to the teacher read *Flat Stanley* aloud. Throughout, the teacher asks questions which encourage students to respond based on their thoughts and experiences. For example, Stanley and his brother Arthur do not always get along in the story. Do any of the students have brothers or sisters they sometimes make angry, and later try to make feel better? Students can share their experiences.

Flat Stanley lends itself quite well to reader's theatre, as well. Students could practice and read aloud such a version of the story – either a script written by the teacher, or one they developed themselves – in order to better their fluency.

The fact that Stanley enjoys so many adventures, including travelling by mail to visit his friend in California, opens the door to numerous writing projects. Students could write Stanley's daily journal as he visits their class and their homes. Through the Flat Stanley Project website, students could link up with penpals from another city and/or country and exchange letters or e-mails. When they send Flat Stanley to visit their distant friends, then can send his journal, along with a written description of their community. When the foreign Flat Stanley arrives for his visit, students can add to his journal as well.

Flat Stanley also lends itself to numerous creative writing possibilities: add another chapter to the book, write a sequel, a day in the life of Flat [*Student's Name*], a newspaper article detailing Flat Stanley's ordeal, etc. The possibilities are countless.

Subject integration can also continue into Visual Art, Social Studies and Science. Students can make a diorama of their favourite part of the book. They can learn more about their significant relationships and their home communities (family, class, school, neighbourhood, city) as well as the communities of their penpals. Having studied the rainforest, for example, students can exchange letters with a class from Brazil and ask them about life in the rainforest region. Another idea is to build kites, inspired by Stanley's adventures as a kite.

Cross-Curricular Expectations

Language Arts: Oral and Visual Communication

By the end of Grade 1, students will:

- listen and react to stories and recount personal experiences

By the end of Grade 2, students will:

- retell stories and recount personal experiences, presenting events in a coherent sequence;
- talk about characters and situations in stories, and information in non-fiction materials, and relate them to personal experiences.

Language Arts: Reading

By the end of Grade 1 / 2 , students will:

- read a variety of simple written materials for different purposes;
- read aloud in a way that communicates the meaning

Language Arts: Writing

By the end of Grade 1, students will:

- communicate ideas for specific purposes;
- organize information so that the writing conveys a clear message;
- write simple sentences using proper punctuation;
- produce short pieces of writing using simple forms;
- begin to revise written work, with the assistance of the teacher;
- use and spell correctly the vocabulary appropriate for this grade level;
- use correctly the conventions specified for this grade level.

By the end of Grade 2, students will:

- communicate ideas for specific purposes;
- organize ideas in a logical sequence;
- begin to write more elaborate sentences by using adjectives and adverbs;
- produce short pieces of writing using simple forms;
- revise and edit written work, focusing on specific features;
- use and spell correctly the vocabulary appropriate for this grade;
- use correctly the conventions specified for this grade level.

Science and Technology: Matters and Materials – Characteristics of Objects and Properties of Materials

By the end of Grade 1, students will:

- investigate the properties of materials and make appropriate use of materials when designing and making objects

Science and Technology: Energy and Control – Energy from Wind and Moving Water

By the end of Grade 2, students will:

- demonstrate an understanding of the movement of air and of water as sources of energy;
- design and construct devices that are propelled by moving air or moving water;
- identify wind and moving water as renewable sources of energy and determine the advantages and disadvantages of using them.

Social Studies: Heritage and Citizenship – Relationships, Rules and Responsibilities

By the end of Grade 1, students will:

- identify people with whom they have significant relationships, and the rules and responsibilities associated with people, places, and events in their lives and communities.

Social Studies: Heritage and Citizenship – Traditions and Celebrations

By the end of Grade 2, students will:

- demonstrate an understanding that Canada is a country of many cultures;
- use a variety of resources and tools to gather, process, and communicate information about similarities and differences among family traditions and celebrations;
- explain how the various cultures of individuals and groups contribute to the local community.

Assessment / Evaluation

Many of the learning centres are intended as review and continued practice of particular concepts to which students have already been introduced: number sense and numeration, patterning, symmetry, etc. In these cases, assessment will primarily be formative, ensuring that students have achieved the expectations. Other learning centres give students the opportunity to explore something new, or in a new way: geometry, measurement. In these circumstances, assessment will primarily be diagnostic, checking to see what understanding students already have of the concept and how they are able to apply this understanding. The teacher-led large group activity (data management) is a mixture of the two: continuation of what has begun, and expansion of the concept. In all cases, the assessment tools and procedures are similar, though the information that is gathered will change.

If this unit is applied as a summative performance task, however, an evaluative rubric is required. See attached for a “translation” of the checklist into a rubric.

Anecdotal Evidence

During the large-group activity, assessment will primarily be in the form of anecdotal evidence. The teacher will note students’ strategies and suggestions during class discussions and brainstorming sessions (gathered by circulating among students). A checklist (see attached) will help in the process. Students are being assessed on their problem-solving skills, their reasoning and their achievement of the expectations.

Conferencing and Worksheets

Each learning centre has an accompanying worksheet – not because pencil-and-paper is necessarily the best way to learn, but because it gives some tangible evidence of the student’s work, since not every moment can be caught through anecdotal observations. Many of the worksheets ask students to justify their answer by explaining their strategy or by explaining through numbers, pictures and words.

Worksheets alone do not always communicate a student’s understanding, however. For this reason, a third assessment strategy for this unit is conferencing. Students will meet individually with the teacher, bringing with them their favourite and least favourite worksheet. Students will be asked questions in order to gather information about their thinking, their understanding and their attitudes. Sample questions include:

- How do you know this is the answer?
- What was your strategy? / How did you come up with your answer?
- What is another way you might have...?
- What do you like most / least about this learning centre?
- What did you find most challenging? ...most interesting?

Math Journals

A fourth method of assessment will be the math journals. Students will be asked to reflect upon their work. Sample journal topics include:

- What math centre did you visit today and what did you discover?
- What was the best / worst thing about math today?
- What strategy did you use today that you like best? Why?
- How would you use what you did today in your life?
- Think of something you learned today that is like something you already knew. Write about how they are alike, and how they are different.
- How well do you think you understand about what you did today?
- About what would you like to know more?

Math journals will be evaluated both diagnostically (to determine the student's level of understanding and their thought process) and also cumulatively and summatively for their clarity and completeness (see attached rubric).

Bibliography of Resources Used

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