Curriculum Project Final

UNDERSTANDING BY DESIGN

Unit Cover Page

Unit Title: Numbers 0 to 10

Grade Level: kindergarten

Subject/Topic Area(s): Math/numbers and operations

Designed By: Kay Garbarino-Flowers

Time Frame: 12 lessons, 3 weeks

Context: I teach half day kindergarten in a suburban school district. The student demographics within the class consist of 53% English Language Learners (ELL), 73.3% girls, 26.7% boys, and over the course of the year, a student turnover rate of 33%. Math takes place 4 days a week for 30 minutes after recess.

Brief Summary of Unit (Including curricular context and unit goals):

Currently, our district sequencing guide has the content that I will cover in my unit distributed between two units. These units are scheduled for student learning in November. Units scheduled prior to November include learning the days of the week and months of the year, sorting & classifying objects, position & location of objects, and patterns. I do understand the philosophy behind this sequencing guide, since numbers increase in a pattern. However, students become frustrated early in the year when they cannot recognize numbers on the calendar or in their reading magazines, while some of their peers are capable of this skill. Students who are able to identify numbers often do not understand what the number represents, nor are they able to clearly write the numbers. Since we use a calendar from the beginning of the year and reading magazines three weeks into the year, I feel that a small change in the sequencing guide is necessary. Introducing this content early in the year gives students time to practice counting and writing numbers before we introduce composing and decomposing numbers.

The learning standards addressed in these units are: 1) Counts objects and orders numbers, 2) Composes and decomposes numbers to 5 fluently, and 3) Joins & separates sets to model addition & subtraction. I propose breaking these units into two parts, addressing standard 1 at the beginning of the year and saving standards 2 & 3 for students after they practice and understand sorting, classifying, defining position & location, and patterning.

Unit goals: I can identify and write the numbers from 0 to 10. I can count up to 10 objects.

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STAGE 1 – DESIRED RESULTS

Content Standard(s) retrieved from
http://standards.ospi.k12.wa.us/ContentWithPEs.aspx?subject=7,PE&gl=1&content=96

K.1. Whole numbers (Numbers, Operations): Students begin to develop basic notions of numbers and use numbers to think about objects and the world around them. They practice counting objects in sets, and they think about how numbers are ordered by showing the numbers on the number line. As they put together and take apart simple numbers, students lay the groundwork for learning how to add and subtract. Understanding numbers is perhaps the most central idea in all of mathematics, and if students build and maintain a strong foundation of number sense and number skills, they will be able to succeed with increasingly sophisticated numerical knowledge and skills from year to year.
K.1.A. Rote count by ones forward from 1 to 100 and backward from any number in the range of 10 to 1.*
K.1.B. Read aloud numerals from 0 to 31.*
K.1.E. Count objects in a set of up to 20, and count out a specific number of up to 20 objects from a larger set.*

*This unit will begin to address this skill.

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Understanding(s) **Students will understand that…**

Retrieved from Pearsonsuccessnet.com, secure online access to enVision Math.

1. Counting tells how many are in a set or how many are part of a set.
2. The order in which the objects are counted is irrelevant.
3. The last number said when counting a set is the total number of objects in the set.
4. Counting is cumulative.
5. There is a unique symbol that goes with each number.

Essential Question(s) for unit: **Q**

Retrieved from Pearsonsuccessnet.com, secure online access to enVision Math.

Lesson 4-1: How does counting tell how many? (Corresponding enduring understandings 1, 2, &3)
Lesson 4-2: Why is writing the number 1, 2, or 3 important? (Corresponding enduring understanding 5)
Lesson 4-3: Why is the last number you say important when counting a set of objects? (Corresponding enduring understandings 2 & 3)
Lesson 4-4: Why is writing the numbers 4 & 5 important? (Corresponding enduring understanding 5)
Lesson 5-1: How can you be sure you are counting correctly? (Corresponding enduring understanding 4)
Lesson 5-3: Why is writing the number 6 or 7 important? (Corresponding enduring understanding 5)
Lesson 5-6: When can you write the number 8 to tell how many items are in a group? (Corresponding enduring understanding 5)
Lesson 5-7: How do you use counting to tell how many objects are in a group? (Corresponding enduring understandings 1, 2, 3, & 4)
Lesson 5-9: Which number can you use to show there are 10 items in a group? Can you use any other number to show 10 items? (Corresponding enduring understanding 5)

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Students will know…	*Students will be able to:*	**K**

- Students will know that counting is cumulative and the last number said when counting a set of objects is the total.
- Students will know there is a unique symbol that goes with each number.
- Students will be able to count a set of up to 10 objects.
- Students will be able to write the symbol for a set of objects counted when that set is from 0 to 10.

