



**EAST LOS
ANGELES
COLLEGE**

**CD 4: CREATIVE
EXPERIENCES
FOR CHILDREN
II**

INSTRUCTOR: ROKEYA RAHMAN

TOPIC: GRAPHING



AGENDA

- **Welcome**
- **Math in Early Childhood Classroom**
- **Areas of Math**
- **Graphing and Data Analysis**
- **Upcoming Assignment**
- **Questions & Answers**



OBJECTIVES: EARLY MATHEMATICS (GRAPHING)

- **The student will be able to:**
 - ✓ Define key terms related to graphing and data analysis
 - ✓ Familiar with key terms and concept of graphing
 - ✓ Identify the types of graphing
 - ✓ Graphing Activity ideas in promoting math experiences in the classroom

REVIEW ECE DOMAINS: ACCORDING TO PRESCHOOL LEARNING FOUNDATION, VOL # 1,2,3

There are several standards/domain in ECE field in California:

- Social-Emotional Development
- Language and Literacy
- English Language Development (for English Learner)
- **Mathematics**
- Visual and Performing Arts
- Physical Development
- Health
- History and Social Science
- Science



CURRICULUM AREAS:

- Language and Literacy
- Art and Music
- Social studies and Dramatic Play
- Sensor Play
- Science
- Math
- Fine motor and Manipulatives
- Gross motor and outdoor Play
- Construction: Blocks and Wood Working
- STEAM education

WHAT IS EARLY MATHEMATICS?

■ Early Math Knowledge

- Includes skills and concepts related to number, geometry and spatial sense, measurement, and patterns.
- It is rooted in children's everyday experiences, and interactions beginning in infancy.
- It is interconnected with all areas of early learning and development.
- (Frye et al., 2013; Ginsburg et al., 2008; NAEYC & NCTM, 2002; National Research Council, 2009; Sarama & Clements, 2009)

EARLY MATH IN THE ECE

- ▶ Math is everywhere
- ▶ Daily living provides a math-rich environment
- ▶ Math must be hands-on and DAP
- ▶ Teach math in a context that has a purpose to the child
- ▶ Focus on conceptual math, not pencil-and-paper
- ▶ Not limited to a specific period or time of day
- ▶ Relationships and repetition are key to math learning

(Beaver, Wyatt, and Jackman, 2017, p. 261)



DEVELOPMENTAL STAGES OF MATH

□ **Early Math Knowledge includes skills and concepts related to**

- Number and Operations
- Geometry & Spatial Sense
- **Measurement**
- Patterns, Functions, and Algebra
- **Data Analysis and Probability (Graphing)**
- Problem Solving (Beaver, Wyatt, and Jackman, 2017, p. 263-269)

MEASUREMENT IN THE EARLY CHILDHOOD CURRICULUM

- **What is Data Analysis (graphing) for Young Children?**
- Data analysis is a math concept that requires strong skills in several other math-related areas.
- Children must first understand math concepts and be able to recognize numbers, count numbers, and apply one-to-one correspondence.
- Data can be organized, represented, and summarize in a variety of ways.
- Using graphs, and charts, children can discover how to interpret information.

(Beaver, Wyatt, and Jackman, 2017, p. 263-269)

GENERAL LEARNING PATH AND DEVELOPMENT

□ Level 1:

- Children start learning about sorting objects at early age.
- At first, a child will separate objects from a pile or collection based on the same attributes.
- Sometimes children can verbalize the reason of selection.

□ Level 2:

- Children are able to sort entire collection of objects by one attribute.
- They are able to classifying things as having a certain attributes and as not having it.

GENERAL LEARNING PATH AND DEVELOPMENT (CONTINUED)

□ Level 3:

- Children are able to sort by more than one ways.
- In this level, children might get confused when another child uses different sorting rules.
- At this level, children need to hear other children's reasoning.

□ Level 4:

- Children are able to state the rules that accounts for a grouping.
- At this level, child also is able to verbalize a rule to indicate whether a new object would be included or excluded. (Copley, 2010, p.143)

PROMOTING DEVELOPMENT OF KEY SKILLS AND CONCEPTS

☐ Posing Questions and Gathering Data:

- ✓ Teacher can help children formulate questions. For example: “Do you have any brothers and sisters?”
- ✓ Teacher can use these kind of questions to engage children in data analysis experiences using simple yes/no tally.
- ✓ Children will begin to understand data gathering by conducting simple surveys of attributes of children in their class.
- ✓ Children may better understand the concept of data gathering when it is demonstrated physically or concretely.

PROMOTING DEVELOPMENT OF KEY SKILLS AND CONCEPTS

❑ Organizing data, including sorting and classifying:

- ✓ Sorting and classifying activities promote reason skills
- ✓ Teachers should help children develop basic sorting and classifying skills by using materials with easily identifiable characteristics
- ✓ Children need opportunities to collect data and then sort and organize it in ways they work out themselves.
- ✓ Teachers can use the teachable moment to offer ideas for children how to organize and display the data, so they can find their answers.

PROMOTING DEVELOPMENT OF KEY SKILLS AND CONCEPTS

❑ Representing data using concrete, objects, pictures, and graphs:

- ✓ Using concrete objects is an essential first step in learning to represent data. Such as – yes/no group
- ✓ Representations of data can also be made with pictures depicting children's choices and answers.
- ✓ Different questions can be answered using the children's pet cards, with the answers displayed in a horizontal, vertical, or bar representation, a blob representation, or a cycle representation.
(Copley, 2010, p.144-146)

OPEN-ENDED QUESTION ABOUT DATA ANALYSIS

- ☐ How are these alike? Different? The Same?
- ☐ Why do these belong here? Why does this not belong?
- ☐ Is there anything that doesn't belong here?
- ☐ What name could you give this group?
- ☐ What if I asked you to sort things in this group in another way? How would you do it?
- ☐ Which group has the most? How can you tell without counting?
- ☐ Which group has the least? How can you tell without counting?
- ☐ What does this graph tell you?
- ☐ Which group has more children? How many more are in this group than in that one?

MEASUREMENT ACTIVITY IDEAS

- Sorting Collages
- Veggie Robots
- People Sort Book
- Ice Cube Tray Graphing
- Counting Walk
- People in Your Hand
- Minibeasts
- Sorting with Venn Diagrams
- Bar graphing how many boys and girls
- Favorite Colors



PROVIDING A MATHEMATICS-RICH ENVIRONMENT

- Teacher should use variety of materials, such as animal counters, sorting rings, graphing paper, buttons, posters, blocks etc.
- Introduce different kind of graphing to children.
- Use literature to make connection
- Ask questions that promote critical thinking

UPCOMING ASSIGNMENTS:

- ✓ Read the textbook chapter 8
- ✓ Read the lecture slides on Graphing
- ✓ Visit Modules for updates and announcement
- ✓ Complete weekly activity/discussion/assignment