



Further Examples of Differentiating

- More of the counting learning trajectory.
- Let's start with more of the developmental progression.

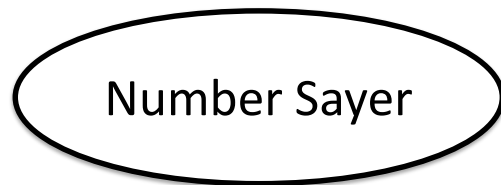


Number Sayer

- Children begin connecting small quantities to number words to form an initial idea of cardinality, or *how-many-ness*.
- Following their first birthday, children often learn the number word *two*.



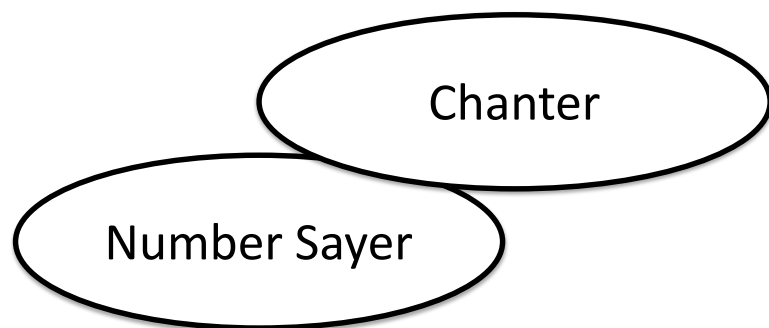
- Other general terms such as *many* and *less* usually follow. After that, children often learn *one*, and for some children, *three*.
- Only over time do they begin to understand that all groups labeled with the same number word...actually have the same amount.





Chanter

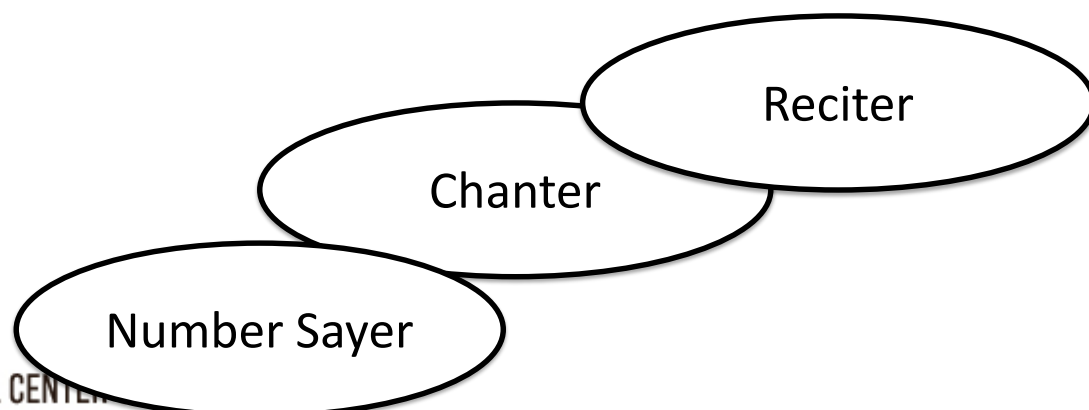
Says numbers in sequence but may run together.





