

Opening & Reflection

Nevada Early Childhood Leadership Series

Session 3

Session Objectives

- Preview the scope of work for the day
- Reflect on the impact that math talk and their vision work is having in their centers/schools
- Share successes and challenges around math talk and vision work to teachers and implementation at their center/school

- ICE BREAKER -

Write down your favorite number between 1-20 that has personal significance/meaning to it. (i.e. I was my high school jersey number)

Share with people at your table your name, center/school, number, and why you chose it.



Table Reflection and Discussion

- How have you had teachers dig in to math talk or how will you do this? (What setting? What format? What activities or strategies did you use?)
- What went well? What evidence have you seen of the training on math talk thus far in their classrooms?
- What was challenging? How did you address the challenges?
- Group brainstorm ways to address outstanding challenges moving forward.

Tracker System

Nevada Early Childhood Leadership Series

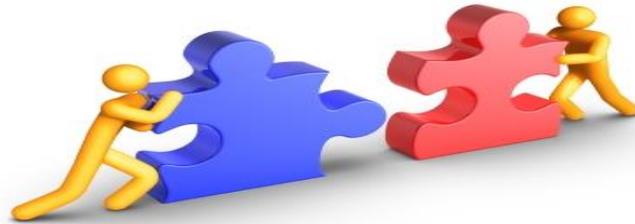
Session 3

Place Holder for Tracker Information



Partners Reflect on Math Data

- Discuss teacher data
- Brainstorm next steps to grow your teachers through PD opportunities and coaching
- What steps do you need to take as a leader between now and next session to ensure teachers are moving forward?



Do Now



- Part 1: Using the paper with your number from the ice breaker, stand up, and form groups based on the number you have. (If you wrote a 1, find other 1s, 2s find 2s, 3s find 3s, etc. It's okay if no one else has your number.)
- Part 2: Now work together to have everyone in the room line up in order from 1-20.

Building Math Skills –Number Sense and Related Key Concepts

Nevada Early Childhood Leadership Series

Session 3

Objectives

- Explain why number sense is essential to young children's future math success
- Understand and describe the key concepts of: object permanence, more, one, and numeracy (quantity, verbal, symbol)
- Understand the developmental progression of number sense and what is developmentally appropriate for students from birth through five
- Plan for common opportunities to integrate number sense throughout the day

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Introduction to Number Sense

Key Concepts

Strategies

Application: Practice and Planning

Closing



During the activity we completed (both the icebreaker and Do Now), what math skills did you use?

- Number recognition
- Numeral writing
- Counting as they got in order
- Understanding that written numbers are symbols for number quantities
- Understanding the relationship between numbers and quantities

These are all key skills related to number sense.

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What are your reactions/responses to the summary below of this study?

- The study posits the idea that math is inborn. The researchers worked with 48 children at 6 months (monitoring their gaze tracking groups to assess their math skills) and compared them with those same children at 4 years old. The study found that the children who were assessed three times showed significantly better understanding of math concepts than those who were only assessed once.



- For those 4-year-olds who scored high on the test, their parents reported that they had been reading to them since they were 18 months old. This suggests that early exposure to books and language may be a key factor in developing math skills.
- And the children who scored low on the test at age 4 had a significantly lower number of books read to them as infants.

- **Key takeaway: If we can develop strong number sense in children by age 4, it potentially could be a huge influencer in their future math skills and success.**



What is Number Sense?

- Number sense is defined as **an intuitive feel for numbers and a common sense approach to using them**. It is a comfort with what numbers represent, coming from investigating their characteristics and using them in diverse situations.
- Another way to think about number sense is the **understanding of the relative value of numbers**, the effects of operations on combining numbers, the relationships between numbers, and how to use numbers in a variety of ways including computation, measurement, and estimation.
- Acquiring number sense requires **fluency**. Number sense helps students to be able to more nimbly complete other math tasks and to understand math at a conceptual level.

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Key Concepts Gallery Walk: What key concepts are inherent to build number sense in our youngest learners?

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Key Idea: Number sense is not a skill that is taught, mastered, and complete. Rather it's a skill that is built, refined, and furthered as children develop (from infancy through adulthood).

The key concepts we will focus on are:

-  Object permanence
-  More
-  One
-  Numeracy (quantity, verbal, symbol)

Quick Check: Numeracy Understanding

Let's go through a couple examples, and determine what type of numeracy they are building in children: quantity, verbal, or symbol.

