

A GUIDE TO...

TEACHING PRACTICES

Cultivate and encourage ALL young children (0-5; with and without disabilities) to explore STEM concepts through activities as independently as possible with adaptations in their natural environments.

Every child is different, and these are only suggested adaptations. Do what works best for the child. The child's therapist can give you more ideas.

Are you interested in helping your child learn about STEM? Are you looking for ways to support your child with STEM materials and activities?

Use this guide to support STEM learning experiences through teaching. Every child is different, and these are only suggestions. Do what works best for your young child or children you are working with. You might also work with the child's speech or occupational therapist to support your child.



TEACHING PRACTICES

Teaching strategies are practices used by adults (e.g., family members, practitioners) or, in some instances, by other children to help support children's learning. Using these strategies engages children in activities, keeps their interest, and provides opportunities for them to learn and think about STEM when using adaptations (refer to [A Guide to Adaptations](#) for more information) is not enough support.

These teaching practices can be done one-on-one or in groups by adults or other children (siblings or classmates). Most often, practices are used with adaptations so that children have the individual supports they need to engage in STEM learning.

- ▶ **General Teaching Practices**
- ▶ **Descriptive Talking/Verbal Guidance**
- ▶ **Modeling**
- ▶ **Prompting**

- ▶ **Reinforcement**
- ▶ **Scaffolding**
- ▶ **Wait Time**



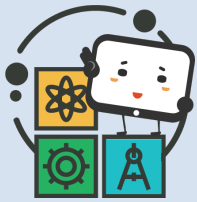
Follow your child's lead and interests. Enthusiastically ask your child questions about what they are doing and what they like.



Answer your child's questions. If you do not know the answer, work together with your child to discover the answer.



Encourage your child to participate in the activity as much as possible. Praise your child's efforts and successes.



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GENERAL TEACHING PRACTICES:

Some young children may need more support, such as teaching strategies/practices from adults and/or peers to engage in STEM learning.

- Encourage children
- Keep number of children low
- Change an activity (shorten, extend, break into steps, add movement)
- Pair children
- Take turns with children
- Understand that children are engaging in purposeful play & learning (Milbourne & Campbell, 2007).
- Wait for children to begin activities and follow their lead



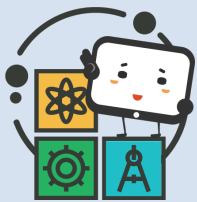
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DESCRIPTIVE TALKING/VERBAL GUIDANCE:

Use simple words to build upon what a child is seeing and/or doing

- Add new ideas and words (e.g., narrating "I see your fingers are getting wrinkly from soaking in the water.")
- Build on what children do and say (e.g., when a child says "Wet!", expand by saying "Yes, the water is very wet!")
- Introduce the activity and show children what will happen (model where the water should stay [the container], and how it should be used [poured or dumped, but not thrown or splashed])
- Talk about what is happening – "You are putting your hands under the water – under the wet, cold water".
- Use words to describe the parts of the activity even if the child is just being introduced to particular words (hot/cold; wet/dry) or actions (splash, pour, dump)



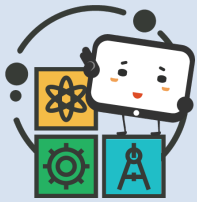
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MODELING:

Visually demonstrate and/or perform the target activity/behavior/skill to encourage participation

- Show child what to do in the activity (e.g., use of number and words for comparing [e.g., more, less, fewer, same] when beginning and doing an activity [e.g., "I see you and Emma have the same number of counters, you both have three – Let's count them..."])
- Show child what you expect (e.g., show your hand slowly touching each counter, saying aloud "One, two, three" to model using 1-1 correspondence)
- Model exploration and play
- Pair child with a peer who can support and show the child how to do an activity
- Role-playing (e.g., saying "Let's pretend we're playing with the counters. I'll count first, then you show me what to do!")



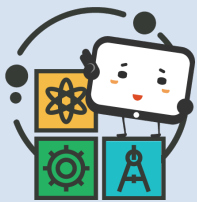
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PROMPTING:

Help given by another person (usually an adult) to assist children in doing something or showing a skill (Sandall, Hemmeter, Smith, & McLean, 2005). Types of prompts may include verbal, gestural (pointing), and/or physical cues to encourage participation.

- Use prompt fade (i.e., reduced assistance) as needed to promote children's independence in the activities. For example, an adult might initially offer physical hand-over-hand support for a young child to sign the word "more", fade to prompting with an adult modeling the sign while saying it, and then fade to the adult saying "More?" as an oral prompt for the child to sign "More" independently.
- Use verbal prompts, gestures (e.g., pointing) and sign language in conjunction with words during activities and songs to facilitate engagement (e.g., the adult might pair the sign for "Next" with the spoken phrase "Next, we need the jelly.", then point to the jelly)
- Use visual and verbal prompts to move child along through an activity (e.g., a communication choice board paired with the verbal prompt "What's next?")