STAGE 2 – ASSESSMENT EVIDENCE

Performance Task   **T**

The performance task goals are to: identify numerals 0 to 10, write numerals 0 to 10, and count 0 to 10 objects. The performance task will consist of each student creating a personal number journal followed by creating a video number journal.

The personal number journal will consist of a cover page followed by a page for each number 0 to 10. Each page will have a ten-frame containing a specific number of objects.

Students will count the number of objects within the frame and circle the correct numeral. This addresses the goals: count 0 to 10 objects and identify numerals 0 to 10.

Students will then write the number on the writing line six times. This task addresses the goal writes numerals 0 to 10.

Students will then draw the same number of objects in the box below the writing line, addressing the goal counting 0 to 10 objects. Students may draw objects of their choice.

The number journal will be assembled in numerical order.

The video number journal will have students demonstrating their ability to count 0 to 10 objects out of a larger set of objects. Students will count 0 to 10 objects from a larger set of objects, once for every number 0 to 10. At the end of each counted subset, the student will write the numeral on a white board and hold the number up, saying the number, much like the Count in the video the *Count and the Cookie Monster*. Each student's video segments will be placed into a single video per student and posted on the class blog.

Key Criteria:

Student is able to count forward from 0 to 10.
Student is able to count backwards from 10 to 0.
Student is able to identify numerals 0 to 10 out of sequence.
Student is able to count objects in a set of up to 10 objects.
Student is able to count out a specific number of up to 10 objects from a larger set.

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<table>
<tr><td colspan="2">Rubric based upon Key Criteria
The number journal and video journal will be assessed with this rubric.</td></tr>
<tr><td colspan="2">The school district uses a 4 point system for scoring. 3 is at standard, 4 exceeds standard, 2 approaches standard, and 1 is not at standard.</td></tr>
<tr><td>4</td><td>Counts by 1's to 31 fluently and accurately.
Identifies numbers 11 to 31 out of sequence.
Counts a set of up to 20 objects.
Counts a set of up to 20 objects from a larger set.</td></tr>
<tr><td>3</td><td>Counts by 1's forward from 1 to 10 fluently and accurately.
Counts backwards from any number in the range of 10 to 1.
Identifies numerals from 0 to 10 out of sequence.
Counts a set of up to 10 objects.
Counts a set of up to 10 objects from a larger set.</td></tr>
<tr><td>2</td><td>Counts by 1's forward from 1 to 5 fluently and accurately.
Identifies numerals from 0 to 5 out of sequence.
Counts a set of up to 5 objects.
Counts a set of up to 5 objects from a larger set.</td></tr>
<tr><td>1</td><td>With help, partial understanding of the above content, details, vocabulary, concepts, procedures, and skills.</td></tr>
</table>

Other Evidence

Orders numerals from 0 to 10.

	Rubric
4	Orders numbers from 0 to 20.
3	Orders numbers from 0 to 10.
2	Orders numbers from 0 to 5.
1	*With help*, orders numbers from 0 to 10.