Example	Type of Numeracy?
Children count the number of snacks as the teacher passes them out.	Quantity
During circle time, children count to 10 as they form the circle and sit down.	Quantity
A teacher plays a game with children where she shows them two paper plates with dots on it and students identify which one has more without counting	Quantity
On a walk to the store for a field trip, students point to signs and say the numbers they see on the street	Verbal

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Effective strategies for building number sense in children have a few key hallmarks that all center around what we want students to walk away doing:

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For students to...	Teachers must...
Accurately use vocabulary	<ul style="list-style-type: none">• Intentionally identify appropriate vocabulary• Use self or parallel talk or ask questions to build student understanding of vocab
Take on the bulk of the “lifting”	<ul style="list-style-type: none">• Plan strategies/activities that are student-focused• Plan and ask rich questions
Be challenged in the work!	<ul style="list-style-type: none">• Check the standards for alignment• Use student data and milestones to check for DAP
Connect the learning to real-life	<ul style="list-style-type: none">• Plan and make explicit real-life connections• Provide multiple opportunities for students to practice (during the activity and throughout the day)

Planning: In pairs, you will work to create a poster with strategies for teaching your concept keeping in mind the criteria we just reviewed.

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Key Idea: As we know, it's not enough for us to explain a concept to a teacher or child, we need to make the explanation fun and engaging through intentional activities and classroom opportunities.

-  Object permanence
-  More
-  One
-  Numeracy (quantity, verbal, symbol)

Your poster should include:

- Child-centered activities,
- For infant/toddler AND pre-k,
- At least 1 example for a math specific activity,
- At least 1 non-math based activity,
- And a clear real-life connection

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Plan

- **Imagine** you are popping in to multiple classrooms and you know they will be focusing on the concept that matches your post-it.
- Write a **brief explanation of the concept and one question you could ask of students in each classroom that would appropriately develop their understanding of the concept you are assigned (same as from our previous activity)**.
- Use the standards as needed to support your planning.

Practice

- With the person sitting next to you, **practice explaining the concept to students (how you will have them interact with it in the activity) and question** as though one of you is the leader and the other is the student.
- If you are the student, listen for and consider how the explanation and question: 1-are developmentally appropriate, and 2-develop math language skills (math talk never disappears!)

Feedback

- After the leader shares their activity and question, the student will **provide feedback (one glow, one grow) to the leader** in line with math talk look fors and/or the developmental progression.
- After providing feedback, the roles will switch and the other partner will become the leader.

Reflecting on Practice

Put your leader hat back on. Discuss the following questions with your group:

- How could this quick practice activity support your teachers in gaining comfort and confidence planning for a number sense activity?
- How will it support teachers' understanding of what is developmentally appropriate? Why is this important?

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Developmental Progression

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Take the next several minutes to create a plan for how you will take this content back to your team.

- When will you deliver this content to your staff? (**Remember:** we expect you to share this content by the Session 5 training.)
- How will you deliver content to your staff? (One whole-group two-hour professional development? Smaller groups? Smaller chunks of time? Direct facilitation vs. small group planning?)
- How will you support your team in furthering students' number sense? What tools will you create and provide them with?
- What challenges do you anticipate your staff may have with this content?



The questions below are for when you facilitate for your staff:

What are your next steps for ensuring that you are constantly and intentionally building number senses with students?

When and where will you prioritize focusing on number sense? How will you hold yourself accountable for using these strategies?

What questions do you still have about what you learned today?

What feedback do you have about the session for the facilitator?

Next Steps for Teachers

- Draft sentence starters that will help you remember to use number sense strategies daily. Post these prompts around your classroom strategically.
 - Have your prompts posted by **PROVIDE DATE.**

Break 😊



A



Reflect on your experience making time for math observations.

How have you been able to prioritize getting in to classrooms to observe for math?

What has worked well? What has been challenging?

What have you needed to do to effectively prepare for these observations?

Practice: Observing for Number Sense

Nevada Early Childhood Leadership Series

Session 3

Objectives

- Develop a deeper understanding of the math observation rubric in line with number sense
- Observe an ECE math lesson and take low-inference notes on evidence of number sense using the math observation rubric

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Digging Into the Rubric: Number Sense

Practice Observation Using the Rubric

Closing

Revisiting the Rubric

- As a reminder, the 4 competencies in our math rubric are:
 - **Essential Content**
 - **Math Language Development**
 - **Owning the Learning**
 - **Integrated, Cohesive Learning**
- Each competency has indicators that you'll rate individually and then use them and the guiding question to help you arrive at your overall rating.

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Digging Into the Rubric: Number Sense

Practice Observation Using the Rubric

Closing

Digging in to the Rubric: Essential Content in line with Number Sense



Take **5 minutes** to:

- Highlight and annotate the Essential Content Competency in a way that helps you.
- On a post-it or in your note-taker (this is up to you!), jot down notes that help you consider what evidence you will need to consider to accurately rate Essential Content for Number Sense.
- What questions do you have?

