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Title: Second Grade Teacher

Subject(s): Math

Intended Grade Level(s): 2nd grade

Description: This is a collection of differentiated computer tasks that have been planned according to prior knowledge of Michigan Benchmarks for math patterns, variability, and change concepts. There are at least ten activities for three groups with varying abilities. All of the differentiated activities incorporate Blooms Taxonomy. Activities are labeled according to thinking skill and reach the upper-tier task levels and attempt to accommodate multiple intelligences. Kinesthetic and musical areas are not included. Children will have opportunities to work with sound and kinesthetic activities during Math Center Time. Children are grouped in the following way:

1. Student shows little prior-knowledge about number patterns variability, and change.
2. Student shows development of concepts and expanding knowledge.
3. Student shows advanced knowledge and would benefit from enrichment activities.

Children have an opportunity to work with a printed card copy of the activities or KidPix templates saved on a floppy disk. Again, many children vary with their computer skills in the early grades, and some are still struggling to log onto the network because of the cumbersome procedure. Others will be able to open and save their own copy of the template. Complete the activity and save it as their original product. Of course, all efforts will be made to orientate and teach all children to work from a template.

All students will be expected to complete at least six out of the ten activities. Students will also be aware of the "Problem Solving" rubric for assessment. An example of an activity from each group is attached. All template activities are listed below under "Activities". As a follow-up activity students may complete a slide show of their six completed task cards.

Curriculum Benchmarks:

Mat. 1.1.E 1. Patterns:

1. Describe and extend numerical and geometric patterns.
2. Represent and record patterns and relationships in a variety of ways including tables, charts, and pictures.
3. Use patterns to describe real-world phenomena.
4. Explore various types of numeric and geometric patterns, (repeating, growing, shrinking).
5. Apply their experiences with patterns to help solve problems and explore new content.

Mat. 1.2.E Variability and Change

1. Recognize change and variability when it occurs in a variety of settings.
2. Recognize that change is often predictable, but variable, and that patterns emerge that help to describe the change.

National Educational Technology Standards:

Technology productivity tools

Students use technology tools to enhance learning, increase productivity, and promote creativity.

Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

Materials/Hardware/Software: Students need either printed copies of task cards or they may use a floppy disks with templates already made. All of the tasks have examples and some “technology tips” listed on the cards. Students will use a computer with Kid Pix Deluxe software. Publisher information is as follows for WINDOWS CD_ROM: Windows 95, 98, 2000 or N.T. 4.00, 233 MHz Pentium or faster, 32MB RAM, 100MB hard drive space, 4XCD-ROM drive or faster, 800 x 600 display, windows compatible printer, and microphone. The program is also compatible with Macintosh systems.

Teacher Preparation: The teacher will pre-test the students in the second grade and determine prior knowledge regarding math patterns, variability and change. The teacher will evaluate pre-test information and place students in three groups and assign color coded task cards according to group needs.

Students will complete the activities as described above during their Computer Lab time, about 50 minutes once a week. The classroom computer will also be used as a Math Center activity five days a week.

Teacher Preparation continued:

As students work on and complete assignments, the teacher and lab helper will observe and give assistance to students when necessary. The teacher will also view and assess KidPix slides from printed copies, KidPix pictures, or the completed slide show. In addition to working on the computer with, students will work with manipulatives during Math Center time and have center activities that target benchmarks.

Student Preparation: Students should have had adequate time to explore the basic features of KidPix. Students would also have time to use real objects to reinforce concepts. Explain to expectations to students and set up of cards and templates.

What do students need to know how to do before this lesson?

Students should know basic tools bar operation with KidPix such as inserting text, selecting color and texture, erasing, making stamps larger, moving objects, and basic use of the pencil and square or circle tools. Students should also know how to save their work either on the network or on a floppy disk. How to make a slide show would also be helpful.

In addition, children should be know that they are expected to complete at least six activities using the templates or by creating their own by looking at the printed copy. If working from a printed copy, students should know where to place name, number activity and color group.

Activities/Procedures:

Group One: Little prior knowledge group (Yellow Group) Task Cards:

Analysis

1. Make a skip counting pattern. Use large and small stamps to show tens and one in a numbers.
2. Survey 8 friends. Ask them one of the following questions or make up your own yes or no question.
 1. Do you like mustard?
 2. Do you like carrots?
 3. Do you like spelling quizzes?

