MGSE2.NBT.1 Video Transcript

00:01
[Intro Music]

00:17
This video will deconstruct the Georgia Standards of Excellence 2.NBT.1 which focuses on understanding place value.

00:25
2.NBT.1 states that students will understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones. They will understand the following as special cases:

00:36
100 can be thought of as a bundle of ten tens — called a "hundred," and the numbers 100 through 900 refer to the number of hundreds with 0 tens and 0 ones.

00:52
Kindergarten students begin place value understanding by composing and decomposing teen numbers into 10 ones and some more ones.

First graders then transition to understanding that ten ones equal a bundle of ten and that the two digits of a 2-digit number represent amounts of tens and ones.

01:11
Place value understanding is the critical building block for reading and writing numbers, comparing numbers, addition and subtraction of larger numbers, multiplication and division, as well as understanding decimals which are skills that are addressed throughout elementary.

01:27
Students in kindergarten and first grade should use groupable manipulatives such as linking cubes, counters, and sticks that can be bundled and unbundled as they compose and decompose numbers.

2nd grade students then transition to pregrouped base-ten models such as base ten blocks and printed ten frame cards.

01:48
It is important that students first use concrete/hands-on tools before transitioning to representational models. Representations should progress from proportional to non-proportional models before moving to the abstract.

02:00
True place value understanding takes time. 2nd grade students should have ample opportunities to explore concrete manipulatives before transitioning to representational models and abstract numerical representations.

02:14
The acquisition of numeracy occurs in developmental stages. Students begin with a unitary (or counting by ones) concept of numbers. Students then begin to group ones and begin to see a ten-structured system of counting. This thinking progresses into deeper place value understanding where units of tens and ones are counted separately and can be traded or exchanged which then leads students to understanding multi-unit concepts that extend beyond tens and ones.

02:45
To deepen place value understanding students can play "Race to 100" by using a variety of base ten models and representations.
Students simply role a die and add that many counters to the ones place. They then regroup their counters until they have 10 tens (or 100).

03:02 (Video)
Teacher: So, when you add another ten, how many tens will you have?
Student: Umm… ten of… ten tens.
Teacher: Ten tens?
Teacher: So what does that... What do ten tens make?
Student: One-hundred.
Teacher: One-hundred.
Student (off camera) (excitedly): Equals 100!

03:20
This game can then expand to 1,000 as students begin to build larger numbers.
In this next video, you will see how students discovered that adding 1 block to the ones place created a new ten. 30 tens then equaled 300.

03:26 (Video)
03:43
Teacher: How many ones do we have?
Student: Zero.

Teacher: How many tens do we have?
Student: Zero.

03:56
A similar game, "Triple Digit Cover-up" can also be played by using base ten blocks and hundreds charts that go up to 1,000.
Students role the die and add either a flat, rod, or cube to see who can be closest to 1,000 without going over.

04:11 (Video)
Teacher: Who is closest to 1,000?
Student 1: Me.
Teacher (to Student 1): How many do you have?
Student 1: Umm… 510.
Teacher (to Student 2): And how many did you have?
Student 2: 490.

04:27
Student understanding progressed and became more strategic after playing multiple times. Only using tens and ones didn't get them very close to 1,000 but using 100's along with the 10's and 1's did. The value of each digit was reinforced as students strove to get the closest to 1,000 without going over.

04:44
To reinforce the value of each digit in 2 and 3-digit numbers, "I Spy a Number" found in the Ga Frameworks can be used as a regular classroom routine. The upcoming video shows a group of 2nd graders tying to guess a specific mystery number. As students made guesses, they were told how many digits and places in their number were correct.

05:07 (Video)
Student 1: 82?
Teacher: Does he have any digits correct?
Teacher: One digit… And it's in the right place. Ok, call on someone else.
Student 2: 58?
Teacher: What digit would be correct (referring to chart on board).
Several Students: Eight.
Teacher: But is it in the right place anymore?
Students: No.
Teacher: Ok.
Student 3: 28.
Student 4 (after chart is filled in for the guess of 28): What?
Student 5: Because the 8 has to be in the front.

Teacher: Where does the 8 need to go?

Several Students: In the front.

Teacher: In the tens place?

Student: It's in the 80s.

Student: We know it's in the 80s.

Student 6: 89.

Teacher (after chart is filled in for guess of 89): So, her mystery number was 89. We have 2 digits correct and 2 in the correct place.

06:14
In this framework task, students compose numbers in different ways by making base ten pictures. After building their pictures, they determined the number of hundreds, tens, and ones that were used.

06:27
This task encouraged students to see that numbers can be represented in different ways. Not only did they enjoy sharing their designs, they enjoyed seeing whose robot had the greatest value.

06:39
Understanding the value of each digit and that numbers can be represented in different ways lays the critical foundation for the flexible thinking that is needed when working with numbers. For example, 124 is more than just 1 hundred, 2 tens, and 4 ones. It can be represented in a variety of ways that all show the same quantity.

07:00
In the upcoming videos, student will build 147 in different ways.

07:07 (Video)

Teacher: How did you create 147 a different way?

Student 1: I did ten tens, 4 tens, and seven ones.

Teacher: So you have 14 tens and seven ones.

Student 1 (puzzled): 14 tens?

Teacher: 14 tens. Does 14 tens equal 140?

Student 1: It makes 140!

Student 2: I broke up one of the tens… I broke up one of the tens into ones, so I have more ones. And then I used 3 tens and 1 hunderd.

Teacher: So you have one hundred, three tens, and how many ones?

Student 2: 17.

Teacher: 17 ones.

07:50
"What Number Am I?" is another great classroom routine that helps develop base ten understanding.

07:56 (Video)
Teacher: How do you know that 3 hundreds, 12 tens, and 5 ones is 425?
Student 1: I know that like 3 hundred, but those 10 tens… So, ten tens is 100. So, I put 400 down to add a hundred. And then I had 2 tens left, so that's 2 tens, and then 5 ones, so it's 425.

Teacher: How did you know that 2 hundreds, 32 tens, and 21 ones was 541?
Student: 300 plus 200 is 500. Bring it down here (pointing to white board). Then plus 20 equals 520. And then down here, 520 + 20 equals 540. 540 + 1 = 541.

08:49
To support instruction, there are several connections to literature that bring place value understanding to life.

08:54
In "Sir Cumference and All the King's Tens", the queen wants to have a party for the king.

09:00
So many guests began to arrive that they lost count and began to organize the crowd into groups of ten.

09:06
Eventually 9,999 guests arrived. Organizing the attendees into groups of ones, tens, hundreds, and thousands helped keep track of the total number of guests.

09:18
Even though the digits are the same, they placement of the digits determine their value.

09:24
In "A Place for Zero", Count Infinity formed a new digit, but Zero meant nothing, and no one knew what his job would be. The king declared that no more zeros would be made until they found a purpose for this one.

09:37
The Count soon discovered the additive property of zero. He could add 0 + 1 to make a new 1. The 9 digits also discovered that counting could go beyond 9. When two digits stood beside each other they made lots of new numbers which showed that everyone had a place and value.

09:57
For additional activities and resources, please visit unit 1 in the Georgia frameworks.

10:01
[Closing Music]