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Digging In to the Rubric: Number Sense

Practice Observation Using the Rubric

Closing

The purpose of this practice for you to have an opportunity to practice observing for number sense so that you can more nimbly do so in your own center/school.

Practice Steps:

- o Watch the video clip and collect data in line with **Essential Content in Number Sense** for teacher and student actions.
- o You'll reflect and respond in three ways – first independently, then in pairs, and lastly summarizing our analysis whole group.

Take 2 minutes to look for trends in your notes.

1. How would you rate what we observed on the rubric? Does this teacher's instruction exemplify what we identified as critical for number sense in essential content?
2. What is emerging to you as a primary area of development? (*You don't have to fully commit to your area of development quite yet - more evidence is coming!*)

Take 3 minutes to reflect in pairs.

- Compare evidence you collected. Do your notes look similar?
- What was difficult about collecting evidence this way? Easy?
- Share your thinking about an area of development for this teacher.



Be prepared to share out your responses with the group.

ESSENTIAL CONTENT	RATING: 3-
Evidence Summary	
<ul style="list-style-type: none">• The concepts that students explored during this attendance time are appropriate for PreK classrooms: counting, above, below, equal groups, adding, empty, observe, verify, and compare.• The lesson was worked into a morning routine, and less of a deep dive into content.• We don't see deep engagement around the standards, but we do see meaningful practice of several standards.• Students were being asked to compare groups and conclude that they were equal. For example, all had 5 and the top and bottom rows had equal amounts.• Students were to draw conclusions about the total group based on what they observed.• Questions were appropriate for the age of students in the classroom.• Students were able to provide answers (sometimes with scaffolded support) individually and occasionally as a whole group.• Given the limitations of this clip, we can only see some or most students engaging in the lesson. <p>1a: 3 1b: 3 1c: 3 Overall: 3</p>	



Let's take a few minute to reflect on our practice

1) Reflection Questions:

1. What did you find came naturally to you during this observation?
2. What did you find challenging?
3. What do you need to do as a leader to be ready to conduct these observations?

2) Staff Feedback

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Opening

Introduction: Math Rubric

Digging In to the Rubric: Math Talk

Practice Observation Using the Rubric

Closing



- o What are **3** steps you need (before/during/after an observation) to take to effectively rate Essential Content?
- o What are **2** concepts you think your staff need the most support in understanding about number sense? Why?
- o What is **1** way you will ensure they have a deeper understanding of those concepts before the next time we reconvene?

Closing and Reflection

Nevada Early Childhood Leadership Series

Session 3

Session Objectives

- Reflect on key concepts learned during the day and revise their visions to reflect that
- Articulate the next steps to take prior to the next session (including completing this session with teachers and observing for number sense throughout the day)
- Provide feedback on the day's session

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Revisiting Your Vision

Looking Ahead to Our Next Session: Next Steps

Feedback Survey

Revisiting Your Vision

Today we dug deeply into what number sense looks like in early childhood classrooms and centers.

Take out your vision from our last session together and look to see how/if number sense is present. Based on what we discussed and practiced today, revise your vision to reflect your deeper understanding of number sense and your learnings from today.

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Revisiting Your Vision

Looking Ahead to Our Next Session: Next Steps

Feedback Survey

Looking Ahead to Our Next Session

Teacher Content: Problem Solving and Reasoning

We'll look at how our youngest learners make sense of the world around them by using problem solving and reasoning in their everyday mathematics.

Leadership Skills:

Observing a classroom for evidence of problem solving and reasoning using key look-fors in line with our vision.

Prior to our next Math Series training:

Teacher Observations:

- Conduct at least 3 teacher observations using the Math Talk and Number Sense Look-Fors. Observe teachers during any time of the day to get an understanding of when/how math skills are being developed in their classroom.

Building Number Sense:

- Implement the teacher training content on Number Sense with at least one small group of teachers (approximately 5 teachers) prior to the Session 5 training. **Note that you'll have two months to facilitate this training and complete these next steps.**
- Collect exit tickets at the end of the Number Sense training session and bring those with you to the Session 5 training.
- Before and after the training: Observe a small group of teachers who will participate in the training (3-5) to assess if and how number sense development is being implemented in their classrooms before and after the training you provide. Complete the graphic organizer and bring it to the March training.

Ongoing:

Teacher Observations:

- Prioritize time in your schedule to conduct observations of teachers each week. Enter those teachers' ratings into the observation tracker.

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Revisiting Your Vision

Looking Ahead to Our Next Session: Next Steps

Feedback Survey

Providing Feedback

Please take the next five minutes to complete the feedback survey for today's sessions.