Make a graph to show how many Yes and No answers you recorded.

3. Draw a pattern you have seen in nature or around school. Describe it, such as "I saw this pattern in a compound leaf, or I saw this pattern on a turtle."

Evaluation

4. Stamp four rows of patterns, make a mistake and ask a friend if they can find the mistake.
5. Stamp around the page. Use the pencil to group the stamps into groups of tens and ones. Label the tens and ones.
6. Stamp your own pattern. Describe it. For example is it an AB, ABC, AABB pattern? Is it big...small...big....small?

Synthesis

7. Make a pattern, and ask a friend to rearrange it in a new way. Help them by using the moving van magnet.
8. Pick a stamp set and stamp at least 10 stamps. Use the moving van magnet to sort them two different ways.
9. Make a pattern quilt with the square tool. Use four different colors and make at least four rows. Look at it and use the pencil tool to circle where the pattern your pattern repeats in your quilt. Try another pattern.
10. Use the large stamp to show tens, and skip count by tens. Use the small stamp to add ones. Skip count by tens. For example 10, 20, 30...13, 23, 33.

Group 2: Shows development of concepts and expanding knowledge about number patterns (Green Group) Task Cards

Analysis

1. Skip count by tens and ones. Show tens with the larger stamp and ones with the smaller stamp.
2. Use the circle tool and fill with at least three different textures or colors. Ask a friend to name the pattern. Do you agree with your friend?
3. Pick a stamp set and stamp at least 15 stamps. Use the moving van tool magnet to sort them in two different ways.
4. Continue the skip counting pattern. Show them with the larger stamp and ones with the smaller stamp. Example, 26, 36, 46 ...

Evaluation

5. Stamp four rows of patterns, make a mistake and ask a friend if they can find the mistake.
6. Make a "What's the Rule?" picture. Tell what the rule is. Example, 30, 35 40 ____ 50. "It's counting by fives."
7. Think of a survey question where they can only answer yes or no. Ask ten friends and graph how many yes and no answers. Write a sentence about your results.

Synthesis

8. Invent a new pattern using the circle tool. Ask a friend to describe what will come next.
9. Make a pattern quilt with the square tool. Use three different colors and make it 4 across and 3 down. Look at it and describe the pattern you see happening in your quilt. Try another pattern.
10. Draw a pattern you have seen in nature or around school. Think of something it reminds you and tell about it. Example, The leaf pattern reminds me of a map.

Group Three: Shows advanced knowledge and would benefit from enrichment activities (Orange Group)

Analysis

1. Skip count by tens and ones. Show tens with the larger stamp and ones with the smaller stamp.
2. Stamp sets for multiplication facts. Example, *** *** *** $3 \times 3 + 9$
3. Continue the skip counting pattern by tens and ones. Show them with the larger stamp and ones with the smaller stamp. Example, ____, ____, 27, 37, 47, ____ ____

Evaluation

4. Make a "What's the Rule?" picture. Tell what the rule is. Example, 12, 22,.. They increase by 10. or 1, 2, 3, ... They increase by 1.
5. Make a calendar for this month. Use two different cafeteria lunch menus to find "What's for Lunch" patterns. Example, If It's the second Wednesday, pizza is for lunch! How about cheeseburgers?
6. Think of a survey question where they can only answer yes or no. Ask ten friends and graph how many yes and no answers. Write a sentence about your results.

Synthesis

7. Draw a pattern you have seen in nature or around school. Compare it to something else you have seen. Example, the ridges around my pumpkin looks the same as a basketball.
8. Write and illustrate a "new" version of a nursery rhyme, song, or poem to skip count by twos, fives, tens, or twenty fives. Example, Hop, Hop little kangaroo, have you any bounces? Yes sir, Yes sir, 3, 6, 9 pounces. Hop, hop, little kangaroo, 12, 15, 18, quick run away from the mouse.
9. Write a short story about an even or odd number and draw a picture that goes along with it. Example, Two was always happy, she didn't get mad what 3 got one more cookie.
10. Make a pattern quilt with the square tool. Make try different patterns with the same colors or textures. Compare them and write what about the patterns you see.

Assessment/Evaluation: Pre-test of prior knowledge of number pattern, variability and change. A Rubric for problem solving task cards (attachment), and post-test.

Follow-up Activities: After completing at least six activities, students will complete a slide show of the activities.