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Stage 3 – Learning Plan

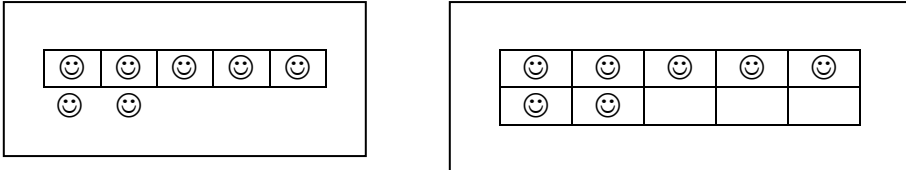|	WHERETO
W	***Where are we going?*** We are going to be able to count up to 10, count 10 objects, and write the numerals 0 to 10.
H	***How will we hook and hold interest?*** Watch *Count and Cookie Monster Cooperate* video. Discuss why we need to be able to count. Each student will create a video of each number of objects counted, including writing the numeral on a white board at the end of the counting. Each number segment will be placed into a movie and posted on the class blog. Net books will be used to record students counting and writing.
E	***How will we equip students for expected performance?*** We will use materials from enVision math for lessons 4-1 to 4-5, 5-1, 5-3, 5-4, 5-6, 5-7, and 5-9. Each lesson takes approximately 20 minutes for general guided instruction, followed by independent work, and checking with partners. Number games will include students taking turns putting a specific number of puzzle pieces onto a puzzle. The number of puzzle pieces depends upon the number card drawn. Each deck of cards will only have the numbers covered to that point in the unit. The deck will increase in size with each lesson.
R	***How will students revise and rethink?*** Students that need further support as indicated through observation, or performance on curriculum magazines and formative assessments will receive support tailored for that lesson's content. The rethink and revise activities have students counting small sets of objects with an adult's supervision. The student will also need to write the number of objects counted.
E	***How will students self evaluate and reflect on their own learning?*** Students will be given a daily learning target upon which to self assess. Students will self assess at the end of the lesson by checking their work against a neighbor's work and against the teacher sample shown at the end of the lesson.
T	***How will I tailor learning to varied needs, interests, and styles?*** I can locate number words and symbols for the different languages spoken by the students in class. I can provide objects for counting that fall within student interest areas, for example, toy cars, and small erasers in the form of sports equipment, small animals, and connecting cubes of students' favorite colors. I can provide puzzles made from pictures taken in class.
O	***How will I organize and sequence the learning?*** Using enVision math curriculum, I will direct instruct counting objects and writing numerals. Students will practice counting objects, writing numerals, and playing number games with guided practice and independently and/or cooperatively. Lessons will proceed in enVision's content order as stated above. This content order builds upon previous lessons' learning targets.

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		Learning Experiences	

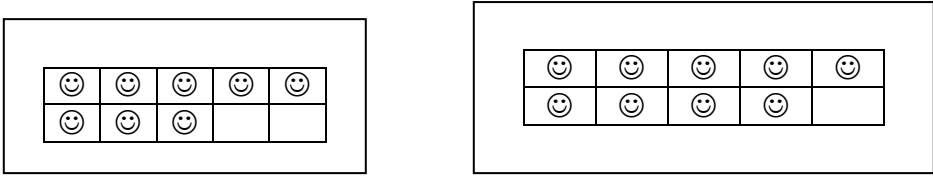| Week	Day & Lesson	Teaching and Learning Activity	WHERE TO
1	1 Intro	Watch "Count and cookie Monster Cooperate" at http://www.youtube.com/watch?v=5l7KbMVdN7E&list=PL04469955F46F6C14&index=1&feature=plpp_video	H
		Ask, "How does counting tell how many? Record answers on flipchart for later in the week.	H
1	2, 4-1	Act out Problem of the Day for lesson 4-1 with classroom volunteers.	H
		Tell students the goal for the day is to be able to count 1, 2, and 23 objects.	W
		Practice counting 1, 2, and 3 objects and coloring in squares, one square for each object counted.	E
		Use envision Quick Check 4-1 to check for understanding. Students check with neighbor as self evaluation and indicate if they think they met the goal in the earlier step by circling a ☺, ☺, or ☹.	E-2
		After students hand in their Quick Checks, review the answers as a whole class.	R
		Plan for support as indicated by Quick Check formative assessment. Use Reteach materials with fun objects to count.	R & T
1	3, 4-2	Why is writing 1, 2, & 3 important?	H
		Pass out 3 large construction paper circles to each student. Use circles to indicate how many objects are in each group in the Problem of the Day.	H
		Tell students the goal for the day is to write the numbers 1, 2, & 3 instead of holding up that number of circles.	W
		Using magazine 4-2, practice drawing up to 3 objects and writing the symbol that represents the number.	E
		Use envision Quick Check 4-2 to check for understanding. Students check with neighbor as self evaluation and indicate if they think they met the goal in the earlier step by circling a ☺, ☺, or ☹.	E-2
		After students hand in their Quick Checks, review the answers as a whole class.	R
		Plan for support as indicated by formative assessment. Supply Reteaching materials and fun objects to count. Provide blank paper upon which students can draw or stamp up to 3 objects and write appropriate number next to the group.	R & T
1	4, 4-3	Why is the last number you say important when counting a set of objects?	H
		Tell students the goal for the day is to count 4 and 5 objects.	W
		Using magazine 4-3, practice counting 4 and 5 objects and coloring a square for each object counted.	E

