

Number Sense and Place Value Development

Early Stages of Place Value Development Number Sense: Steps and Landmarks

Develop cardinality
(The final number states in count is the number of objects in the set)



Conservation of number
(One-to-one correspondence)



Subitization
(Instantly recognizing units of a number-usually 1-6)



Part/whole relationship
(6 and 1 are parts of 7 because they contribute to the 7)



Compensation
(Other ways to make the same number)



Counting on

Three Distinct Learning Styles!

(adapted from several sources, including *Accelerated Learning for the 21st Century*.)



VISUAL: Learning through seeing. Likes to see pictures or diagrams. Likes demonstrations and watching videos.

Enjoys reading, watching television, going to movies. Would rather read than be read to. Remembers people by sight, does not forget faces. Reveals emotions through facial expressions. Plans ahead, likes to see overall big picture. Good eye contact, recall, prefers to be shown rather than told. Often a good speller. Needs verbal directions written down "I SEE what you mean."



AUDITORY: Learning through hearing. Likes to listen to debates, audiotapes, lectures, discussion and verbal instructions.

Enjoys listening to radio, music, debates, remembers names, recalls facts, has big vocabulary. Gives verbal directions (go one block and turn left!). Reveals emotions verbally through change in tone. Responds better when hearing information rather than reading. Talk out loud to themselves to help themselves think. Would rather tell it than write it. A good speaker. Loves discussion. Likes to learn by listening to tapes. "I hear what you mean."



KINESTHETIC: Learns through physical activities and through direct involvement. Likes to be "hands-on," moving, touching, and experiencing first hand.

Enjoys active pursuits such as hiking, dancing, biking. Remembers things that happen. Gives street directions by leading the way. Reveals emotions through body language. Learns well by manipulating objects. Feels if something is right, relies on a lot of gut feelings. Hard to sit still for more than a few minutes. Taps pen or foot while listening. Sensitive to the furniture, clothes, how it all feels. "I can feel what you mean."

Suggested Order for Number Corner Work With Students

(Remember that there is no "set" order. As students gain number confidence you will rotate their number practice.)

1. Hands-1 to 5

Using one hand-

You say and show, students say and show

You show and students say and show

You say and students say and show

You can also have students just show or just say

When students are comfortable, do the same choices with hand over head

2. Now, add second hand and 6-10

Using both hands-

You say and show, students say and show

You show and students say and show

You say and students say and show

You can also have students just show or just say

When students are comfortable, do the same choices with hands over head

3. When students are ready, hold up a card with a numeral on it and the students can say and show, just say, or just show.

At the same time you are doing math hands your are subitizing with the dot cards

1. As a student uses fingers to show 1-5 you are also showing the dot cards for 1-5 for students to also instantly recognize their corresponding number name

3. Add dot cards 6-9 when students are ready.

4. Students can also use the dot cards that are not in the same order as dice.

Once student are comfortable with hands and dots, you will want to introduce the five frame and the ten frame where the "dots" are ordered-

Show the five or ten frame and the student says and shows number represented

Show the five or ten frame and the student just says or just shows.

You can also begin to introduce the "teen" numbers by taping a full ten frame and hold another ten frame beside it.

Students say ten four for fourteen showing ten and then four

Students practice this way and then eventually see 14 and show ten fingers,

four fingers, and say 14. You want to spend a lot of time saying ten five

fifteen, ten six sixteen, etc. in order for students to have a strong understanding of place value.

When students are ready you start decomposing numbers with fingers and five and ten frames. 10 is 5 and 5, or 6 and 4, or 8 and 2, etc.

Again, Please remember that there is no strict order. I tend to blend the hands and dot cards for 1-5 and then 6-9. When I reach ten I begin the five and ten frames. BUT, I have seen other educators do differently. The goal is to have all students say, show, and see a number as a whole and all the parts that make that whole so one to one correspondence does not become the way addition and subtraction is computed.

For numbers 20 on there are three ways to show the number. The order is:

1. Twenty-four is ten, ten, four, 24 (number)
2. Twenty-four is two tens, 4 ones, 24 (place value)
3. Twenty-four is ten, twenty, 24 (algebra-patterning)