Reciter

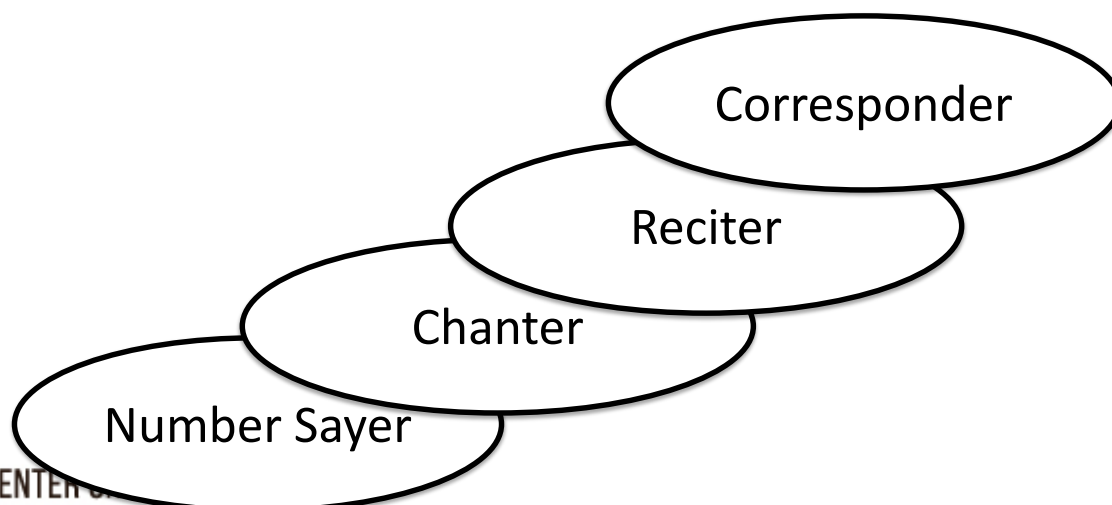
Verbal counting to 5, then 10.





Corresponder

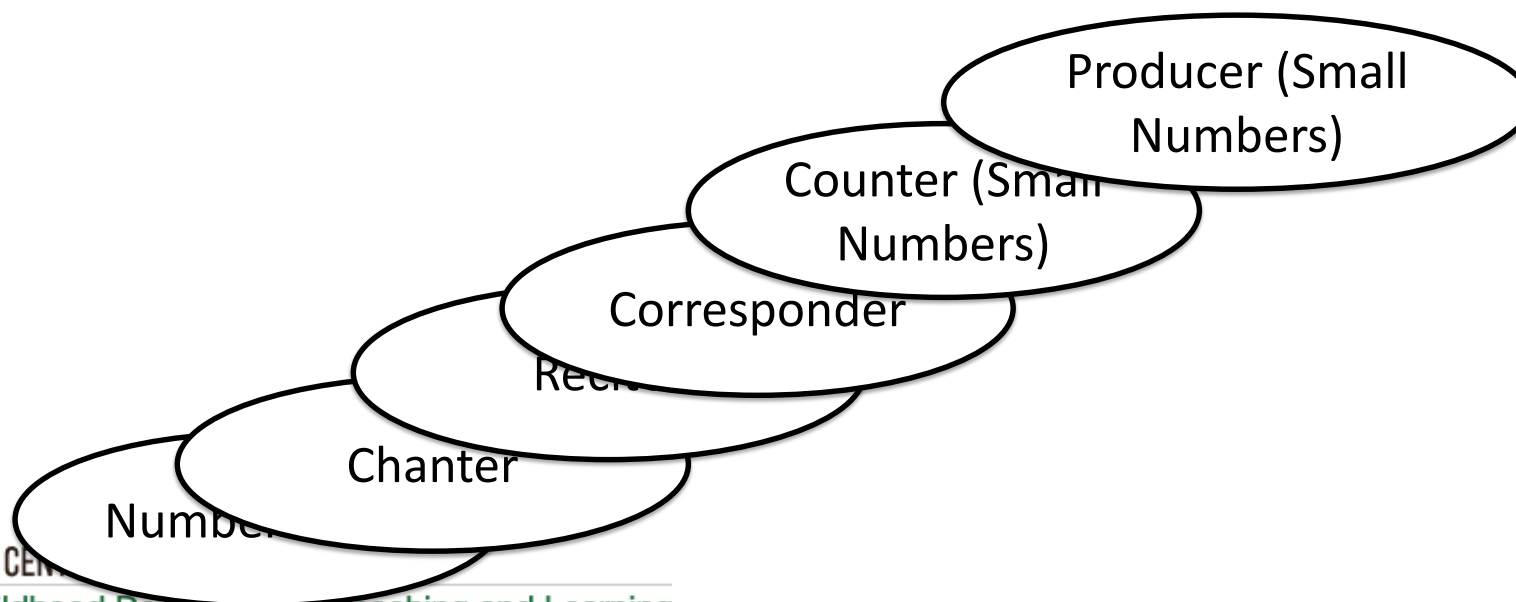
Counts correctly using 1-1 correspondence, up to 5 objects in a line.