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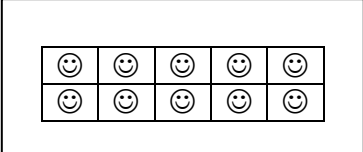|			
		Use envision Quick Check 4-3 to check for understanding. Students check with neighbor as self evaluation and indicate if they think they met the goal in the earlier step by circling a ☺, ☻, or ☹.	E-2
		After students hand in their Quick Checks, review the answers as a whole class.	R
		Plan for support as indicated by Quick Checks. Supply Reteaching materials and fun objects to count. Provide paper with large circles in which students can draw sets of 4 and 5 objects of their choice.	R
2	5, 4-4	Pass out 5 large construction paper circles to each student. Use circles to indicate how many objects are in each group in the Problem of the Day.	H
		Why is writing the number 4 & 5 important?	H
		Tell students the goal for the day is to learn to write the numerals 4 & 5 instead of holding up that number of circles.	W
		Using magazine 4-4, students practice drawing 4 and 5 objects and writing the numbers 4 & 5 for each set of objects. Students practice counting 4 & 5 predrawn objects and write the correct numeral for the number of objects in the set.	E
		Use envision Quick Check 4-4 to check for understanding. Students check with neighbor as self evaluation and indicate if they think they met the goal in the earlier step by circling a ☺, ☻, or ☹.	E-2
		After students hand in their Quick Checks, review the answers as a whole class.	R
		Plan for support as indicated by formative assessment. Supply Reteaching materials and fun objects to count. Provide blank paper upon which students can draw or stamp 4 & 5 objects and write appropriate number next to the group.	R & T
2	6, 4-5	Review Problem of the day for lesson 4-5. Talk about how many chopsticks there are in the picture and how many chopsticks each child has. How can we talk about the child that does not have chopsticks?	H
		Tell students the goal of the day is to learn what the word zero means. The second goal of the day is to write the number 0.	W
		Using magazine 4-5, practice counting and writing numbers representing the number of objects in a set from 0 to 3.	E
		Use envision Quick Check 4-5 to check for understanding. Students check with neighbor as self evaluation and indicate if they think they met the goal in the earlier step by circling a ☺, ☻, or ☹.	E-2
		After students hand in their Quick Checks, review the answers as a whole class.	R
		Plan for support as indicated by Quick Checks. Supply Reteaching materials and fun objects to count. Provide paper with large circles in which students can draw sets of 0 to 5 objects of their choice and write the number for each set.	R & T
2	7, 5-1	How can you be sure that you are counting correctly?	H
		Tell students the goal for the day is to be able to correctly count six and seven objects and show correct counting using a five-frame.	W
		Using magazine 5-1, demonstrate counting 6 and 7 objects. Demonstrate using 6 and 7 counters and how to use the counters in conjunction with a five-frame.	E
		Use envision Quick Check 5-1 to check for understanding. Students check with	E-2

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		neighbor as self evaluation and indicate if they think they met the goal in the earlier step by circling a ☺, ☺, or ☹.	
		After students hand in their Quick Checks, review the answers as a whole class.	R
		Plan for support as indicated by Quick Check. Supply Reteaching materials and counters to use on the reteach page. Provide a netbook logged into the student's district account so that envision etools can be used. Have student practice filling the ten frame with counters. Students will learn the frame fills from left to right on the top, then from left to right from the bottom. Learning to group objects into sets of 5 and 10 is the stepping stone to counting by 5's and 10's covered later in the year.	R & T
2	8, 5-3	Pass out a paper with 3 five frames spaced equally. Review the problem of the day. Students count objects in each row. Students color the correct number of circles using the five-frame showing how many objects are in each row. How can we show there are 6 and 7 objects without using a five frame?	H
		Tell students the goal for the day is to be able to read and write the numbers 6 & 7 for sets containing 6 and 7 objects.	W
		Using magazine 5-3, students will practice counting and drawing sets of 6 & 7 objects and writing the correct number for each set.	E
		Use envision Quick Check 5-3 to check for understanding. Students check with neighbor as self evaluation and indicate if they think they met the goal in the earlier step by circling a ☺, ☺, or ☹.	E-2
		After students hand in their Quick Checks, review the answers as a whole class.	R
		Plan for support as indicated by Quick Check. Supply envision Reteaching materials. Supply sheet with five and ten frames filled with 6 and 7 objects as shown below. Students should count objects and write the correct numeral for the number of objects.	R
3	9, 5-4	Review the problem of the day, revising the number of loops to 8. Ask students, "How can we show 8 and 9 objects?	H
		Tell students that today they will learn to count 8 and 9 objects.	W
		Using magazine 5-4, students will practice counting 8 and 9 objects and completing a ten frame with 8 and 9 counters demonstrating how many objects in the set were counted.	E
		Use envision Quick Check 5-3 to check for understanding. Students check with neighbor as self evaluation and indicate if they think they met the goal in the earlier step by circling a ☺, ☺, or ☹.	E-2
		After students hand in their Quick Checks, review the answers as a whole class.	R
		Plan for support as indicated by Quick Check. Supply envision Reteaching materials. Provide a netbook logged into the student's district account so that envision etools can be used. Have student practice filling the ten frame with counters. Students will	R & T