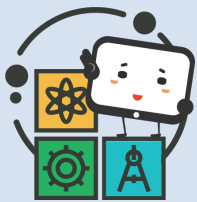
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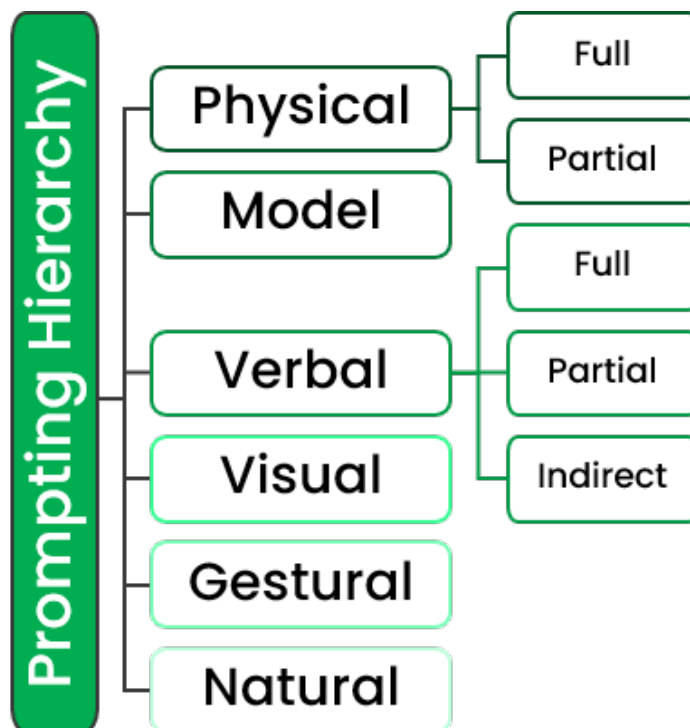
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PROMPTING (CONTINUED):

To reduce a child needing the prompt and increase child independence, it is recommended to use least-to-most prompting hierarchy. The level of prompting that is least intrusive to the prompting level that is most intrusive is determined by the child's needs and the setting and/or activity.

- Often physical prompting is considered the most intrusive level. Full physical support might be taking the child's hands and showing them how to fill and pour the cup.
- A modeled prompt would be the adult demonstrating pouring the cup.
- Verbal prompting is considered the least intrusive (this depends on the child's support needs and the setting and/or activity), and would be to say, "Pour the water."
- A visual prompt might look like using a communication board or pictures to show how to use the cup.
- A gestural prompt would be to point to the cup
- A natural prompt during water play might be to provide a cup for pouring.



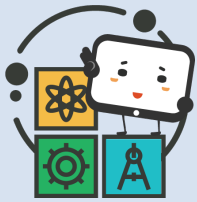
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REINFORCEMENT:

Provide immediate and specific feedback to encourage performing the skill again

- Pair the child with a peer who can show the child how to do something and praise them when they do.
- Use positive reinforcement with feedback (e.g., if a child is struggling to fit a peg into a hole, say "Let's try turning it." and giving support to manipulate the peg)
- Use process-based reinforcement (e.g., "You are working so hard to fit all of the pieces together.")



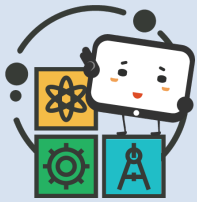
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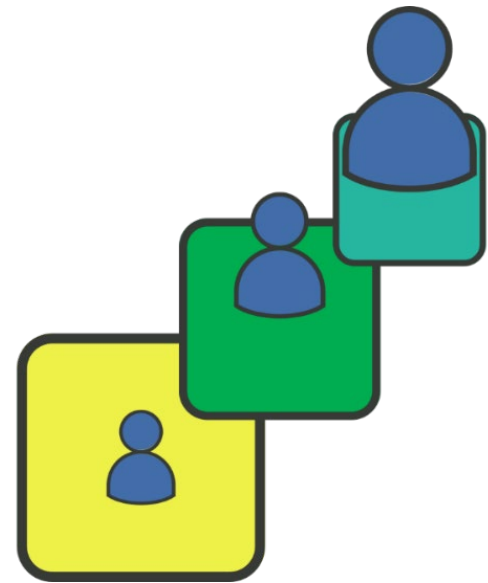
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SCAFFOLDING:

Provide "prompts and hints to support the child and then gradually take away these supports as the child shows the skill on their own" (Leong & Bodrova, 2012).

- Build on what children do and say (refer to **Descriptive Talking/Verbal Guidance**)
- Support children to problem solve ("I wonder what will happen if we turn on both faucets, fill this cup and then dump it.")
- Give a lot of wait time before prompting again (e.g., 10-60 seconds depending on developmental level of child, see **Wait Time**)
- Use pictures/icons and/or words to break down a complex activity into smaller, more doable steps (refer to **Visual Cues** in **A Guide to Adaptations**)
- Ask the child questions to support understanding (e.g., "I wonder why the water made your fingers wrinkly?"; for more examples see **A Guide to Asking Open-Ended Questions**)
- Use visual and verbal prompts to support the child as they go through the activity (refer to **Prompting**)



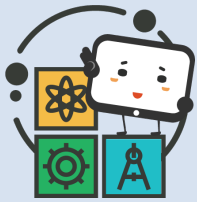
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WAIT TIME:

Provide a generous amount of time for independent response

- Allow time for child to respond on their own
- Give at least a 3-seconds for child to reflect and process
- Give child time to ask questions
- Wait at least 3 seconds before calling on a child after asking a question
- Wait at least 3 seconds for child to respond after asking them to do something
- Wait for children to ask for something and follow their lead and interests



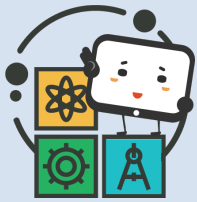
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