Counter/Producer

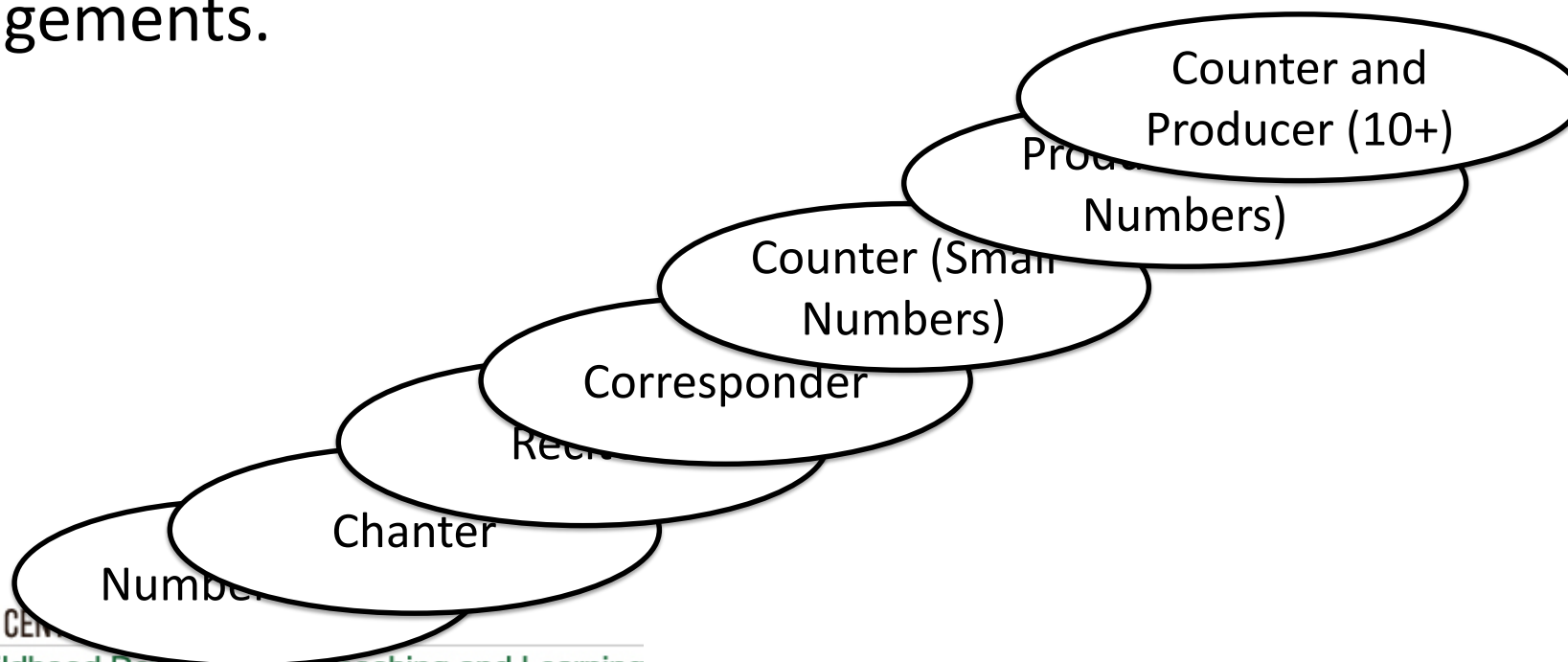
Counts out a collection up to 5.





Counter & Producer

- Counts and counts out objects accurately beyond 10 (usually to 30 or more). Keeps track of objects that have and have not been counted, even in different arrangements.




LT²: A Counting Example



... 15-Minute ...
In-Service Suites

- [LearningTrajectories.org](https://learningtrajectories.org)
- Example...click [here](#)



LT²





Differentiating Teaching

- Notice and encourage children's natural development through the developmental progression.
- Count in rhymes, finger plays, stacking blocks—emphasize one or two numbers *past* where children are.
- Don't underestimate! Higher numbers helps.
 - Mothers use *two* more than *three* and *three* more than *four*.
 - From ages 1-9 and 3-9, children used the word *two* 158 times, *three* 47 times, *four* 18 times, and *five* only 4 times!



