



Topic IV Trainer's Manual: Mathematic Development

Introduction



Providing technical assistance to teachers can sometimes feel overwhelming. Where do you begin? How do you prioritize the areas that you will address? How do you approach professional development so that it is meaningful to teachers?

This trainer's manual is organized to help trainers work with teachers who support children's mathematical growth and development. Guidance from a trainer or mentor can help teachers gain confidence as they develop these skills.

This manual is organized to:

- Help you identify and address specific teacher needs
- Give you an array of training ideas and strategies from which to choose
- House useful resources related to dual language learners from both California Department of Education (CDE) documents and outside resources

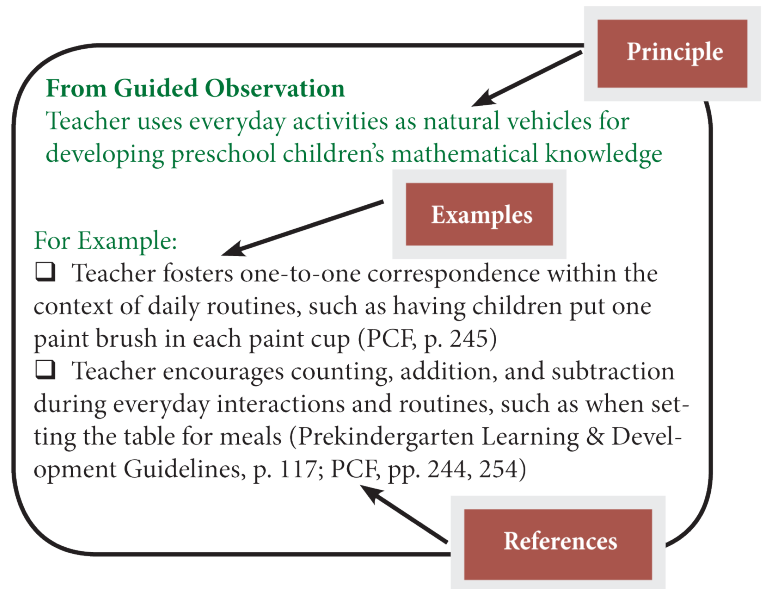
Guided Observation

The first section in this trainer's manual, "Guided Observation," simplifies the observation process by listing a principle from the *California Preschool Curriculum Framework* and offers concrete examples of what this might look like in a preschool classroom. The guided observation is not intended to be used as a classroom or teacher assessment. Instead, it is a guide to assist efforts in supporting teacher practice.

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The principles and examples in the guided observation align with the guiding principles from the *California Preschool Curriculum Framework*. The principles are listed first and are followed by a few examples of how a principle might be demonstrated. For example, the observation that “a teacher uses everyday activities as natural vehicles for developing preschool children’s mathematical knowledge” might be reflected in a teacher taking advantage of daily opportunities to help children practice one-to-one correspondence by matching paint brushes to paint cups, for example. It is important to note that the examples listed are simply examples for each of the principles and that there may be many more ways teachers might demonstrate each principle. The guided observation is not intended to be used as a classroom or teacher assessment, but rather a guide to assist efforts in supporting teacher practice. References are provided following each example. The abbreviations refer to the resources listed in the “ELCD Resources” section of this trainer’s manual.



The cited references are as follows:

- California Preschool Curriculum Framework (PCF)
- California Preschool Learning Foundations (PLF)
- Early Childhood Environment Rating Scale (ECERS)
- Preschool English Learners Resource Guide (PEL)
- Desired Results Developmental Profile © (DRDP©)
- Preschool Program Guidelines (PPG)

Professional Development Toolbox

Once a trainer observes teachers and environments using the guided observation in this trainer’s manual, he/she will have a general idea in which areas teachers might need additional support and/or coaching. The “Professional Development Toolbox” section of this trainer’s manual offers professional development strategies and ideas for each of the principles listed in the *California Preschool*

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Curriculum Framework. It is recommended, however, that before using the toolbox, teachers be given the opportunity to conduct a self-evaluation. A self-evaluation tool is available in the program guidelines handouts. From the self-evaluation process, teachers will identify their strengths and one or two areas to requiring assistance. Given the insight from the self-evaluation, in addition to classroom observations, the trainer will be able to best identify which coaching strategies/ideas from the toolbox might be most beneficial to the teacher. Below is an example of the process of collecting data, the type of data which may be collected and possible course of action:

Information Gathered from Observation

Trainer observed that the teacher seemed to overlook the importance of including preschool children's home language in counting activities.

Teacher supports English language learners as they develop mathematical knowledge

(From Guided Observation)

For example:

- Teacher observes children rehearsing the second language by repeating what other speakers say and by playing with the sounds of the new language. (PEL, p.48)
- Teacher includes preschool children's home language in counting activities, whenever possible (PCF, p. 244)

Information Gathered from Teacher's Self-Evaluation

The teacher takes pleasure talking with children; according to the self-evaluation, she regularly enters children's play and expands on their conversation. She takes pride in this area. Using a strength-based approach, trainer shares observations that exemplify support for children's vocabulary development during these interactions. Trainer may ask, "Let's talk about next steps. What would you like to work on?" The teacher shares that while she wants to enhance math in her classroom, she is not confident about her own mathematical vocabulary, and is not familiar with how to count in the home languages of the children in the classroom. She would like support on how to better incorporate math-related terminology in the classroom.

Gathering information from conversations and interactions with the teacher, the guided observation tool, and the teacher self-evaluation process will help determine which strategies from the toolbox might be most beneficial. In this scenario, the information gathered is that the teacher may need support in (1) understanding the importance of mathematical vocabulary, and (2) becoming confident and competent in when and how to use mathematical vocabulary in the children's home languages in the classroom. Although there are several strategies in the toolbox that address mathematical vocabulary, choosing one or two strategies to begin with is a good idea. The following strategies are from the toolbox and address the area of mathematical vocabulary:

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- Discuss the importance of using meaningful activities to promote measurement vocabulary. Suggest the teacher plan a “Measurement March” as described on page 117 of *Showcasing Mathematics for the Young Child 2*. Extend this conversation to include measurement vocabulary from children’s primary language.(PCF, p. 276).
- Discuss the powerful impact of using numerical vocabulary and counting in meaningful daily interactions. Using the current daily schedule, ask the teacher to identify all of the possible times in which counting can be a daily ritual. Support the teacher in making a plan to add counting to two new times throughout the day. (PCF, p. 244)
- For programs with multiple home languages, discuss the importance of using the home language in the classroom specifically for mathematical development. With teachers, create a list of concepts for parents to teach at home in the home language such as shapes, numerals, and quantities. (PCF, pp. 235, 294)

Resources

This trainer’s manual has two resource sections. The first section provides a list of CDE resources including the *California Preschool Learning Foundations*, the *California Preschool Curriculum Framework*, the Desired Results Developmental Profile© (DRDP©), and *Preschool English Learners: Principles and Practices for Promoting Language, Literacy and Learning* as well as outside resources such as, the *Early Childhood Environment Rating Scale (ECERS)*. For each resource listed, the sections and/or pages that refer to mathematical development in young children are listed below the resource description. The second resource section includes additional resources such as websites and journal articles that address mathematics in early childhood.

Utilizing and referencing these resources will help teachers become more aware of the research available in the area mathematics in early childhood. Additionally, The *California Preschool Curriculum Framework* will provide teachers with guidance for planning experiences and classroom environments that not only align with the foundations but also are meaningful for young children, developmentally appropriate, and inclusive of children who speak a language other than English in their home and children with disabilities or other special needs.