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		learn the frame fills from left to right on the top, then from left to right on the bottom of the ten frame. Learning to group objects into sets of 5 and 10 is the stepping stone to counting by 5's and 10's covered later in the year.	
3	10, 5-6	Pass out a paper with 3 ten frames spaced equally. Review the problem of the day. Students count objects in each bucket. Students color the correct number of circles using the ten-frame showing how many objects are in each row. How can we show there are 8 and 9 objects without using a ten frame?	H
		Tell student that they are going to learn to read and write the numbers 8 and 9.	W
		Using magazine 5-6, students will practice drawing and counting 8 and 9 objects and writing the correct numeral for each set of objects counted.	E
		Use envision Quick Check 5-6 to check for understanding. Students check with neighbor as self evaluation and indicate if they think they met the goal in the earlier step by circling a ☺, ☺, or ☹.	E-2
		After students hand in their Quick Checks, review the answers as a whole class.	R
		Plan for support as indicated by Quick Check. Supply envision Reteaching materials. Supply sheet with ten frames filled with 8 and 9 objects as shown below. Students should count objects and write the correct numeral for the number of objects. Students can draw objects of their choosing to fill in blank ten frames with 8 or 9 objects and write the numbers.	R & T
3	11, 5-7	How do you use counting to tell how many objects are in a set?	H
		Tell students they are going to learn to count 10 objects.	W
		Using magazine 5-7, students will practice drawing and counting up to 10 objects and writing the correct numeral for each set of objects counted.	E
		Use envision Quick Check 5-7 to check for understanding. Students check with neighbor as self evaluation and indicate if they think they met the goal in the earlier step by circling a ☺, ☺, or ☹.	E-2
		After students hand in their Quick Checks, review the answers as a whole class.	R
		Plan for support as indicated by Quick Check. Supply envision Reteaching materials. Provide a netbook logged into the student's district account so that envision etools can be used. Have student practice filling the ten frame with counters. Students will learn the frame fills from left to right on the top, then from left to right on the bottom. Learning to group objects into sets of 5 and 10 is the stepping stone to counting by 5's and 10's covered later in the year.	R & T
3	12, 5-9	Which number can you use to show ten in a group? Are there any other numbers you can use to show there are ten objects?	H
		Tell students they are going to learn to read and write the number 10 to show there	W

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		are 10 objects in a group.	
		Using magazine 5-9, students will practice drawing and counting up to 10 objects and writing the correct numeral for each set of objects counted.	E
		Use envision Quick Check 5-10 to check for understanding. Students check with neighbor as self evaluation and indicate if they think they met the goal in the earlier step by circling a ☺, ☺, or ☹.	E-2
		After students hand in their Quick Checks, review the answers as a whole class.	R
		Plan for support as indicated by Quick Check. Supply envision Reteaching materials. Supply sheet with ten frames filled with ten objects as shown below. Students should count objects and write the correct numeral for the number of objects. Students can draw objects of their choosing to fill in blank ten frames with up to 10 objects and write the numbers.	R & T

Other support:
Students make numbers out of clay and 10 objects out of clay.
Number games will include students taking turns putting a specific number of puzzle pieces onto a puzzle. The number of puzzle pieces depends upon the number card drawn. Each deck of cards will only have the numbers covered to that point in the unit. The deck will increase in size with each lesson.

Sample of number journal on next page.

Resources needed:

Number journals
Netbooks
Reteaching materials
EnVision magazines
Parent volunteers
Objects to count, including connecting cubes and objects of student interest
Self assessment smiling, so-so, and frowning face tickets or stamps to place on Quick Checks
Papers with five frames, ten frames, and circled areas for counting and drawing specific numbers of objects.
Puzzles
Playing cards

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Name_____ Date_____

☺	☺	☺	☺	☺
☺	☺			

1   2   3   4   5   6   7   8   9   10

Draw the same number of objects in this box.

Resources

Scott Foresman-Addison Wesley, en**Vision**MATH Curriculum (2009). www.pearsonsuccessnet.com.

District standards based assessment

Wiggins, G. & McTighe, J. (2005). *Understanding by design*. Upper Saddle River, New Jersey: Pearson

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