Supporting Teaching and Learning: Examples

- Small Groups
- Naturalistic Observation
 - Templates for differentiation
 - Support from LT²
- The Role of Feedback Cycles



Small Groups

- Research suggest small groups are the most effective teaching strategy.
- There are benefits and misuses of grouping by children's level of thinking.
- Use small group work to differentiate teaching, based on children's needs and learning trajectories.



Free Explore—With Observation

- 4-year-olds explore manipulatives, interacting with each other and the teacher.
- Example of teacher's notes:

Child	Numbers Counted/Produced	LT Level
Nita	VC "2 4...3"; C 2 some corr.; P 1	Number Sayer
Ming	None in English	? Check first language
Maria	C 1-5 (card.); P 1, 2, 3	Counter Small Numbers
José	C 3, 4 corr., no cardinality	Corresponder





Making Number Pizzas

1. Verbal counting with guided correspondence to 3 or 4. [Repeat informally throughout week.]
2. Count 1-4, emphasis on cardinality. [Repeat on Friday, increasing numbers.]
3. Produce to 5, explore larger numbers.
4. Explore with interpreter.

Child	Numbers	LT Level
1. Nita		
2. José		
3. Maria		
4. Ming		





Assessment from Making Number Pizzas

1. Verbal counting with guided correspondence to 3 or 4. [Repeat informally throughout week.]
2. Count 1-4, emphasis on cardinality. [Repeat on Friday, increasing numbers.]
3. Produce to 5, explore larger numbers.
4. Explore with interpreter.

Child	Numbers	LT Level
1. Nita	VC 1-4; C 2 corr.	Reciter
2. José	C 1-5, some cardinality	Corresponder+
3. Maria	C to 6, P to 5	Producer (Small Numbers)
4. Ming	C to 8, possibly more; P to 6	Producer (Small Numbers)+





Formative Planning for Board Game

1. Cube with 1-2, then 1-3 dots.
2. Cube with 1-6 dots.
3. Cube with 1-6, then 3-8 dots.
4. Cube with 3-8, maybe numerals.

Child	Numbers	LT Level
1. Nita		
2. José		
3. Maria		
4. Ming		

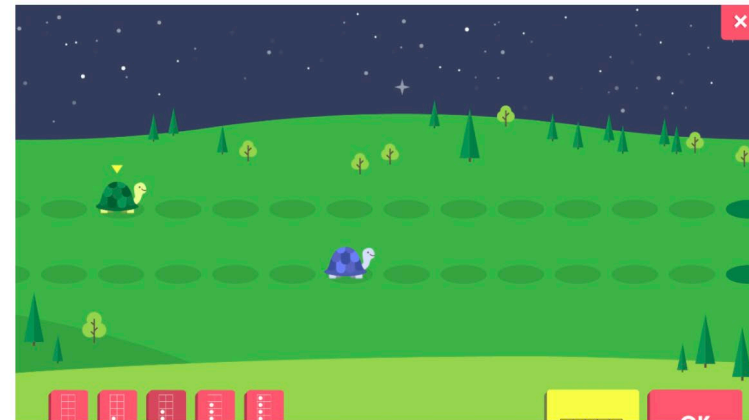




At the Same Time...

- LT² games that adjust dynamically with the children's level.
- Immediate feedback, multiple representations.

The screenshot shows the LT² interface. At the top, there is a navigation bar with 'LT²' in a red box, 'Julie's Class' with a dropdown arrow, and links for 'Developmental Progression', 'Roster', and 'Activity Explorer'. Below this, the page is yellow with a scalloped bottom edge. It displays 'Counting > Counter (Small Numbers)' and the main title 'Help the Turtle Get Home: Counter (Small Numbers)' in large pink letters. Underneath, it says 'COMPUTER ACTIVITY' and 'Students play a board game with a friend or the computer.' A green 'Start Game' button is prominently displayed.



LT²: An Instructional Example

- LearningTrajectories.org
- Example...click [here](#)

