Quick Images by Tom Patten

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Grades: K and 1

Subject: Math

CCLS Standard Addressed:

*K.CC.* *2.* Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

*K.CC.3.* Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects). Count to tell the number of objects.

*K.CC.4.* Understand the relationship between numbers and quantities; connect counting to cardinality.

b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

c. Understand that each successive number name refers to a quantity that is one larger.

*K.CC.5.* Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

*K.OA.1.* Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

*K.OA.3.* Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).

*K.OA.4.* For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
 *K.NBT.1.* Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones. *1.OA.5* Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

*1.OA.6.* Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known

equivalent 6 + 6 + 1 = 12 + 1 = 13).

*1.NBT.2*. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

a. 10 can be thought of as a bundle of ten ones — called a “ten.”

b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

Website/ Location of app:

<https://sites.google.com/site/lucidnumeracy/>

Description of application:

 Quick Images is six games in one app and helps students with subitizing or instantly seeing how many units are in a group without counting one at a time. All six games help students develop strategies that help them instantly see numbers, including strategies based on composing and decomposing numbers. Furthermore, the app prepares students for addition and subtraction simply by using models. Through these games, students will develop a strong number sense and be better prepared to represent pictures using addition and subtraction equations and vice versa.

 Game #1 Dot Cards – This game flashes scattered combinations of dots (1 through 10) on the screen, and students need to select how many dots they saw. The teacher can allow students to see the dots for 1, 2, 3, or 4 seconds. It may sound like a short amount of time, but that is the point. Students really need to develop quick counting strategies; simply counting one at a time will not work.

Game #2 Fingers 1 – 10 – This game flashes pictures of real human hands on the screen. Fingers are held up in various combinations to create the numbers 1 through 10, and students are given 1 through 4 seconds to look at the fingers and decide how many were shown. Again, students will not have time to count one-by-one, so they must develop counting strategies to help them subitze.

 Game #3 Ten Frame 1 – 10 – This game builds on games 1 and 2 and shows students a ten frame that has 1 through 10 counters in it. Students must quickly identify how many counters are shown given the time constraint chosen by the teacher.

 Game #4 Ten Frame 1 – 20 – In this game, a double ten frame is used and the game is played the same as Game #3. This time, however, students are shown 1 through 20 counters Game #5 Rekenrek 1 – 10 – Since the introduction of the Common Core Curriculum, rekenreks have become very popular and useful manipulatives. In this game, students see a rekenrek that shows 1 through 10 beads, and students must quickly identify how many beads were shown.

 Game #6 Rekenrek 1 – 20 – This game is the same as Game #5, except students are shown 1 through 20 beads.

In all six games, students are shown 10 images, and the teacher can decide if students see the images for 1, 2, 3, or 4 seconds. At the end of every game, students receive a summary. At this point, they can review the questions they got wrong.

Incorporation explanation:

The games in this app will encourage students to build a strong number sense which is crucial for their success with the common core curriculum. Strategies used when subitzing lead the way for composing and decomposing numbers, creating number bonds, and understanding addition and subtraction.

This app would be great to use in a Kindergarten or first grade classroom when working on subitizing. The app can be used over the course of six days and teachers can present mini-lessons each day based on the games being played. For example, when using “Game #3 Ten Frame 1 – 10,” the teacher may want to create a SmartBoard lesson with various pages showing large ten frames representing numbers 1 through 10. The teacher can show each page to the class for a short period of time, and then ask the class to share the numbers they saw and the strategies they used to “quickly see” these numbers. Students will learn strategies from each other that they can use when they independently use the app. If the teacher does not have access to a SmartBoard, he or she can also use a magnetic board and magnets to create a ten frame to flash to the class. This is a link to a video that shows how quick images are used in a Kindergarten classroom using a magnetic whiteboard and magnets: <https://www.teachingchannel.org/videos/visualizing-number-combinations>.

Overall, subitizing is an extremely important skill that is sometimes overlooked. Based on the common core learning standards, students in Kindergarten and first grade should be able to successfully use this app and “instantly” see numbers in less than 4 seconds. Students may struggle at first, but they will show growth after practicing. Additionally, strategies students use to see numbers instantly will prepare them for addition and subtraction.